

LM-79-08 Test Report

for

GREEN CREATIVE LTD

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

LED lamp

Model: 9BR30DIM/840

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.: HZ18110032b

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

Review by:



Engineer: April Zou
Nov. 27, 2018

Approved by:



Manager: Jim Zhang
Nov. 27, 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: **9BR30DIM/840**

Luminous Efficacy (Lumens /Watt)	Total Luminous Flux (Lumens)	Power (Watts)	Power Factor
102.6	867.3	8.45	0.7256
CCT (K)	CRI	Stabilization Time (Light & Power)	
4079	83.4	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 : Nov. 20, 2018

Date of Test : Nov. 22, 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	: 9BR30DIM/840
Electrical Ratings	: 120V, 60Hz, 9W
Product Description	: E26 Base, 4000K
Manufacturer	: GREEN CREATIVE LTD
Address	: 756 North Zhongshan Rd., Unit B301 Zhabei District, Shanghai

TEST RESULTS

Test ambient temperature was 25.3°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
Voltage frequency (Hz)	60
Test Current (A)	0.097
Power Factor	0.7256
Test Power (W)	8.45
THD A%	92.20
Luminous Efficacy (lm/W)	102.6
Total Luminous Flux (lm)	867.3
Color Rendering Index (CRI)	83.4
R9	10.2
Correlated Color Temperature (CCT)(K)	4079
Chromaticity Chroma x	0.3773
Chromaticity Chroma y	0.3761
Chromaticity Chroma u	0.2233
Chromaticity Chroma v	0.3339
Duv	0.0001
Chromaticity Chroma u'	0.2233
Chromaticity Chroma v'	0.5008

Special Color Rendering Indices	
R1	81.7
R2	90.4
R3	95.5
R4	81.1
R5	81.5
R6	86.1
R7	86
R8	64.9
R9	10.2
R10	76.4
R11	79.5
R12	63
R13	84
R14	97.8
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)	0.096
Power Factor	0.7287
Test Power (W)	8.39
Luminous Efficacy (lm/W)	103.7
Total Luminous Flux (lm)	870.2
Beam Angle (°)	103.1
Center Beam Candle Power (cd)	290
Spacing Criteria	1.16 (0°-180°)/ 1.19 (90°-270°)
Zonal Lumens in the 0°-60°Zone	68.55%
Zonal Lumens in the 60°-90°Zone	23.77%
Zonal Lumens in the 90°-120°Zone	6.29%
Zonal Lumens in the 120°-180°Zone	1.39%

Table 3: Test data per Goniophotometer Method

Spectral Power Distribution - Sphere Spectroradiometer Method

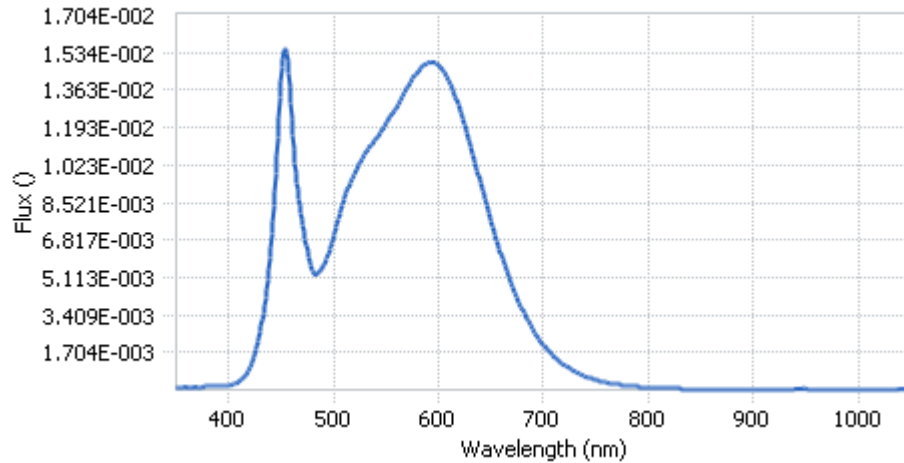


Chart 1: Spectral Power Distribution

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	1.53E-04	485	5.28E-03	590	1.49E-02	695	2.36E-03
385	1.47E-04	490	5.61E-03	595	1.49E-02	700	2.04E-03
390	1.68E-04	495	6.22E-03	600	1.48E-02	705	1.76E-03
395	1.86E-04	500	7.03E-03	605	1.45E-02	710	1.51E-03
400	2.21E-04	505	7.88E-03	610	1.40E-02	715	1.30E-03
405	2.69E-04	510	8.66E-03	615	1.35E-02	720	1.13E-03
410	3.93E-04	515	9.36E-03	620	1.28E-02	725	9.74E-04
415	6.20E-04	520	9.89E-03	625	1.20E-02	730	8.30E-04
420	9.93E-04	525	1.03E-02	630	1.12E-02	735	7.16E-04
425	1.64E-03	530	1.08E-02	635	1.03E-02	740	6.12E-04
430	2.64E-03	535	1.11E-02	640	9.41E-03	745	5.24E-04
435	4.20E-03	540	1.14E-02	645	8.53E-03	750	4.56E-04
440	6.49E-03	545	1.18E-02	650	7.67E-03	755	3.95E-04
445	9.87E-03	550	1.21E-02	655	6.87E-03	760	3.42E-04
450	1.40E-02	555	1.25E-02	660	6.10E-03	765	2.93E-04
455	1.53E-02	560	1.29E-02	665	5.38E-03	770	2.54E-04
460	1.23E-02	565	1.33E-02	670	4.72E-03	775	2.18E-04
465	9.42E-03	570	1.37E-02	675	4.15E-03	780	1.90E-04
470	7.76E-03	575	1.41E-02	680	3.61E-03		
475	6.27E-03	580	1.45E-02	685	3.15E-03		
480	5.38E-03	585	1.48E-02	690	2.73E-03		

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

Chromaticity Diagram - Sphere Spectroradiometer Method

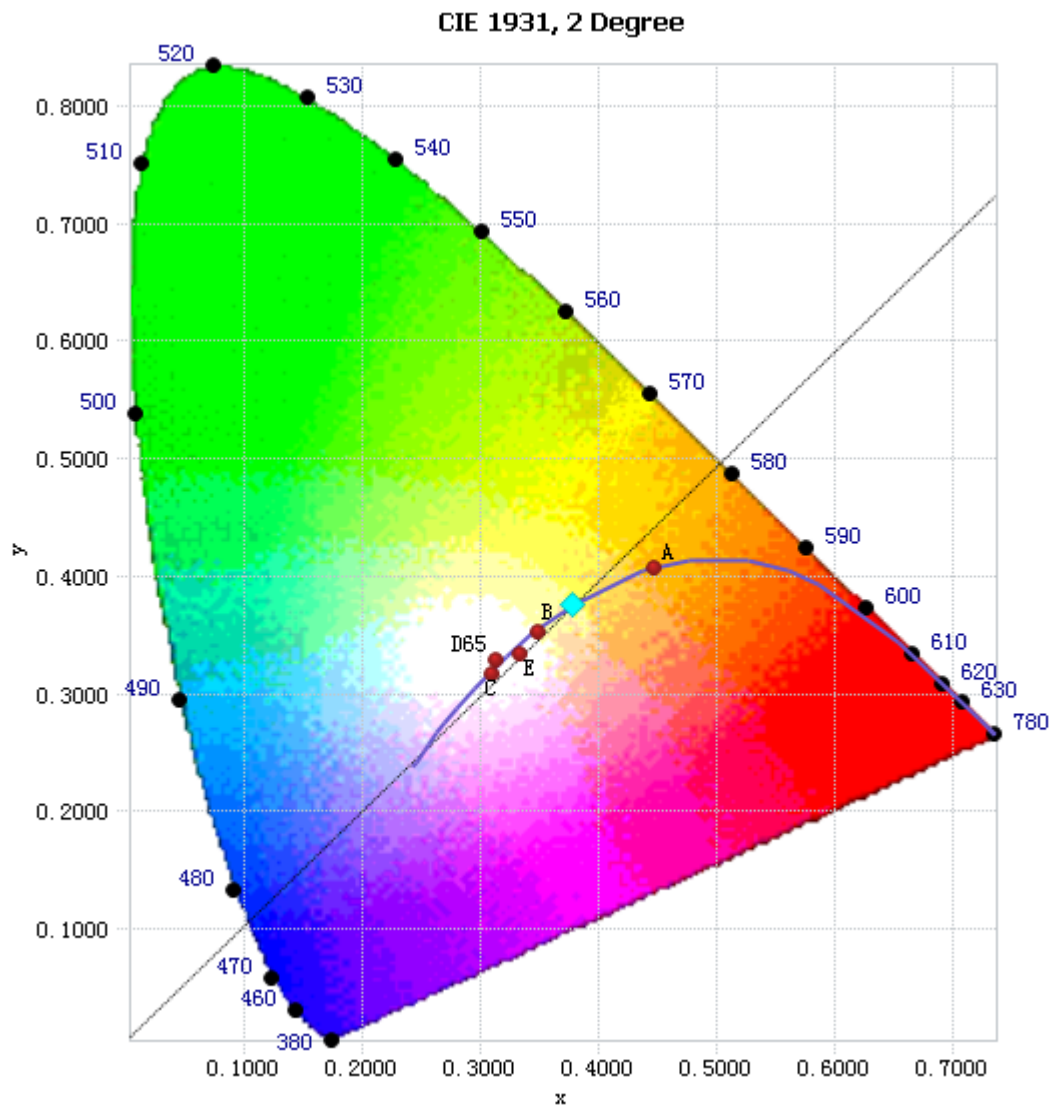


Chart 2: Chromaticity Diagram per Sphere - Spectroradiometer Method

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

Nominal CCT Quadrangles – Sphere Spectroradiometer Method

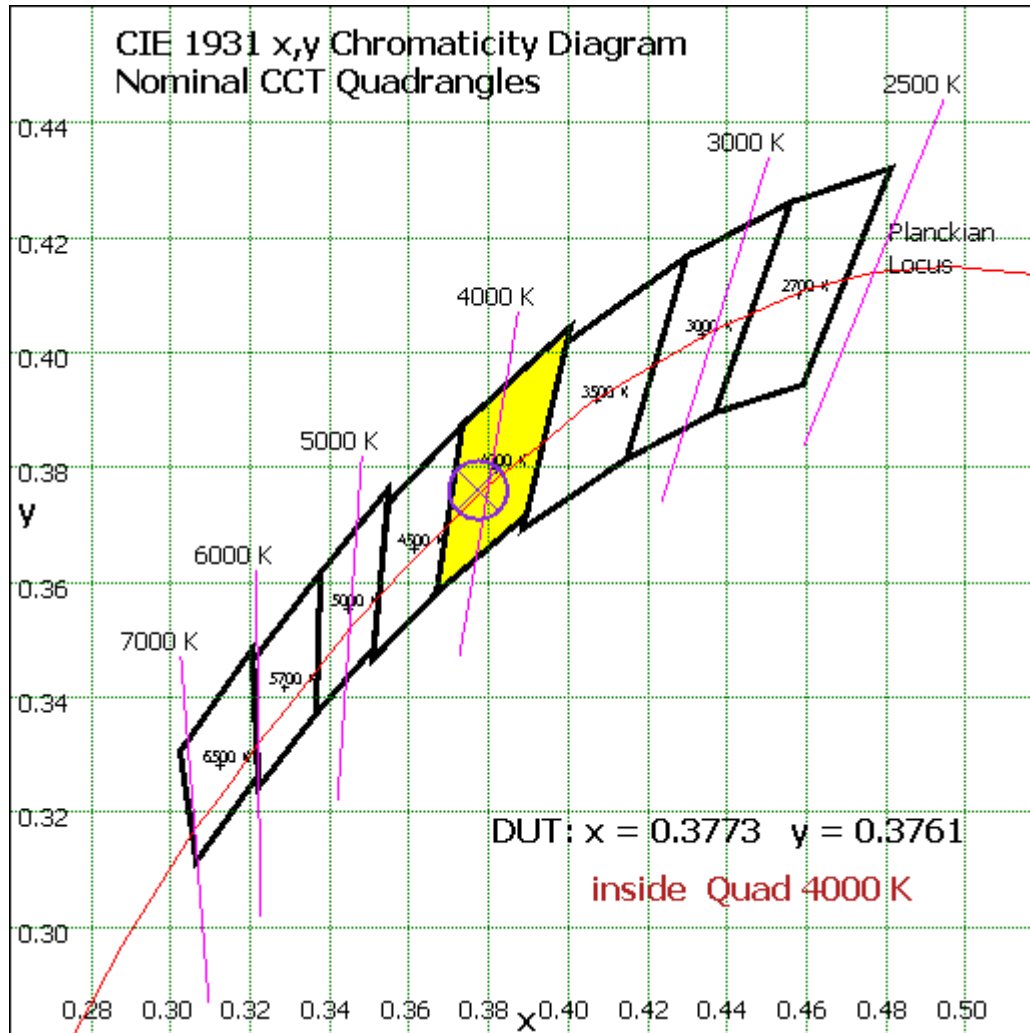


Chart 3: Plot of Lamp x/y coordinates on CIE 1931 Chromaticity Diagram

Zonal Lumen Tabulation- Goniophotometer Method

$\gamma(^{\circ})$	Lumens	% Total
0- 10	27.276	3.13%
10- 20	76.714	8.82%
20- 30	112.61	12.94%
30- 40	130.641	15.01%
40- 50	131.205	15.08%
50- 60	118.085	13.57%
60- 70	95.385	10.96%
70- 80	68.313	7.85%
80- 90	43.102	4.95%
90-100	26.31	3.02%
100-110	17.325	1.99%
110-120	11.087	1.27%
120-130	6.547	0.75%
130-140	3.436	0.39%
140-150	1.495	0.17%
150-160	0.474	0.05%
160-170	0.124	0.01%
170-180	0.034	0.00%
Total	870.2	100%

$\gamma(^{\circ})$	Lumens	% Total
0- 60	596.531	68.55%
60- 90	206.8	23.77%
0-90	803.331	92.32%
90- 180	66.832	7.68%
0- 180	870.2	100%

Table 5: Zonal Lumen Data

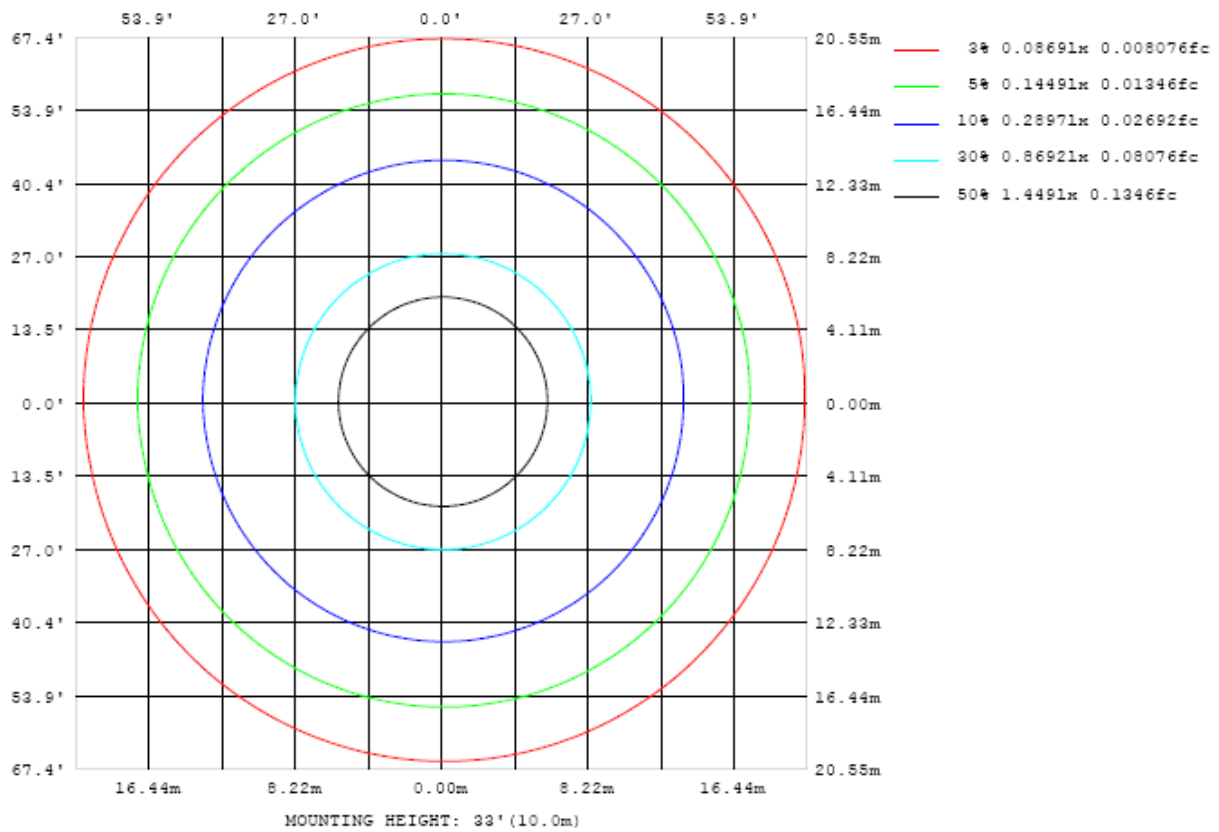


Chart 4: Illuminance Plot (Footcandles)

Luminous Intensity Distribution Plots- Goniophotometer Method

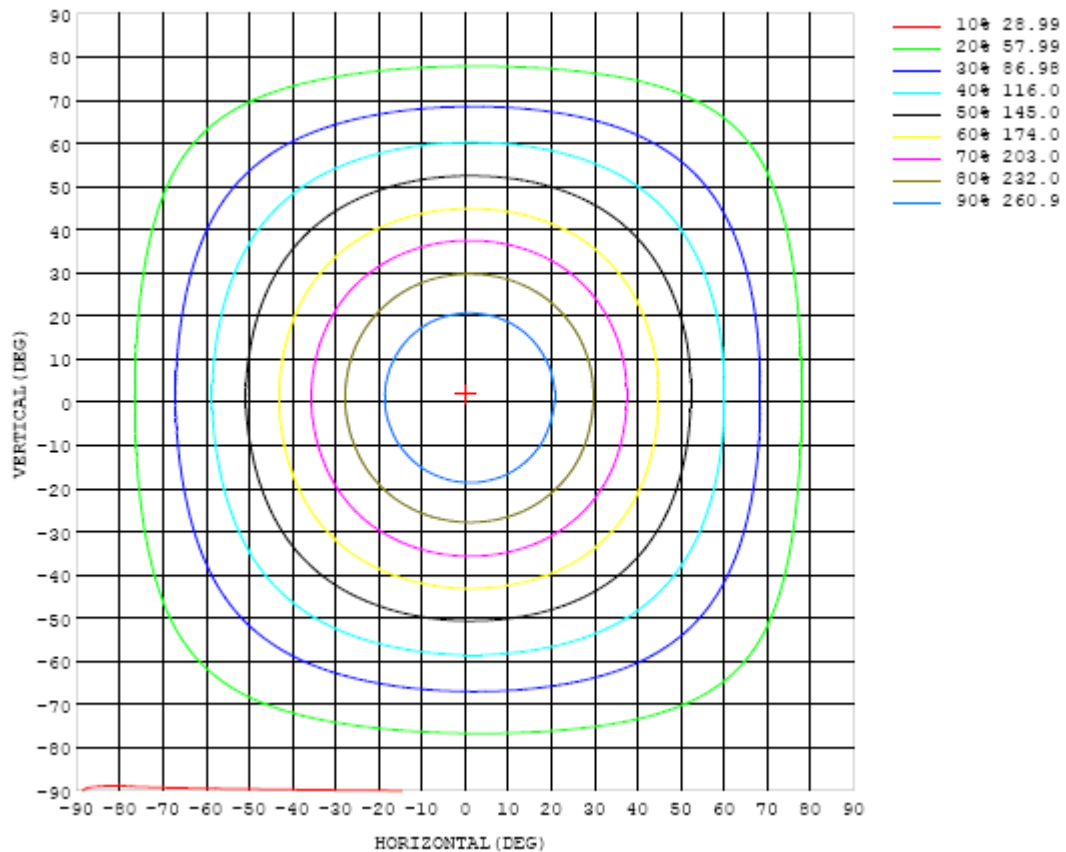


Chart 5: Isocandela Plot

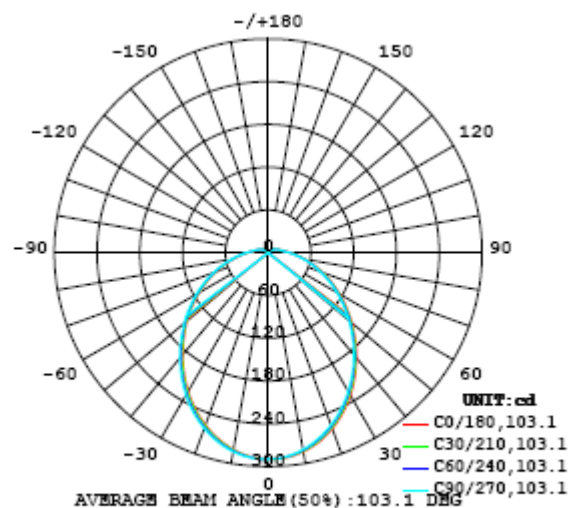


Chart 6: Polar Candela Distribution

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	290	290	290	290	290	290	290	290	290	290	290	290	290	290	290	290	290	290	290
5	289	289	288	288	288	288	287	287	287	287	287	287	286	287	286	287	287	287	287
10	284	283	283	282	282	281	281	281	281	280	280	279	280	279	279	279	280	280	280
15	275	274	273	273	272	272	271	271	271	270	270	269	269	269	269	269	269	270	270
20	263	262	261	261	260	259	259	258	257	257	256	256	256	256	256	256	256	257	257
25	248	247	246	246	245	244	243	243	242	241	241	240	240	240	240	240	240	241	242
30	231	230	229	228	228	227	226	225	225	224	224	223	223	223	222	223	223	223	224
35	212	211	211	210	209	208	208	207	206	205	205	204	204	204	204	204	204	205	206
40	193	192	191	191	190	189	188	188	187	186	186	185	185	185	184	185	185	185	186
45	173	172	172	171	170	169	169	168	167	167	166	166	165	165	165	165	165	166	167
50	154	153	152	151	151	150	149	149	148	147	147	146	146	146	146	146	146	147	148
55	135	134	133	132	132	131	131	130	129	129	128	128	127	127	127	127	127	128	130
60	116	115	115	114	114	113	112	112	111	111	110	110	109	109	109	109	109	110	111
65	98.3	97.8	97.4	96.8	96.2	95.8	95.2	94.6	94.1	93.6	93.1	92.7	92.5	92.3	92.2	92.2	92.3	92.7	94.1
70	81.7	81.2	80.8	80.3	79.8	79.4	78.8	78.3	77.8	77.4	77.0	76.6	76.3	76.2	76.1	76.1	76.2	76.5	77.9
75	66.3	66.1	65.7	65.3	64.9	64.6	64.1	63.8	63.1	62.7	62.4	62.0	61.8	61.7	61.6	61.6	61.6	61.8	62.6
80	52.4	52.1	51.9	51.5	51.2	50.8	50.4	49.9	49.7	49.2	49.0	48.5	48.4	48.3	48.3	48.2	48.3	48.4	49.1
85	40.5	40.3	40.2	39.8	39.5	39.3	38.9	38.5	38.3	38.0	37.8	37.5	37.3	37.2	37.1	37.1	37.1	37.2	37.8
90	31.2	31.1	30.9	30.7	30.5	30.3	29.9	29.8	29.5	29.2	29.1	28.9	28.8	28.6	28.6	28.6	28.6	28.7	29.0
95	24.5	24.4	24.4	24.2	24.1	23.9	23.7	23.5	23.3	23.2	23.1	22.9	22.8	22.8	22.7	22.8	22.7	22.8	23.0
100	20.1	20.0	19.9	19.8	19.8	19.6	19.5	19.3	19.3	19.1	19.0	18.9	18.9	18.9	18.8	18.7	18.8	18.8	18.9
105	16.8	16.8	16.7	16.6	16.5	16.4	16.3	16.2	16.1	16.0	15.9	15.8	15.7	15.8	15.7	15.7	15.6	15.7	15.8
110	14.0	13.9	13.9	13.8	13.8	13.7	13.6	13.5	13.4	13.3	13.2	13.2	13.1	13.0	13.0	13.0	13.0	13.0	13.0
115	11.6	11.5	11.5	11.4	11.4	11.3	11.2	11.1	11.0	10.9	10.9	10.8	10.7	10.7	10.7	10.6	10.6	10.6	10.6
120	9.43	9.38	9.39	9.34	9.29	9.22	9.13	9.04	8.96	8.93	8.83	8.75	8.72	8.68	8.65	8.63	8.60	8.61	8.61
125	7.62	7.62	7.58	7.52	7.48	7.41	7.34	7.24	7.17	7.08	7.02	6.96	6.90	6.87	6.85	6.81	6.79	6.79	6.86
130	5.99	5.99	5.97	5.92	5.89	5.84	5.76	5.68	5.62	5.55	5.50	5.44	5.41	5.37	5.33	5.31	5.29	5.27	5.35
135	4.67	4.67	4.64	4.60	4.56	4.52	4.45	4.38	4.31	4.26	4.20	4.16	4.11	4.08	4.05	4.03	4.01	4.00	4.07
140	3.52	3.51	3.49	3.46	3.42	3.38	3.32	3.26	3.20	3.15	3.10	3.05	3.01	2.99	2.96	2.94	2.92	2.91	2.98
145	2.54	2.54	2.52	2.50	2.47	2.43	2.38	2.32	2.26	2.22	2.17	2.14	2.11	2.08	2.05	2.03	2.02	2.01	2.08
150	1.73	1.73	1.72	1.70	1.67	1.64	1.59	1.54	1.50	1.46	1.42	1.39	1.36	1.34	1.32	1.30	1.29	1.28	1.35
155	1.09	1.10	1.10	1.08	1.06	1.03	0.99	0.95	0.91	0.88	0.85	0.83	0.81	0.79	0.78	0.76	0.75	0.74	0.80
160	0.63	0.67	0.67	0.66	0.65	0.62	0.60	0.57	0.54	0.52	0.50	0.48	0.47	0.45	0.44	0.43	0.42	0.42	0.45
165	0.43	0.44	0.45	0.45	0.44	0.43	0.41	0.40	0.38	0.37	0.36	0.35	0.35	0.34	0.34	0.33	0.33	0.32	0.32
170	0.37	0.39	0.39	0.39	0.39	0.38	0.37	0.37	0.36	0.35	0.35	0.34	0.34	0.34	0.34	0.33	0.33	0.32	0.32
175	0.37	0.36	0.36	0.36	0.36	0.35	0.35	0.35	0.35	0.35	0.34	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.34
180	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33

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	290	290	290	290	290	290	290	290	290	290	290	290	290	290	290	290	290		
5	287	287	287	288	288	288	288	289	289	289	289	289	289	289	289	289	289		
10	281	281	281	282	282	282	283	283	283	284	284	284	284	284	284	284	284		
15	271	271	272	272	273	273	274	274	275	275	275	276	276	276	276	276	275		
20	258	258	259	259	260	261	262	262	263	263	263	264	264	264	264	264	263		
25	242	243	243	244	245	246	247	248	248	248	249	249	249	249	249	249	249		
30	225	225	226	227	228	229	230	230	231	231	232	232	232	232	232	232	232		
35	206	207	208	208	209	210	211	212	212	213	213	214	214	214	214	214	213		
40	187	188	188	189	190	191	192	192	193	194	194	194	195	195	194	194	194		
45	167	168	169	170	170	171	172	173	173	174	174	175	175	175	175	174	174		
50	149	150	150	151	152	152	153	154	154	155	155	155	156	155	155	155	155		
55	130	130	131	132	132	133	134	135	135	136	136	136	136	136	136	136	136		
60	112	112	113	113	114	115	116	116	117	117	117	118	118	118	118	118	118		
65	94.3	95.0	95.4	96.0	96.7	97.3	97.9	98.5	98.9	99.3	99.6	99.8	100.0	100.0	100	99.9	99.7		
70	78.0	78.5	79.0	79.5	80.0	80.6	81.2	81.6	82.0	82.4	82.7	82.9	83.0	83.1	83.2	83.0	82.8		
75	62.8	63.2	63.6	64.0	64.5	65.0	65.5	66.0	66.3	66.7	67.0	67.1	67.3	67.3	67.4	67.3	67.2		
80	49.1	49.5	49.7	50.2	50.6	51.1	51.5	51.9	52.2	52.5	52.7	52.8	53.1	53.0	53.1	53.0	52.8		
85	37.9	38.1	38.4	38.7	39.0	39.3	39.7	40.0	40.3	40.4	40.7	40.8	40.9	40.9	41.0	41.0	40.9		
90	29.2	29.3	29.5	29.8	30.0	30.3	30.5	30.8	31.0	31.1	31.2	31.4	31.5	31.5	31.6	31.6	31.5		
95	23.1	23.2	23.3	23.5	23.6	23.8	24.0	24.2	24.3	24.4	24.5	24.6	24.7	24.7	24.8	24.8	24.7		
100	19.0	19.1	19.2	19.3	19.4	19.5	19.6	19.8	19.9	19.9	20.0	20.1	20.1	20.2	20.2	20.2	20.2		
105	15.8	15.9	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.7	16.8	16.8	16.9	16.9	16.9	16.9		
110	13.0	13.0	13.1	13.2	13.3	13.4	13.5	13.6	13.7	13.7	13.8	13.8	13.9	13.9	13.9	13.9	13.9		
115	10.7	10.7	10.8	10.8	10.9	11.0	11.1	11.2	11.2	11.3	11.3	11.4	11.4	11.5	11.5	11.5	11.5		
120	8.62	8.66	8.72	8.79	8.85	8.92	9.00	9.08	9.13	9.20	9.25	9.30	9.33	9.37	9.41	9.43	9.42		
125	6.87	6.91	6.95	7.01	7.07	7.14	7.21	7.28	7.34	7.39	7.44	7.48	7.52	7.55	7.59	7.61	7.62		
130	5.37	5.40	5.44	5.49	5.55	5.61	5.68	5.74	5.79	5.84	5.89	5.93	5.97	6.00	6.04	6.06	6.06		
135	4.10	4.12	4.16	4.20	4.25	4.31	4.37	4.42	4.47	4.51	4.56	4.60	4.64	4.67	4.71	4.73	4.73		
140	3.02	3.04	3.07	3.11	3.15	3.20	3.26	3.31	3.35	3.38	3.42	3.46	3.50	3.53	3.56	3.59	3.59		
145	2.12	2.14	2.16	2.19	2.23	2.28	2.32	2.37	2.40	2.43	2.47	2.50	2.53	2.56	2.59	2.62	2.61		
150	1.40	1.41	1.43	1.45	1.48	1.52	1.56	1.60	1.63	1.65	1.68	1.72	1.74	1.76	1.79	1.81	1.79		
155	0.86	0.86	0.87	0.89	0.91	0.94	0.97	1.00	1.03	1.06	1.08	1.11	1.12	1.10	1.08	1.11	1.12		
160	0.52	0.52	0.53	0.53	0.55	0.57	0.59	0.61	0.64	0.66	0.68	0.70	0.71	0.68	0.61	0.60	0.60		
165	0.39	0.39	0.39	0.40	0.40	0.41	0.42	0.44	0.45	0.47	0.48	0.49	0.49	0.49	0.46	0.46	0.41		
170	0.35	0.37	0.37	0.37	0.38	0.39	0.39	0.40	0.41	0.42	0.42	0.40	0.39	0.38	0.37	0.35	0.34		
175	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.35	0.36	0.37	0.37	0.37	0.38	0.36	0.37	0.37		
180	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33		

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

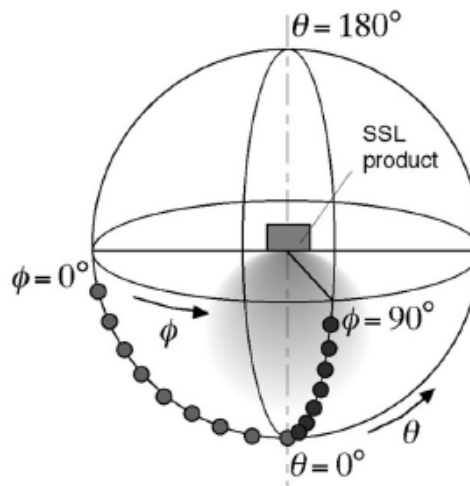
The color characteristics of SSL products include chromaticity coordinates, correlated color temperature, and color rendering index. These characteristics of SSL products may be spatially non-uniform, and thus, in order that they can be specified accurately, the color quantities shall be measured as 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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