

LM-79-08 Test Report

for

GREEN CREATIVE LTD

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

LED lamp

Model: 8.5PLV/827/HYBM

Laboratory: Leading Testing Laboratories

NVLAP CODE: 200960-0

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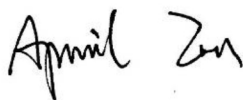
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Report No.: HZ18100024g

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

Review by:



Engineer: April Zou
Nov. 02, 2018

Approved by:



Manager: Jim Zhang
Nov. 02, 2018

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: **8.5PLV/827/HYBM**

Luminous Efficacy (Lumens /Watt)	Total Luminous Flux (Lumens)	Power (Watts)	Power Factor
114.2	993.5	8.70	0.9748
CCT (K)	CRI	Stabilization Time (Light & Power)	
2766	82.2	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 : Oct. 30, 2018

Date of Test : Oct. 31, 2018

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 lamp
Model	: 8.5PLV/827/HYBM
Electrical Ratings	: 120-277V, 50/60Hz, 8.5W
Product Description	: 2700K
Manufacturer	: GREEN CREATIVE LTD
Address	: 756 North Zhongshan Rd., Unit B301 Zhabei District, Shanghai

TEST RESULTS

Test ambient temperature was 24.9°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	277.0
Voltage frequency (Hz)	60	60
Test Current (A)	0.074	0.035
Power Factor	0.9748	0.9053
Test Power (W)	8.70	8.75
THD A%	19.76	28.63
Luminous Efficacy (lm/W)	114.2	113.5
Total Luminous Flux (lm)	993.5	992.9
Color Rendering Index (CRI)	82.2	
R9	7.8	
Correlated Color Temperature (CCT)(K)	2766	
Chromaticity Chroma x	0.4508	
Chromaticity Chroma y	0.4026	
Chromaticity Chroma u	0.2602	
Chromaticity Chroma v	0.3486	
Duv	0.0023	
Chromaticity Chroma u'	0.2602	
Chromaticity Chroma v'	0.5229	

Special Color Rendering Indices	
R1	82
R2	94.6
R3	91.1
R4	78.4
R5	82.7
R6	94
R7	78.9
R8	55.9
R9	7.8
R10	88
R11	77.9
R12	78.7
R13	85.4
R14	95.8
Rf	82
Rg	94

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 24.9°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)	0.074
Power Factor	0.9752
Test Power (W)	8.68
Luminous Efficacy (lm/W)	116.8
Total Luminous Flux (lm)	1013.7
Beam Angle (°)	91.1
Center Beam Candle Power (cd)	446
Spacing Criteria	1.10 (0°-180°)/ 1.17 (90°-270°)
Zonal Lumens in the 0°-60°Zone	82.09%
Zonal Lumens in the 60°-90°Zone	16.80%
Zonal Lumens in the 90°-120°Zone	1.02%
Zonal Lumens in the 120°-180°Zone	0.09%

Table 3: Test data per Goniophotometer Method

Spectral Power Distribution - Sphere Spectroradiometer Method

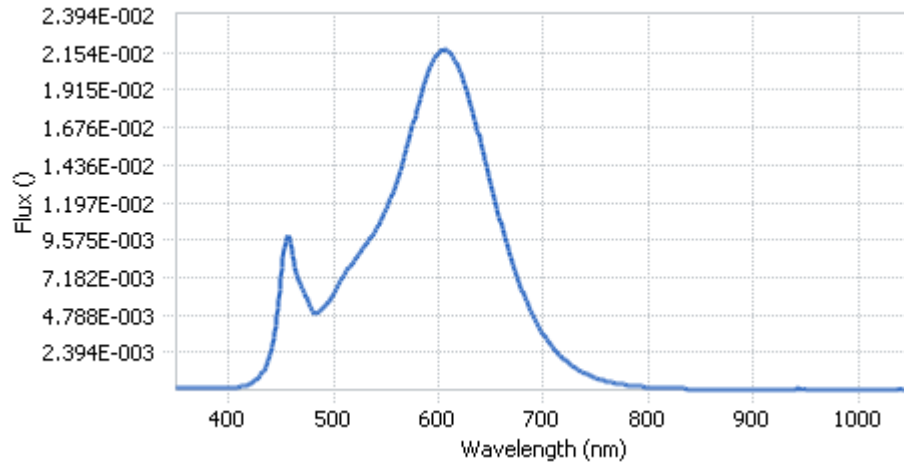
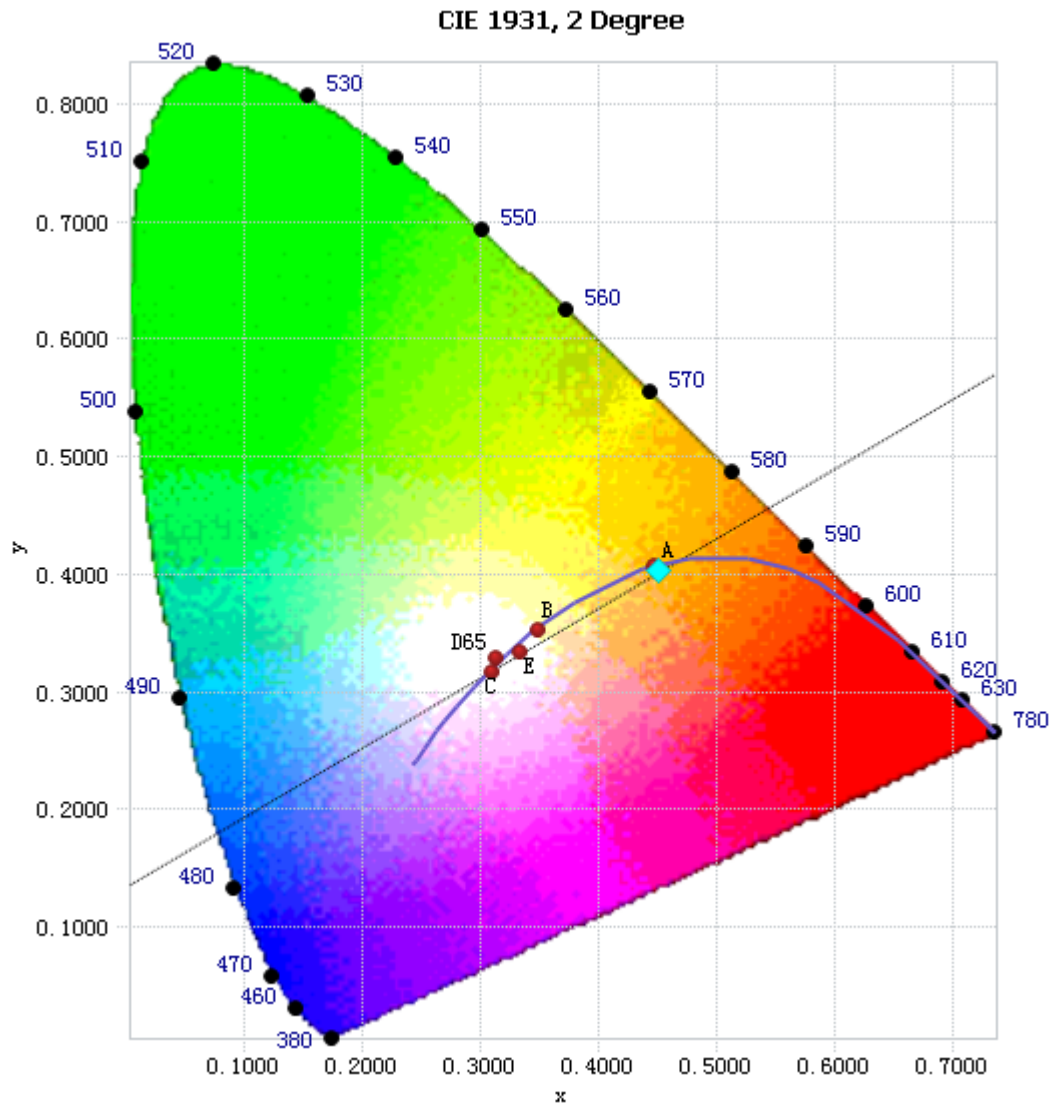


Chart 1: Spectral Power Distribution

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	1.14E-04	485	4.94E-03	590	2.02E-02	695	4.08E-03
385	1.13E-04	490	5.20E-03	595	2.11E-02	700	3.53E-03
390	1.16E-04	495	5.61E-03	600	2.15E-02	705	3.04E-03
395	1.22E-04	500	6.18E-03	605	2.18E-02	710	2.60E-03
400	1.29E-04	505	6.79E-03	610	2.16E-02	715	2.24E-03
405	1.58E-04	510	7.32E-03	615	2.12E-02	720	1.92E-03
410	1.87E-04	515	7.85E-03	620	2.04E-02	725	1.66E-03
415	2.54E-04	520	8.35E-03	625	1.94E-02	730	1.41E-03
420	3.82E-04	525	8.77E-03	630	1.83E-02	735	1.21E-03
425	5.90E-04	530	9.25E-03	635	1.71E-02	740	1.03E-03
430	9.16E-04	535	9.67E-03	640	1.58E-02	745	8.81E-04
435	1.46E-03	540	1.02E-02	645	1.44E-02	750	7.66E-04
440	2.43E-03	545	1.08E-02	650	1.30E-02	755	6.48E-04
445	4.16E-03	550	1.15E-02	655	1.17E-02	760	5.62E-04
450	7.14E-03	555	1.23E-02	660	1.05E-02	765	4.77E-04
455	9.78E-03	560	1.33E-02	665	9.30E-03	770	4.09E-04
460	8.94E-03	565	1.43E-02	670	8.19E-03	775	3.52E-04
465	7.31E-03	570	1.56E-02	675	7.19E-03	780	3.07E-04
470	6.59E-03	575	1.68E-02	680	6.28E-03		
475	5.73E-03	580	1.81E-02	685	5.48E-03		
480	4.97E-03	585	1.93E-02	690	4.75E-03		

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

Chromaticity Diagram - Sphere Spectroradiometer Method



Tristimulus values(x, y): (0.4508, 0.4026)

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

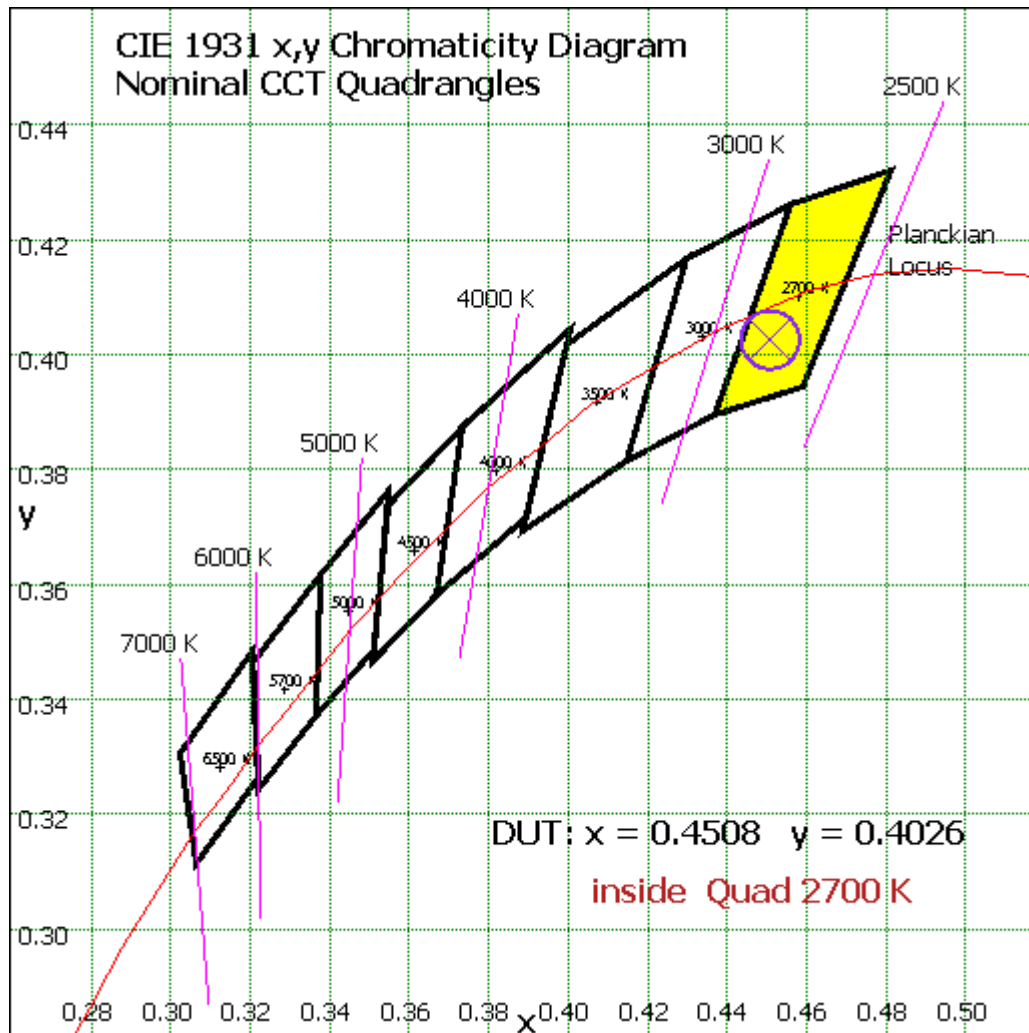


Chart 3: Plot of Lamp x/y coordinates on CIE 1931 Chromaticity Diagram

Zonal Lumen Tabulation- Goniophotometer Method

$\gamma(^{\circ})$	Lumens	% Total
0- 10	41.957	4.14%
10- 20	117.541	11.60%
20- 30	169.568	16.73%
30- 40	189.126	18.66%
40- 50	175.803	17.34%
50- 60	138.087	13.62%
60- 70	92.063	9.08%
70- 80	52.808	5.21%
80- 90	25.461	2.51%
90-100	8.726	0.86%
100-110	1.488	0.15%
110-120	0.146	0.01%
120-130	0.137	0.01%
130-140	0.189	0.02%
140-150	0.214	0.02%
150-160	0.19	0.02%
160-170	0.129	0.01%
170-180	0.045	0.00%
Total	1013.7	100%

$\gamma(^{\circ})$	Lumens	% Total
0- 60	832.082	82.09%
60- 90	170.332	16.80%
0-90	1002.414	98.89%
90- 180	11.264	1.11%
0- 180	1013.7	100%

Table 5: Zonal Lumen Data

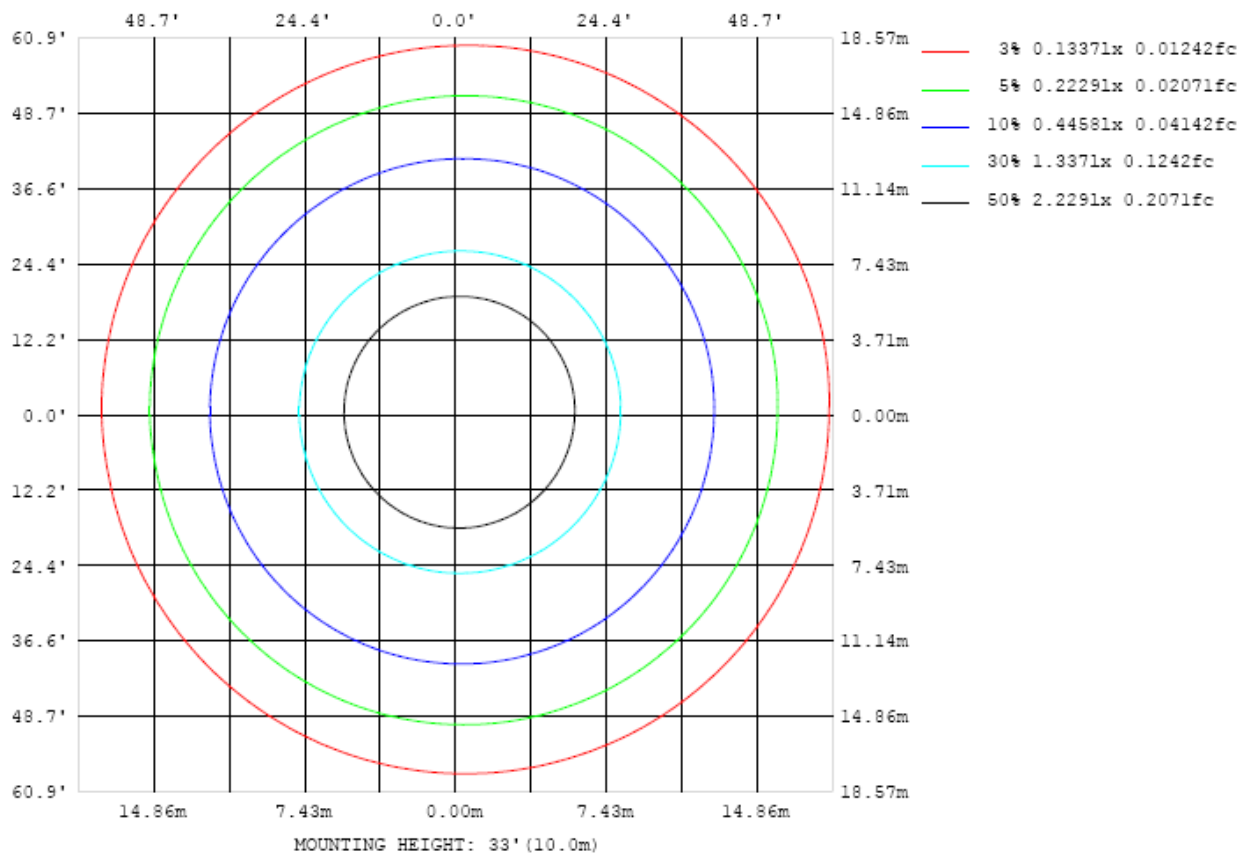


Chart 4: Illuminance Plot (Footcandles)

Luminous Intensity Distribution Plots- Goniophotometer Method

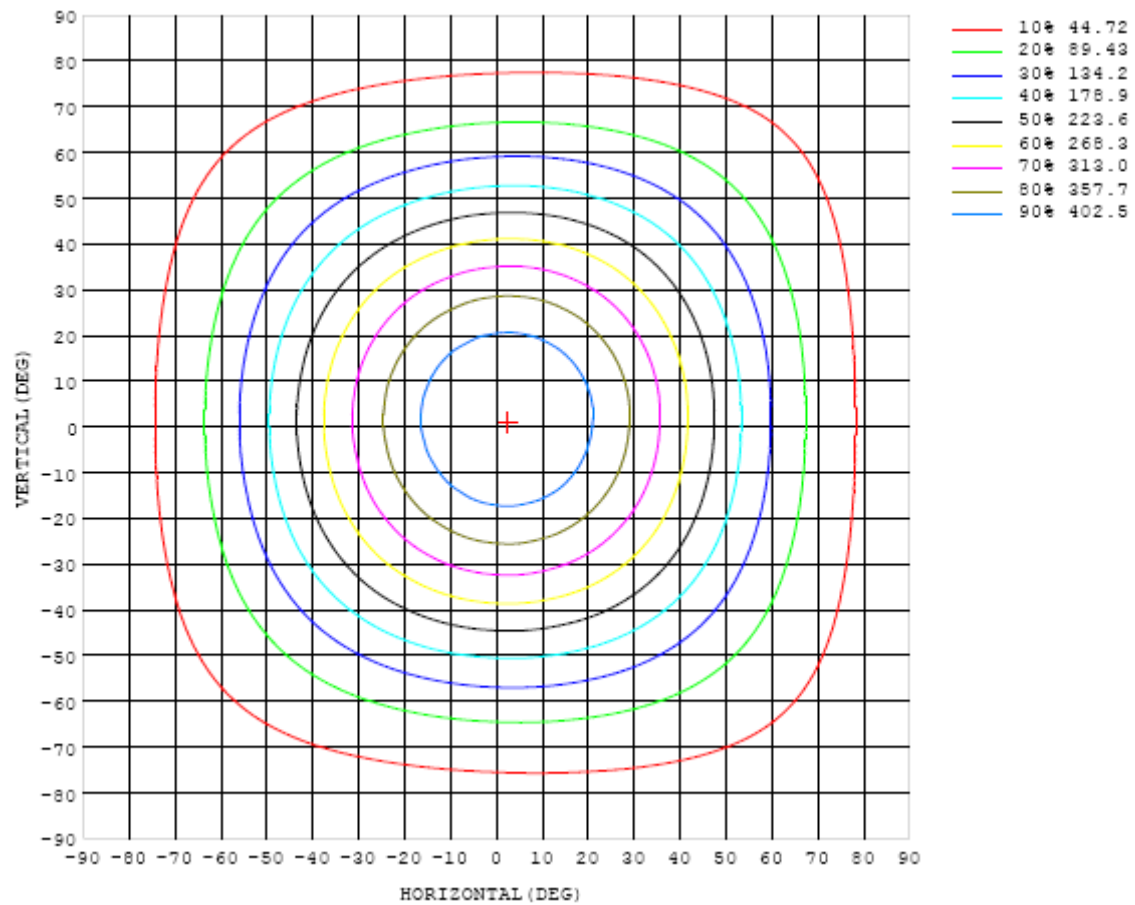


Chart 5: Isocandela Plot

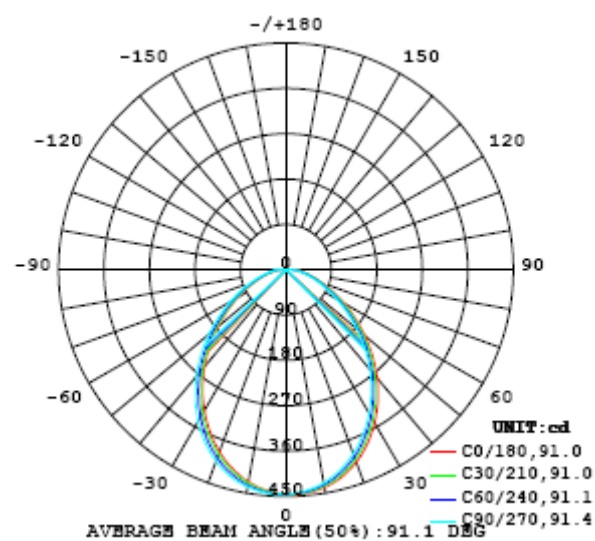


Chart 6: Polar Candela Distribution

Luminous Intensity Data- Goniophotometer Method

Table--1

UNIT: cd

C (DGG) y (DGG)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
0	446	446	446	446	446	446	446	446	446	446	446	446	446	446	446	446	446	446	446
5	446	445	445	444	443	443	443	441	441	441	440	440	439	439	439	439	439	439	440
10	439	438	437	436	435	434	433	431	431	429	428	427	427	426	426	426	426	427	427
15	426	425	423	422	420	418	417	415	414	412	411	409	408	407	406	407	407	407	409
20	406	405	403	401	399	397	395	392	391	389	387	386	384	383	382	382	382	383	384
25	381	379	377	374	372	370	368	365	363	361	359	357	355	354	353	353	353	354	355
30	351	349	346	343	341	338	336	333	332	329	327	325	323	322	321	320	320	321	323
35	317	315	312	309	307	304	302	299	297	295	292	290	288	287	286	285	285	286	288
40	281	278	276	273	270	268	265	263	261	258	256	254	252	250	249	248	249	249	251
45	242	240	238	235	233	230	228	225	223	220	218	216	214	213	212	211	211	211	213
50	204	202	200	198	195	193	190	187	185	183	181	179	177	176	175	174	174	174	176
55	167	165	163	161	159	156	154	152	150	147	145	144	142	140	139	139	139	139	141
60	133	131	130	128	126	123	121	119	117	115	113	112	110	109	108	107	107	108	110
65	102	101	99.8	98.1	96.4	94.7	92.9	90.7	89.1	86.9	85.4	84.0	82.8	81.9	81.2	80.7	80.7	80.9	82.5
70	76.3	75.5	74.4	73.2	71.9	70.4	68.9	68.1	65.6	64.6	63.1	61.9	61.0	60.3	59.7	59.4	59.4	59.5	60.2
75	55.9	55.2	54.4	53.5	52.5	51.3	50.1	48.8	47.7	46.3	45.3	44.4	43.5	43.0	42.5	42.2	42.2	42.3	42.9
80	39.3	38.9	38.3	37.6	36.9	36.0	35.1	34.1	33.3	32.2	31.4	30.7	30.0	29.5	29.1	28.9	28.8	28.9	29.5
85	26.5	26.2	25.7	25.2	24.7	24.1	23.4	22.7	21.9	21.2	20.6	20.0	19.5	19.1	18.8	18.6	18.6	18.6	19.1
90	16.7	16.4	16.1	15.7	15.3	14.9	14.4	13.9	13.3	12.8	12.4	12.0	11.6	11.3	11.1	10.9	10.9	10.9	11.2
95	9.41	9.18	8.95	8.70	8.43	8.13	7.82	7.49	7.15	6.77	6.48	6.23	5.97	5.79	5.59	5.50	5.49	5.51	5.72
100	4.39	4.27	4.12	3.97	3.81	3.64	3.45	3.24	3.03	2.85	2.67	2.54	2.42	2.34	2.27	2.23	2.22	2.23	2.37
105	1.58	1.52	1.45	1.39	1.31	1.23	1.14	1.05	0.97	0.88	0.81	0.76	0.72	0.70	0.69	0.68	0.68	0.68	0.74
110	0.40	0.38	0.37	0.36	0.34	0.33	0.31	0.28	0.24	0.20	0.18	0.18	0.19	0.20	0.21	0.21	0.20	0.19	0.21
115	0.11	0.10	0.09	0.10	0.11	0.11	0.11	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.11
120	0.10	0.10	0.11	0.11	0.11	0.11	0.11	0.12	0.12	0.12	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.14
125	0.13	0.13	0.13	0.14	0.14	0.14	0.14	0.15	0.15	0.15	0.15	0.15	0.16	0.16	0.16	0.16	0.15	0.15	0.17
130	0.16	0.16	0.17	0.17	0.17	0.17	0.18	0.18	0.18	0.18	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.22
135	0.20	0.20	0.20	0.21	0.21	0.21	0.22	0.22	0.22	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.29
140	0.24	0.24	0.24	0.25	0.25	0.25	0.26	0.26	0.26	0.26	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.35
145	0.28	0.28	0.28	0.28	0.29	0.29	0.29	0.29	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.41
150	0.31	0.31	0.31	0.31	0.31	0.32	0.32	0.32	0.32	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.45
155	0.34	0.34	0.34	0.34	0.35	0.35	0.35	0.35	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.48
160	0.37	0.37	0.37	0.38	0.38	0.38	0.38	0.38	0.38	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.50
165	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.50
170	0.42	0.42	0.42	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.50
175	0.46	0.46	0.46	0.46	0.46	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.48
180	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48

Table 6: Luminous Intensity Data

Table--2

UNIT: cd

C (DGG) y (DGG)	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350		
0	446	446	446	446	446	446	446	446	446	446	446	446	446	446	446	446	446		
5	440	441	441	442	443	443	444	445	445	445	446	446	446	446	446	447	446		
10	428	430	431	431	433	434	435	437	438	439	440	440	440	440	441	441	440		
15	410	412	413	415	417	419	420	423	424	426	427	428	428	428	428	428	428		
20	386	388	390	393	395	397	399	403	404	406	408	409	410	410	410	410	408		
25	357	360	362	364	368	370	373	376	378	381	383	384	385	385	385	385	384		
30	325	327	329	332	335	338	341	345	348	350	352	354	355	355	356	355	354		
35	289	292	294	297	300	303	306	309	313	316	318	320	321	321	322	321	320		
40	253	255	257	259	262	266	269	273	276	279	281	283	284	285	285	285	283		
45	214	216	218	221	224	227	230	234	237	240	243	244	246	246	247	246	245		
50	177	179	181	183	185	188	191	195	198	201	204	205	207	208	207	207	206		
55	142	144	146	148	150	152	155	159	162	164	167	168	169	170	170	170	169		
60	111	112	114	115	117	119	122	125	128	130	132	134	135	135	136	136	135		
65	83.3	84.4	85.6	87.1	88.8	90.8	92.7	95.2	97.3	99.5	101	103	104	104	105	105	104		
70	60.9	61.9	62.9	64.0	65.5	67.0	68.5	70.5	72.1	73.8	75.2	76.3	77.1	77.9	78.2	78.3	78.0		
75	43.5	44.3	45.0	46.0	47.0	48.3	49.5	50.9	52.2	53.5	54.5	55.4	56.2	56.4	56.9	56.9	56.7		
80	29.9	30.6	31.2	31.9	32.8	33.7	34.7	35.8	36.7	37.7	38.4	39.0	39.5	39.9	40.1	40.2	40.1		
85	19.4	20.0	20.5	21.1	21.8	22.5	23.2	24.0	24.7	25.4	26.0	26.4	26.7	26.9	27.1	27.2	27.0		
90	11.4	11.8	12.2	12.7	13.2	13.8	14.4	15.0	15.6	16.1	16.4	16.7	16.9	17.0	17.1	17.2	17.1		
95	5.91	6.17	6.45	6.76	7.12	7.48	7.86	8.25	8.59	8.90	9.11	9.28	9.43	9.51	9.58	9.60	9.58		
100	2.46	2.61	2.78	2.96	3.16	3.39	3.59	3.80	3.99	4.17	4.29	4.40	4.48	4.54	4.59	4.60	4.57		
105	0.78	0.84	0.92	1.00	1.09	1.18	1.26	1.35	1.42	1.48	1.53	1.58	1.62	1.66	1.68	1.68	1.67		
110	0.23	0.25	0.27	0.31	0.35	0.37	0.39	0.40	0.40	0.40	0.39	0.39	0.40	0.42	0.43	0.44	0.44		
115	0.11	0.11	0.11	0.11	0.12	0.13	0.14	0.14	0.13	0.12	0.10	0.09	0.10	0.10	0.12	0.12	0.13		
120	0.13	0.13	0.13	0.13	0.13	0.13	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.11	0.12	0.12		
125	0.17	0.17	0.17	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		
130	0.22	0.22	0.22	0.22	0.22	0.21	0.21	0.21	0.21	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20		
135	0.28	0.28	0.28	0.28	0.28	0.28	0.27	0.27	0.27	0.27	0.26	0.26	0.26	0.26	0.26	0.26	0.26		
140	0.35	0.35	0.35	0.34	0.34	0.34	0.34	0.33	0.33	0.33	0.33	0.33	0.33	0.32	0.32	0.32	0.33		
145	0.41	0.41	0.41	0.40	0.40	0.40	0.40	0.40	0.39	0.39	0.39	0.39	0.39	0.38	0.38	0.39	0.39		
150	0.46	0.45	0.45	0.45	0.45	0.45	0.44	0.44	0.44	0.44	0.43	0.43	0.43	0.43	0.43	0.43	0.43		
155	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47		
160	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.49	0.49	0.49	0.49	0.49	0.49	0.49		
165	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50		
170	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50		
175	0.48	0.48	0.48	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49		
180	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48		

Table 7: Luminous Intensity Data

EQUIPMENT LIST

Test Equipment	Model	Equipment No.	Calibration Date	Calibration Due date
Goniophotometer system	GO-R5000	HZTE011-01	Aug. 14, 2018	Aug. 13, 2019
Digital Power Meter	PF2010A	HZTE028-01	Sep. 12, 2018	Sep. 11, 2019
AC Power Supply	DPS1060	HZTE001-06	Aug. 09, 2018	Aug. 08, 2019
DC Power Supply	WY12010	HZTE004-03	Aug. 09, 2018	Aug. 08, 2019
Temperature recorder	JM624U	HZTE018-08	Aug. 09, 2018	Aug. 08, 2019
Temperature and humidity recorder	JR900	HZTE018-01	Aug. 09, 2018	Aug. 08, 2019
Standard source	D908	HZTE012-01	Aug. 14, 2018	Aug. 13, 2019
Integrate Sphere system	2M	HZTE015-01	Aug. 16, 2018	Aug. 15, 2019
Digital Power Meter	WT210	HZTE008-01	Aug. 02, 2018	Aug. 01, 2019
AC Power Supply	PCR 500L	HZTE001-07	Aug. 09, 2018	Aug. 08, 2019
DC Power Supply	IT6154	HZTE004-04	Aug. 09, 2018	Aug. 08, 2019
Standard source	SCL-1400	HZTE012-02	Aug. 16, 2018	Aug. 15, 2019
Temperature and humidity recorder	JR900	HZTE018-02	Aug. 09, 2018	Aug. 08, 2019
Temperature Meter	TES1310	HZTE017-01	Aug. 09, 2018	Aug. 08, 2019

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 expanded uncertainty is 2.1% 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 expanded uncertainty is 2.3% 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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