NVLAP LAB CODE 200960-0

LM-79-08 Test Report

for

GREEN CREATIVE LTD

756 North Zhongshan Rd., Unit B301 Zhabei District, Shanghai

LED BR30

Model: 9BR30DIM/8CCTD

Laboratory: Leading Testing Laboratories

NVLAP CODE: 200960-0

No.1805, DongLiu road, BinJiang District, Hangzhou, China

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www.ledtestlab.com

Report No.: HZ16040009f

The laboratory that conducted the testing detailed in this report has been accredited for SSL by NVLAP.

Review by: April Zou

Engineer: April Zou

Apr. 18, 2016

Approved by: Zhang

Manager: Jim Zhang

Apr. 18, 2016

Note: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Test Summary

Sample Tested: **9BR30DIM/8CCTD**

Luminous Efficacy (Lumens /Watt)	Total Luminous Flux (Lumens)	Power (Watts)	Power Factor
78.4	674.8	8.61	0.9345

CCT (K)	CRI	Stabilization Time (Light & Power)
2784	84.1	60

Table 1: Executive Data Summary

Note: The above results are recorded/ derived from measurements made using an Integrating Sphere.

Test specifications:

Date of Receipt : Apr. 05, 2016

Date of Test : Apr. 08, 2016

Test item : Total Luminous Flux, Luminous Distribution Intensity, Luminous Efficacy, Correlated Color Temperature, Color Rendering Index, Chromaticity Coordinate, Electrical parameters

Reference Standard : IESNA LM-79-2008 Approved Method for the Electrical and Photometric Measurements of Solid-State Lighting Products

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Sample Photos

Figure 1- Overview of the sample

Equipment Under Test (EUT)	
Name	: LED BR30
Model	: 9BR30DIM/8CCTD
Electrical Ratings	: 120V, 60Hz, 9W
Product Description	: E26, BR30 lamp
Manufacturer	: GREEN CREATIVE LTD
Address	: 756 North Zhongshan Rd., Unit B301 Zhabei District, Shanghai Province, China

TEST RESULTS

Test ambient temperature was 24.2℃.

Base orientation was Base up. Test was conducted without a dimmer in the circuit.

The stabilization time of the sample was 60 minutes, and the total operating time including stabilization was 65 minutes.

Sphere-Spectroradiometer Method

Parameter	Result
Test Voltage (V)	120.0
Voltage frequency (Hz)	60
Test Current (A)	0.077
Power Factor	0.9345
Test Power (W)	8.61
THD A%	18.61
Luminous Efficacy (lm/W)	78.4
Total Luminous Flux (lm)	674.8
Color Rendering Index (CRI)	84.1
R9	16.2
Correlated Color Temperature (CCT)(K)	2784
Chromaticity Chroma x	0.4524
Chromaticity Chroma y	0.4079
Chromaticity Chroma u	0.2589
Chromaticity Chroma v	0.3501
Duv	0.0005
Chromaticity Chroma u ’	0.2589
Chromaticity Chroma v’	0.5252

Special Color Rendering Indices	
R1	83.4
R2	94.1
R3	93.9
R4	81.1
R5	83.7
R6	93.6
R7	82
R8	60.7
R9	16.2
R10	86.6
R11	80.7
R12	78.3
R13	86.1
R14	97.4

Table 2: Test data per Sphere-Spectroradiometer Method

Note: According to CIE 1976 (u’,v’) diagram, u’ = u = 4x/(-2x+12y+3), v’ = 3v/2 = 9y/(-2x+12y+3).

Goniophotometer Method

Test ambient temperature was 24.2℃.

The photometric distance is 2.47m.

Luminous data was taken at 0.5°vertical intervals and 10°horizontal intervals.

Parameter	Result
Test Voltage (V)	120.0
Voltage frequency (Hz)	60
Test Current (A)	0.077
Power Factor	0.9329
Test Power (W)	8.66
Luminous Efficacy (lm/W)	77.3
Total Luminous Flux (lm)	669.8
Beam Angle (°)	120.1
Center Beam Candle Power (cd)	196
Spacing Criteria	1.27 (0°-180°)/ 1.28 (90°-270°)
Zonal Lumens in the 0°-60°Zone	69.17%
Zonal Lumens in the 60°-90°Zone	24.72%
Zonal Lumens in the 90°-120°Zone	4.90%
Zonal Lumens in the 120°-180°Zone	1.21%

Table 3: Test data per Goniophotometer Method

Spectral Power Distribution - Sphere Spectroradiometer Method

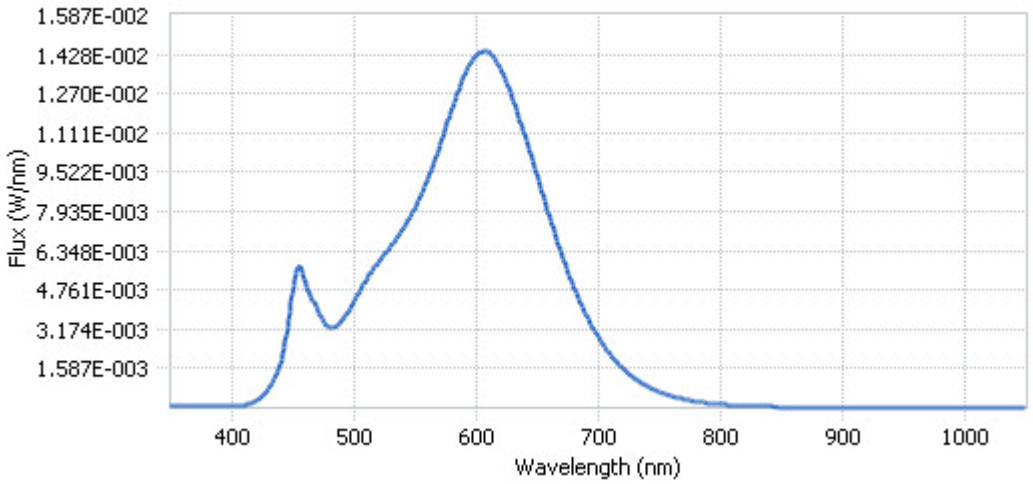
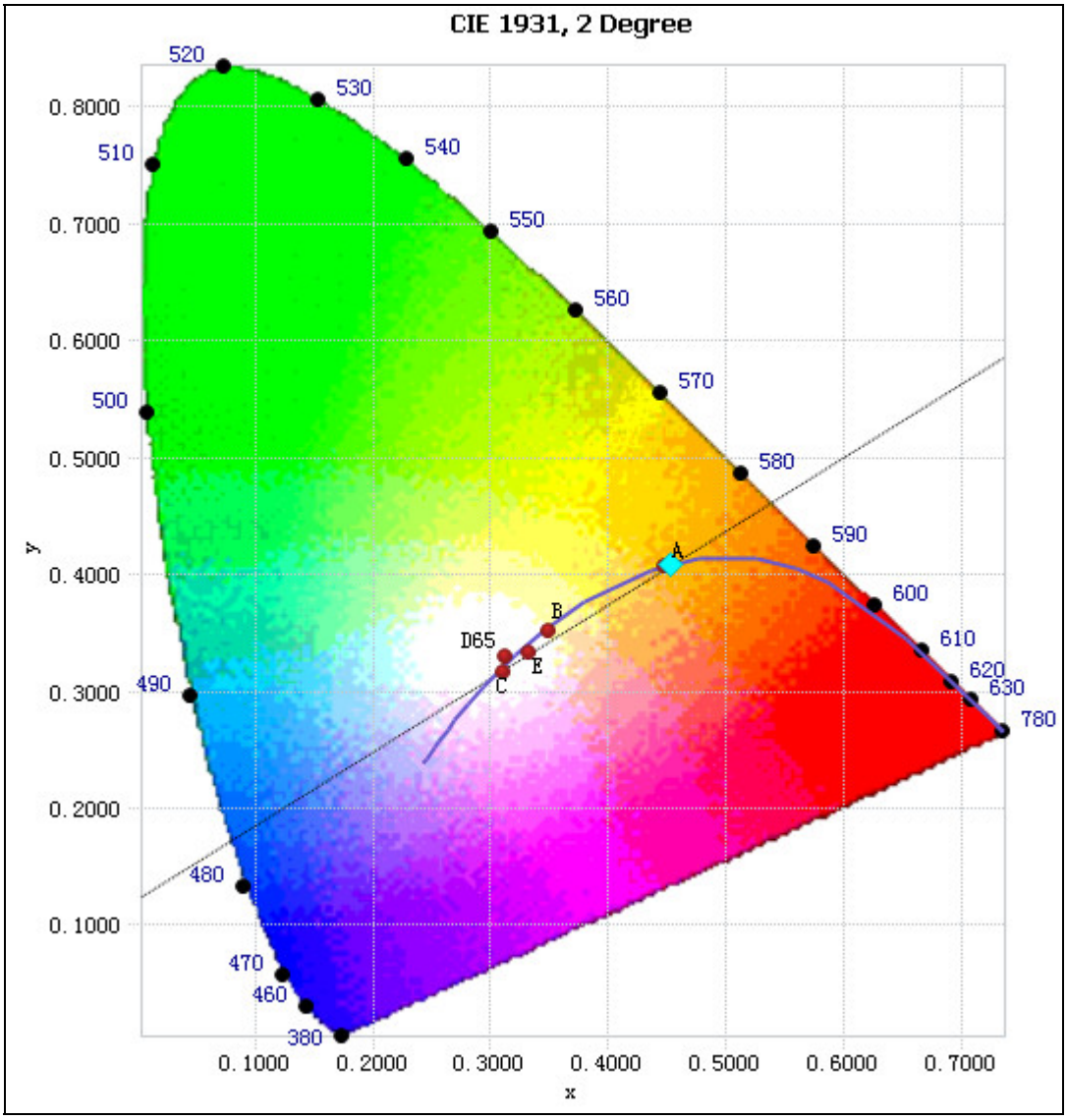


Chart 1: Spectral Power Distribution

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	7.66E-05	485	3.26E-03	590	1.34E-02	695	3.33E-03
385	7.89E-05	490	3.49E-03	595	1.39E-02	700	2.90E-03
390	7.29E-05	495	3.82E-03	600	1.42E-02	705	2.50E-03
395	7.99E-05	500	4.26E-03	605	1.44E-02	710	2.18E-03
400	8.04E-05	505	4.72E-03	610	1.44E-02	715	1.88E-03
405	9.12E-05	510	5.16E-03	615	1.42E-02	720	1.63E-03
410	1.10E-04	515	5.54E-03	620	1.37E-02	725	1.40E-03
415	1.63E-04	520	5.85E-03	625	1.32E-02	730	1.21E-03
420	2.78E-04	525	6.17E-03	630	1.26E-02	735	1.04E-03
425	4.73E-04	530	6.47E-03	635	1.19E-02	740	8.88E-04
430	7.22E-04	535	6.79E-03	640	1.11E-02	745	7.63E-04
435	1.12E-03	540	7.19E-03	645	1.03E-02	750	6.55E-04
440	1.77E-03	545	7.59E-03	650	9.47E-03	755	5.69E-04
445	2.95E-03	550	8.00E-03	655	8.63E-03	760	4.89E-04
450	4.63E-03	555	8.57E-03	660	7.83E-03	765	4.20E-04
455	5.69E-03	560	9.13E-03	665	7.04E-03	770	3.60E-04
460	5.22E-03	565	9.81E-03	670	6.30E-03	775	3.09E-04
465	4.49E-03	570	1.05E-02	675	5.58E-03	780	2.66E-04
470	4.06E-03	575	1.12E-02	680	4.94E-03		
475	3.55E-03	580	1.20E-02	685	4.35E-03		
480	3.24E-03	585	1.27E-02	690	3.83E-03		

Table 4: Spectral Power Distribution Numerical Data per Sphere - Spectroradiometer Method

Chromaticity Diagram - Sphere Spectroradiometer Method



Tristimulus values(x, y): (0.4524, 0.4079)

Chart 2: Chromaticity Diagram per Sphere - Spectroradiometer Method

Note: The location on the diagram of the tristimulus coordinates are indicated by the blue diamond.

Nominal CCT Quadrangles – Sphere Spectroradiometer Method

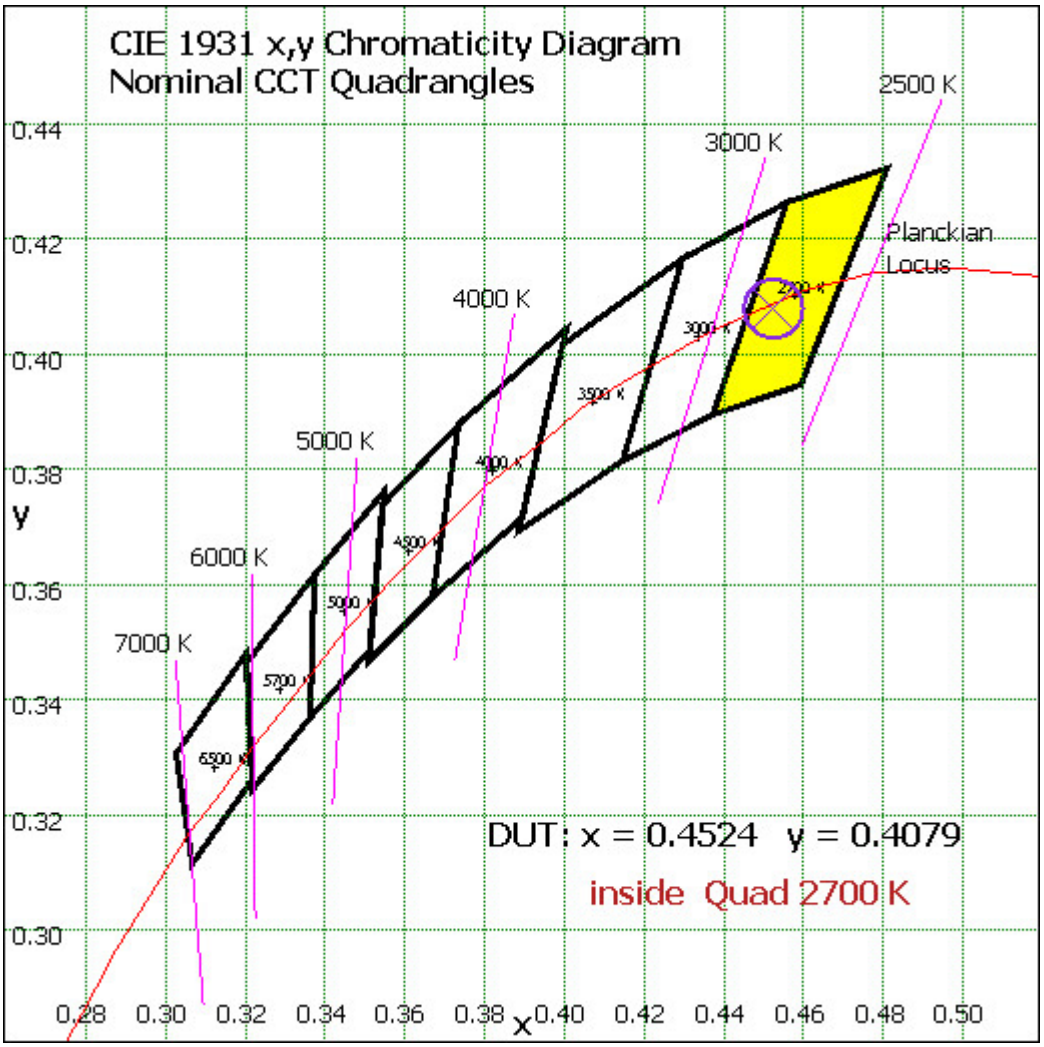


Chart 3: Plot of Lamp x/y coordinates on CIE 1931 Chromaticity Diagram

Zonal Lumen Tabulation- Goniophotometer Method

γ(°)	Lumens	% Total
0- 10	18.599	2.78%
10- 20	53.56	8.00%
20- 30	82.082	12.25%
30- 40	100.747	15.04%
40- 50	107.413	16.04%
50- 60	100.908	15.07%
60- 70	82.199	12.27%
70- 80	54.885	8.19%
80- 90	28.472	4.25%
90-100	15.343	2.29%
100-110	10.496	1.57%
110-120	7.003	1.05%
120-130	4.258	0.64%
130-140	2.296	0.34%
140-150	1.039	0.16%
150-160	0.364	0.05%
160-170	0.116	0.02%
170-180	0.031	0.00%
Total	669.8	100%

γ(°)	Lumens	% Total
0- 60	463.309	69.17%
60- 90	165.556	24.72%
0-90	628.865	93.89%
90- 180	40.946	6.11%
0- 180	669.8	100%

Table 5: Zonal Lumen Data

Illuminance Plots- Goniophotometer Method

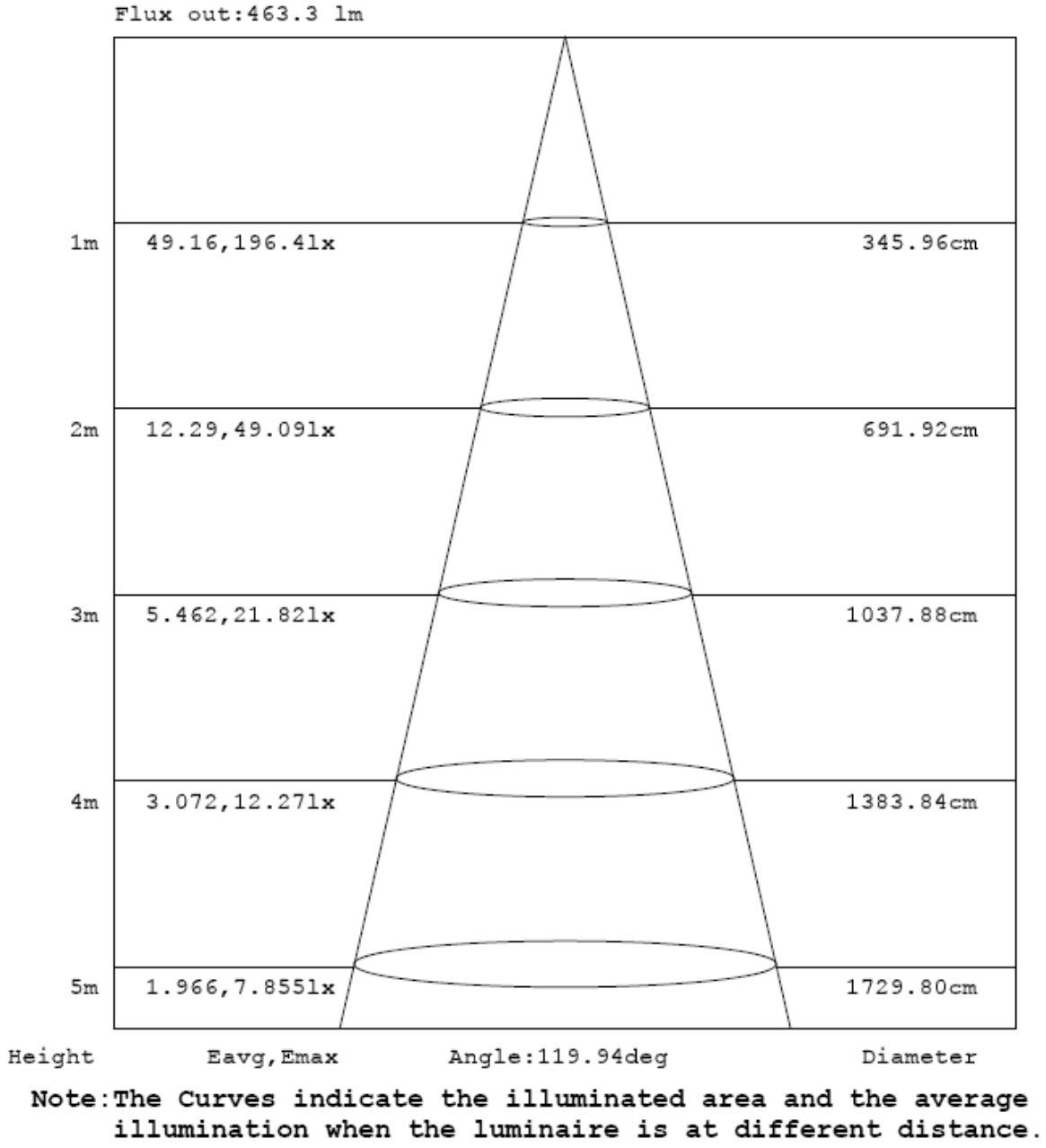


Chart 4: Beam Angle

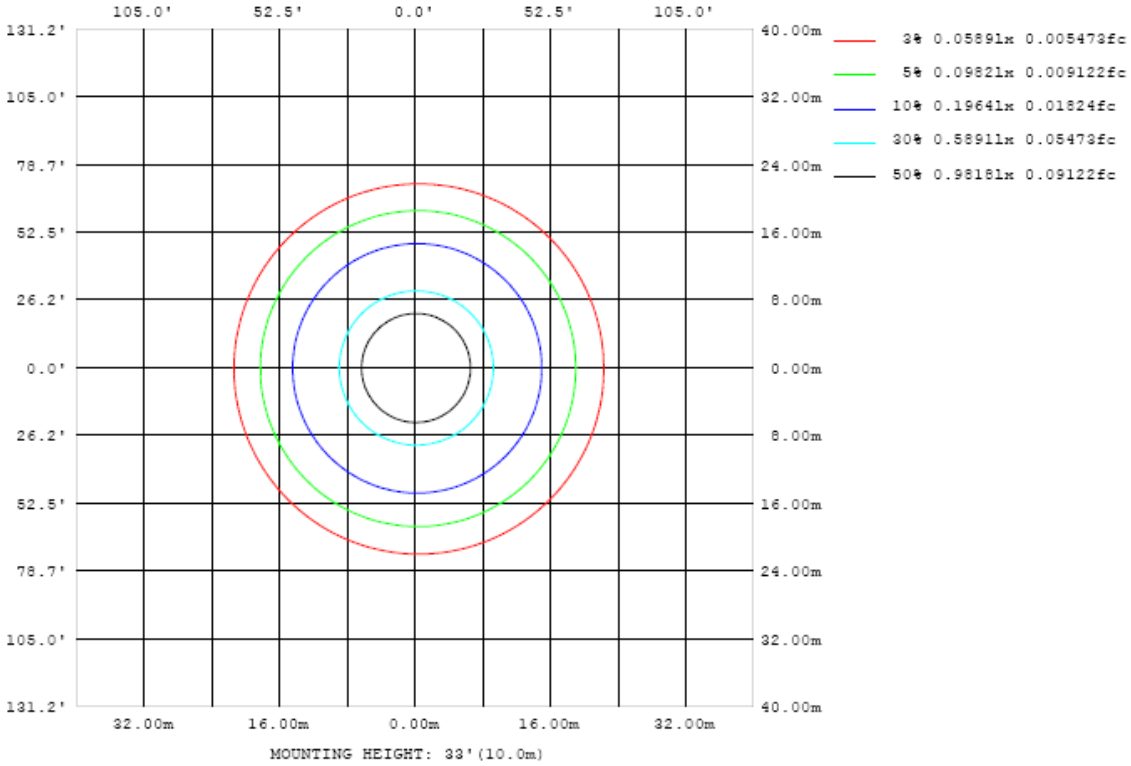


Chart 5: Illuminance Plot (Footcandles)

Luminous Intensity Distribution Plots- Goniophotometer Method

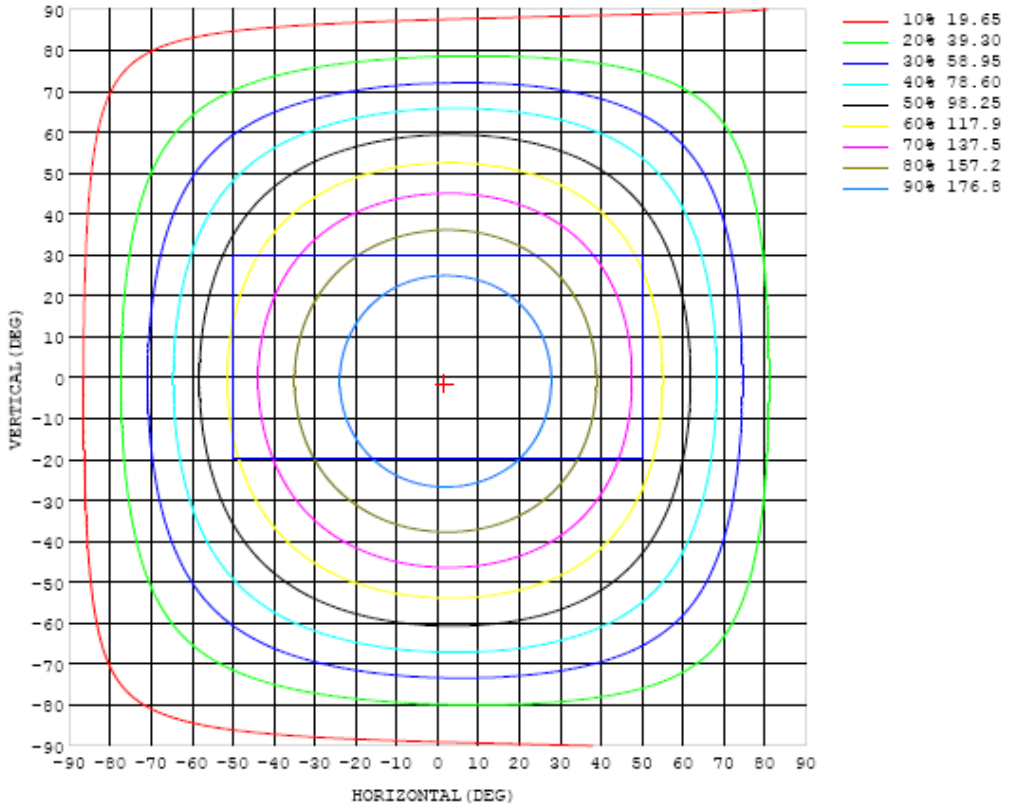


Chart 6: Isocandela Plot

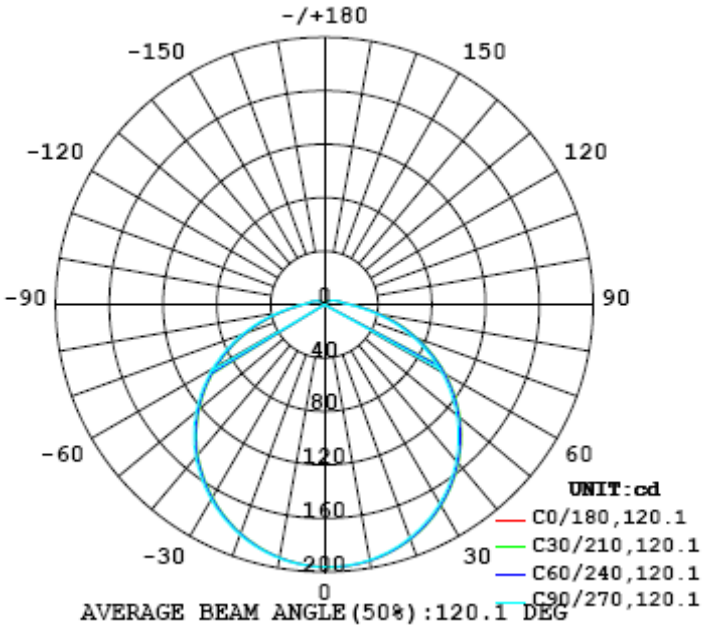


Chart 7: Polar Candela Distribution

Luminous Intensity Data- Goniophotometer Method

Table--1 UNIT: cd

γ (DEG) \ C (DEG)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
0	196	196	196	196	196	196	196	196	196	196	196	196	196	196	196	196	196	196	196
5	196	196	196	196	196	196	196	196	196	196	196	196	195	195	195	195	195	195	195
10	194	195	195	195	195	195	194	194	194	194	194	193	193	193	193	193	192	192	192
15	191	191	191	191	191	191	191	191	191	190	190	190	190	189	189	189	188	188	188
20	187	187	187	187	187	187	187	186	186	185	185	185	184	184	184	183	183	182	182
25	181	181	181	181	181	181	180	180	180	179	179	178	178	177	177	176	176	175	175
30	173	174	174	174	174	173	173	173	172	172	171	170	170	169	169	168	167	167	167
35	165	165	165	165	165	165	164	164	163	163	162	161	160	160	159	158	158	158	157
40	155	155	155	155	155	155	154	154	153	152	151	151	150	149	148	148	147	147	147
45	144	144	144	144	144	143	143	142	142	141	140	139	138	137	137	136	135	135	135
50	131	132	132	132	131	131	130	130	129	128	127	127	126	125	124	123	122	122	122
55	118	118	118	118	118	118	117	116	116	115	114	113	112	111	110	109	108	108	108
60	104	104	104	104	104	103	103	102	101	100	99.3	98.3	97.3	96.3	95.3	94.4	93.7	93.3	93.0
65	88.7	89.0	89.1	89.0	88.7	88.2	87.6	86.8	86.0	85.0	84.0	83.0	81.9	80.9	79.9	79.0	78.3	77.9	77.7
70	73.0	73.3	73.4	73.3	73.0	72.5	71.9	71.1	70.3	69.3	68.2	67.1	66.1	65.3	64.4	63.5	62.8	62.2	61.8
75	57.5	57.8	57.9	57.8	57.5	57.0	56.4	55.6	54.7	53.8	52.8	51.8	50.8	49.8	48.9	48.0	47.3	46.7	46.3
80	42.2	42.5	42.6	42.5	42.2	41.8	41.2	40.5	39.7	38.8	38.0	37.1	36.3	35.4	34.6	33.9	33.3	32.8	32.5
85	29.0	29.3	29.4	29.3	29.1	28.8	28.3	27.7	27.2	26.6	26.0	25.3	24.7	24.2	23.6	23.1	22.6	22.3	22.1
90	19.8	20.0	20.1	20.1	19.9	19.7	19.4	19.1	18.8	18.5	18.2	17.8	17.5	17.1	16.8	16.5	16.3	16.1	16.0
95	14.8	14.9	15.0	15.0	15.0	14.9	14.7	14.5	14.4	14.3	14.1	14.0	13.8	13.6	13.4	13.2	13.1	13.0	12.8
100	12.3	12.4	12.4	12.4	12.4	12.3	12.3	12.2	12.1	12.0	11.9	11.8	11.6	11.5	11.4	11.3	11.1	11.0	11.0
105	10.5	10.6	10.6	10.7	10.6	10.6	10.5	10.4	10.3	10.2	10.1	10.0	9.95	9.85	9.74	9.62	9.51	9.42	9.36
110	8.97	9.04	9.08	9.09	9.07	9.01	8.93	8.85	8.76	8.67	8.59	8.50	8.41	8.31	8.21	8.11	8.02	7.96	7.91
115	7.55	7.61	7.65	7.65	7.64	7.59	7.53	7.45	7.36	7.27	7.19	7.10	7.01	6.91	6.82	6.73	6.67	6.62	6.59
120	6.27	6.32	6.35	6.35	6.33	6.28	6.22	6.14	6.07	5.99	5.91	5.83	5.75	5.67	5.59	5.53	5.47	5.44	5.41
125	5.14	5.19	5.21	5.21	5.18	5.14	5.08	5.01	4.94	4.87	4.80	4.72	4.64	4.57	4.50	4.45	4.40	4.38	4.36
130	4.15	4.18	4.20	4.20	4.17	4.13	4.08	4.02	3.95	3.88	3.81	3.74	3.67	3.61	3.55	3.50	3.47	3.45	3.44
135	3.28	3.31	3.32	3.31	3.29	3.25	3.21	3.15	3.09	3.02	2.95	2.89	2.83	2.77	2.72	2.68	2.66	2.65	2.65
140	2.52	2.54	2.55	2.55	2.53	2.49	2.45	2.39	2.34	2.28	2.22	2.17	2.11	2.06	2.02	1.99	1.97	1.96	1.97
145	1.87	1.89	1.90	1.89	1.87	1.84	1.80	1.75	1.70	1.65	1.60	1.56	1.51	1.47	1.43	1.41	1.39	1.40	1.40
150	1.33	1.35	1.36	1.35	1.33	1.30	1.27	1.23	1.18	1.14	1.10	1.06	1.02	0.99	0.96	0.94	0.93	0.94	0.95
155	0.91	0.92	0.92	0.92	0.90	0.88	0.85	0.82	0.78	0.75	0.71	0.68	0.65	0.63	0.60	0.59	0.58	0.60	0.62
160	0.61	0.62	0.62	0.62	0.60	0.59	0.56	0.54	0.51	0.48	0.46	0.44	0.42	0.40	0.38	0.37	0.37	0.40	0.42
165	0.44	0.45	0.45	0.45	0.45	0.44	0.41	0.39	0.37	0.35	0.34	0.33	0.32	0.31	0.31	0.30	0.30	0.32	0.34
170	0.40	0.41	0.41	0.41	0.41	0.40	0.38	0.36	0.34	0.33	0.32	0.32	0.31	0.31	0.31	0.30	0.30	0.31	0.32
175	0.33	0.34	0.36	0.37	0.38	0.38	0.37	0.35	0.33	0.31	0.30	0.30	0.30	0.29	0.29	0.30	0.30	0.30	0.30
180	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12

Table 6: Luminous Intensity Data

Table--2 UNIT: cd

γ (DEG) \ C (DEG)	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350		
0	196	196	196	196	196	196	196	196	196	196	196	196	196	196	196	196	196		
5	195	195	195	195	195	195	195	195	195	195	196	196	196	196	196	196	196		
10	192	192	192	192	192	192	192	193	193	193	193	194	194	194	194	194	194		
15	188	188	188	188	188	188	188	189	189	189	189	190	190	190	191	191	191		
20	182	182	182	182	182	183	183	183	183	184	184	185	185	186	186	186	187		
25	175	175	175	175	175	176	176	176	177	177	178	178	179	179	180	180	181		
30	167	167	167	167	167	167	168	168	169	169	170	171	171	172	172	173	173		
35	157	157	157	157	157	158	158	159	159	160	161	161	162	163	164	164	164		
40	147	147	147	147	147	148	148	149	149	150	150	151	152	153	153	154	154		
45	135	135	135	135	135	136	136	137	138	138	139	140	141	142	143	143	143		
50	122	122	122	122	122	123	123	124	125	125	126	127	128	129	130	131	131		
55	108	108	108	108	108	109	109	110	111	112	113	114	115	116	117	118	118		
60	92.8	92.7	92.8	93.0	93.4	94.0	94.6	95.4	96.2	97.3	98.4	99.5	101	102	102	103	103		
65	77.4	77.3	77.3	77.6	78.0	78.6	79.2	79.9	80.7	81.8	83.0	84.1	85.2	86.2	87.2	88.0	88.5		
70	61.6	61.5	61.6	61.8	62.2	62.8	63.5	64.3	65.3	66.3	67.4	68.5	69.5	70.5	71.5	72.3	72.8		
75	46.1	46.1	46.2	46.4	46.8	47.3	48.0	48.8	49.7	50.7	51.7	52.8	53.8	54.8	55.7	56.5	57.0		
80	32.3	32.3	32.4	32.5	32.8	33.3	33.8	34.5	35.2	36.1	37.0	37.9	38.9	39.8	40.6	41.3	41.8		
85	22.0	21.9	22.0	22.1	22.2	22.5	22.8	23.2	23.6	24.3	25.1	25.8	26.5	27.2	27.8	28.4	28.8		
90	15.9	15.9	15.9	15.9	15.9	16.0	16.2	16.4	16.6	17.0	17.4	17.8	18.2	18.6	19.0	19.4	19.6		
95	12.8	12.8	12.7	12.7	12.7	12.7	12.7	12.8	13.0	13.2	13.4	13.6	13.9	14.1	14.4	14.6	14.7		
100	10.9	10.9	10.9	10.8	10.8	10.8	10.8	10.9	11.0	11.1	11.3	11.4	11.6	11.7	11.8	12.0	12.1		
105	9.32	9.29	9.26	9.24	9.22	9.22	9.24	9.29	9.37	9.48	9.61	9.75	9.89	10.0	10.1	10.3	10.4		
110	7.88	7.85	7.83	7.81	7.80	7.80	7.81	7.86	7.93	8.03	8.14	8.26	8.39	8.51	8.63	8.75	8.86		
115	6.57	6.55	6.53	6.52	6.51	6.51	6.53	6.57	6.63	6.71	6.81	6.92	7.04	7.15	7.26	7.37	7.46		
120	5.39	5.38	5.37	5.36	5.35	5.36	5.38	5.41	5.46	5.53	5.62	5.72	5.83	5.94	6.04	6.13	6.21		
125	4.34	4.33	4.33	4.32	4.33	4.33	4.35	4.38	4.43	4.49	4.56	4.65	4.75	4.85	4.94	5.03	5.09		
130	3.43	3.42	3.42	3.42	3.43	3.44	3.45	3.48	3.52	3.57	3.64	3.72	3.81	3.90	3.98	4.05	4.11		
135	2.64	2.64	2.64	2.65	2.65	2.66	2.68	2.70	2.73	2.78	2.85	2.92	2.99	3.07	3.14	3.21	3.25		
140	1.97	1.97	1.98	1.98	1.99	2.00	2.02	2.04	2.06	2.11	2.16	2.22	2.29	2.35	2.42	2.47	2.50		
145	1.41	1.42	1.42	1.43	1.44	1.45	1.47	1.48	1.50	1.54	1.58	1.63	1.69	1.74	1.79	1.83	1.86		
150	0.96	0.97	0.98	0.99	1.00	1.01	1.02	1.03	1.05	1.07	1.11	1.15	1.19	1.23	1.27	1.30	1.32		
155	0.63	0.64	0.65	0.66	0.67	0.68	0.69	0.70	0.70	0.72	0.74	0.77	0.80	0.83	0.87	0.89	0.90		
160	0.43	0.44	0.45	0.46	0.46	0.47	0.48	0.48	0.48	0.49	0.50	0.52	0.54	0.56	0.58	0.59	0.60		
165	0.35	0.36	0.37	0.39	0.40	0.40	0.40	0.39	0.39	0.39	0.40	0.41	0.42	0.43	0.44	0.44	0.44		
170	0.33	0.34	0.36	0.37	0.38	0.38	0.37	0.37	0.37	0.37	0.36	0.38	0.40	0.41	0.42	0.42	0.41		
175	0.31	0.32	0.32	0.33	0.32	0.31	0.30	0.29	0.29	0.30	0.30	0.32	0.34	0.35	0.36	0.36	0.35		
180	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12		

Table 7: Luminous Intensity Data

EQUIPMENT LIST

Test Equipment	Model	Equipment No.	Calibration Date	Calibration Due date
Goniophotometer system	GO-R5000	HZTE011-01	Jul. 17, 2015	Jul. 16, 2016
Digital Power Meter	PF2010A	HZTE028-01	Jul. 17, 2015	Jul. 16, 2016
AC Power Supply	PCR 500L	HZTE001-08	Jul. 17, 2015	Jul. 16, 2016
DC Power Supply	WY12010	HZTE004-03	Jul. 17, 2015	Jul. 16, 2016
Temperature Meter	TES1310	HZTE017-01	Jul. 17, 2015	Jul. 16, 2016
Standard source	D908	HZTE012-01	Jul. 23, 2015	Jul. 22, 2016
Integrate Sphere system	2M	HZTE015-01	Jul. 16, 2015	Jul. 15, 2016
Digital Power Meter	WT210	HZTE008-01	Jul. 17, 2015	Jul. 16, 2016
AC Power Supply	PCR 500L	HZTE001-07	Jul. 17, 2015	Jul. 16, 2016
DC Power Supply	6154	HZTE004-04	Jul. 17, 2015	Jul. 16, 2016
Temperature and humidity recorder	JR900	HZTE018-01	Jul. 21, 2015	Jul. 20, 2016
Standard source	SCL-1400	HZTE012-02	Oct. 21, 2015	Oct. 20, 2016

Table 8: Test Equipment List

TEST METHODS

Seasoning of SSL Product

For the purpose of rating new SSL products, SSL products shall be tested with no seasoning.
Therefore, no seasoning was performed.

Sphere-Spectroradiometer Method- Photometric and Electrical Measurements

A Labsphere Model CDS 2100 Spectroradiometer and Two Meter Sphere was used to measure correlated color temperature, chromaticity coordinates, and the color rendering index for each SSL unit. The coating reflectance of each sphere is 98%. The measure geometry is 4π. Self-absorption correction is conducted in testing. Bandwidth of spectroradiometer is 350nm-1050nm.
Ambient temperature was measured at a position inside the sphere. Each SSL unit was operated on the client provided driver at the rated input voltage in its designated orientation.
The stabilization time typically ranges from 30 min (small integrated LED lamps) to 2 or more hours for large SSL luminaires). It can be judged that stability is reached when the variation (maximum – minimum) of at least 3 readings of the light output and electrical power over a period of 30 min, taken 15 minutes apart, is less than 0.5 %.
Electrical measurements including voltage, current, and power were measured using the Yokogawa Power Analyzer.
The standard reference of the integrated sphere system is halogen incandescent lamp, the intensity distribution type is omni-directional, and is traceable to the National Institute of Standards and Technology.
The uncertainty of integrating sphere system reported in this document is expended uncertainty is 1.06% with a coverage factor k=2.

Goniophotometer Method

Photometric and Electrical Measurements

An EVERFINE Type C Model GO-R5000 Goniophotometer was used to measure the intensity at each angle of distribution for each sample. The photometric distance is 2.475m for near-field measurement or 30m for far-field measurement. Bandwidth of spectroradiometer is 380nm-780nm.
Ambient temperature was measured at the same height of the sample mounted on the Goniophotometer equipment. Each SSL unit was operated on the client provided driver at the rated input voltage in its designated orientation.
The stabilization time typically ranges from 30 min (small integrated LED lamps) to 2 or more hours for large SSL luminaires). It can be judged that stability is reached when the variation (maximum – minimum) of at least 3 readings of the light output and electrical power over a period of 30 min, taken 15 minutes apart, is less than 0.5 %.
Electrical measurements including voltage, current, and power were measured using the Everfine Digital Power Meter.
Some graphics were created with Photometric Plus software.
The standard reference of the Goniophotometer system is halogen incandescent lamp, the intensity distribution type is omni-directional, and is traceable to the National Institute of Metrology P.R. China.
The uncertainty of goniophotometer system reported in this document is expended uncertainty is 1.94% with a coverage factor k=2.

Color Characteristics Measurements

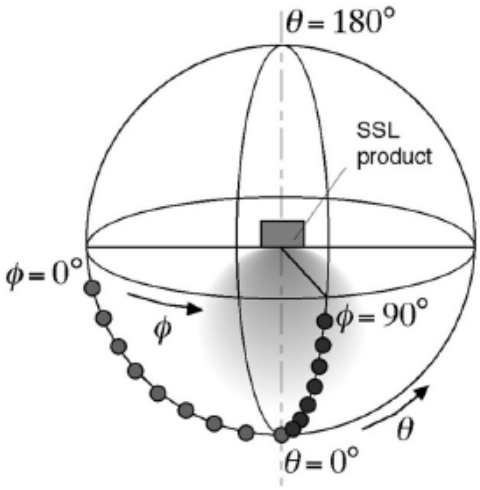
The color characteristics of SSL products include chromaticity coordinates, correlated color temperature, and color rendering index. These characteristics of SSL products may be spatially non-uniform, and thus, in order that they can be specified accurately, the color quantities shall be measured as values that are spatially average, weighted to intensity, over the angular range where light is intentionally emitted from the SSL product. The color characteristics measurements are using gonio-spectroradiometer.

Color Spatial Uniformity

The characteristics of SSL products may be spatially non-uniform, the chromaticity coordinate shall be measured at two vertical planes (C=0°/180° and C=90°/270°) and at 10° or less intervals for vertical angle until the light output dropped to below 10% of the peak intensity. The averaged weighted chromaticity coordinate was calculated from these points. The data was then analyzed to check for delta color differences of the u', v' chromaticity coordinates. The spatial non-uniformity of chromaticity, Δu'v', is determined as the maximum deviation (distance on the CIE (u', v') diagram) among all measured points from the spatially averaged

chromaticity coordinate.

The geometry for the chromaticity measurement using gonio-spectroradiometer is shown as following.



*** End of Report ***