



LM-79-08 Test Report

for

GREEN CREATIVE LTD

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

PLS LAMP

Model: 6PLS/827/HYB/GX23/R

Laboratory: Leading Testing Laboratories

NVLAP CODE: 200960-0

3rd Floor, Bld. 2, NO. 96 Longchuanwu Rd Qianjiang Economy Dev. Zone, Yuhang Dist,
Hangzhou, Zhejiang Province, China 311100

Tel: +86 571 86376106

www.ledtestlab.com

Report No.: HZ17030069a

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

Review by:

April Zou

Engineer: April Zou
Mar. 24, 2017

Approved by:



Jim Zhang

Manager: Jim Zhang
Mar. 24, 2017

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: **6PLS/827/HYB/GX23/R**

Luminous Efficacy (Lumens /Watt)	Total Luminous Flux (Lumens)	Power (Watts)	Power Factor
107.9	643.3	5.96	0.9752
CCT (K)	CRI	Stabilization Time (Light & Power)	
2714	81.6	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 : Mar. 21, 2017

Date of Test : Mar. 22, 2017

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	: PLS LAMP
Model	: 6PLS/827/HYB/GX23/R
Electrical Ratings	: 120-277Vac, 60Hz, 6W
Product Description	: GX23 base, 2700K, CRI80
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 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 70 minutes.

Sphere-Spectroradiometer Method

Parameter	Result	
Test Voltage (V)	120.0	277.0
Voltage frequency (Hz)	60	60
Test Current (A)	0.051	0.024
Power Factor	0.9752	0.8938
Test Power (W)	5.96	5.98
THD A%	20.49	26.26
Luminous Efficacy (lm/W)	107.9	107.6
Total Luminous Flux (lm)	643.3	643.2
Color Rendering Index (CRI)	81.6	
R9	6.6	
Correlated Color Temperature (CCT)(K)	2714	
Chromaticity Chroma x	0.4568	
Chromaticity Chroma y	0.4071	
Chromaticity Chroma u	0.2621	
Chromaticity Chroma v	0.3504	
Duv	0.0013	
Chromaticity Chroma u'	0.2621	
Chromaticity Chroma v'	0.5255	

Special Color Rendering Indices	
R1	80.1
R2	91.3
R3	95.3
R4	78.6
R5	80.2
R6	89.9
R7	81
R8	56.6
R9	6.6
R10	80.4
R11	77.6
R12	73.7
R13	82.7
R14	98.2
Rf	82
Rg	96

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 24.6°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)	0.051
Power Factor	0.9746
Test Power (W)	5.98
Luminous Efficacy (lm/W)	110.7
Total Luminous Flux (lm)	661.9
Beam Angle (°)	111.3
Center Beam Candle Power (cd)	206
Spacing Criteria	1.16 (0°-180°)/ 1.26 (90°-270°)
Zonal Lumens in the 0°-60°Zone	67.66%
Zonal Lumens in the 60°-90°Zone	24.52%
Zonal Lumens in the 90°-120°Zone	6.65%
Zonal Lumens in the 120°-180°Zone	1.17%

Table 3: Test data per Goniophotometer Method

Spectral Power Distribution - Sphere Spectroradiometer Method

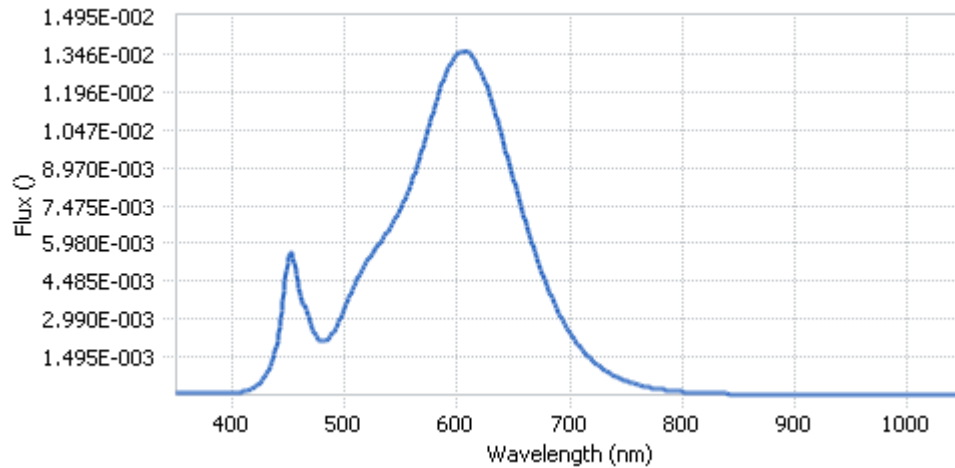


Chart 1: Spectral Power Distribution

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	7.82E-05	485	2.22E-03	590	1.27E-02	695	2.84E-03
385	7.90E-05	490	2.48E-03	595	1.31E-02	700	2.48E-03
390	8.82E-05	495	2.90E-03	600	1.35E-02	705	2.13E-03
395	8.20E-05	500	3.44E-03	605	1.35E-02	710	1.84E-03
400	8.86E-05	505	3.99E-03	610	1.35E-02	715	1.59E-03
405	1.01E-04	510	4.46E-03	615	1.33E-02	720	1.37E-03
410	1.32E-04	515	4.92E-03	620	1.28E-02	725	1.18E-03
415	1.91E-04	520	5.30E-03	625	1.23E-02	730	1.02E-03
420	3.07E-04	525	5.62E-03	630	1.17E-02	735	8.65E-04
425	5.03E-04	530	5.93E-03	635	1.10E-02	740	7.44E-04
430	8.17E-04	535	6.24E-03	640	1.02E-02	745	6.42E-04
435	1.30E-03	540	6.58E-03	645	9.37E-03	750	5.53E-04
440	2.15E-03	545	6.98E-03	650	8.55E-03	755	4.81E-04
445	3.74E-03	550	7.38E-03	655	7.74E-03	760	4.13E-04
450	5.42E-03	555	7.90E-03	660	6.97E-03	765	3.53E-04
455	5.22E-03	560	8.48E-03	665	6.21E-03	770	3.06E-04
460	4.02E-03	565	9.11E-03	670	5.52E-03	775	2.60E-04
465	3.38E-03	570	9.87E-03	675	4.87E-03	780	2.24E-04
470	2.80E-03	575	1.06E-02	680	4.28E-03		
475	2.27E-03	580	1.14E-02	685	3.76E-03		
480	2.12E-03	585	1.21E-02	690	3.28E-03		

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

Chromaticity Diagram - Sphere Spectroradiometer Method

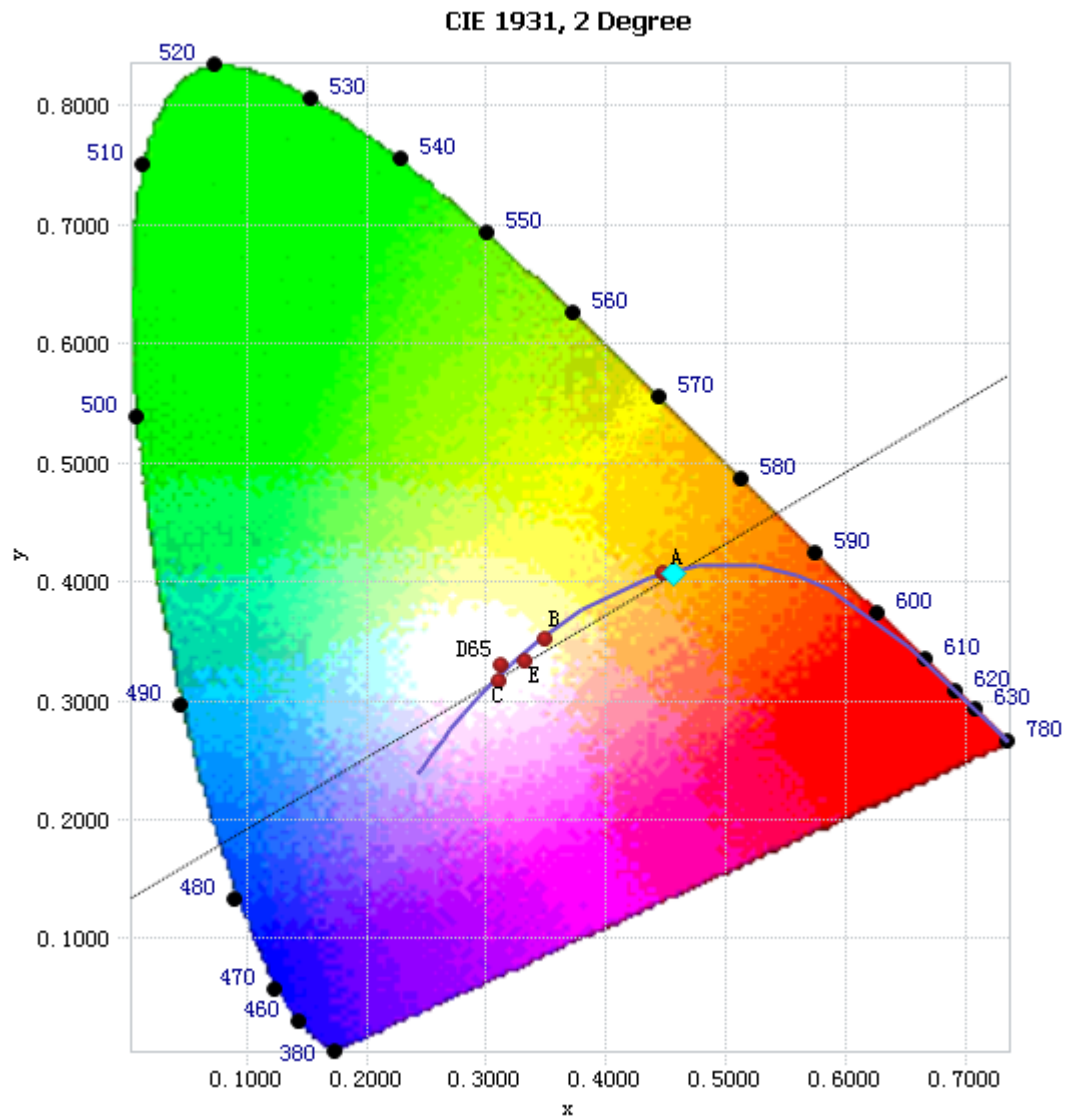


Chart 2: Chromaticity Diagram per Sphere - Spectroradiometer Method

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

Nominal CCT Quadrangles – Sphere Spectroradiometer Method

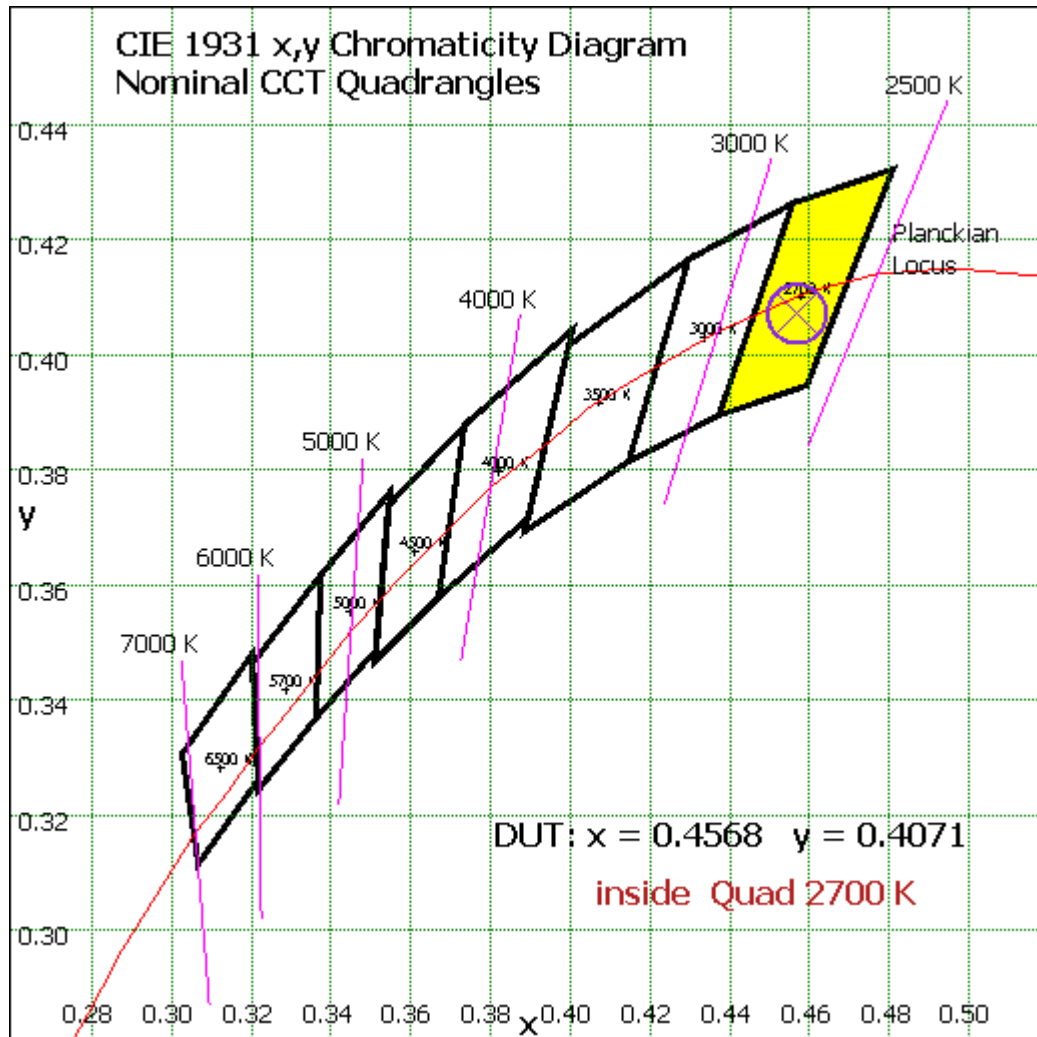


Chart 3: Plot of Lamp x/y coordinates on CIE 1931 Chromaticity Diagram

Zonal Lumen Tabulation- Goniophotometer Method

$\gamma(^{\circ})$	Lumens	% Total
0- 10	19.436	2.94%
10- 20	55.201	8.34%
20- 30	82.418	12.45%
30- 40	97.798	14.77%
40- 50	100.719	15.22%
50- 60	92.318	13.95%
60- 70	75.409	11.39%
70- 80	53.659	8.11%
80- 90	33.24	5.02%
90-100	20.984	3.17%
100-110	14.221	2.15%
110-120	8.829	1.33%
120-130	4.442	0.67%
130-140	2.007	0.30%
140-150	0.797	0.12%
150-160	0.33	0.05%
160-170	0.119	0.02%
170-180	0.026	0.00%
Total	662.0	100%

$\gamma(^{\circ})$	Lumens	% Total
0- 60	447.89	67.66%
60- 90	162.308	24.52%
0-90	610.198	92.18%
90- 180	51.755	7.82%
0- 180	662.0	100%

Table 5: Zonal Lumen Data

Note: The Flux in this table might be a little different from the total flux in Table 2 due to rounding.

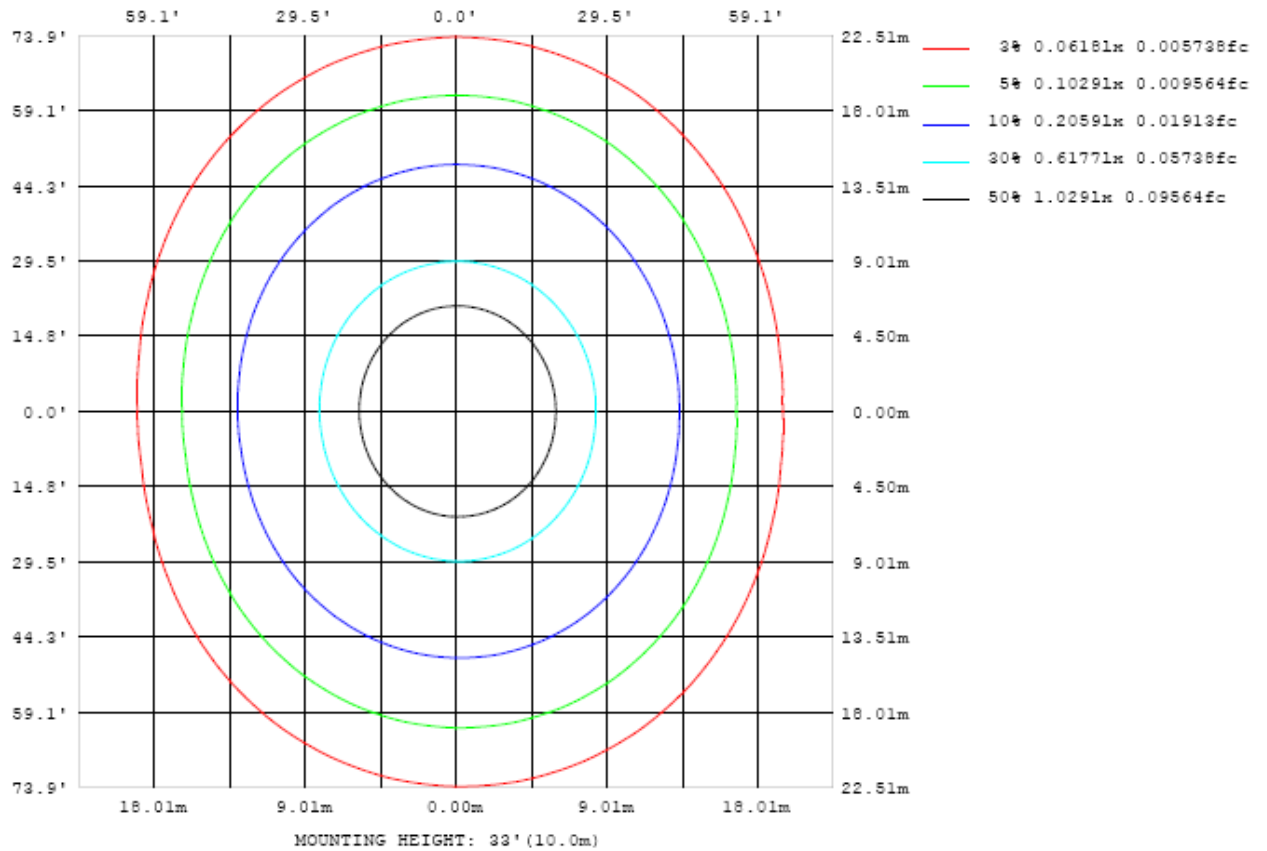


Chart 4: Illuminance Plot (Footcandles)

Luminous Intensity Distribution Plots- Goniophotometer Method

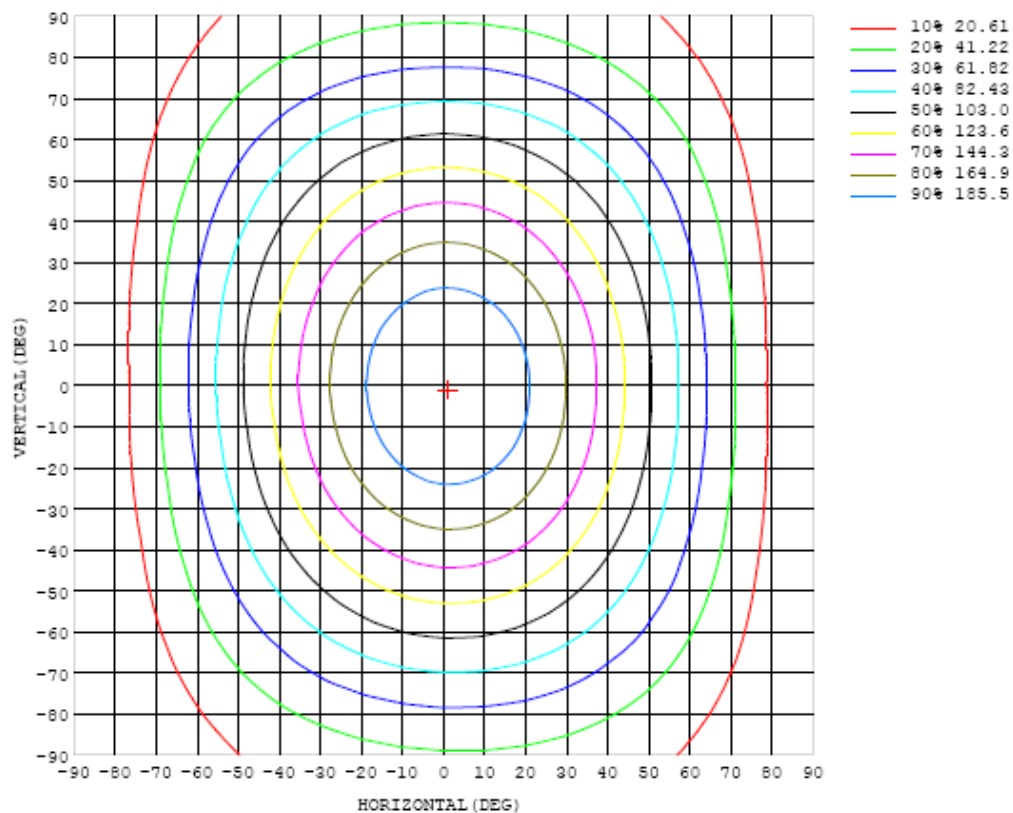


Chart 5: Isocandela Plot

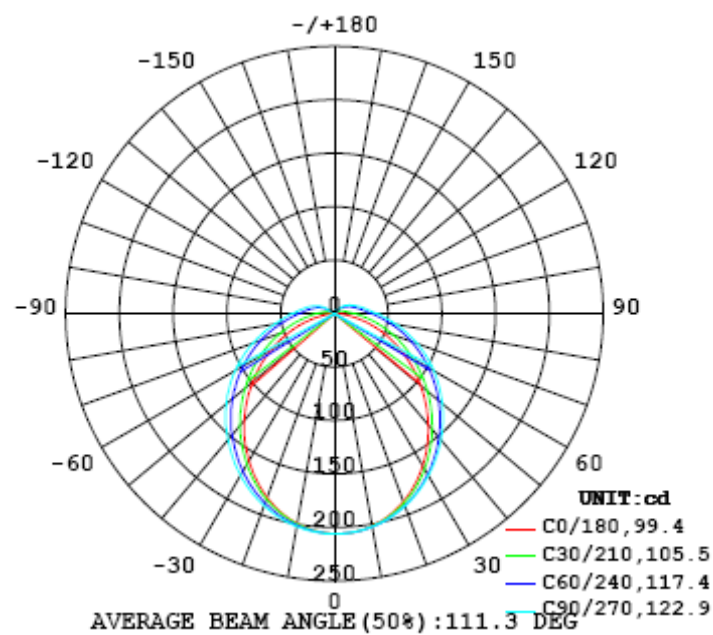


Chart 6: Polar Candela Distribution

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	206	206	206	206	206	206	206	206	206	206	206	206	206	206	206	206	206	206	206
5	205	205	205	205	205	205	205	205	205	205	205	205	205	205	204	204	204	204	204
10	202	202	202	202	202	202	202	202	202	202	202	202	202	201	201	200	200	199	199
15	196	196	196	197	197	197	198	198	198	198	197	197	196	195	194	193	193	192	192
20	187	188	188	189	190	190	191	192	192	192	191	190	189	187	186	185	183	183	183
25	177	177	178	179	181	182	183	184	184	184	183	181	180	178	176	174	173	172	172
30	164	165	166	168	170	172	174	175	175	175	174	172	170	167	165	162	160	159	159
35	150	151	153	155	158	160	163	164	165	165	164	161	158	155	152	149	146	145	146
40	136	137	139	142	145	148	151	153	154	154	153	150	147	142	138	135	132	130	131
45	120	122	124	127	131	135	139	141	143	143	141	138	134	129	125	120	117	115	115
50	105	106	109	113	118	122	126	129	131	131	129	126	121	116	111	106	102	99.2	99.7
55	89.1	90.6	94.1	98.5	104	109	114	117	119	119	117	113	109	103	97.0	91.3	86.7	83.7	83.8
60	73.6	75.4	79.4	84.6	90.3	96.1	101	105	107	107	105	101	95.9	89.8	83.4	77.2	71.9	68.4	68.0
65	58.8	60.9	65.1	70.9	77.1	83.2	88.5	92.2	94.3	94.4	92.5	88.6	83.4	77.2	70.3	63.6	57.9	53.8	53.2
70	44.0	46.6	51.9	58.2	64.9	70.7	76.0	79.8	81.9	82.0	80.2	76.4	71.3	64.4	58.1	50.8	44.2	39.4	38.4
75	30.0	33.1	39.1	45.8	52.7	59.0	64.0	67.7	69.6	69.7	68.1	64.2	59.8	53.5	46.4	38.8	31.6	26.0	24.8
80	17.4	21.3	27.6	34.7	41.5	47.7	52.8	56.4	58.4	58.4	57.0	53.6	48.7	42.8	35.7	28.2	20.7	14.5	12.7
85	7.69	11.8	18.3	25.3	31.9	38.0	42.9	46.2	47.9	48.0	46.7	43.6	39.2	33.5	27.0	19.7	12.3	5.93	3.91
90	1.33	5.97	12.0	18.6	24.8	30.4	34.8	37.9	39.5	39.6	38.3	35.7	31.6	26.5	20.5	13.9	7.10	1.58	0.43
95	0.42	3.11	8.38	14.3	20.0	25.0	29.1	31.8	33.2	33.3	32.2	29.8	26.3	21.7	16.3	10.6	4.61	0.68	0.23
100	0.40	2.03	6.23	11.4	16.6	21.2	24.8	27.3	28.5	28.7	27.8	25.6	22.4	18.2	13.4	8.35	3.69	0.47	0.25
105	0.30	1.45	4.77	9.25	13.9	18.0	21.3	23.6	24.8	24.9	24.1	22.1	19.2	15.5	11.1	6.65	2.75	0.64	0.19
110	0.17	0.98	3.58	7.55	11.6	15.3	18.3	20.4	21.5	21.7	20.9	19.1	16.5	13.1	9.24	5.30	1.89	0.44	0.19
115	0.09	0.62	2.27	6.01	9.69	13.0	15.7	17.6	18.6	18.7	18.0	16.4	14.1	11.1	7.65	3.98	1.37	0.43	0.23
120	0.10	0.40	1.46	4.27	7.92	10.9	13.3	15.1	16.0	16.1	15.5	14.1	11.9	9.23	6.00	2.34	1.21	0.44	0.29
125	0.11	0.32	1.01	2.54	5.89	8.89	11.1	12.7	13.6	13.7	13.1	11.8	9.92	7.36	3.85	1.79	0.98	0.46	0.42
130	0.12	0.25	0.74	1.71	3.63	6.44	8.86	10.4	11.2	11.3	10.8	9.62	7.72	4.80	2.40	1.59	0.81	0.45	0.45
135	0.14	0.22	0.53	1.27	2.45	3.98	5.83	7.63	8.52	8.72	8.20	6.88	4.81	3.11	2.12	1.25	0.67	0.40	0.44
140	0.15	0.21	0.42	1.12	1.69	2.45	3.37	4.09	4.83	5.11	4.87	4.19	3.23	2.50	1.67	1.01	0.60	0.37	0.33
145	0.17	0.21	0.36	0.86	1.49	2.03	2.51	2.95	3.30	3.55	3.36	2.97	2.53	1.93	1.30	0.83	0.53	0.36	0.31
150	0.19	0.20	0.32	0.60	1.10	1.54	1.93	2.25	2.44	2.49	2.40	2.16	1.83	1.43	1.02	0.67	0.44	0.29	0.27
155	0.22	0.24	0.33	0.52	0.80	1.11	1.36	1.55	1.67	1.70	1.62	1.46	1.25	1.00	0.73	0.48	0.32	0.24	0.28
160	0.25	0.30	0.38	0.47	0.61	0.79	0.93	1.04	1.11	1.12	1.08	0.93	0.85	0.70	0.54	0.39	0.30	0.26	0.29
165	0.27	0.29	0.36	0.41	0.48	0.55	0.62	0.68	0.71	0.72	0.69	0.65	0.58	0.49	0.43	0.36	0.30	0.28	0.29
170	0.26	0.28	0.32	0.35	0.38	0.40	0.43	0.44	0.45	0.45	0.44	0.43	0.41	0.38	0.35	0.33	0.31	0.29	0.27
175	0.20	0.21	0.21	0.21	0.24	0.29	0.29	0.31	0.34	0.33	0.33	0.32	0.31	0.30	0.28	0.27	0.27	0.27	0.27
180	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	0.16

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	206	206	206	206	206	206	206	206	206	206	206	206	206	206	206	206	206		
5	204	204	204	204	204	205	205	205	205	205	205	205	205	205	205	205	205		
10	199	200	200	200	201	201	201	202	202	202	202	202	202	202	202	202	202		
15	192	193	193	194	195	196	196	197	197	198	197	197	197	197	196	196	196		
20	183	184	185	186	188	189	190	191	191	191	191	190	190	189	188	188	187		
25	172	173	175	177	178	180	182	183	184	184	183	182	181	180	178	177	177		
30	159	161	163	165	168	170	172	174	175	175	174	172	171	169	167	165	165		
35	146	148	150	153	156	159	162	164	165	165	163	162	159	157	154	152	151		
40	131	134	137	141	145	148	151	153	154	154	152	150	147	144	141	139	137		
45	116	119	123	127	132	136	140	143	143	143	141	138	134	130	127	124	122		
50	101	104	109	114	119	124	128	130	131	131	129	125	121	116	112	108	106		
55	85.4	89.0	94.5	99.9	105	111	115	118	119	119	116	112	108	103	97.3	93.4	90.5		
60	70.5	74.4	80.1	86.7	92.5	98.0	102	105	106	106	103	99.1	94.0	88.6	83.0	78.5	75.2		
65	55.5	60.4	66.6	73.1	79.4	85.2	89.7	92.5	93.4	93.0	90.3	86.2	80.6	74.8	69.0	63.8	60.2		
70	41.3	46.9	53.3	60.4	66.9	72.7	77.0	79.8	80.6	79.9	77.3	73.2	67.8	61.6	55.4	49.7	45.4		
75	28.3	34.4	41.8	48.7	55.0	60.4	64.7	67.2	68.0	67.5	64.9	61.1	55.7	49.4	43.0	36.8	31.6		
80	16.9	23.9	31.2	38.1	44.2	49.5	53.4	55.7	56.8	56.0	53.5	49.6	44.4	38.2	31.4	25.0	19.4		
85	8.61	15.6	22.7	29.5	35.5	40.3	44.0	46.2	46.8	46.2	44.0	40.2	35.3	29.1	22.6	15.8	9.68		
90	4.29	10.3	16.9	23.3	28.8	33.4	36.6	38.7	39.2	38.5	36.5	33.0	28.2	22.5	16.1	9.48	3.72		
95	2.36	7.14	12.9	18.8	23.9	28.1	31.1	33.0	33.5	33.0	31.0	27.7	23.3	17.9	11.9	6.09	1.65		
100	1.87	4.91	9.98	15.3	20.0	23.9	26.7	28.5	29.0	28.4	26.6	23.5	19.4	14.3	9.01	4.23	1.19		
105	0.95	4.07	7.38	12.1	16.6	20.2	22.8	24.4	24.9	24.4	22.6	19.7	15.8	11.2	6.70	3.07	0.69		
110	0.68	2.72	5.22	8.98	13.2	16.7	19.2	20.8	21.2	20.6	18.9	16.2	12.4	7.91	4.20	1.65	0.39		
115	0.57	1.83	3.73	5.47	9.02	12.9	15.7	17.1	17.6	17.0	15.2	12.2	7.66	4.43	2.32	0.83	0.14		
120	0.54	1.35	2.57	4.04	5.37	7.24	10.5	12.3	12.8	12.0	9.69	6.33	3.79	2.53	1.39	0.54	0.13		
125	0.52	1.08	1.88	2.83	3.74	4.71	5.72	6.41	6.63	6.11	5.06	3.63	2.37	1.64	0.93	0.38	0.13		
130	0.49	0.90	1.45	2.09	2.67	3.16	3.73	4.03	4.06	3.77	3.15	2.30	1.56	1.11	0.66	0.29	0.14		
135	0.46	0.74	1.14	1.57	1.93	2.12	2.41	2.65	2.68	2.50	2.12	1.58	1.07	0.79	0.49	0.25	0.16		
140	0.33	0.45	0.73	1.00	1.26	1.46	1.70	1.86	1.88	1.77	1.54	1.17	0.77	0.58	0.38	0.23	0.19		
145	0.27	0.26	0.53	0.75	0.94	1.08	1.25	1.34	1.40	1.31	1.16	0.90	0.59	0.45	0.32	0.23	0.22		
150	0.28	0.33	0.34	0.56	0.70	0.80	0.92	0.97	0.99	0.93	0.84	0.70	0.50	0.39	0.28	0.24	0.25		
155	0.29	0.31	0.37	0.41	0.41	0.49	0.63	0.68	0.71	0.68	0.64	0.55	0.43	0.35	0.28	0.25	0.27		
160	0.29	0.30	0.32	0.36	0.40	0.45	0.50	0.52	0.51	0.29	0.42	0.44	0.39	0.34	0.30	0.28	0.30		
165	0.29	0.29	0.30	0.31	0.33	0.35	0.37	0.39	0.40	0.29	0.22	0.26	0.34	0.33	0.30	0.28	0.33		
170	0.28	0.29	0.29	0.29	0.30	0.29	0.29	0.29	0.29	0.29	0.24	0.20	0.26	0.29	0.27	0.26	0.26		
175	0.27	0.27	0.28	0.26	0.23	0.22	0.21	0.20	0.20	0.20	0.23	0.23	0.19	0.19	0.20	0.20	0.21		
180	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		

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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