



LM-79-08 Test Report

for

GREEN CREATIVE LTD

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

Surface mounted down light

Model: 14.5SMDL6DIM/930

Laboratory: Leading Testing Laboratories

NVLAP CODE: 200960-0

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Report No.: HZ16090035c

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

Review by:

Engineer: April Zou
Oct. 12, 2016

Approved by:



Manager: Jim Zhang
Oct. 12, 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: 3.5FB11DIM/827/E26

Luminous Efficacy (Lumens /Watt)	Total Luminous Flux (Lumens)	Power (Watts)	Power Factor
70.3	1000.0	14.22	0.9376
CCT (K)	CRI	Stabilization Time (Light & Power)	
3099	92.9	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 : Sep. 28, 2016

Date of Test : Oct. 10, 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



E26 base??

Figure 1- Overview of the sample

Equipment Under Test (EUT)

Name	: surface mounted down light
Model	: 14.5SMDL6DIM/930
Electrical Ratings	: 120Vac, 60Hz, 14.5W
Product Description	: E26 base, 3000K
Manufacturer	: GREEN CREATIVE LTD
Address	: 756 North Zhongshan Rd., Unit B301 Zhabei District, Shanghai

TEST RESULTS

Test ambient temperature was 25.0°C.

Base orientation was light down. 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 70 minutes.

Sphere-Spectroradiometer Method

Parameter	Result
Test Voltage (V)	120.0
Voltage frequency (Hz)	60
Test Current (A)	0.1264
Power Factor	0.9376
Test Power (W)	14.22
THD A%	33.86
Luminous Efficacy (lm/W)	70.3
Total Luminous Flux (lm)	1000.0
Color Rendering Index (CRI)	92.9
R9	66.6
Correlated Color Temperature (CCT)(K)	3099
Chromaticity Chroma x	0.4321
Chromaticity Chroma y	0.4063
Chromaticity Chroma u	0.2465
Chromaticity Chroma v	0.3477
Duv	0.0011
Chromaticity Chroma u'	0.2465
Chromaticity Chroma v'	0.5216

Special Color Rendering Indices	
R1	93.3
R2	95.3
R3	95.3
R4	93.2
R5	91.9
R6	93.2
R7	94.9
R8	86.2
R9	66.6
R10	87.1
R11	93
R12	74.1
R13	93.8
R14	96.5

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 2.47m.

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)	0.1257
Power Factor	0.9352
Test Power (W)	14.11
Luminous Efficacy (lm/W)	71.8
Total Luminous Flux (lm)	1013.0
Beam Angle (°)	114.2
Center Beam Candle Power (cd)	339
Spacing Criteria	1.25 (0°-180°)/ 1.26 (90°-270°)
Zonal Lumens in the 0°-60°Zone	75.97%
Zonal Lumens in the 60°-90°Zone	23.39%
Zonal Lumens in the 90°-120°Zone	0.59%
Zonal Lumens in the 120°-180°Zone	0.06%

Table 3: Test data per Goniophotometer Method

Spectral Power Distribution - Sphere Spectroradiometer Method

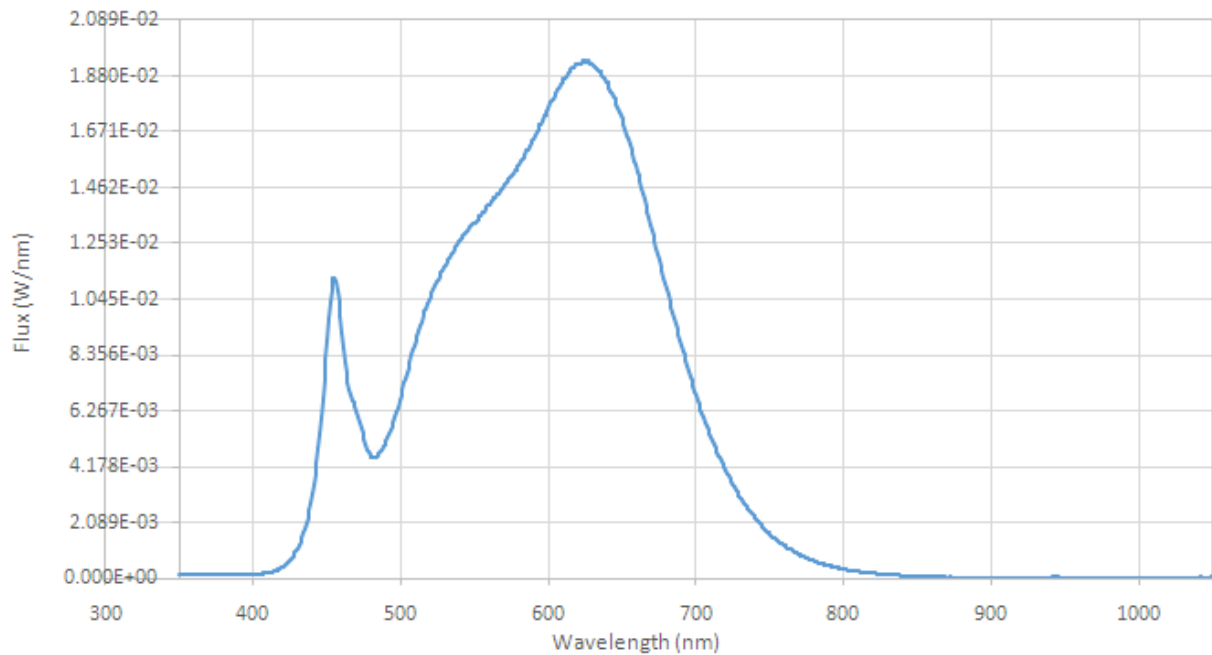
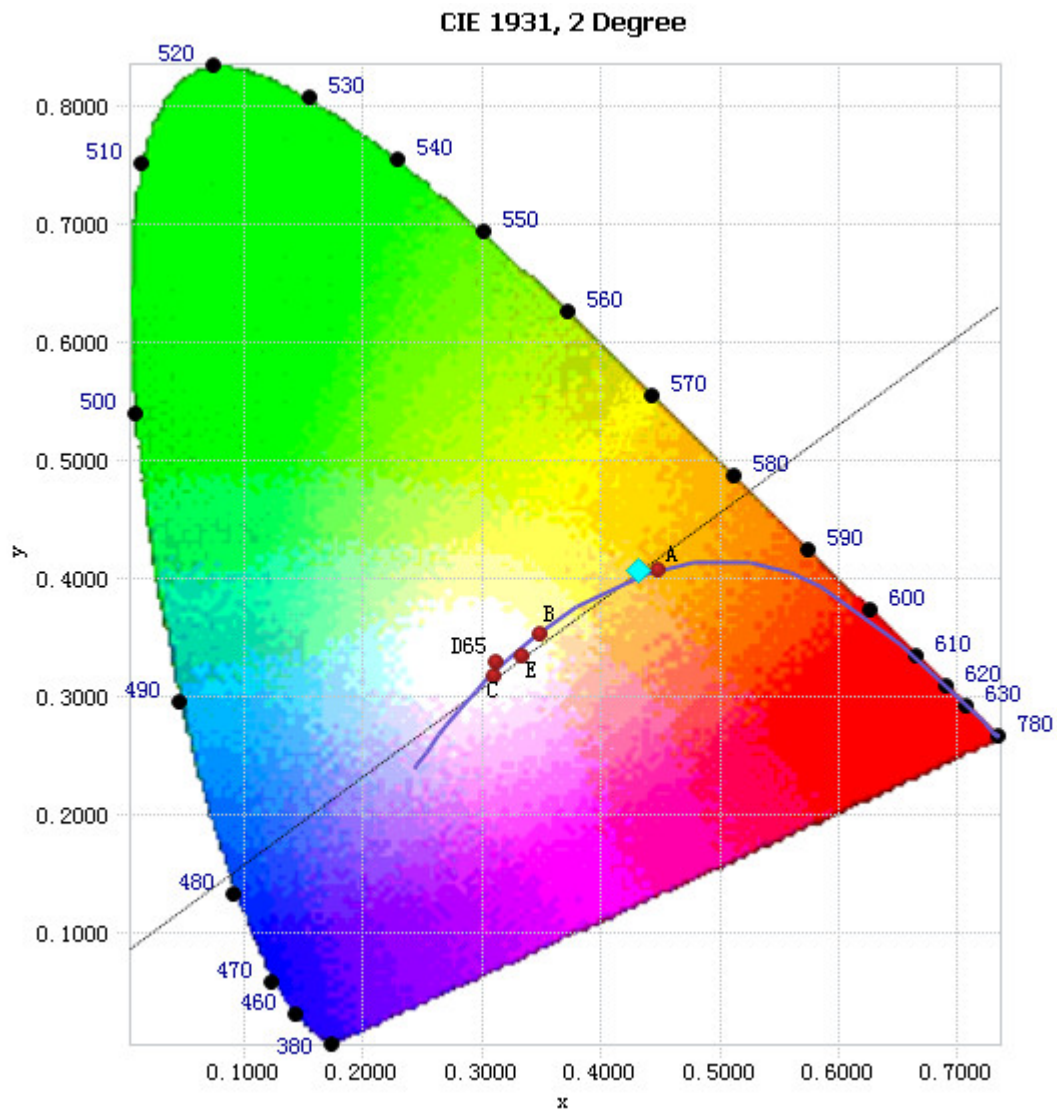


Chart 1: Spectral Power Distribution

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	1.49E-04	485	4.64E-03	590	1.65E-02	695	7.74E-03
385	1.37E-04	490	5.16E-03	595	1.70E-02	700	6.84E-03
390	1.35E-04	495	5.84E-03	600	1.76E-02	705	6.01E-03
395	1.44E-04	500	6.85E-03	605	1.81E-02	710	5.26E-03
400	1.52E-04	505	7.92E-03	610	1.87E-02	715	4.62E-03
405	1.66E-04	510	8.90E-03	615	1.91E-02	720	4.05E-03
410	2.05E-04	515	9.84E-03	620	1.92E-02	725	3.51E-03
415	2.83E-04	520	1.06E-02	625	1.94E-02	730	3.03E-03
420	4.40E-04	525	1.12E-02	630	1.92E-02	735	2.60E-03
425	7.05E-04	530	1.17E-02	635	1.90E-02	740	2.24E-03
430	1.13E-03	535	1.22E-02	640	1.86E-02	745	1.91E-03
435	1.89E-03	540	1.27E-02	645	1.79E-02	750	1.65E-03
440	3.14E-03	545	1.30E-02	650	1.72E-02	755	1.42E-03
445	5.43E-03	550	1.33E-02	655	1.62E-02	760	1.21E-03
450	8.94E-03	555	1.37E-02	660	1.52E-02	765	1.04E-03
455	1.13E-02	560	1.40E-02	665	1.42E-02	770	8.92E-04
460	9.20E-03	565	1.44E-02	670	1.30E-02	775	7.65E-04
465	7.08E-03	570	1.47E-02	675	1.19E-02	780	6.52E-04
470	6.27E-03	575	1.51E-02	680	1.08E-02		
475	5.21E-03	580	1.55E-02	685	9.71E-03		
480	4.54E-03	585	1.60E-02	690	8.72E-03		

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

Chromaticity Diagram - Sphere Spectroradiometer Method



Tristimulus values(x, y): (0.4321, 0.4063)

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

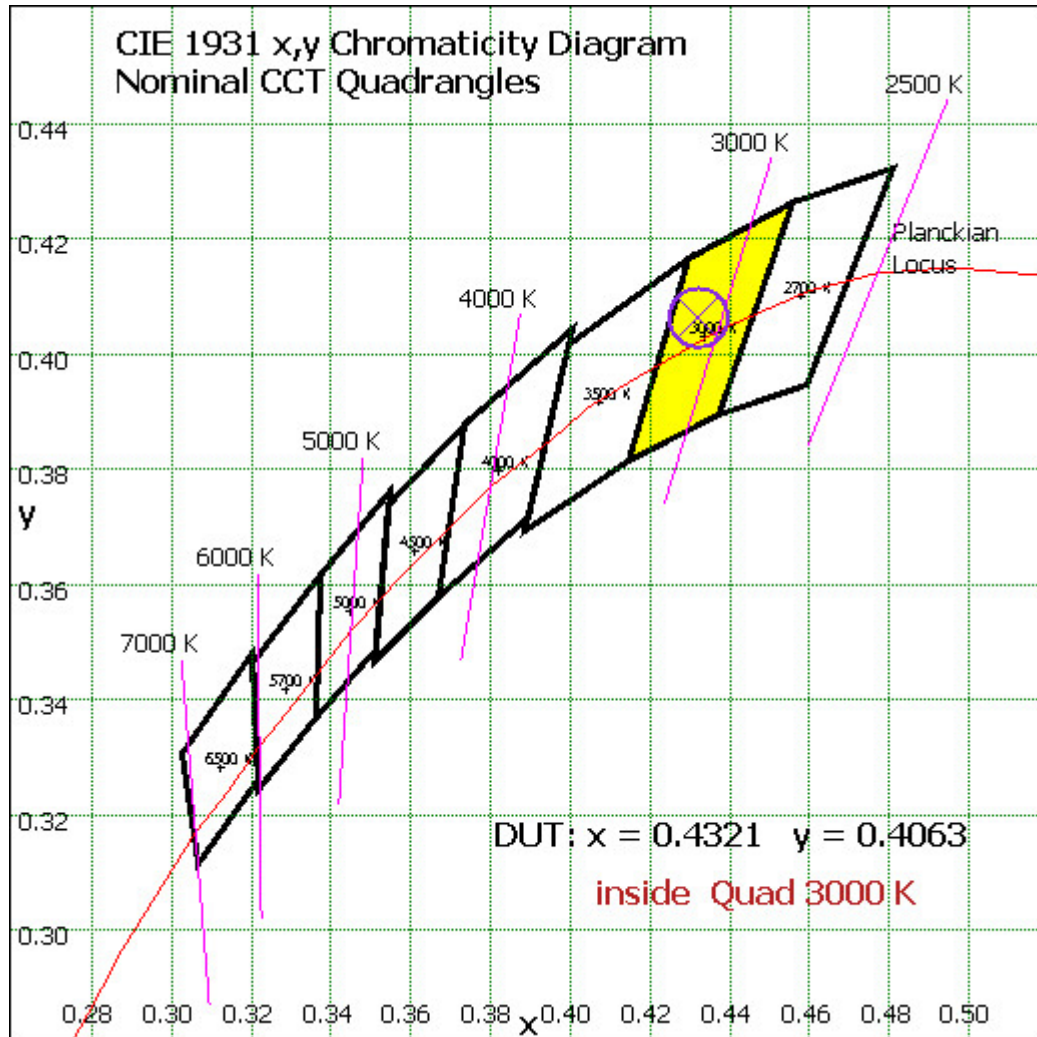


Chart 3: Plot of Lamp x/y coordinates on CIE 1931 Chromaticity Diagram

Zonal Lumen Tabulation- Goniophotometer Method

$\gamma(^{\circ})$	Lumens	% Total
0- 10	32.096	3.17%
10- 20	91.932	9.08%
20- 30	139.441	13.77%
30- 40	168.628	16.65%
40- 50	176.125	17.39%
50- 60	161.323	15.93%
60- 70	126.49	12.49%
70- 80	78.21	7.72%
80- 90	32.248	3.18%
90-100	5.774	0.57%
100-110	0.072	0.01%
110-120	0.096	0.01%
120-130	0.112	0.01%
130-140	0.131	0.01%
140-150	0.13	0.01%
150-160	0.101	0.01%
160-170	0.065	0.01%
170-180	0.023	0.00%
Total	1013.0	100%

$\gamma(^{\circ})$	Lumens	% Total
0- 60	769.545	75.97%
60- 90	236.948	23.39%
0-90	1006.493	99.36%
90- 180	6.504	0.64%
0- 180	1013.0	100%

Table 5: Zonal Lumen Data

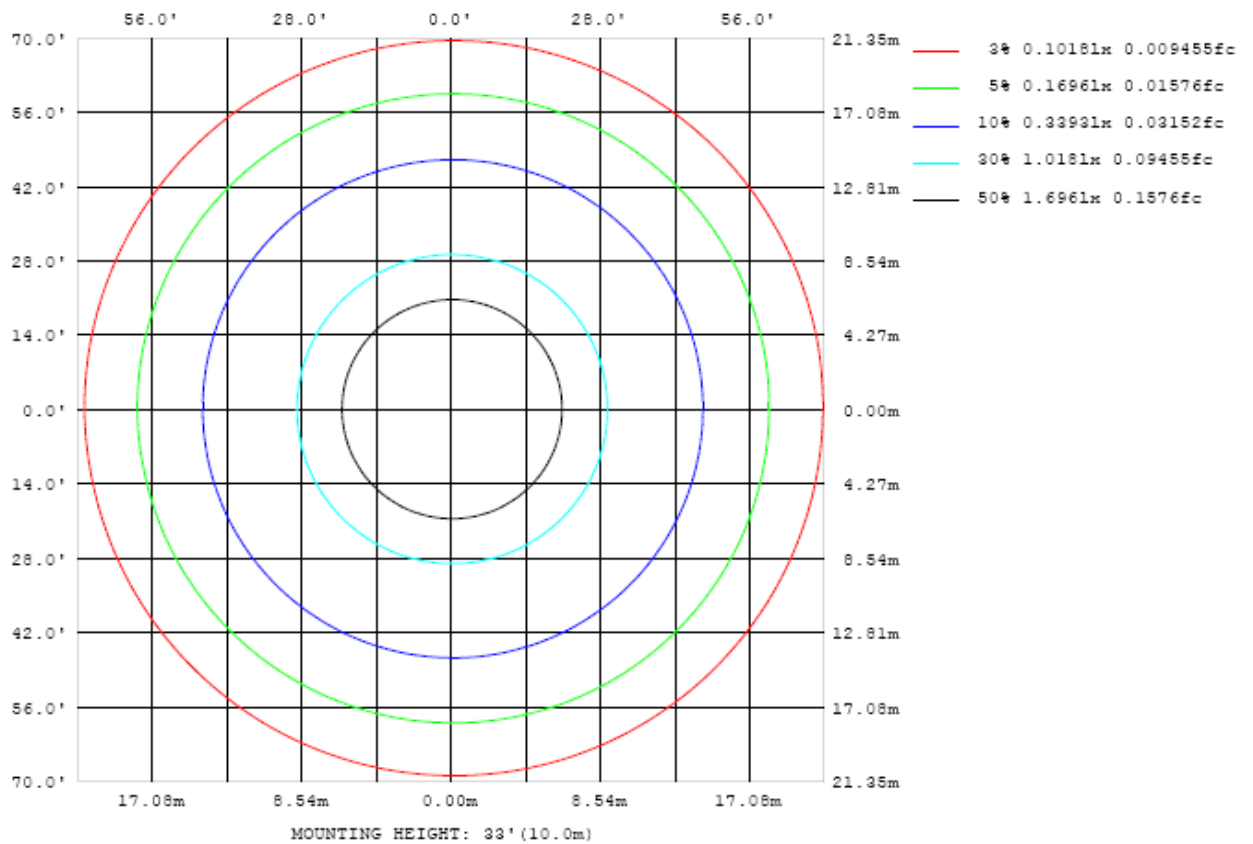


Chart 4: Illuminance Plot (Footcandles)

Luminous Intensity Distribution Plots- Goniophotometer Method

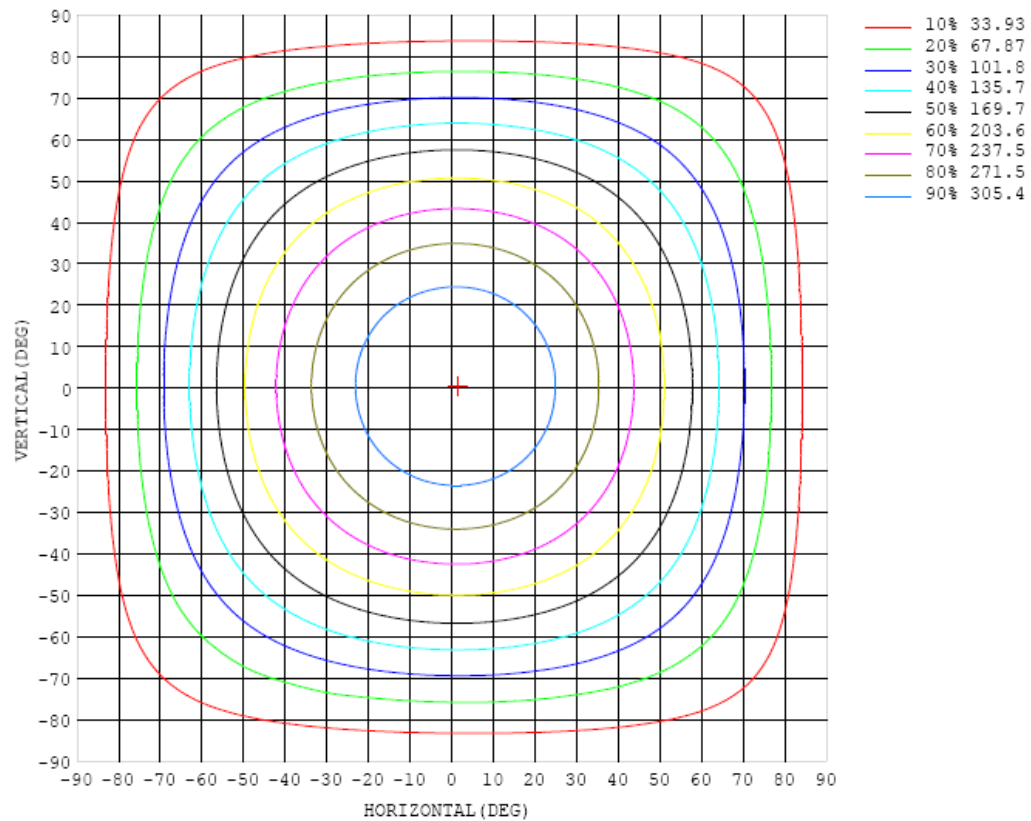


Chart 5: Isocandela Plot

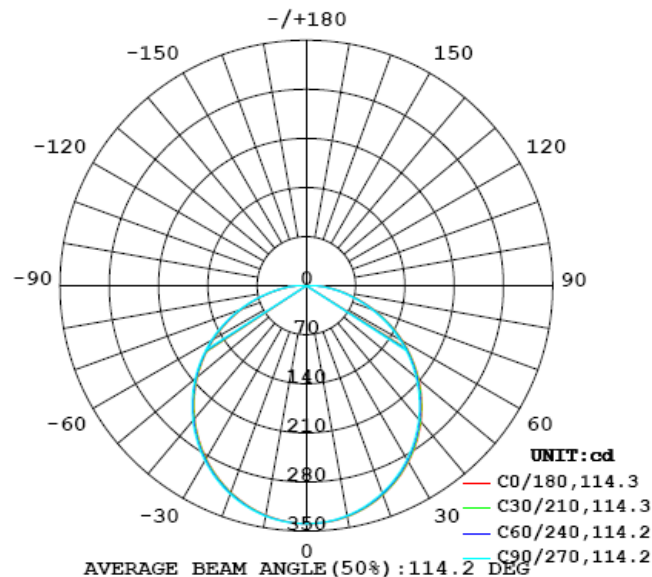


Chart 6: Polar Candela Distribution

Luminous Intensity Data- Goniophotometer Method

Table--1

UNIT: cd

C (DEG) γ (DEG)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
0	339	339	339	339	339	339	339	339	339	339	339	339	339	339	339	339	339	339	339
5	338	338	338	338	338	338	338	338	338	337	337	337	337	337	337	337	337	337	337
10	334	334	334	334	334	334	333	333	333	333	332	332	332	332	332	332	332	332	332
15	327	327	327	327	326	326	326	326	325	325	325	324	324	324	324	324	324	324	324
20	318	317	317	317	316	316	316	315	315	314	314	314	313	313	313	313	313	313	313
25	305	305	305	304	304	303	303	302	302	301	301	300	300	300	300	300	300	300	300
30	290	290	290	289	289	288	287	287	286	286	285	285	284	284	284	284	284	284	284
35	273	272	272	272	271	270	270	269	268	268	267	267	267	266	266	266	266	266	267
40	253	253	253	252	251	251	250	249	249	248	248	247	247	246	246	246	246	246	247
45	232	232	231	231	230	229	229	228	227	226	226	225	225	225	225	225	225	225	225
50	209	208	208	207	207	206	205	205	204	203	203	202	202	202	201	201	201	202	202
55	184	184	183	183	182	181	181	180	179	179	178	178	177	177	177	177	177	177	177
60	158	158	157	157	156	156	155	154	153	153	152	152	151	151	151	151	151	151	152
65	131	131	130	130	129	129	128	127	126	126	125	125	124	124	124	124	124	124	125
70	104	103	103	102	102	101	101	99.8	99.2	98.6	98.0	97.5	97.2	96.9	96.7	96.6	96.7	96.8	97.7
75	76.8	76.5	76.2	75.7	75.1	74.5	73.9	73.2	72.6	71.9	71.5	71.0	70.8	70.5	70.5	70.1	70.3	70.5	71.2
80	52.1	51.9	51.6	51.2	50.7	50.1	49.5	48.9	48.4	47.8	47.4	47.1	46.8	46.6	46.5	46.5	46.5	46.6	46.9
85	30.7	30.6	30.4	30.1	29.7	29.2	28.7	28.3	27.8	27.5	27.2	26.9	26.8	26.7	26.7	26.7	26.8	26.9	27.2
90	15.0	14.9	14.8	14.6	14.3	14.1	13.8	13.5	13.2	13.0	12.8	12.7	12.6	12.7	12.8	12.9	13.0	13.1	13.3
95	5.35	5.52	5.49	5.43	5.34	4.90	4.02	4.43	4.82	4.74	4.69	4.66	4.66	4.70	4.79	4.89	4.99	4.64	4.11
100	0.04	0.04	0.04	0.04	0.04	0.04	0.05	0.04	0.04	0.04	0.05	0.05	0.04	0.04	0.05	0.05	0.05	0.05	0.07
105	0.05	0.06	0.05	0.05	0.06	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.05	0.05	0.06	0.06	0.06	0.06	0.08
110	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	0.10
115	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.11
120	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.12
125	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	0.12	0.12	0.12	0.14
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	0.13	0.13	0.13	0.16
135	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.19
140	0.16	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.22
145	0.17	0.17	0.17	0.17	0.17	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.17	0.18	0.18	0.17	0.18	0.18	0.24
150	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.18	0.17	0.17	0.17	0.17	0.17	0.17	0.18	0.17	0.17	0.17	0.25
155	0.17	0.17	0.17	0.17	0.17	0.18	0.17	0.18	0.17	0.18	0.18	0.18	0.17	0.17	0.18	0.18	0.17	0.17	0.25
160	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.25
165	0.19	0.19	0.19	0.19	0.19	0.20	0.20	0.19	0.19	0.19	0.20	0.19	0.19	0.19	0.19	0.20	0.20	0.19	0.25
170	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	0.25
175	0.24	0.24	0.24	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	0.25
180	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24

Table 6: Luminous Intensity Data

Table--2

UNIT: cd

C (DEG) γ (DEG)	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350		
0	339	339	339	339	339	339	339	339	339	339	339	339	339	339	339	339	339		
5	337	337	337	337	338	338	338	338	338	338	338	338	338	338	338	338	338		
10	332	332	333	333	333	333	333	334	334	334	334	334	334	334	334	335	335	334	
15	324	325	325	325	325	326	326	326	326	327	327	327	327	327	328	328	328	328	
20	314	314	314	315	315	315	316	316	316	317	317	317	317	318	318	318	318	318	
25	300	301	301	301	302	302	303	303	304	304	305	305	305	305	305	305	305	305	
30	285	285	285	286	286	287	287	288	288	289	289	290	290	290	290	290	290	290	
35	267	267	268	268	269	269	270	270	271	271	272	272	273	273	273	273	273	273	
40	247	248	248	248	249	250	250	251	251	252	252	253	253	254	254	254	254	254	
45	225	226	226	227	227	228	229	229	230	230	231	231	232	232	232	232	232	232	
50	202	203	203	204	204	205	205	206	207	207	208	208	209	209	209	209	209	209	
55	178	178	178	179	180	180	181	181	182	183	183	184	184	184	185	185	185	185	
60	152	153	153	153	154	155	155	156	156	157	157	158	158	159	159	159	159	159	
65	125	126	126	127	127	128	128	129	130	130	131	131	132	132	132	132	132	132	
70	98.0	98.3	98.7	99.2	99.7	100	101	101	102	103	103	104	104	104	104	105	105	105	
75	71.4	71.7	72.0	72.4	72.9	73.3	73.9	74.3	74.9	75.5	76.0	76.4	76.8	77.2	77.4	77.5	77.5	77.5	
80	47.2	47.4	47.6	47.9	48.3	48.6	49.1	49.5	49.9	50.4	50.8	51.2	51.6	51.9	52.2	52.3	52.3	52.3	
85	27.3	27.5	27.6	27.8	28.0	28.2	28.4	28.7	29.1	29.4	29.7	30.1	30.3	30.6	30.8	30.9	30.9	30.9	
90	13.4	13.4	13.4	13.6	13.7	13.7	13.8	14.0	14.1	14.4	14.5	14.7	14.9	15.1	15.2	15.2	15.3	15.3	
95	4.76	5.18	5.18	5.16	5.14	5.13	5.13	5.19	5.26	5.34	4.98	4.35	5.02	5.56	5.60	5.60	5.61	5.61	
100	0.06	0.07	0.07	0.07	0.06	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	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	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	
110	0.10	0.10	0.10	0.10	0.09	0.10	0.10	0.10	0.10	0.10	0.10	0.09	0.09	0.09	0.10	0.10	0.10	0.10	
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	0.11	
120	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	
125	0.14	0.14	0.14	0.14	0.13	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.13	0.13	0.13	0.13	0.13	0.13	
130	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	
135	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	0.19	0.19	
140	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	
145	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	
150	0.26	0.26	0.26	0.26	0.25	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.25	0.25	0.25	0.25	0.26	0.25	
155	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.25	
160	0.27	0.27	0.27	0.27	0.26	0.26	0.27	0.27	0.27	0.27	0.27	0.27	0.26	0.26	0.26	0.27	0.26	0.26	
165	0.26	0.26	0.26	0.27	0.26	0.26	0.27	0.27	0.27	0.27	0.27	0.27	0.26	0.26	0.26	0.27	0.26	0.26	
170	0.27	0.27	0.27	0.27	0.26	0.26	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.26	
175	0.26	0.26	0.26	0.26	0.26	0.26	0.27	0.27	0.26	0.26	0.27	0.26	0.26	0.26	0.26	0.27	0.25	0.25	
180	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	

Table 7: Luminous Intensity Data

EQUIPMENT LIST

Test Equipment	Model	Equipment No.	Calibration Date	Calibration Due date
Goniophotometer system	GO-R5000	HZTE011-01	Jul. 27, 2016	Jul. 26, 2017
Digital Power Meter	PF2010A	HZTE028-01	Jul. 27, 2016	Jul. 26, 2017
AC Power Supply	PCR 500L	HZTE001-08	Jul. 27, 2016	Jul. 26, 2017
DC Power Supply	WY12010	HZTE004-03	Jul. 27, 2016	Jul. 26, 2017
Temperature Meter	TES1310	HZTE017-01	Jul. 27, 2016	Jul. 26, 2017
Standard source	D908	HZTE012-01	Jul. 27, 2016	Jul. 26, 2017
Integrate Sphere system	2M	HZTE015-01	Jul. 27, 2016	Jul. 26, 2017
Digital Power Meter	WT210	HZTE008-01	Jul. 27, 2016	Jul. 26, 2017
AC Power Supply	PCR 500L	HZTE001-07	Jul. 27, 2016	Jul. 26, 2017
DC Power Supply	6154	HZTE004-04	Jul. 27, 2016	Jul. 26, 2017
Temperature and humidity recorder	JR900	HZTE018-01	Jul. 27, 2016	Jul. 26, 2017
Standard source	SCL-1400	HZTE012-02	Jul. 27, 2016	Jul. 26, 2017

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 FA19 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 expanded 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 FA19 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 expanded 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 ($C=0^\circ/180^\circ$ 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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