



Rotation Luminaire Goniospectroradiometer (LSG-1800CCD / LSG-1700CCD)

Brochure

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Leader in Lighting & Electrical Test Instruments

Rev. 10/18/2019

Rotation Luminaire Goniospectroradiometer

1. System Configuration

The quotation includes all the following items:

A. Goniophotometric System:

- Goniometric Rotating Console
- Goniometric Rotating Control Instrument in 19inch cabinet: It connects to the PC and was controlled by the software. (Only LSG-1800CCD function)
- High Precision Photometer (Only LSG-1800CCD function)
- Class A Photo Detector
- Line Laser System for Calibrating
- English Measuring Software

B. LMS-9500 Scientific Grade CCD Spectroradiometer

C. CLAMP-9500 Adjustable Tripod for LMS-9500

D. SLS-250W DC Distribution Standard Lamp

E. DC3010 DC Power Source

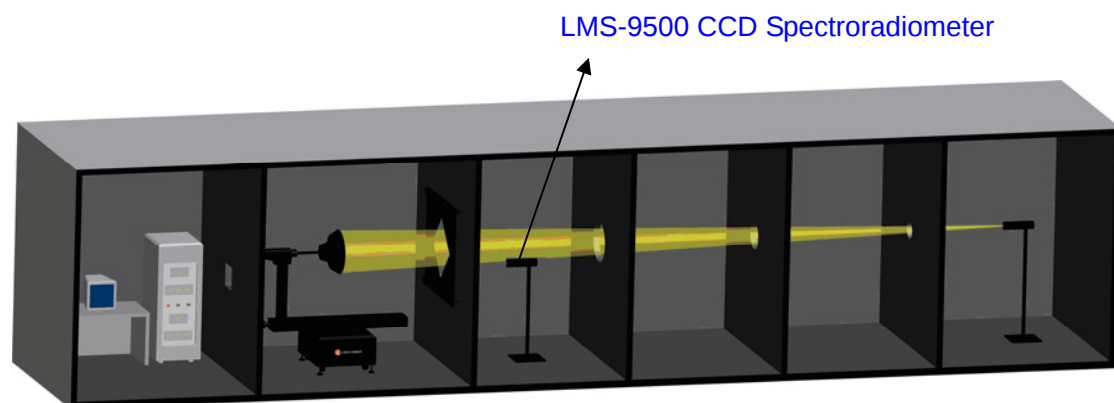
F. LS2012 Digital Power Meter: High Accuracy to measure AC and DC voltage, current, power and PF

G. AC Power Source to give a stably AC Output for luminaries test

H. CASE-19IN 19inch Standard Instruments Cabinet

I. Two sets of luminaries Clamps: two sets of multi-function luminaries clamps

J. Oversea Delivery Packing: all of the instruments and accessories will be packed to meet long distance sea delivery



Full View for Rotation Luminaire Goniospectroradiometer

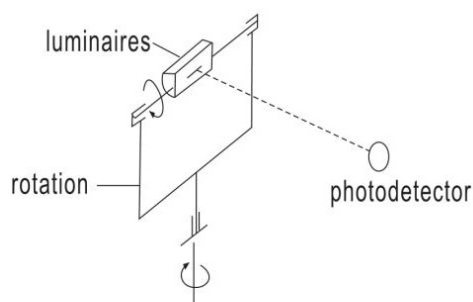
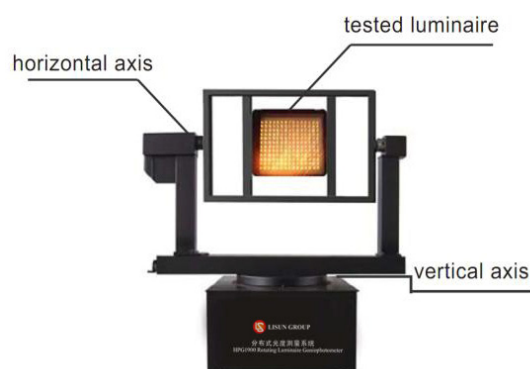
Note: PC and Printer prepared by the customer (request at least two USB ports)

2. Working Principle

LSG-1800CCD/LSG-1700CCD Goniophotometric System carries out measuring methods of fixed location and rotating luminaires. The measured luminaire is installed on the rotating supporter, 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 $-180^{\circ} \sim +180^{\circ}$. According to the measurement requirements, the system can be operated in B- β or C- γ coordinates. When getting intensity distribution data, PC will calculate photometric parameters automatically.

LSG-1800 Double pillars structure (B-Beta and A-Alpha Test)

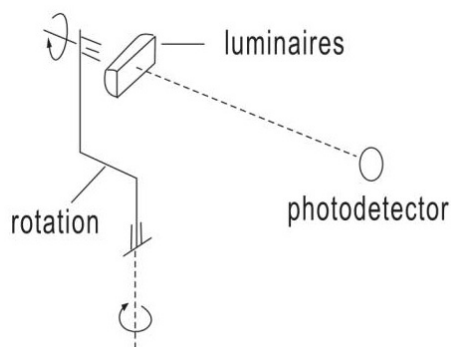
This type is applied to fixed grille lamp. The symmetry axis of lamp and the horizontal of rotating supporter is coaxial, in the B- β coordinate system, and the two is vertical Cross, in the A- α coordinate system.



Double pillars structure

LSG-1800CCD / LSG-1700CCD Single pillar structure (C- γ Test)

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-1800CCD/LSG-1700CCD Goniospectroradiometer is for luminous intensity distribution measurements with facility for turning the light source. It is for industrial laboratory measurements the photometric data of luminaires. LSG-1800CCD/LSG-1700CCD is used 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 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-Beta & C-Gamma (LSG-1800CCD) and C-Gamma (LSG-1700CCD)
- The tested luminaires rotates around an angle of (γ) $\pm 180^\circ$ (or 0-360 $^\circ$) and the tested luminaires rotates around itself with an angle of (C) $\pm 180^\circ$ (or 0-360 $^\circ$)
- Luminosity Testing Range: Illuminance 0.001lx~10,000lx; Light Intensity 1.0cd ~ 10⁷cd(detector)
- The accuracy of angle: 0.2 $^\circ$
- Test CCT and Spectrum Distribution Test for the lamp, the data can be export be excel
- Spectral Range Wavelength: 380~780nm; Wavelength Accuracy: ± 0.2 nm
- Accuracy of Chromaticity Coordinates x, y: ± 0.0015
- Correlated Color Temperature Range: 1000~100000K, Resolution: 1K
- Accuracy of photometry: Class 1
- Testing Accuracy: 3%(Under Standard lamp); Stray Light: less than 0.2%
- English version software can run in WinXP, Win7 or Win 8

Max Size for the Testing Lamp (mm)	The max size for the Testing Lamp		Max Weight
	C-Gamma Test with one Pillar	B-Beta Test with Two Pillars	
LSG-1800CCD	1600*550	700*600	50kg
LSG-1700CCD	1600*550	N/A	40kg

5. Laboratory Requirements

- The Dimension of Dark Room for Goniometric Rotating Console and Photometric Light Patch: W3.5m*H2.5m*L8m (Other size please check with LISUN engineer)
- Operator Room for controlling cabinet, PC and printer Dimension: W3.0m*L3m
- 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 overseas market customers:

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

7. Design Standard of Device

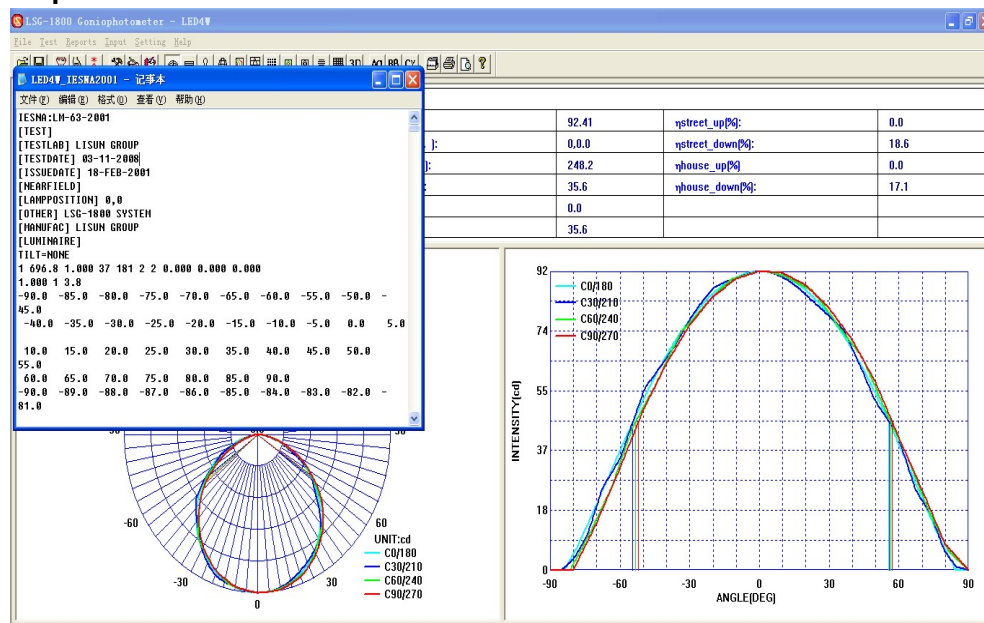
The construction, technical parameter, test & operate steps as well as data processing software of LSG-1800CCD/LSG-1700CCD Goniospectroradiometer meet the following requirements:

- 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 9467-1988, "Luminosity Test of Indoor Luminaires"
- 3.7 GB/T 9468-1988, "Luminosity Test of Street Luminaires"
- 3.8 IES 61341 "Method of Measurement of Center Beam Intensity Angle of Lamp"
- 3.9 CIE Pub.NO.76, "Photometry-the CIE System of Physical Photometry"

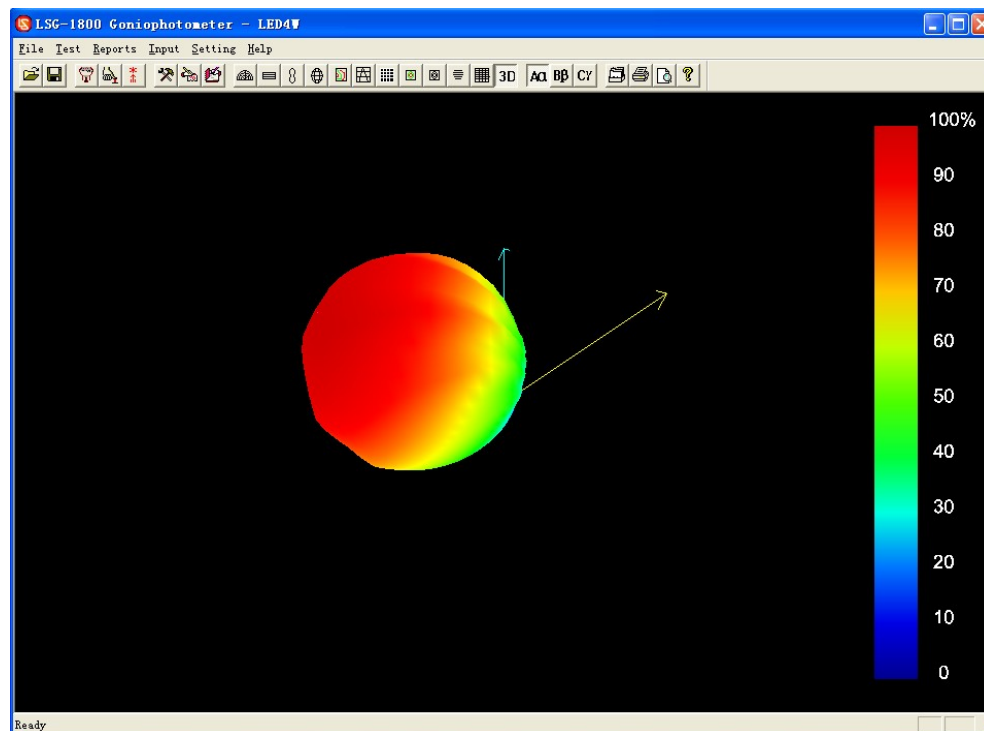
8. Application Software

All control of the LSG-1800CCD/LSG-1700CCD Goniospectroradiometer 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. It can export IES/LDT files for the luminaire design software such as DiaLux

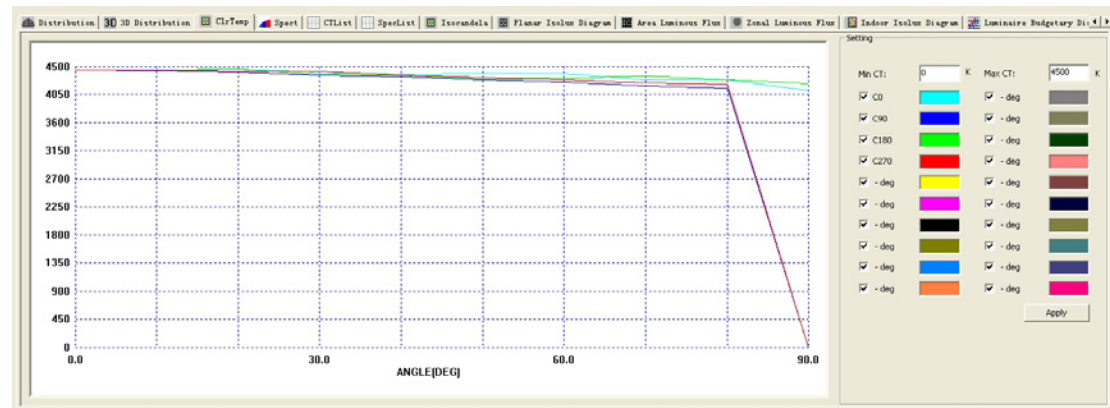
Export the IES standard format document



3D Graph Distribution



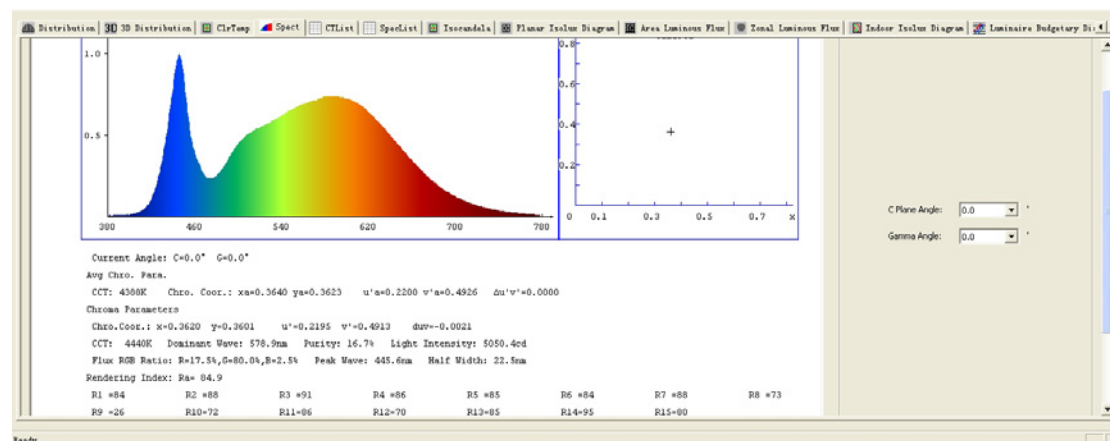
● CCT Distribution Test:



● CCT List:

Gamma/C	CCT (K)	CCT (K)	CCT (K)	CCT (K)	CCT (K)
0.0deg	4400K 0.0014	4400K 0.0015	4400K 0.0014	4400K 0.0015	
10.0deg	4410K 0.0011	4410K 0.0012	4410K 0.0015	4410K 0.0016	
20.0deg	4420K 0.0022	4420K 0.0006	4420K 0.0021	4420K 0.0010	
30.0deg	4402K 0.0006	4388K 0.0008	4370K 0.0005	4418K 0.0008	
40.0deg	4365K 0.0005	4377K 0.0013	4355K 0.0009	4361K 0.0007	
50.0deg	4355K 0.0004	4291K 0.0030	4298K 0.0025	4319K 0.0020	
60.0deg	4377K 0.0004	4245K 0.0042	4308K 0.0022	4294K 0.0020	
70.0deg	4284K 0.0028	4188K 0.0059	4344K 0.0011	4249K 0.0044	
80.0deg	4202K 0.0020	4143K 0.0074	4250K 0.0023	4207K 0.0053	
90.0deg	4117K 0.0079	OK 0.5394	4227K 0.0050	OK 0.5394	

● Spectrum Distribution Test:



● Spectrum List:

No.	C(deg)	Gamma(deg)	CCT(K)	x	y	u'	v'	du'	dv'	Ir(cd)	Ra	Peak Wave(nm)	Half Width(nm)	Domain Wave(nm)	Peak Sig	Peak Sig
1	0.0	0.0	4440	0.3620	0.3601	0.2195	0.4913	0.0014	0.0014	5050.4	85	445.6	22.5	570.9	61999	4021
2	0.0	10.0	4431	0.3623	0.3605	0.2195	0.4913	0.0014	0.0014	5050.4	85	445.6	22.5	570.9	61991	4021
3	0.0	20.0	4402	0.3611	0.3587	0.2194	0.4905	0.0022	0.0022	4882.7	85	446.0	22.5	579.1	61197	4021
4	0.0	30.0	4402	0.3634	0.3612	0.2200	0.4920	0.0006	0.0006	4499.9	85	445.6	22.5	578.0	58377	4021
5	0.0	40.0	4365	0.3648	0.3629	0.2203	0.4929	0.0005	0.0005	3931.6	85	445.5	22.5	578.9	52194	4021
6	0.0	50.0	4383	0.3640	0.3616	0.2202	0.4923	0.0004	0.0004	3452.9	85	445.5	22.5	579.0	44716	4021
7	0.0	60.0	4377	0.3643	0.3619	0.2203	0.4924	0.0004	0.0004	2591.9	85	445.9	22.5	579.1	34625	4021
8	0.0	70.0	4284	0.3682	0.3665	0.2211	0.4951	0.0028	0.0028	1797.1	84	446.5	22.3	578.7	26091	4021
9	0.0	80.0	4202	0.3682	0.3665	0.2211	0.4952	0.0028	0.0028	1320.5	84	446.7	22.5	578.7	20599	4021
10	0.0	90.0	4117	0.3757	0.3746	0.2203	0.4999	0.0079	0.0079	605.7	84	446.5	22.5	578.4	12701	4021
11	90.0	0.0	4442	0.3619	0.3599	0.2195	0.4912	0.0015	0.0015	5053.2	85	446.3	22.5	570.9	61999	4021
12	90.0	10.0	4431	0.3623	0.3603	0.2196	0.4914	0.0012	0.0012	4945.2	85	446.5	22.5	570.9	60972	4021
13	90.0	20.0	4403	0.3633	0.3613	0.2199	0.4921	0.0008	0.0008	4663.0	85	446.0	22.8	578.9	56155	4021
14	90.0	30.0	4368	0.3652	0.3634	0.2203	0.4932	0.0008	0.0008	4240.6	85	446.5	22.5	578.8	53729	4021
15	90.0	40.0	4337	0.3660	0.3642	0.2205	0.4938	0.0013	0.0013	3690.2	84	446.0	22.8	578.7	47449	4021
16	90.0	50.0	4281	0.3653	0.3639	0.2210	0.4954	0.0020	0.0020	2862.3	84	446.5	22.8	578.6	38122	4021
17	90.0	60.0	4245	0.3700	0.3689	0.2213	0.4965	0.0042	0.0042	1950.5	84	445.8	22.5	578.4	27932	4021
18	90.0	70.0	4188	0.3725	0.3715	0.2220	0.4991	0.0059	0.0059	1016.1	84	446.0	22.5	578.4	17230	4021
19	90.0	80.0	4143	0.3747	0.3742	0.2223	0.4996	0.0074	0.0074	772.7	84	445.0	21.4	578.2	9009	4021
20	90.0	90.0	0	0.0000	0.0000	0.0000	0.0000	0.5394	0.0	0	0	300.0	0.0	0.0	7507	4021
21	180.0	0.0	4440	0.3620	0.3601	0.2195	0.4913	0.0014	0.0014	5050.4	85	445.6	22.5	570.9	61999	4021
22	180.0	10.0	4431	0.3619	0.3600	0.2195	0.4912	0.0015	0.0015	5011.0	85	446.5	22.5	570.9	61463	4021
23	180.0	20.0	4402	0.3612	0.3588	0.2194	0.4905	0.0021	0.0021	4772.8	85	445.6	22.5	579.1	59317	4021
24	180.0	30.0	4370	0.3647	0.3620	0.2201	0.4930	0.0006	0.0006	4173.8	85	446.0	22.5	578.7	52748	4021
25	180.0	40.0	4355	0.3653	0.3637	0.2203	0.4934	0.0009	0.0009	3776.4	84	445.6	22.5	578.7	46340	4021
26	180.0	50.0	4299	0.3677	0.3664	0.2208	0.4950	0.0026	0.0026	2794.9	84	445.6	22.5	578.5	37230	4021
27	180.0	60.0	4308	0.3672	0.3657	0.2207	0.4947	0.0022	0.0022	2239.3	84	445.6	22.5	578.6	31077	4021
28	180.0	70.0	4244	0.3657	0.3637	0.2205	0.4935	0.0011	0.0011	1527.9	84	445.6	22.3	578.8	22906	4021
29	180.0	80.0	4200	0.3660	0.3646	0.2209	0.4952	0.0020	0.0020	959.0	84	445.0	22.1	578.6	15259	4021
30	180.0	90.0	4227	0.3709	0.3705	0.2213	0.4974	0.0050	0.0050	436.9	84	444.5	21.6	578.2	10622	4021
31	270.0	0.0	4442	0.3619	0.3599	0.2195	0.4912	0.0015	0.0015	5053.2	85	446.3	22.5	570.9	61920	4021
32	270.0	10.0	4414	0.3618	0.3599	0.2195	0.4911	0.0016	0.0016	5081.1	85	445.8	22.8	570.9	61503	4021
33	270.0	20.0	4422	0.3626	0.3606	0.2197	0.4916	0.0010	0.0010	4794.4	85	446.5	22.8	570.9	59252	4021
34	270.0	30.0	4416	0.3629	0.3609	0.2198	0.4917	0.0008	0.0008	4443.1	85	445.8	22.8	578.9	55600	4021
35	270.0	40.0	4381	0.3651	0.3634	0.2200	0.4937	0.0015	0.0015	3816.5	85	446.5	22.5	578.7	48760	4021

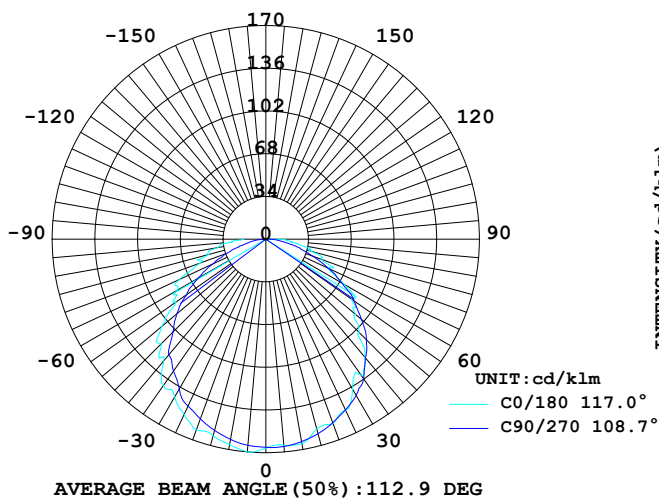
The Next Page is the Test Report by the software

STREETLIGHT PHOTOMETRIC TEST REPORT

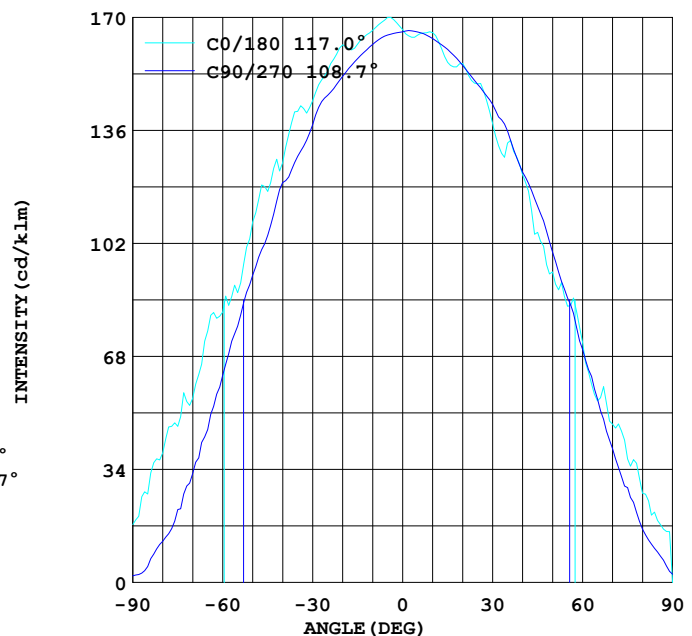
Report number:

MANUFACTURER:	Address:	
NAME: LED Street Lamp	TYPE:LED-L120W	WEIGHT:8kg
SPECIFICATION:120W	DIMENSION: 750*350*85	SERIAL No.:LED-L120W-01

MODEL:	OSRAM	Imax(cd/klm):	170.2	Effective Flux(lm):	487.0
NOMINAL POWER(W):	56	MAXIMUM(C, γ):	0, 4.0	EEI	1.298
RATED VOLTAGE(V):	220	EFFICIENCY(%):	49.3	Voltage(V)	220.0
NOMINAL FLUX(lm):	10659.4	η street_up(%):	0.0	Current(A)	0.264
TEST FLUX(lm):	10659	η street_down(%):	24.4	Power(W)	56.16
LAMPS QUANTITY:	1	η house_up(%):	0.0	Power Factor	0.966
TOTAL FLUX(lm/klm):	493.1	η house_down(%):	24.9	EEFFICIENCY(lm/W)	8.8

INTENSITY DISTRIBUTION DIAGRAM
IN C PLANSINTENSITY DISTRIBUTION DIAGRAM
IN C PLANS

LUMINOUS INTENSITY DISTRIBUTION



Test System:LSG-1800
 Temperature:25.3DEG
 Operators:
 Test Date:2014-05-02

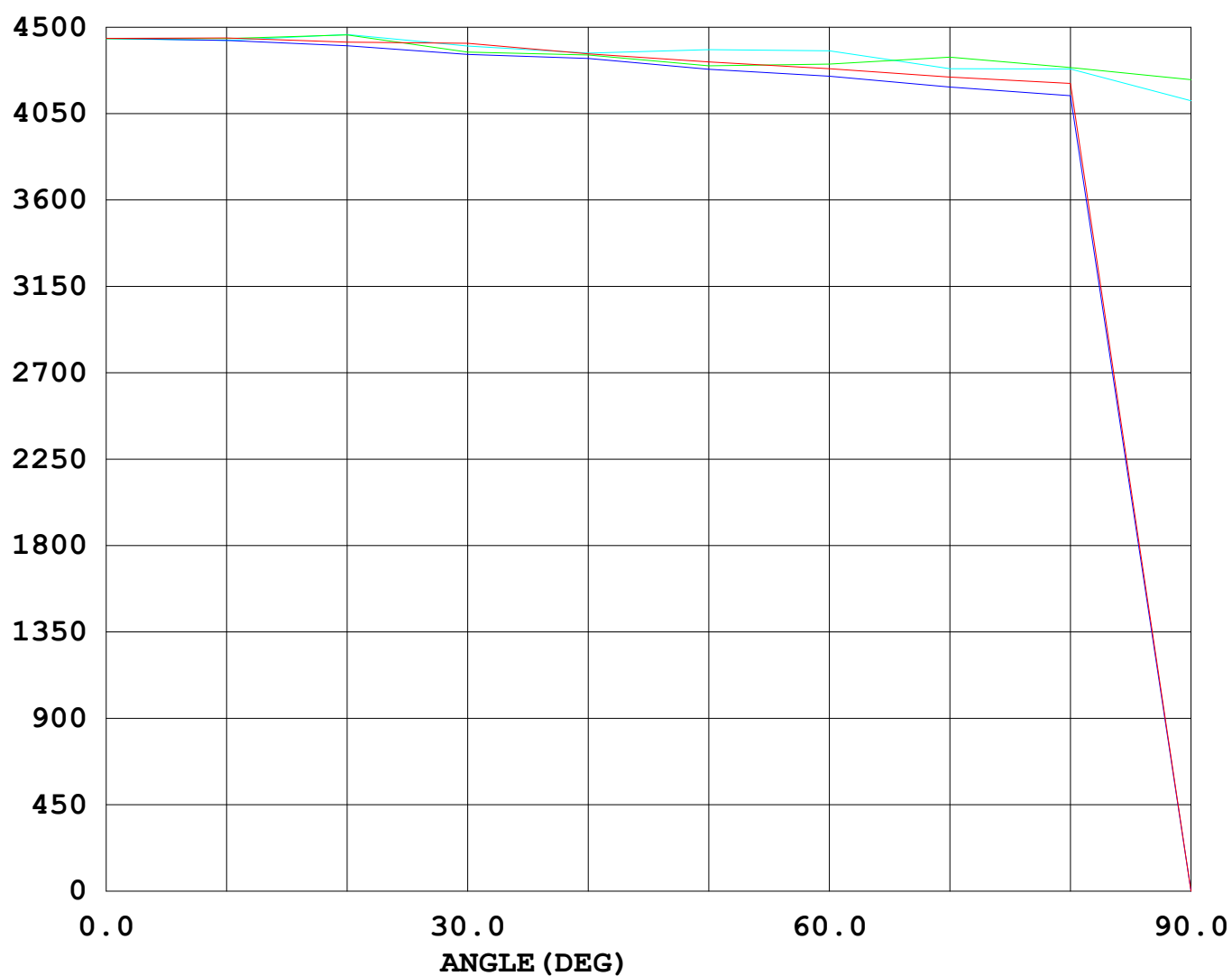
Test Set: 5.0deg/s C-Gamma (TYPE C)
 Humidity:65.0%
 Test Distance:11.060 m
 Remarks:

Color Temperature Distrib

Report number:

MANUFACTURER:	Address:	
NAME: LED Street Lamp	TYPE:LED-L120W	WEIGHT:8kg
SPECIFICATION:120W	DIMENSION: 750*350*85	SERIAL No.:LED-L120W-01

COLOR TEMPERATURE DISTRIBUTION



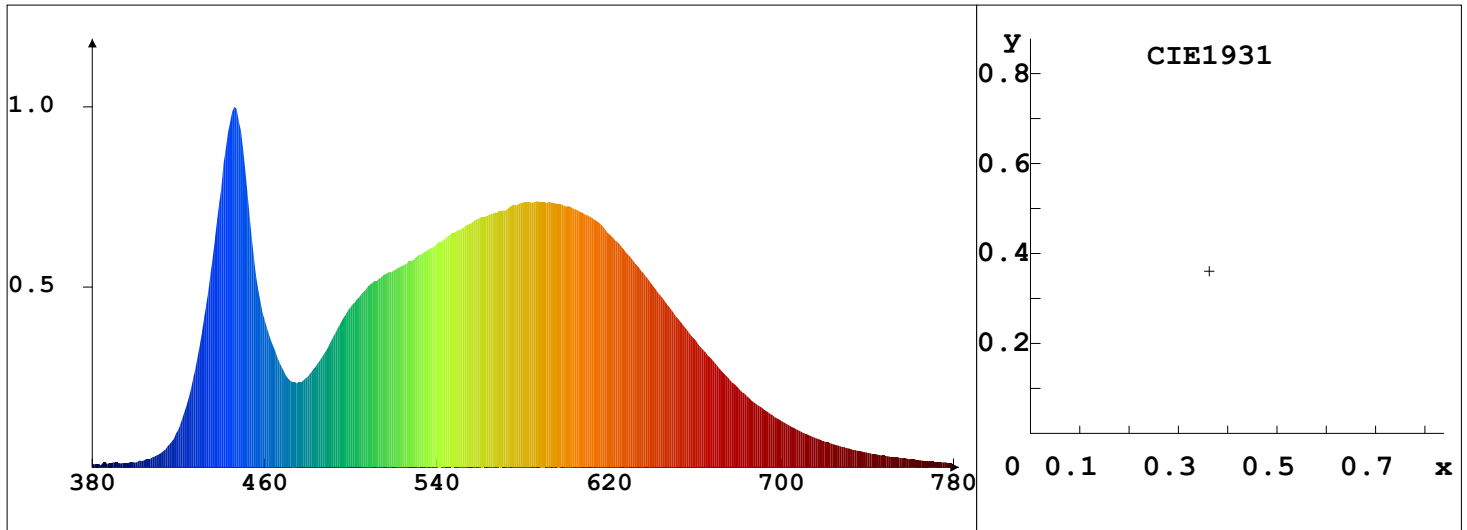
Test System:LSG-1800
Temperature:25.3DEG
Operators:
Test Date:2014-05-02

Test Set: 5.0deg/s C-Gamma (TYPE C)
Humidity:65.0%
Test Distance:11.060 m
Remarks:

Spectrum Chart

Report number:

MANUFACTURER:	Address:	
NAME: LED Street Lamp	TYPE:LED-L120W	WEIGHT:8kg
SPECIFICATION:120W	DIMENSION: 750*350*85	SERIAL No.:LED-L120W-01



Current Angle: C=0.0° G=0.0°

Avg Chro. Para.

CCT: 4388K Chro. Coord.: xa=0.3640 ya=0.3623 u'a=0.2200 v'a=0.4926 Δu'v'=0.0000

Chroma Parameters

Chro.Coord.: x=0.3620 y=0.3601 u'=0.2195 v'=0.4913 duv=-0.0021

CCT: 4440K Dominant Wave: 578.9nm Purity: 16.7% Light Intensity: 5050.4cd

Flux RGB Ratio: R=17.5%,G=80.0%,B=2.5% Peak Wave: 445.6nm Half Width: 22.5nm

Rendering Index: Ra= 84.9

R1 =84 R2 =88 R3 =91 R4 =86 R5 =85 R6 =84 R7 =88 R8 =73

R9 =26 R10=72 R11=86 R12=70 R13=85 R14=95 R15=80

Instrument State

Scan Range: 380nm-780nm Integral Time: 2040.0ms Peak Signal: 61899 Dark Signal: 4821

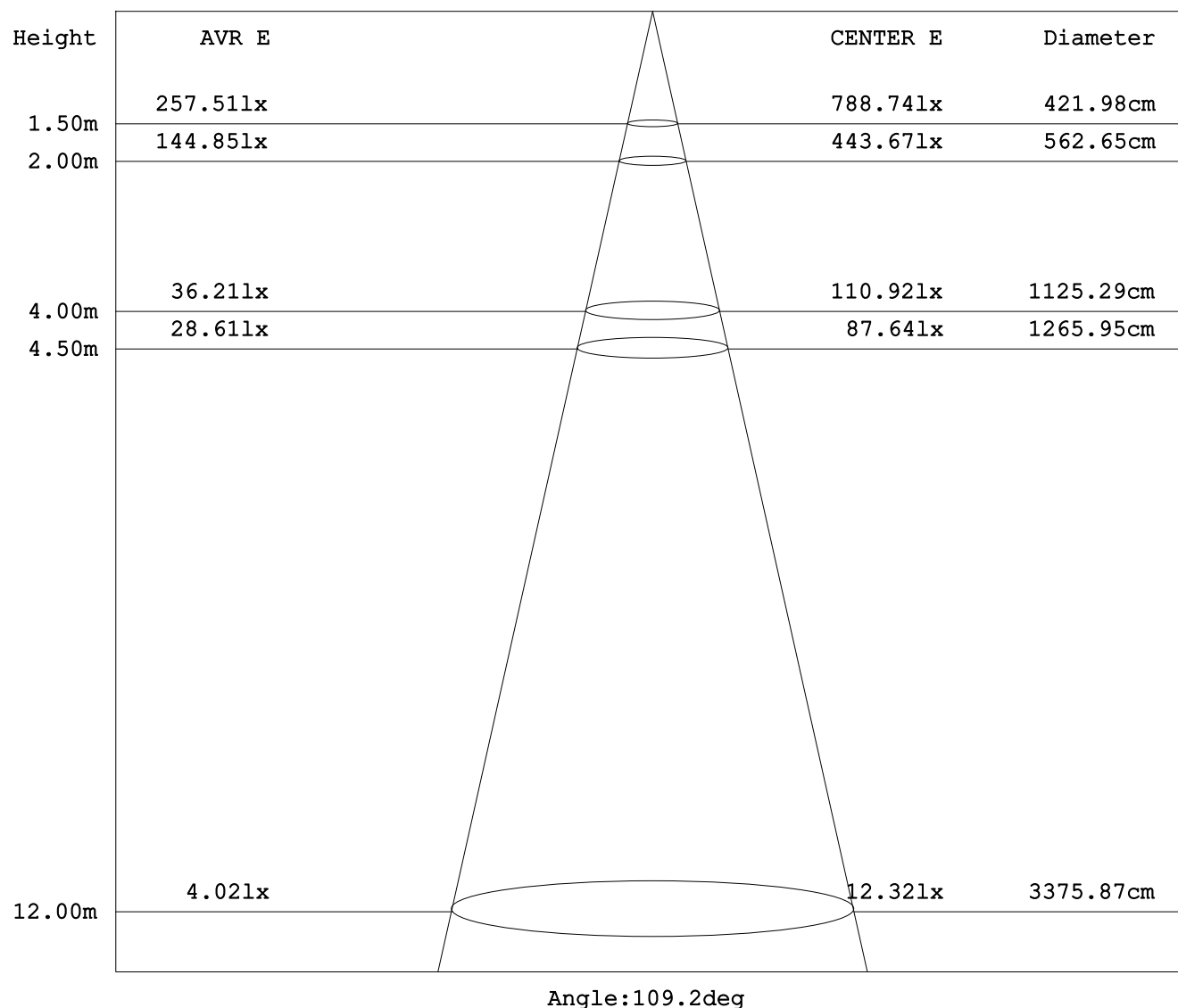
Test System:LSG-1800
 Temperature:25.3DEG
 Operators:
 Test Date:2014-05-02

Test Set: 5.0deg/s C-Gamma (TYPE C)
 Humidity:65.0%
 Test Distance:11.060 m
 Remarks:

AVERAGE AND CENTER E Figure

Report number:

MANUFACTURER:	Address:	
NAME: LED Street Lamp	TYPE:LED-L120W	WEIGHT:8kg
SPECIFICATION:120W	DIMENSION: 750*350*85	SERIAL No.:LED-L120W-01



Test System:LSG-1800
 Temperature:25.3DEG
 Operators:
 Test Date:2014-05-02

Test Set: 5.0deg/s C-Gamma (TYPE C)
 Humidity:65.0%
 Test Distance:11.060 m
 Remarks:

ZONAL FLUX DIAGRAM

Report number:

MANUFACTURER:	Address:	
NAME: LED Street Lamp	TYPE:LED-L120W	WEIGHT:8kg
SPECIFICATION:120W	DIMENSION: 750*350*85	SERIAL No.:LED-L120W-01

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	zOne	total
5.0	170.2	169.0	164.9	162.7	164.8	164.1	165.8	169.4	0- 5	3.975	3.975
10.0	166.3	166.4	162.0	163.0	165.6	164.9	163.8	167.3	5- 10	11.86	15.84
15.0	162.2	161.2	157.8	160.3	156.6	162.6	160.5	162.8	10- 15	19.32	35.16
20.0	161.9	155.5	152.4	150.2	156.4	153.6	155.8	158.1	15- 20	26.01	61.18
25.0	153.9	149.7	146.7	144.7	150.2	148.6	150.0	153.0	20- 25	31.90	93.08
30.0	145.2	144.3	137.9	138.5	138.2	143.3	144.0	148.7	25- 30	37.21	130.2
35.0	141.8	133.5	128.3	131.9	132.3	138.1	136.0	137.8	30- 35	40.70	171.0
40.0	126.4	121.6	120.4	116.3	122.8	121.2	123.5	128.5	35- 40	43.12	214.1
45.0	117.8	117.1	104.6	108.8	105.4	114.0	113.3	121.6	40- 45	43.50	257.6
50.0	108.6	98.18	92.57	95.63	93.57	105.3	99.53	106.2	45- 50	43.22	300.8
55.0	87.30	91.34	77.19	76.12	83.20	85.16	85.67	92.75	50- 55	40.11	340.9
60.0	81.51	73.14	62.49	64.45	72.22	70.57	70.19	84.11	55- 60	36.60	377.5
65.0	75.75	57.91	46.08	58.72	54.68	63.33	55.26	63.43	60- 65	31.82	409.3
70.0	55.48	52.44	32.80	39.18	47.64	46.02	40.30	53.62	65- 70	26.86	436.2
75.0	47.01	36.12	21.96	31.39	37.20	37.19	28.57	43.87	70- 75	21.58	457.8
80.0	39.07	27.56	12.41	22.09	26.86	27.48	16.10	32.48	75- 80	16.50	474.3
85.0	26.65	18.07	4.819	12.51	18.65	19.49	9.203	24.53	80- 85	11.65	485.9
90.0	17.44	9.972	2.008	8.549	0	10.76	2.490	15.14	85- 90	7.162	493.1
95.0									90- 95		
100.0									95-100		
105.0									100-105		
110.0									105-110		
115.0									110-115		
120.0									115-120		
125.0									120-125		
130.0									125-130		
135.0									130-135		
140.0									135-140		
145.0									140-145		
150.0									145-150		
155.0									150-155		
160.0									155-160		
165.0									160-165		
170.0									165-170		
175.0									170-175		
180.0									175-180		
DEG	LUMINOUS INTENSITY:cd/klm									UNIT:lm/klm	

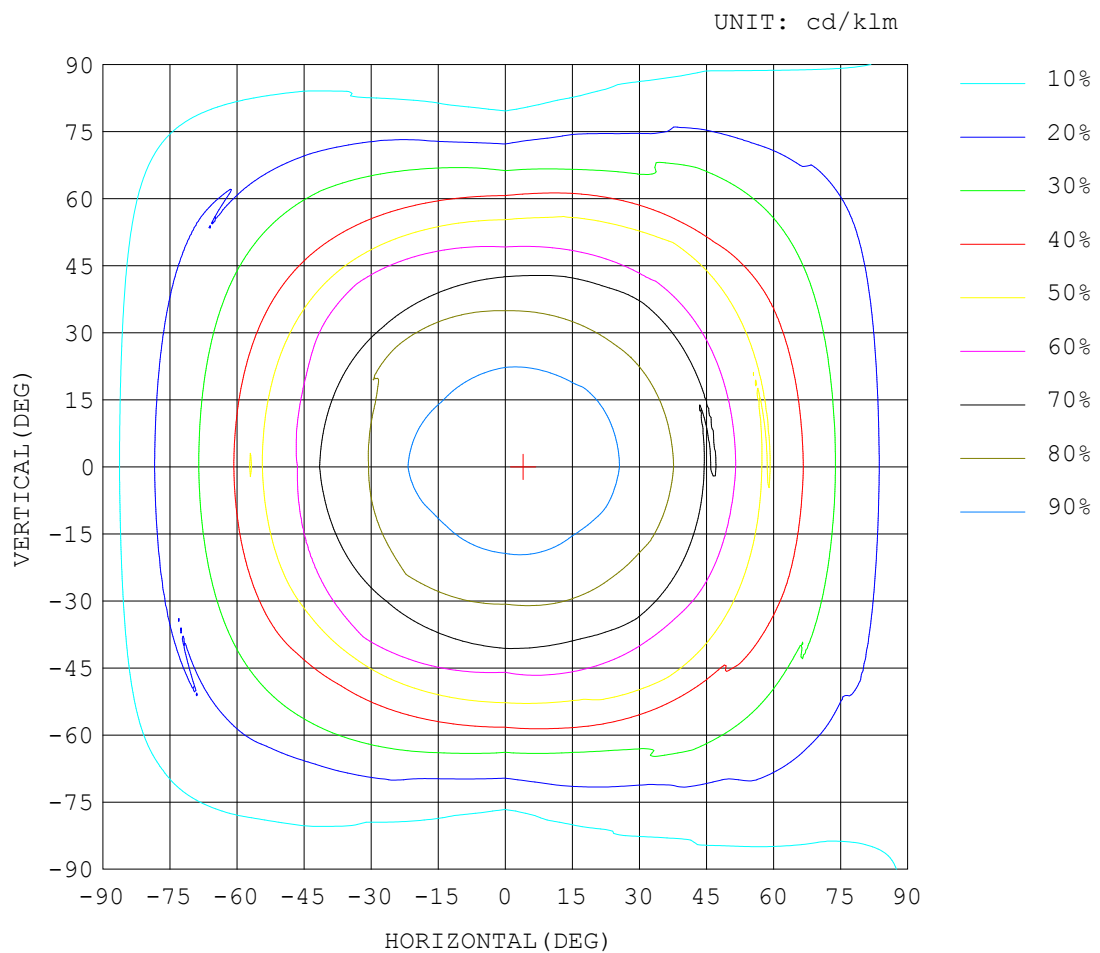
Test System:LSG-1800
Temperature:25.3DEG
Operators:
Test Date:2014-05-02

Test Set: 5.0deg/s C-Gamma (TYPE C)
Humidity:65.0%
Test Distance:11.060 m
Remarks:

ISOCANDELA DIAGRAM

Report number:

MANUFACTURER:	Address:	
NAME: LED Street Lamp	TYPE: LED-L120W	WEIGHT: 8kg
SPECIFICATION: 120W	DIMENSION: 750*350*85	SERIAL No.: LED-L120W-01



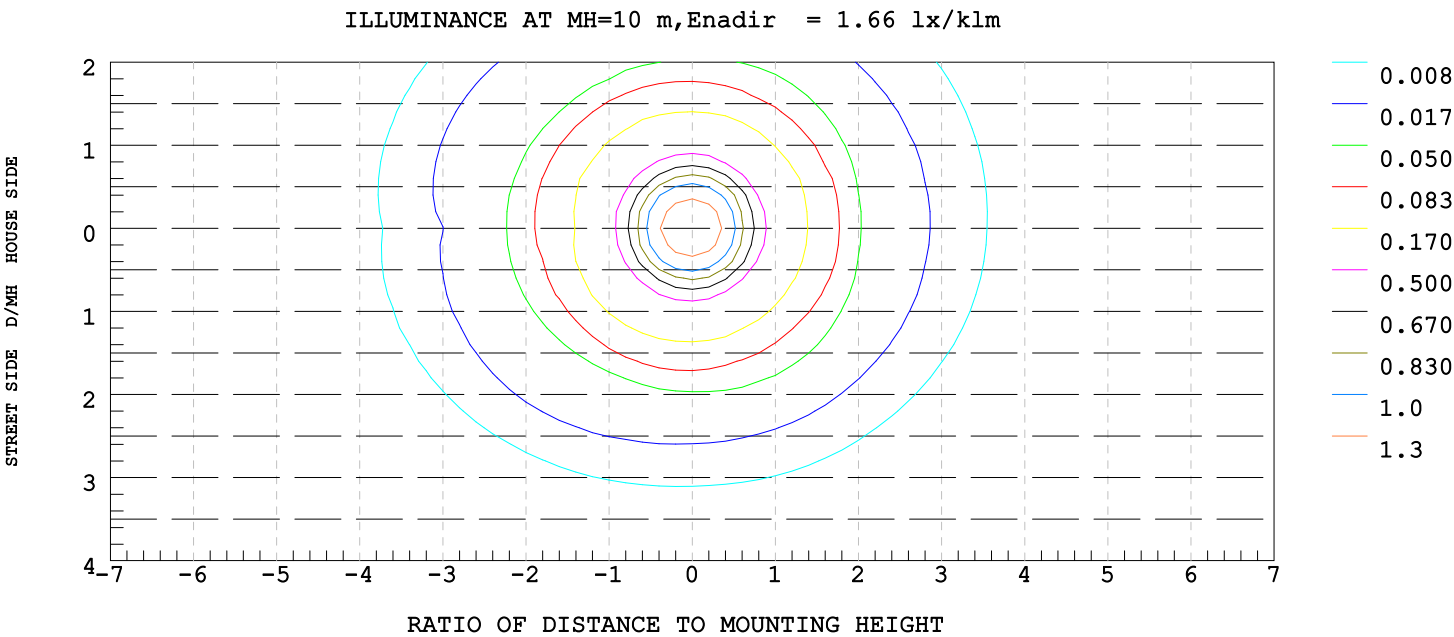
Test System: LSG-1800
Temperature: 25.3 DEG
Operators:
Test Date: 2014-05-02

Test Set: 5.0 deg/s C-Gamma (TYPE C)
Humidity: 65.0%
Test Distance: 11.060 m
Remarks:

ISOLUX DIAGRAM

Report number:

MANUFACTURER:	Address:	
NAME: LED Street Lamp	TYPE:LED-L120W	WEIGHT:8kg
SPECIFICATION:120W	DIMENSION: 750*350*85	SERIAL No.:LED-L120W-01



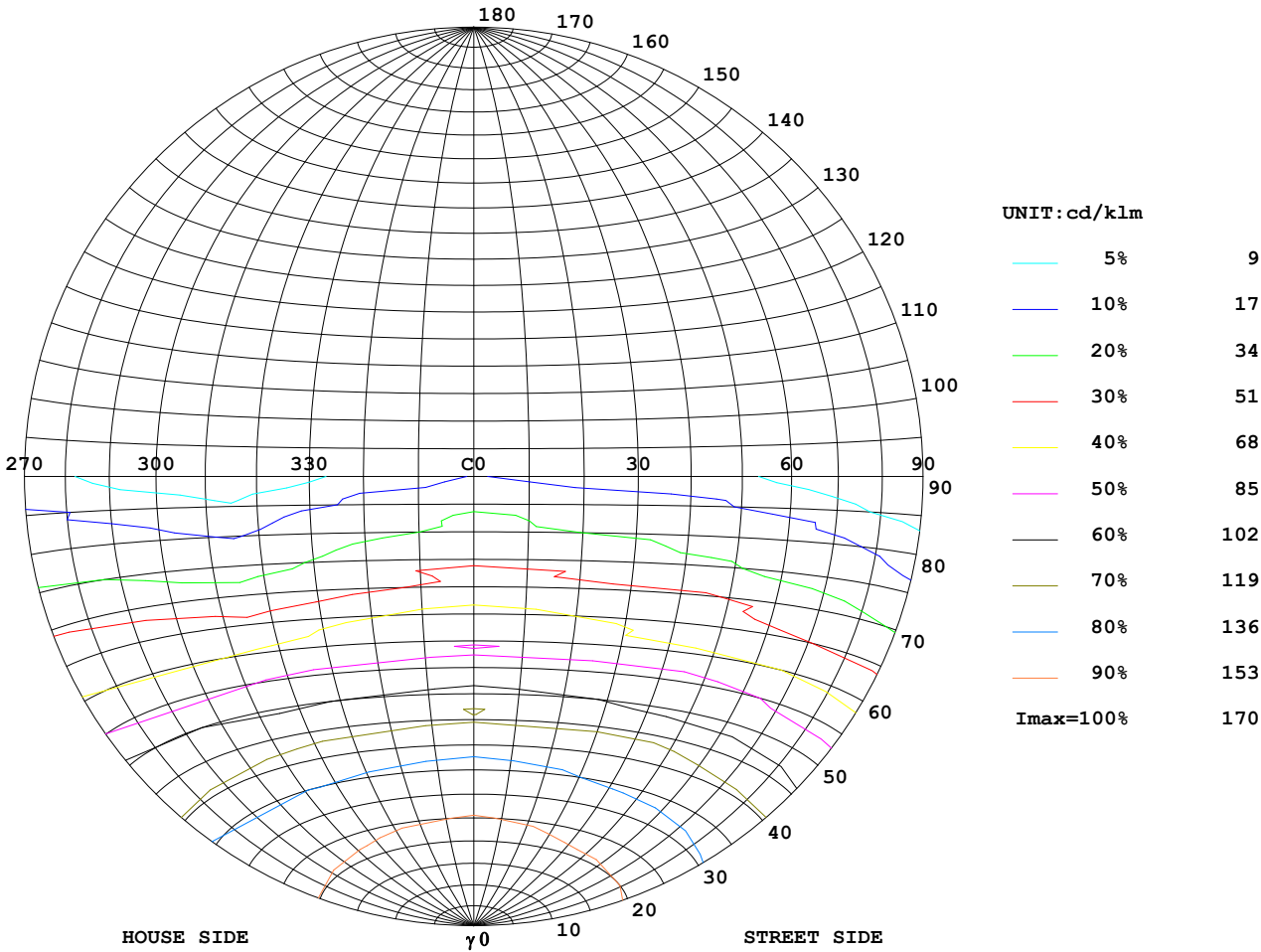
Test System:LSG-1800
Temperature:25.3DEG
Operators:
Test Date:2014-05-02

Test Set: 5.0deg/s C-Gamma (TYPE C)
Humidity:65.0%
Test Distance:11.060 m
Remarks:

ISOCANDELA DIAGRAM

Report number:

MANUFACTURER:	Address:	
NAME: LED Street Lamp	TYPE:LED-L120W	WEIGHT:8kg
SPECIFICATION:120W	DIMENSION: 750*350*85	SERIAL No.:LED-L120W-01



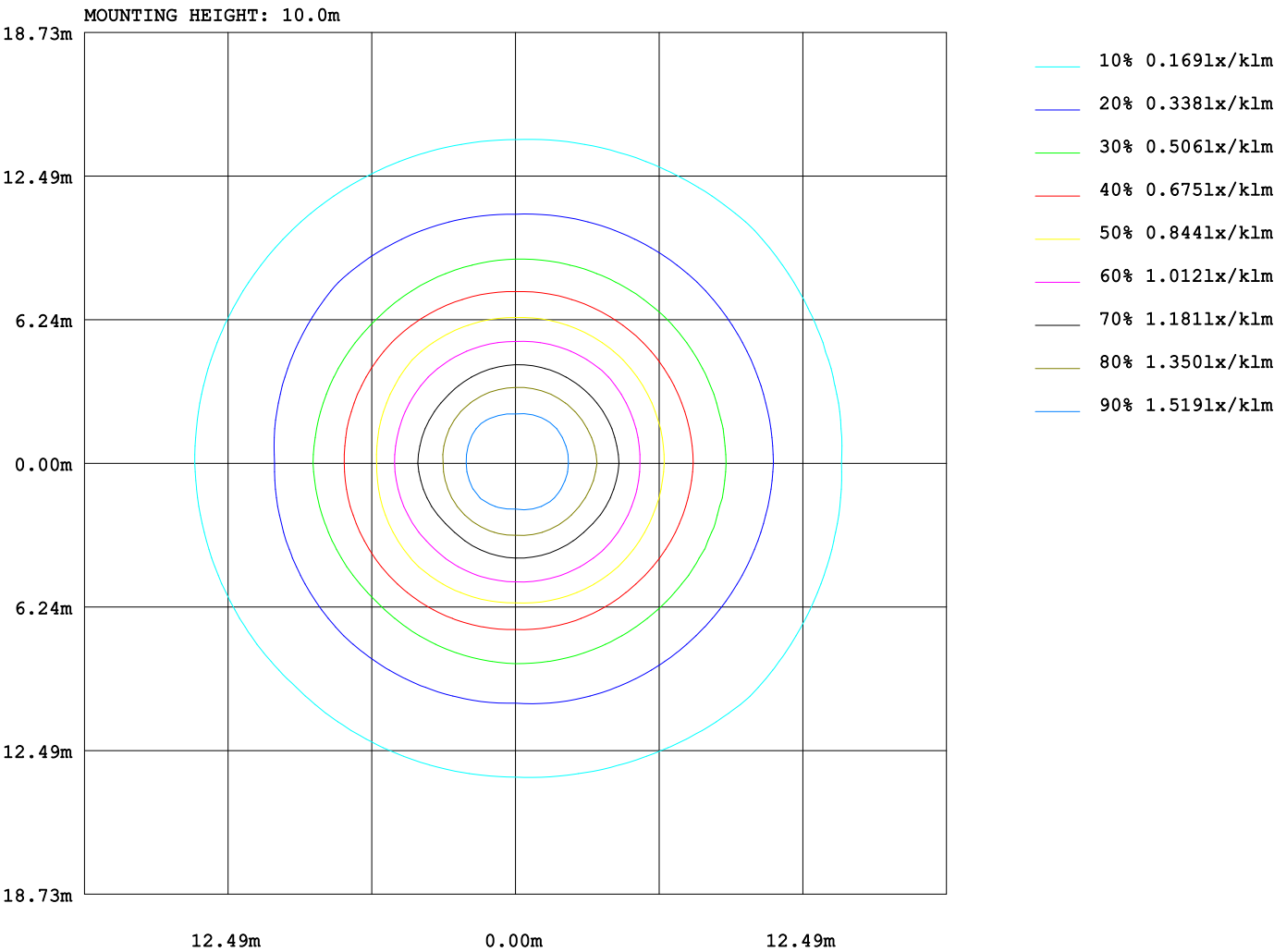
Test System:LSG-1800
Temperature:25.3DEG
Operators:
Test Date:2014-05-02

Test Set: 5.0deg/s C-Gamma (TYPE C)
Humidity:65.0%
Test Distance:11.060 m
Remarks:

ISOLUX DIAGRAM

Report number:

MANUFACTURER:	Address:	
NAME: LED Street Lamp	TYPE:LED-L120W	WEIGHT:8kg
SPECIFICATION:120W	DIMENSION: 750*350*85	SERIAL No.:LED-L120W-01



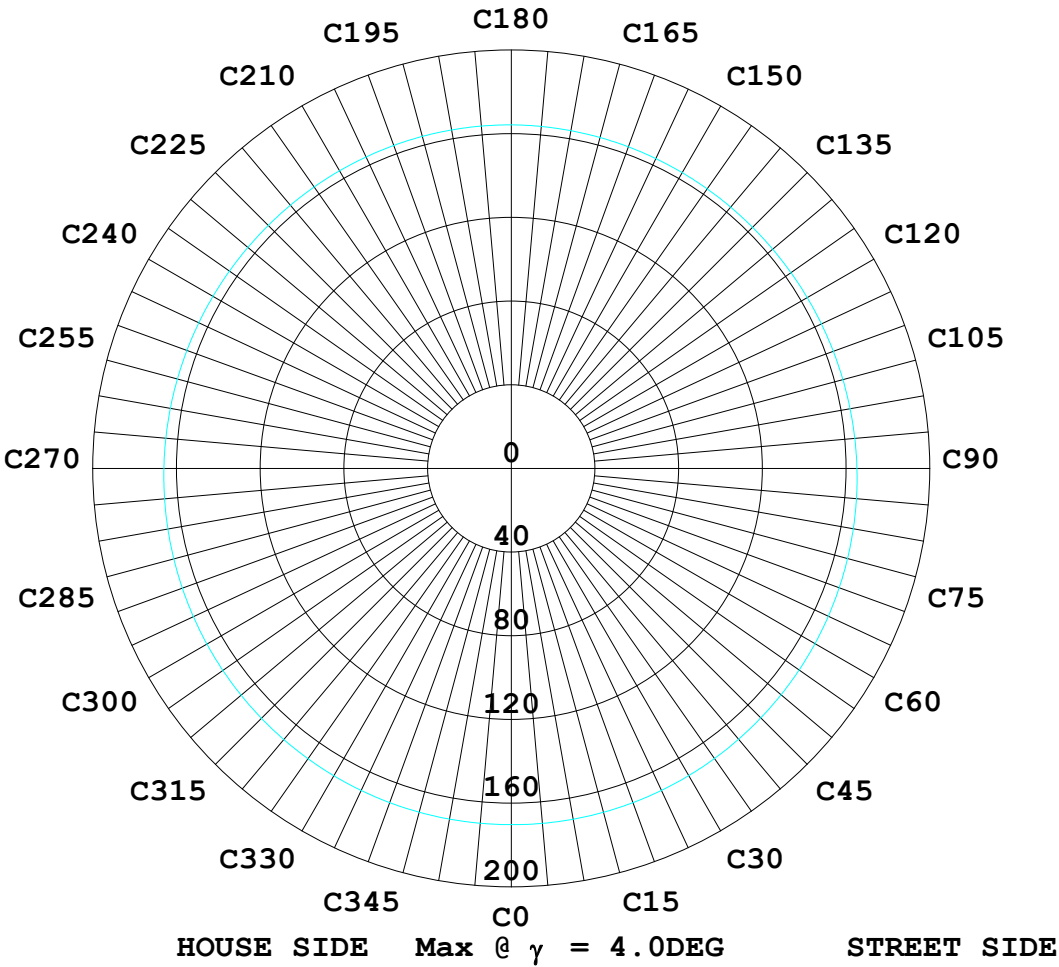
Test System:LSG-1800
Temperature:25.3DEG
Operators:
Test Date:2014-05-02

Test Set: 5.0deg/s C-Gamma (TYPE C)
Humidity:65.0%
Test Distance:11.060 m
Remarks:

ISOCANDELA DIAGRAM

Report number:

MANUFACTURER:	Address:	
NAME: LED Street Lamp	TYPE:LED-L120W	WEIGHT:8kg
SPECIFICATION:120W	DIMENSION: 750*350*85	SERIAL No.:LED-L120W-01



Test System:LSG-1800
Temperature:25.3DEG
Operators:
Test Date:2014-05-02

Test Set: 5.0deg/s C-Gamma (TYPE C)
Humidity:65.0%
Test Distance:11.060 m
Remarks:

AREA LUMINOUS FLUX

Report number:

MANUFACTURER:	Address:		
NAME: LED Street Lamp	TYPE:LED-L120W	WEIGHT:8kg	
SPECIFICATION:120W	DIMENSION: 750*350*85	SERIAL No.:LED-L120W-01	

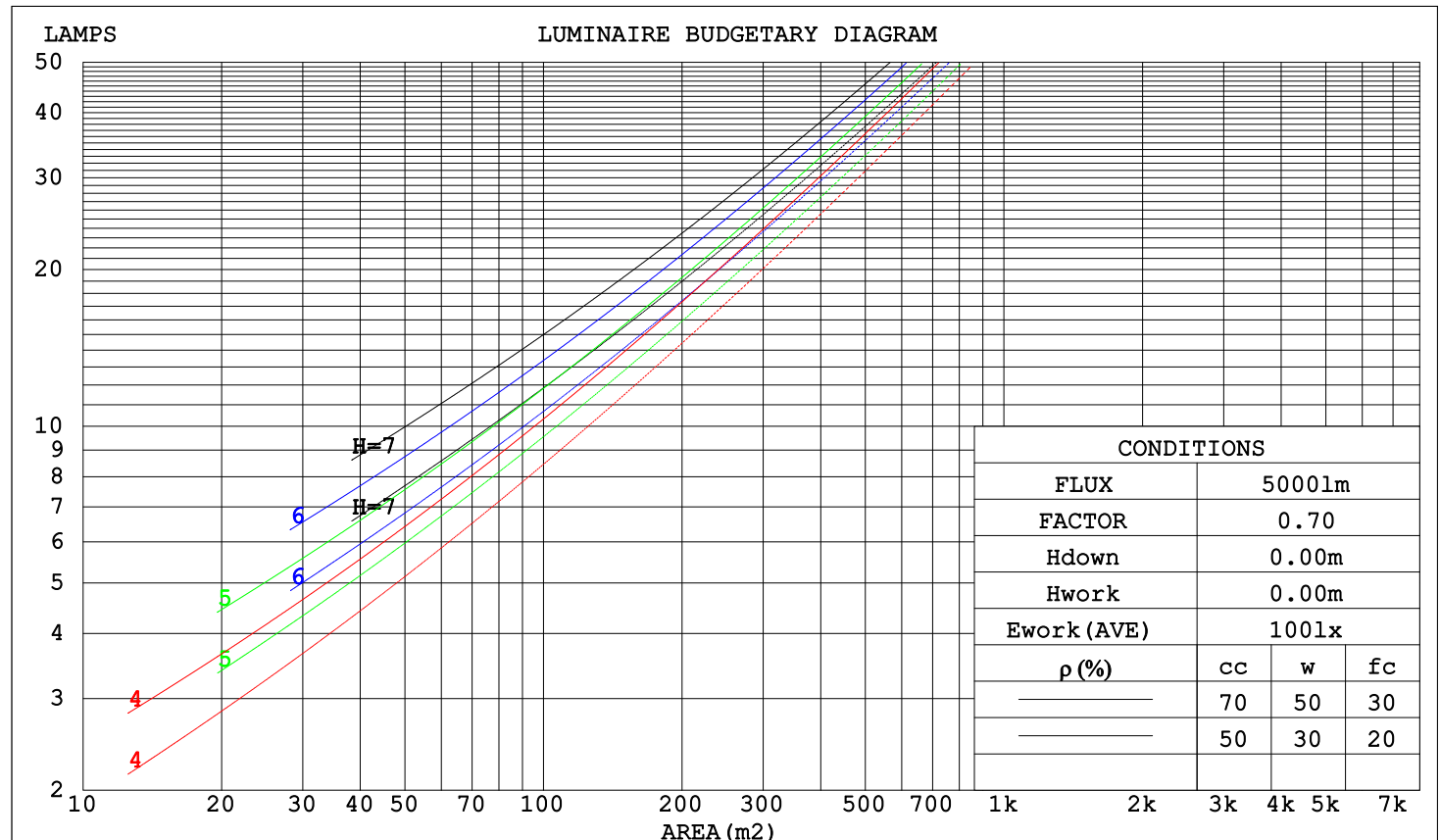
	AREA FLUX DIAGRAM																		UNIT:lm/klm				Φ t	Φ a
	0.02	0.10	0.17	0.26	0.33	0.37	0.37	0.35	0.30	0.32	0.41	0.46	0.49	0.46	0.37	0.26	0.15	0.05	5.25	2.64				
90																								
80																								
70	0.04	0.14	0.27	0.43	0.60	0.73	0.82	0.87	0.87	0.90	0.95	0.94	0.86	0.73	0.56	0.38	0.20	0.05	10.3	10.2				
60	0.04	0.17	0.37	0.62	0.89	1.20	1.45	1.62	1.68	1.69	1.64	1.49	1.31	1.08	0.76	0.48	0.25	0.06	16.8	16.8				
50	0.05	0.20	0.47	0.82	1.29	1.67	2.04	2.38	2.57	2.60	2.51	2.25	1.84	1.34	0.96	0.59	0.28	0.07	23.9	23.9				
40	0.05	0.24	0.56	1.02	1.52	2.16	2.81	3.19	3.40	3.43	3.27	2.89	2.36	1.77	1.14	0.67	0.32	0.07	30.9	30.9				
30	0.05	0.27	0.65	1.15	1.86	2.67	3.24	3.78	4.06	4.08	3.85	3.44	2.82	2.03	1.36	0.75	0.35	0.08	36.5	36.5				
VERTICAL (DEG)	0.05	0.29	0.70	1.31	2.11	2.90	3.73	4.26	4.51	4.55	4.35	3.83	3.13	2.30	1.48	0.83	0.37	0.08	40.8	40.8				
	0.06	0.31	0.73	1.43	2.22	3.18	3.95	4.49	4.84	4.86	4.60	4.10	3.34	2.49	1.56	0.90	0.39	0.09	43.5	43.5				
	0.06	0.32	0.75	1.48	2.29	3.25	4.08	4.66	4.99	5.07	4.76	4.22	3.45	2.57	1.60	0.94	0.39	0.09	45.0	45.0				
	0.06	0.32	0.74	1.46	2.27	3.23	4.06	4.63	4.96	5.05	4.74	4.20	3.43	2.55	1.59	0.93	0.39	0.09	44.7	44.7				
	0.06	0.31	0.72	1.40	2.17	3.12	3.87	4.40	4.75	4.78	4.52	4.03	3.27	2.44	1.53	0.89	0.38	0.09	42.7	42.7				
	0.05	0.29	0.67	1.27	2.01	2.82	3.60	4.11	4.39	4.44	4.22	3.70	3.03	2.21	1.43	0.82	0.36	0.08	39.5	39.5				
	0.05	0.26	0.61	1.10	1.74	2.50	3.10	3.62	3.87	3.89	3.69	3.28	2.67	1.94	1.28	0.73	0.34	0.08	34.8	34.7				
	0.05	0.23	0.53	0.95	1.42	1.96	2.57	2.97	3.18	3.22	3.06	2.69	2.21	1.61	1.09	0.64	0.31	0.07	28.7	28.7				
	0.04	0.19	0.44	0.74	1.14	1.52	1.85	2.16	2.34	2.38	2.28	2.02	1.62	1.26	0.89	0.54	0.27	0.07	21.7	21.7				
	0.04	0.15	0.34	0.55	0.77	1.01	1.24	1.39	1.44	1.46	1.44	1.34	1.18	0.95	0.67	0.44	0.23	0.06	14.7	14.7				
-30	0.04	0.12	0.23	0.36	0.50	0.60	0.67	0.70	0.68	0.70	0.76	0.76	0.71	0.62	0.49	0.34	0.18	0.05	8.52	7.91				
-40	0.02	0.09	0.15	0.21	0.25	0.27	0.27	0.25	0.21	0.22	0.29	0.34	0.36	0.34	0.29	0.22	0.13	0.05	3.96	0.82				
-50																								
-60																								
-70																								
-80																								
-90																								
-90 -80 -70 -60 -50 -40 -30 -20 HORIZONTAL (DEG) 20 30 40 50 60 70 80 90																								
Φ t	0.83	3.98	9.09	16.6	25.4	35.2	43.7	49.8	53.1	53.7	51.4	46.0	38.1	28.7	19.1	11.3	5.30	1.26	493					
Φ a	0.50	3.60	8.70	16.1	25.0	34.7	43.2	49.2	52.4	53.0	50.8	45.6	37.8	28.5	18.9	11.2	5.21	1.25		487				

Test System:LSG-1800
 Temperature:25.3DEG
 Operators:
 Test Date:2014-05-02

Test Set: 5.0deg/s C-Gamma (TYPE C)
 Humidity:65.0%
 Test Distance:11.060 m
 Remarks:

Report number:

pcc	80%			70%			50%			30%			10%			0
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
pfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio			Coefficients of Utilization(CU)												
0.0	.59	.59	.59	.57	.57	.57	.55	.55	.55	.52	.52	.52	.50	.50	.50	.49
1.0	.51	.48	.46	.50	.47	.46	.47	.46	.44	.45	.44	.43	.44	.43	.41	.40
2.0	.44	.40	.37	.43	.40	.37	.41	.39	.36	.40	.37	.35	.38	.36	.35	.33
3.0	.39	.34	.31	.38	.34	.31	.36	.33	.30	.35	.32	.30	.34	.31	.29	.28
4.0	.34	.30	.26	.33	.29	.26	.32	.29	.26	.31	.28	.25	.30	.27	.25	.24
5.0	.30	.26	.23	.30	.26	.22	.29	.25	.22	.28	.25	.22	.27	.24	.22	.21
6.0	.27	.23	.20	.27	.23	.20	.26	.22	.19	.25	.22	.19	.24	.21	.19	.18
7.0	.25	.20	.17	.24	.20	.17	.24	.20	.17	.23	.20	.17	.22	.19	.17	.16
8.0	.23	.18	.15	.22	.18	.15	.22	.18	.15	.21	.18	.15	.20	.17	.15	.14
9.0	.21	.17	.14	.21	.17	.14	.20	.16	.14	.19	.16	.14	.19	.16	.14	.13
10.0	.19	.15	.13	.19	.15	.13	.18	.15	.13	.18	.15	.12	.18	.15	.12	.12



Test Set: 5.0deg/s C-Gamma (TYPE C)
Humidity:65.0%
Test Distance:11.060 m
Remarks:

WEC AND CCEC

Report number:

MANUFACTURER:	Address:					
NAME: LED Street Lamp	TYPE:LED-L120W			WEIGHT:8kg		
SPECIFICATION:120W	DIMENSION: 750*350*85			SERIAL No.:LED-L120W-01		

pcc	80%			70%			50%			30%			10%			0
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
pfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Wall Exitance Coefficients (WEC)									
0.0																
1.0	.164	.093	.030	.160	.091	.029	.154	.088	.028	.148	.085	.027	.142	.082	.027	
2.0	.150	.082	.025	.147	.081	.025	.141	.078	.024	.135	.076	.024	.131	.074	.023	
3.0	.137	.073	.022	.134	.072	.022	.129	.070	.021	.124	.068	.021	.120	.066	.021	
4.0	.125	.065	.019	.123	.064	.019	.118	.063	.019	.114	.061	.018	.110	.060	.018	
5.0	.115	.059	.017	.113	.058	.017	.109	.057	.017	.105	.056	.017	.102	.054	.016	
6.0	.107	.053	.015	.105	.053	.015	.101	.052	.015	.098	.051	.015	.095	.050	.015	
7.0	.099	.049	.014	.097	.049	.014	.094	.048	.014	.091	.047	.014	.088	.046	.013	
8.0	.092	.045	.013	.091	.045	.013	.088	.044	.013	.085	.043	.012	.083	.043	.012	
9.0	.087	.042	.012	.085	.042	.012	.083	.041	.012	.080	.040	.011	.078	.040	.011	
10.0	.081	.039	.011	.080	.039	.011	.078	.038	.011	.076	.038	.011	.073	.037	.011	

pcc	80%			70%			50%			30%			10%			0
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
pfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Ceiling Cavity Exitance Coefficients (CCEC)									
0.0	.094	.094	.094	.080	.080	.080	.055	.055	.055	.031	.031	.031	.010	.010	.010	
1.0	.090	.077	.065	.077	.066	.056	.052	.045	.039	.030	.026	.023	.010	.008	.007	
2.0	.086	.065	.048	.073	.056	.041	.050	.039	.029	.029	.023	.017	.009	.007	.005	
3.0	.082	.056	.036	.070	.049	.031	.048	.034	.022	.028	.020	.013	.009	.006	.004	
4.0	.078	.050	.028	.067	.043	.025	.046	.030	.017	.027	.018	.010	.009	.006	.003	
5.0	.074	.045	.023	.064	.039	.020	.044	.027	.014	.025	.016	.008	.008	.005	.003	
6.0	.071	.041	.019	.061	.035	.017	.042	.025	.012	.024	.014	.007	.008	.005	.002	
7.0	.067	.037	.016	.058	.032	.014	.040	.023	.010	.023	.013	.006	.007	.004	.002	
8.0	.064	.034	.014	.055	.030	.012	.038	.021	.009	.022	.012	.005	.007	.004	.002	
9.0	.061	.032	.012	.052	.028	.011	.036	.019	.008	.021	.011	.005	.007	.004	.002	
10.0	.058	.030	.011	.050	.026	.010	.035	.018	.007	.020	.011	.004	.007	.004	.001	

Test System:LSG-1800
Temperature:25.3DEG
Operators:
Test Date:2014-05-02

Test Set: 5.0deg/s C-Gamma (TYPE C)
Humidity:65.0%
Test Distance:11.060 m
Remarks:

Uncorrected UGR Table

Report number:

MANUFACTURER:	Address:			
NAME: LED Street Lamp	TYPE:LED-L120W		WEIGHT:8kg	
SPECIFICATION:120W	DIMENSION: 750*350*85		SERIAL No.:LED-L120W-01	

ceiling/cavity	0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
walls	0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
working 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	14.7	16.2	14.9	16.4	16.6	13.7	15.3	14.0	15.5	15.7
3H	16.5	17.9	16.8	18.2	18.4	14.9	16.3	15.2	16.6	16.8
4H	17.5	18.9	17.8	19.1	19.4	15.3	16.7	15.6	16.9	17.2
6H	18.5	19.8	18.9	20.1	20.4	15.6	16.9	15.9	17.2	17.4
8H	19.1	20.4	19.5	20.6	20.9	15.7	16.9	16.0	17.2	17.5
12H	19.6	20.8	20.0	21.1	21.5	15.7	16.9	16.1	17.2	17.5
4H 2H	15.2	16.5	15.5	16.8	17.1	14.5	15.8	14.8	16.1	16.3
3H	17.3	18.5	17.6	18.8	19.1	15.9	17.1	16.3	17.4	17.7
4H	18.4	19.5	18.8	19.8	20.1	16.5	17.6	16.9	17.9	18.2
6H	19.6	20.6	20.0	21.0	21.3	16.9	17.9	17.3	18.2	18.6
8H	20.3	21.2	20.7	21.6	22.0	17.1	18.0	17.5	18.4	18.8
12H	21.0	21.8	21.4	22.2	22.6	17.2	18.0	17.6	18.4	18.8
8H 4H	18.7	19.6	19.1	19.9	20.3	17.0	17.9	17.4	18.3	18.7
6H	20.1	20.9	20.5	21.3	21.7	17.7	18.5	18.1	18.9	19.3
8H	21.0	21.7	21.4	22.1	22.5	18.0	18.7	18.5	19.1	19.6
12H	21.8	22.4	22.3	22.8	23.3	18.2	18.8	18.7	19.3	19.8
12H 4H	18.7	19.5	19.1	19.9	20.3	17.1	18.0	17.6	18.4	18.8
6H	20.2	20.9	20.6	21.3	21.8	17.9	18.6	18.4	19.0	19.5
8H	21.1	21.7	21.6	22.2	22.7	18.4	19.0	18.8	19.4	19.9
Variations with the observer position at spacings:										
S = 1.0H	+ 0.1 / - 0.1					+ 0.1 / - 0.2				
1.5H	+ 0.2 / - 0.2					+ 0.3 / - 0.3				
2.0H	+ 0.2 / - 0.3					+ 0.2 / - 0.4				

CIE Pub.117 Corrected 1000 lm Total Lamp Luminous Flux. (8log(F/F0) = 0.0)

Test System:LSG-1800
Temperature:25.3DEG
Operators:
Test Date:2014-05-02

Test Set: 5.0deg/s C-Gamma (TYPE C)
Humidity:65.0%
Test Distance:11.060 m
Remarks:

UTILIZATION FACTORS TABLE

Report number:

MANUFACTURER:	Address:		
NAME: LED Street Lamp	TYPE: LED-L120W	WEIGHT: 8kg	
SPECIFICATION: 120W	DIMENSION: 750*350*85	SERIAL No.: LED-L120W-01	

REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS (PERCENT) $k(RI) \times RCR = 5$									
$k = 0.60$	28	22	19	28	22	19	27	22	19	15
0.80	33	27	23	32	27	23	32	27	23	20
1.00	37	31	28	36	31	28	35	32	27	24
1.25	40	35	32	40	35	31	38	34	31	27
1.50	43	38	34	42	37	34	41	37	34	30
2.00	46	42	39	45	41	38	44	40	37	34
2.50	48	44	41	47	44	41	45	42	40	36
3.00	50	46	43	49	46	43	47	44	42	38
4.00	52	49	46	51	48	46	49	46	44	40
5.00	53	51	48	52	50	48	50	48	46	42
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004			Suspended					SHRNOM = 1.25		

Test System: LSG-1800
 Temperature: 25.3 DEG
 Operators:
 Test Date: 2014-05-02

Test Set: 5.0 deg/s C-Gamma (TYPE C)
 Humidity: 65.0%
 Test Distance: 11.060 m
 Remarks:

LUMINOUS DISTRIBUTION INTENSITY DATA

Report number:

MANUFACTURER:	Address:	
NAME: LED Street Lamp	TYPE:LED-L120W	WEIGHT:8kg
SPECIFICATION:120W	DIMENSION: 750*350*85	SERIAL No.:LED-L120W-01

UNIT: cd/klm

C (DEG)	0	45	90	135	180	225	270	315
γ (DEG)								
0.0	166	166	166	166	166	166	166	166
5.0	170	169	165	163	165	164	166	169
10.0	166	166	162	163	166	165	164	167
15.0	162	161	158	160	157	163	161	163
20.0	162	156	152	150	156	154	156	158
25.0	154	150	147	145	150	149	150	153
30.0	145	144	138	139	138	143	144	149
35.0	142	134	128	132	132	138	136	138
40.0	126	122	120	116	123	121	124	129
45.0	118	117	105	109	105	114	113	122
50.0	109	98.1	92.5	95.6	93.5	105	99.5	106
55.0	87.3	91.3	77.1	76.1	83.2	85.1	85.6	92.7
60.0	81.5	73.1	62.4	64.4	72.2	70.5	70.1	84.1
65.0	75.7	57.9	46.0	58.7	54.6	63.3	55.2	63.4
70.0	55.4	52.4	32.8	39.1	47.6	46.0	40.3	53.6
75.0	47.0	36.1	21.9	31.3	37.2	37.1	28.5	43.8
80.0	39.0	27.5	12.4	22.0	26.8	27.4	16.1	32.4
85.0	26.6	18.0	4.81	12.5	18.6	19.4	9.20	24.5
90.0	17.4	9.97	2.00	8.54	0.00	10.7	2.49	15.1

Test System:LSG-1800
 Temperature:25.3DEG
 Operators:
 Test Date:2014-05-02

Test Set: 5.0deg/s C-Gamma (TYPE C)
 Humidity:65.0%
 Test Distance:11.060 m
 Remarks: