



LM-79-08 Test Report

For

GREEN CREATIVE LTD

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

LED commercial downlight

Model: 14CDLA4/840/277V

Laboratory: Leading Testing Laboratories

NVLAP CODE: 200960-0

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

Tel: +86-571-56680806

www.ledtestlab.com

Report No.: HZ16020003e/R1

This report is replaced the old report No. HZ16020003e dated Mar. 25, 2016

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

Reviewed by:

Engineer: April Zou
Mar. 31, 2016

Approved by:



Manager: Jim Zhang
Mar. 31, 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: 14CDLA4/840/277V

Luminous Efficacy (Lumens /Watt)	Total Luminous Flux (Lumens)	Power (Watts)	Power Factor
84.6	1118.0	13.21	0.9903
CCT (K)	CRI	Stabilization Time (Light & Power)	
4001	84.7	65	

Table 1: Executive Data Summary

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

Test specifications:

Date of Receipt	: Mar. 16, 2016
Date of Test	: Mar. 23, 2016
Test item	: Total Luminous Flux, Luminous Distribution Intensity, Luminous Efficacy, Correlated Color Temperature, Color Rendering Index, Chromaticity Coordinate, Electrical parameters, Color Uniformity
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



Sample view

Equipment Under Test (EUT)

Name	: LED commercial downlight
Model	: 14CDLA4/840/277V
Electrical Ratings	: 120-277VAC, 60Hz, 14W
Product Description	: 4000K, Non-dimmable, CRI80 Manufacturer of LED light source: Lextar Electronics Corp Model of LED light source: PC35H11
Manufacturer	: GREEN CREATIVE LTD
Address	: 756 North Zhongshan Rd., Unit B301 Zhabei District, Shanghai

TEST RESULTS

Test ambient temperature was 25.2°C.

Test orientation was Light down. Test was conducted without a dimmer in the circuit.

The stabilization time of the sample was 65 minutes, and the total operating time including stabilization was 70 minutes.

Sphere-Spectroradiometer Method

Parameter	Result	
Test Voltage (V)	120.0	277.0
Voltage frequency (Hz)	60	60
Test Current (A)	0.111	0.052
Power Factor	0.9903	0.9156
Test Power (W)	13.21	13.13
THD A%	10.31	16.79
Luminous Efficacy (lm/W)	84.6	85.7
Total Luminous Flux (lm)	1118.0	1125.0
Color Rendering Index (CRI)	84.7	
R9	15	
Correlated Color Temperature (CCT)(K)	4001	
Chromaticity Chroma x	0.3800	
Chromaticity Chroma y	0.3757	
Chromaticity Chroma u	0.2253	
Chromaticity Chroma v	0.3340	
Duv	0.0011	
Chromaticity Chroma u'	0.2253	
Chromaticity Chroma v'	0.5010	

Special Color Rendering Indices	
R1	83.4
R2	91.1
R3	95.9
R4	83.4
R5	83.5
R6	87.5
R7	86.4
R8	66.5
R9	15
R10	78.6
R11	82.8
R12	66.8
R13	85.5
R14	98.1

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°C.

The photometric distance is 2.475m.

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)	0.115
Power Factor	0.9915
Test Power (W)	13.63
Luminous Efficacy (lm/W)	89.2
Total Luminous Flux (lm)	1216.3
Beam Angle (°)	96.7
Center Beam Candle Power (cd)	533
Spacing Criteria	1.17(0°-180°)/1.19(90°-270°)
Zonal Lumens in the 0°-60°Zone	86.78%
Zonal Lumens in the 60°-90°Zone	13.16%
Zonal Lumens in the 90°-120°Zone	0.02%
Zonal Lumens in the 120°-180°Zone	0.05%

Table 3: Test data per Goniophotometer Method

Spectral Power Distribution - Sphere Spectroradiometer Method

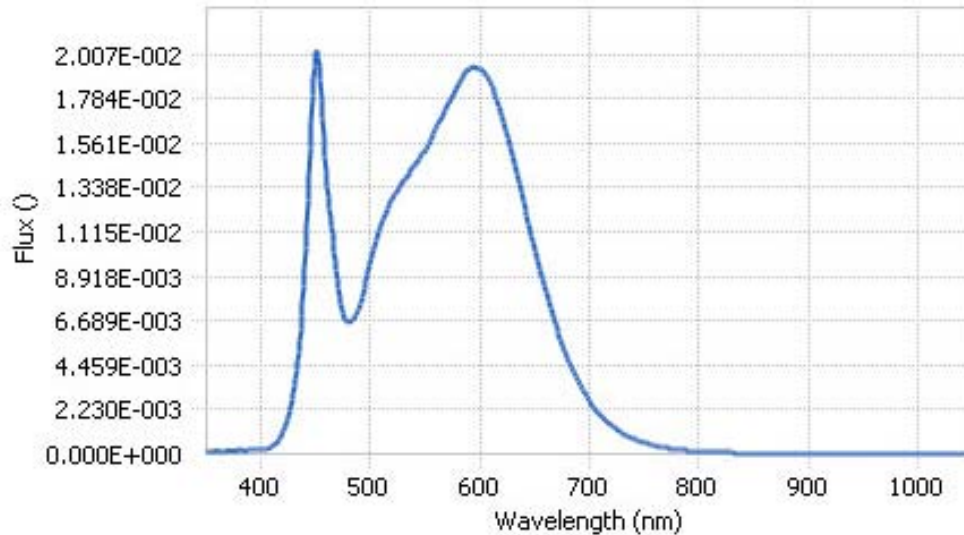
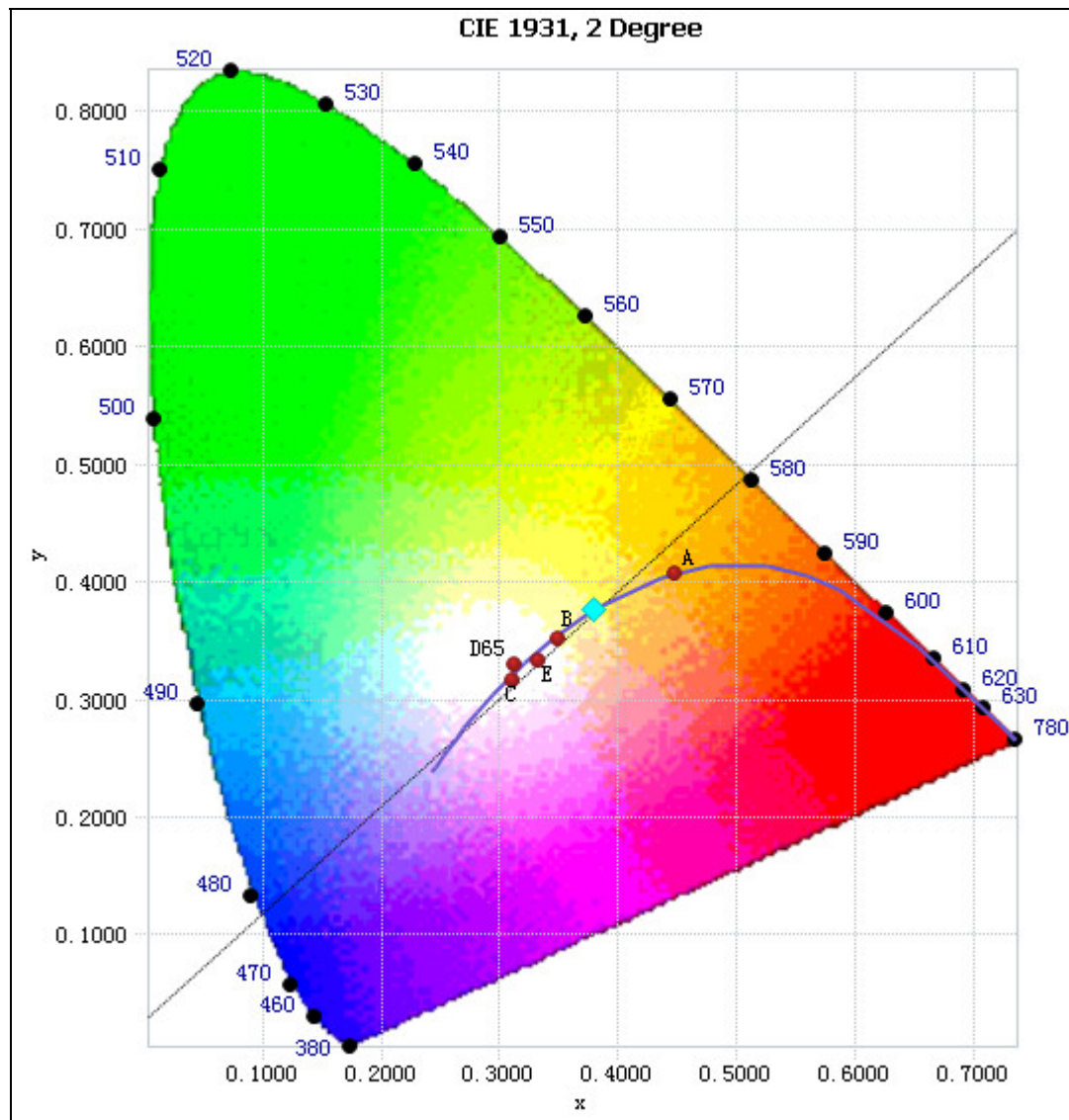


Chart 1: Spectral Power Distribution

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	1.73E-04	485	6.79E-03	590	1.93E-02	695	3.12E-03
385	1.63E-04	490	7.48E-03	595	1.94E-02	700	2.67E-03
390	1.69E-04	495	8.48E-03	600	1.93E-02	705	2.29E-03
395	1.80E-04	500	9.61E-03	605	1.90E-02	710	1.96E-03
400	2.06E-04	505	1.07E-02	610	1.86E-02	715	1.68E-03
405	2.68E-04	510	1.16E-02	615	1.79E-02	720	1.45E-03
410	3.77E-04	515	1.23E-02	620	1.70E-02	725	1.24E-03
415	6.23E-04	520	1.28E-02	625	1.60E-02	730	1.05E-03
420	1.09E-03	525	1.33E-02	630	1.49E-02	735	8.96E-04
425	1.96E-03	530	1.37E-02	635	1.38E-02	740	7.63E-04
430	3.38E-03	535	1.40E-02	640	1.26E-02	745	6.51E-04
435	5.66E-03	540	1.44E-02	645	1.15E-02	750	5.56E-04
440	9.27E-03	545	1.49E-02	650	1.03E-02	755	4.82E-04
445	1.54E-02	550	1.52E-02	655	9.24E-03	760	4.11E-04
450	2.01E-02	555	1.58E-02	660	8.20E-03	765	3.50E-04
455	1.77E-02	560	1.63E-02	665	7.22E-03	770	3.02E-04
460	1.34E-02	565	1.69E-02	670	6.33E-03	775	2.63E-04
465	1.10E-02	570	1.75E-02	675	5.53E-03	780	2.25E-04
470	8.71E-03	575	1.81E-02	680	4.82E-03		
475	7.01E-03	580	1.86E-02	685	4.18E-03		
480	6.56E-03	585	1.90E-02	690	3.63E-03		

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

Chromaticity Diagram - Sphere Spectroradiometer Method



Tristimulus values(x, y) : (0.3800,0.3757)

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

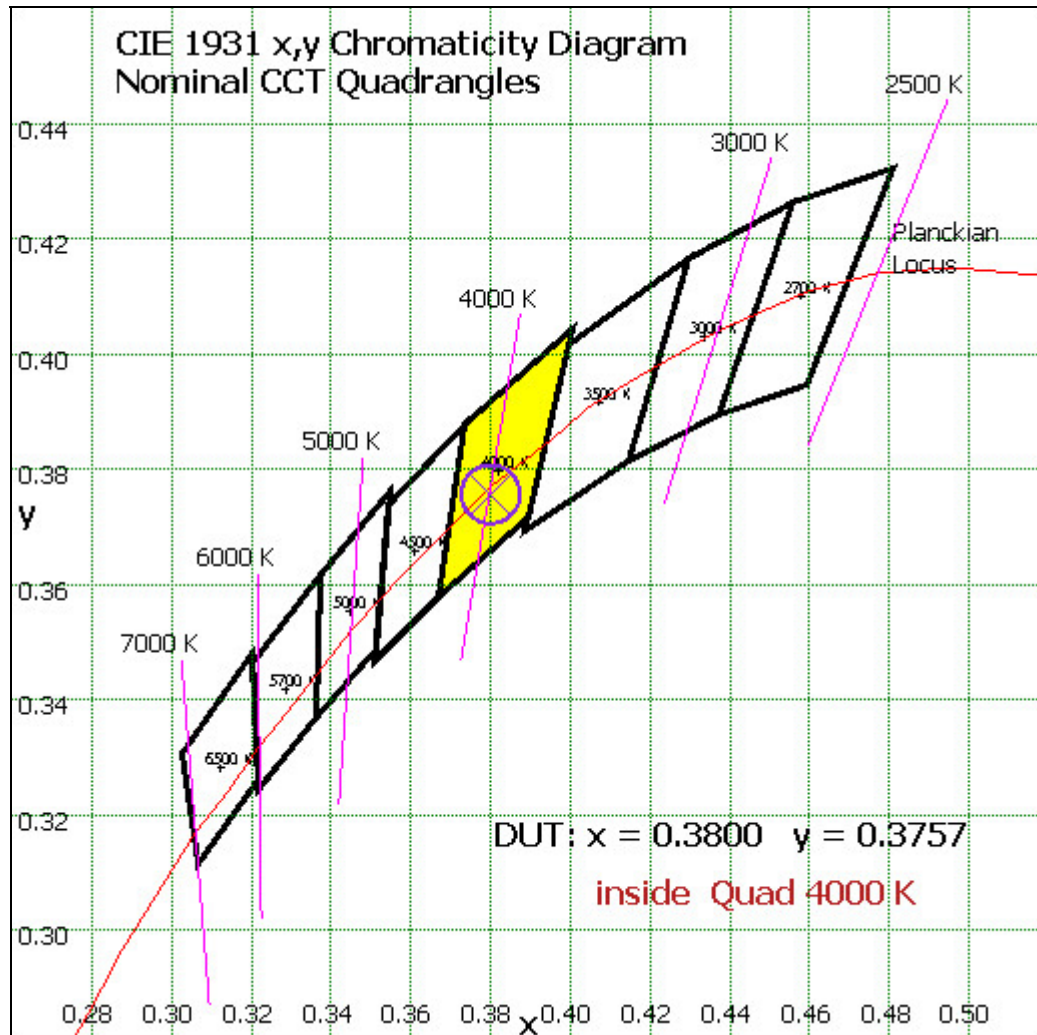


Chart 3: Plot of Lamp x/y coordinates on CIE 1931 Chromaticity Diagram

Zonal Lumen Tabulation- Goniophotometer Method

$\gamma(^{\circ})$	Lumens	% Total
0- 10	50.346	4.14%
10- 20	142.279	11.70%
20- 30	209.52	17.23%
30- 40	242.111	19.91%
40- 50	230.465	18.95%
50- 60	180.736	14.86%
60- 70	110.239	9.06%
70- 80	40.939	3.37%
80- 90	8.837	0.73%
90-100	0.039	0.00%
100-110	0.062	0.01%
110-120	0.089	0.01%
120-130	0.117	0.01%
130-140	0.15	0.01%
140-150	0.151	0.01%
150-160	0.118	0.01%
160-170	0.075	0.01%
170-180	0.027	0.00%
Total	1216.3	100%

$\gamma(^{\circ})$	Lumens	% Total
0- 60	1055.457	86.78%
60- 90	160.015	13.16%
0-90	1215.472	99.93%
90- 180	0.828	0.07%
0- 180	1216.3	100%

Table 4: Zonal Lumen Data

Illuminance Plots- Goniophotometer Method

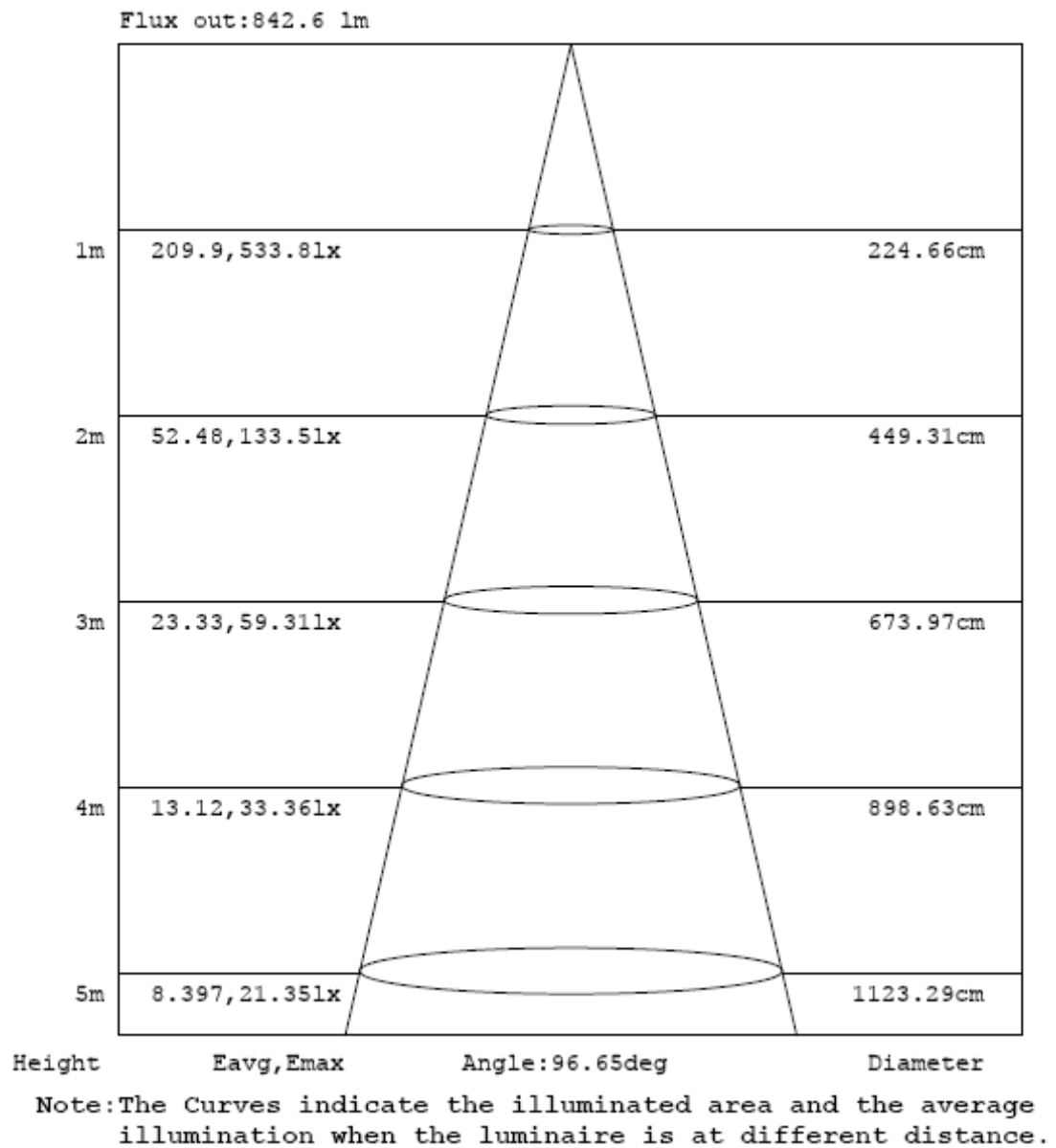


Chart 4: Beam Angle

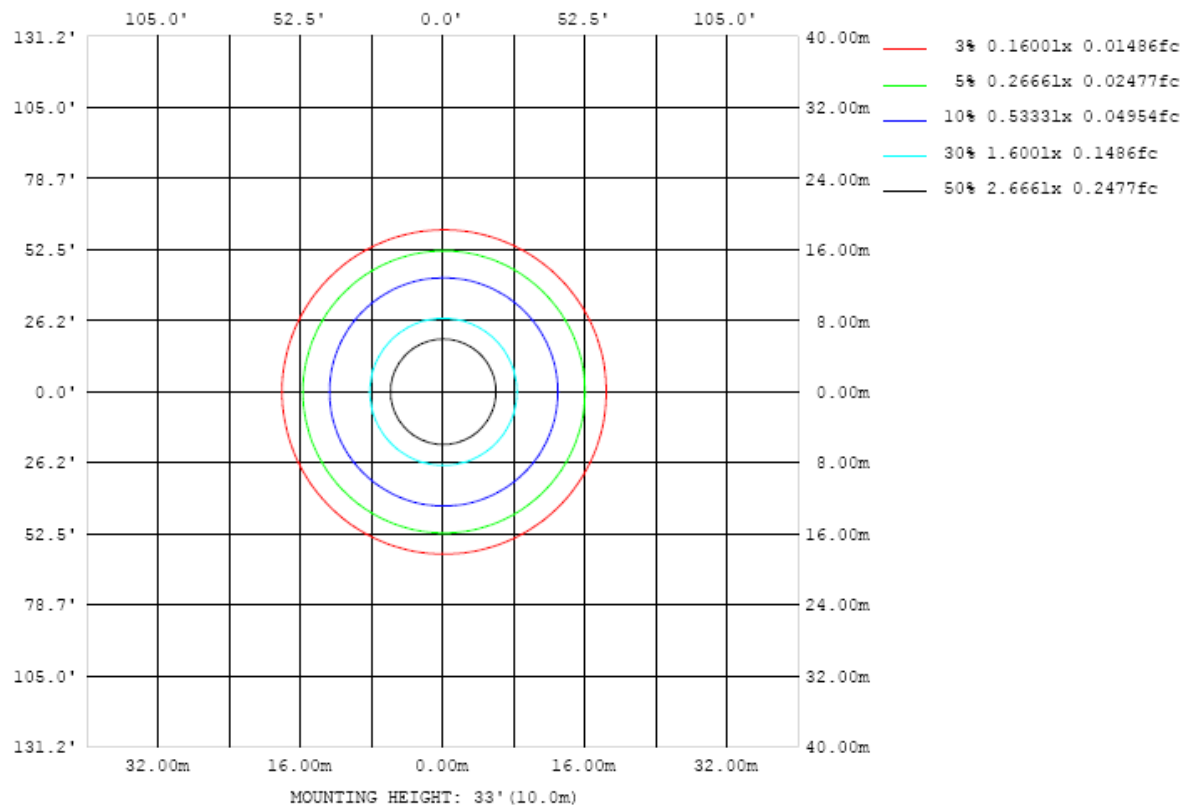


Chart 5: Illuminance Plot (Footcandles)

Luminous Intensity Distribution Plots- Goniophotometer Method

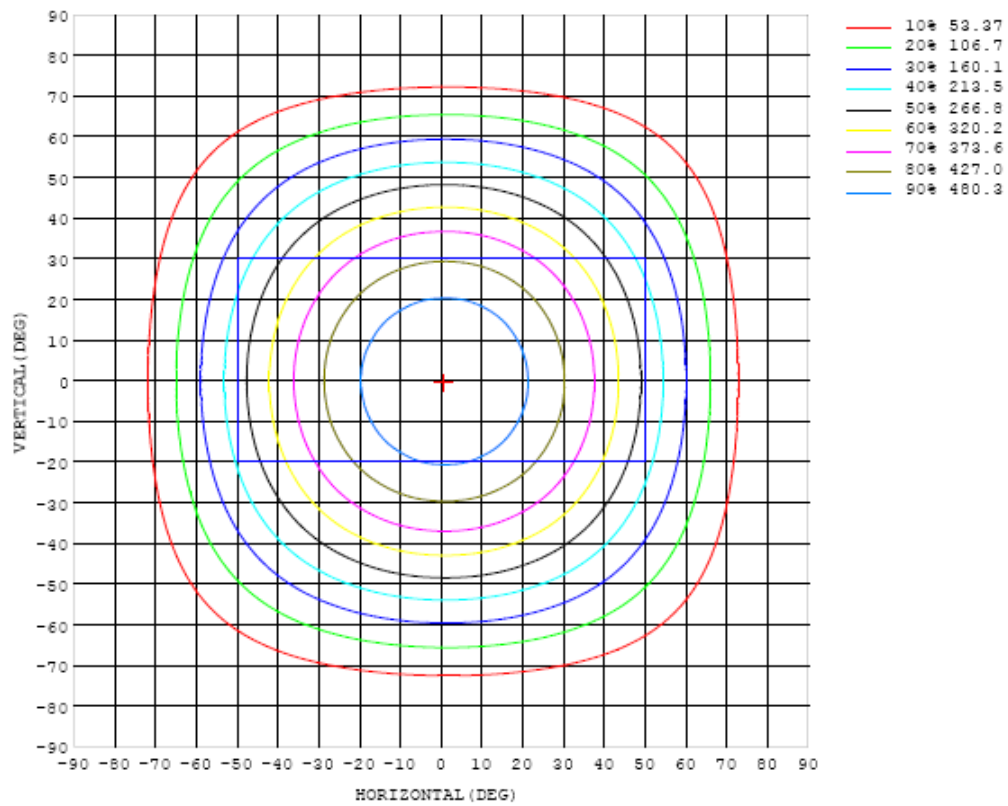


Chart 6: Isocandela Plot

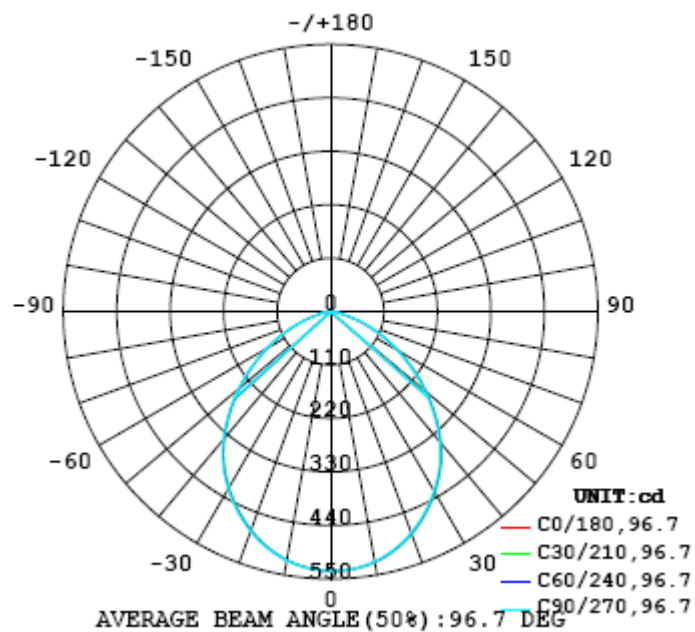


Chart 7: Polar Candela Distribution

Luminous Intensity Data- Goniophotometer Method

Table--1

UNIT: cd

C (DEG) y (DEG)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
0	533	533	533	533	533	533	533	533	533	533	533	533	533	533	533	533	533	533	533
5	532	532	531	532	531	531	531	531	531	531	531	530	530	530	530	530	530	530	530
10	524	523	523	524	523	523	523	523	522	522	521	521	520	520	520	519	519	519	519
15	508	508	508	508	508	508	507	507	506	506	505	505	504	503	503	503	502	502	502
20	487	487	487	487	486	486	486	485	484	484	483	482	481	481	480	480	479	479	479
25	460	460	460	460	459	459	458	458	457	456	455	455	454	453	452	451	451	451	450
30	429	429	429	429	428	428	427	426	425	425	424	423	422	421	420	419	419	418	418
35	394	394	394	394	393	393	392	391	390	390	388	388	386	386	385	384	383	383	383
40	352	353	353	353	352	351	351	350	349	348	347	345	344	343	342	341	341	340	340
45	306	306	306	306	305	305	304	303	302	301	300	298	297	296	295	294	293	293	293
50	257	257	257	257	257	256	255	254	253	252	251	250	249	248	247	246	245	244	244
55	208	208	208	208	208	207	206	205	204	203	202	201	200	199	198	198	197	197	197
60	161	161	161	161	160	160	159	158	157	156	156	155	154	153	152	151	151	150	151
65	115	116	116	116	115	115	114	114	113	112	111	110	109	109	108	107	107	106	107
70	73.9	74.1	74.1	74.1	73.9	73.5	73.2	72.6	71.9	71.3	70.5	69.9	69.1	68.4	68.0	67.6	67.1	66.8	66.9
75	39.2	39.4	39.4	39.4	39.3	39.1	38.8	38.5	38.0	37.6	37.1	36.6	36.0	35.6	35.1	34.7	34.4	34.1	34.0
80	18.1	18.1	18.2	18.2	18.2	18.2	18.1	18.1	17.9	17.8	17.7	17.5	17.4	17.2	17.0	16.9	16.8	16.7	16.7
85	8.87	8.89	8.99	9.01	8.98	8.93	8.88	8.76	8.63	8.47	8.28	8.09	7.89	7.69	7.51	7.37	7.19	7.09	7.03
90	0.07	0.08	0.08	0.09	0.08	0.07	0.08	0.07	0.06	0.05	0.04	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03
95	0.03	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04
100	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.06
105	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.08
110	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.09
115	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.11
120	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.08	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.13
125	0.10	0.10	0.10	0.10	0.10	0.10	0.11	0.10	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.15
130	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.14	0.14	0.14	0.19
135	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.23
140	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.19	0.19	0.19	0.19	0.19	0.19	0.26
145	0.19	0.19	0.19	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.29
150	0.20	0.20	0.19	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.30
155	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.31
160	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.30
165	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.30
170	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.30
175	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.30
180	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.28	0.28	0.29	0.28	0.28

Table 6: Luminous Intensity Data

Table--2

UNIT: cd

C (DEG) y (DEG)	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350		
0	533	533	533	533	533	533	533	533	533	533	533	533	533	533	533	533	533		
5	529	529	530	529	530	530	530	530	530	530	531	531	531	531	531	531	532		
10	519	519	519	519	519	520	520	520	521	521	522	522	522	522	523	523	523		
15	502	502	502	502	502	503	503	504	504	505	506	506	507	507	508	508	508		
20	478	479	479	479	479	480	480	481	482	482	483	484	485	485	486	486	487		
25	450	450	451	451	451	452	453	453	454	455	456	457	458	458	459	459	460		
30	418	418	419	419	419	420	421	421	422	423	424	425	426	427	427	428	429		
35	382	383	383	383	384	384	385	386	387	388	389	390	391	392	393	393	394		
40	340	340	340	340	341	342	342	343	344	346	347	348	349	350	351	352	353		
45	293	293	293	293	294	295	296	296	298	299	300	301	302	303	304	305	306		
50	244	244	245	245	245	246	247	248	249	250	251	252	253	254	255	256	257		
55	196	196	197	197	197	198	199	200	201	202	203	204	205	206	207	207	208		
60	151	150	151	151	151	152	153	153	154	155	156	157	158	159	160	160	161		
65	107	107	107	107	107	108	108	109	110	111	111	112	113	114	115	115	116		
70	66.7	66.6	66.7	66.9	67.1	67.5	68.0	68.7	69.2	69.9	70.5	71.2	72.0	72.6	73.3	73.8	74.3		
75	34.0	33.8	33.9	33.9	34.2	34.4	34.7	35.1	35.6	36.0	36.5	37.0	37.5	38.0	38.5	38.9	39.2		
80	16.7	16.7	16.7	16.7	16.7	16.8	16.9	17.0	17.1	17.2	17.4	17.5	17.6	17.8	17.9	18.0	18.1		
85	6.98	6.94	6.92	6.96	6.99	7.09	7.19	7.31	7.48	7.65	7.85	8.05	8.23	8.41	8.58	8.74	8.86		
90	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.05	0.07	0.07		
95	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04		
100	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.05	0.06	0.06		
105	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.07	0.07	0.07	0.07	0.07	0.07	0.07		
110	0.10	0.09	0.10	0.10	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09		
115	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11		
120	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13		
125	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15		
130	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.18		
135	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23		
140	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26		
145	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29		
150	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.30	0.30	0.30	0.30	0.30	0.30	0.30		
155	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31		
160	0.30	0.30	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.30	0.30	0.30	0.30	0.31	0.30	0.30	0.30		
165	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30		
170	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31		
175	0.31	0.30	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31		
180	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29		

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 BR30s) 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 1.39% with a coverage factor $k=2$.

Goniophotometer Method

Prepared by: Leading Testing Laboratories
No.1805, DongLiu road, BinJiang District, Hangzhou, China
Tel: +86-571-56680806 www.ledtestlab.com

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 BR30s) 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 expanded uncertainty is 1.8% with a coverage factor $k=2$.

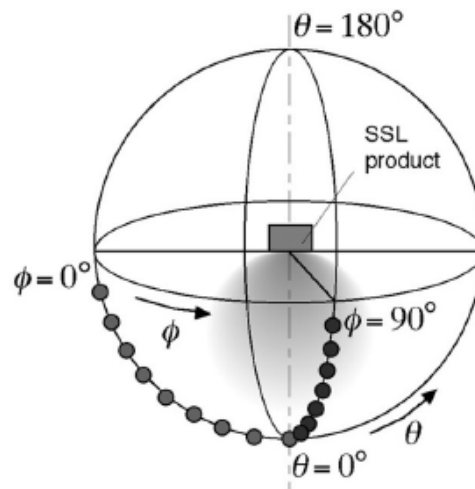
Color Characteristics Measurements

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 ($C=0^\circ/180^\circ$ and $C=90^\circ/270^\circ$) 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, $\Delta u'v'$, 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 ***

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