

LM-79-08 Test Report

for

GREEN CREATIVE LTD

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

LED lamp

Model: 9BR30DIM/830

Laboratory: Leading Testing Laboratories

NVLAP CODE: 200960-0

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Report No.: HZ18110032a

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/830**

Luminous Efficacy (Lumens /Watt)	Total Luminous Flux (Lumens)	Power (Watts)	Power Factor
98.7	835.7	8.47	0.7314
CCT (K)	CRI	Stabilization Time (Light & Power)	
3091	81.8	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/830
Electrical Ratings	: 120V, 60Hz, 9W
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 25.1 °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	0.7314
Test Power (W)	8.47
THD A%	90.74
Luminous Efficacy (lm/W)	98.7
Total Luminous Flux (lm)	835.7
Color Rendering Index (CRI)	81.8
R9	4.1
Correlated Color Temperature (CCT)(K)	3091
Chromaticity Chroma x	0.4287
Chromaticity Chroma y	0.3979
Chromaticity Chroma u	0.2479
Chromaticity Chroma v	0.3451
Duv	0.0018
Chromaticity Chroma u'	0.2479
Chromaticity Chroma v'	0.5177

Special Color Rendering Indices	
R1	80.3
R2	91.4
R3	95.3
R4	78.7
R5	80.6
R6	89.2
R7	81.6
R8	57.5
R9	4.1
R10	80
R11	77.4
R12	71.3
R13	83.1
R14	98.1
Rf	82
Rg	95

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	0.7350
Test Power (W)	8.42
Luminous Efficacy (lm/W)	100.8
Total Luminous Flux (lm)	848.4
Beam Angle (°)	102.6
Center Beam Candle Power (cd)	284
Spacing Criteria	1.15 (0°-180°)/ 1.17 (90°-270°)
Zonal Lumens in the 0°-60°Zone	68.64%
Zonal Lumens in the 60°-90°Zone	23.67%
Zonal Lumens in the 90°-120°Zone	6.28%
Zonal Lumens in the 120°-180°Zone	1.42%

Table 3: Test data per Goniophotometer Method

Spectral Power Distribution - Sphere Spectroradiometer Method

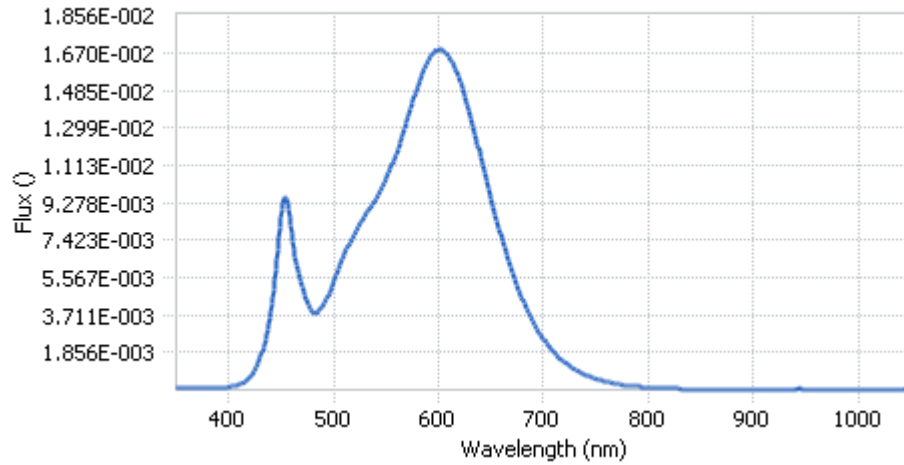


Chart 1: Spectral Power Distribution

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	3.87E-03	590	1.63E-02	695	2.91E-03
385	1.10E-04	490	4.20E-03	595	1.67E-02	700	2.52E-03
390	1.17E-04	495	4.70E-03	600	1.69E-02	705	2.16E-03
395	1.36E-04	500	5.36E-03	605	1.68E-02	710	1.86E-03
400	1.48E-04	505	6.07E-03	610	1.65E-02	715	1.60E-03
405	1.86E-04	510	6.70E-03	615	1.61E-02	720	1.38E-03
410	2.66E-04	515	7.30E-03	620	1.53E-02	725	1.19E-03
415	4.00E-04	520	7.78E-03	625	1.45E-02	730	1.01E-03
420	6.30E-04	525	8.21E-03	630	1.36E-02	735	8.71E-04
425	1.01E-03	530	8.65E-03	635	1.26E-02	740	7.40E-04
430	1.61E-03	535	9.03E-03	640	1.16E-02	745	6.36E-04
435	2.52E-03	540	9.45E-03	645	1.05E-02	750	5.46E-04
440	3.88E-03	545	9.94E-03	650	9.45E-03	755	4.71E-04
445	5.93E-03	550	1.05E-02	655	8.49E-03	760	4.05E-04
450	8.55E-03	555	1.11E-02	660	7.56E-03	765	3.50E-04
455	9.48E-03	560	1.17E-02	665	6.68E-03	770	3.03E-04
460	7.70E-03	565	1.25E-02	670	5.85E-03	775	2.59E-04
465	6.12E-03	570	1.34E-02	675	5.14E-03	780	2.26E-04
470	5.21E-03	575	1.42E-02	680	4.49E-03		
475	4.31E-03	580	1.50E-02	685	3.91E-03		
480	3.83E-03	585	1.58E-02	690	3.37E-03		

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

Chromaticity Diagram - Sphere Spectroradiometer Method

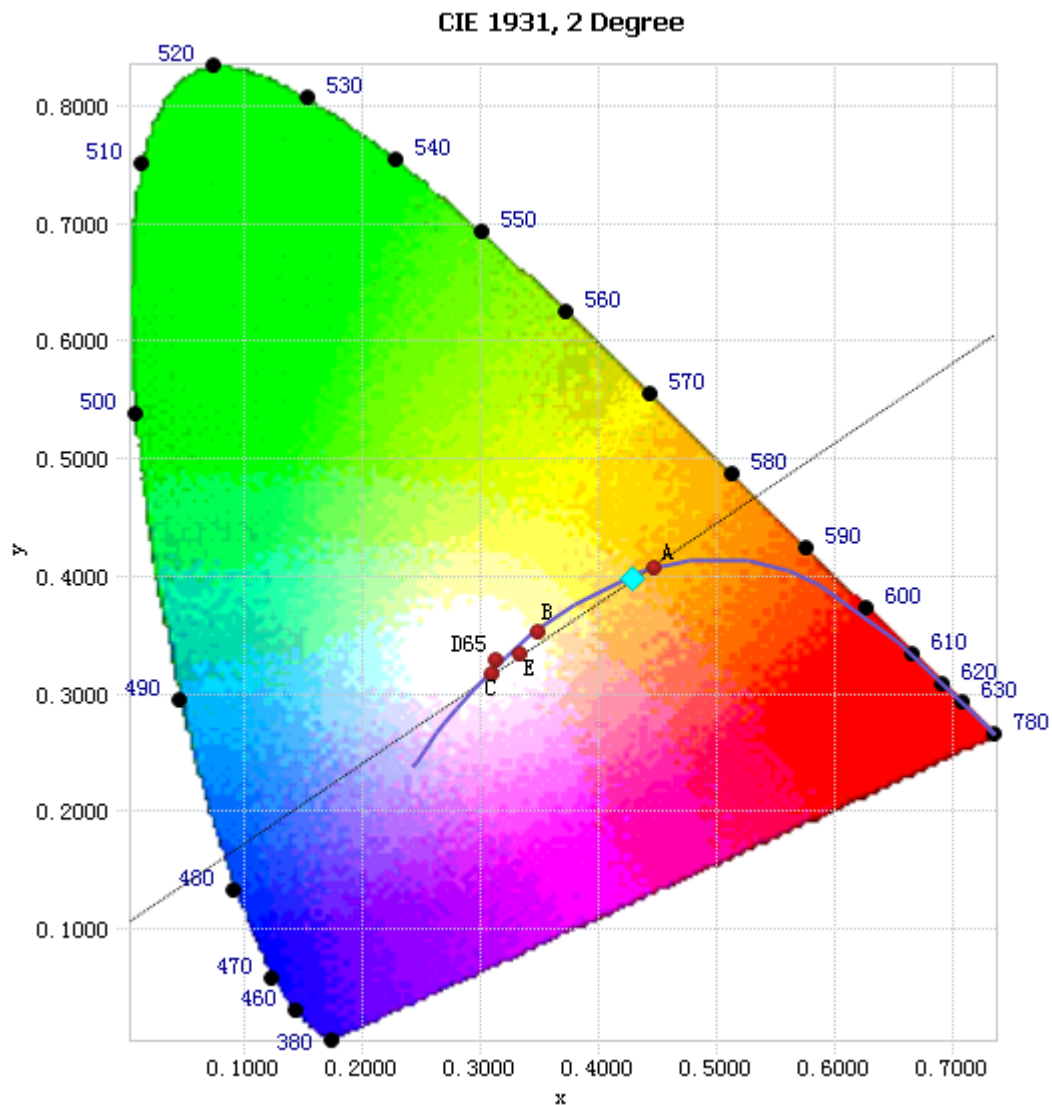


Chart 2: Chromaticity Diagram per Sphere - Spectroradiometer Method

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

Nominal CCT Quadrangles – Sphere Spectroradiometer Method

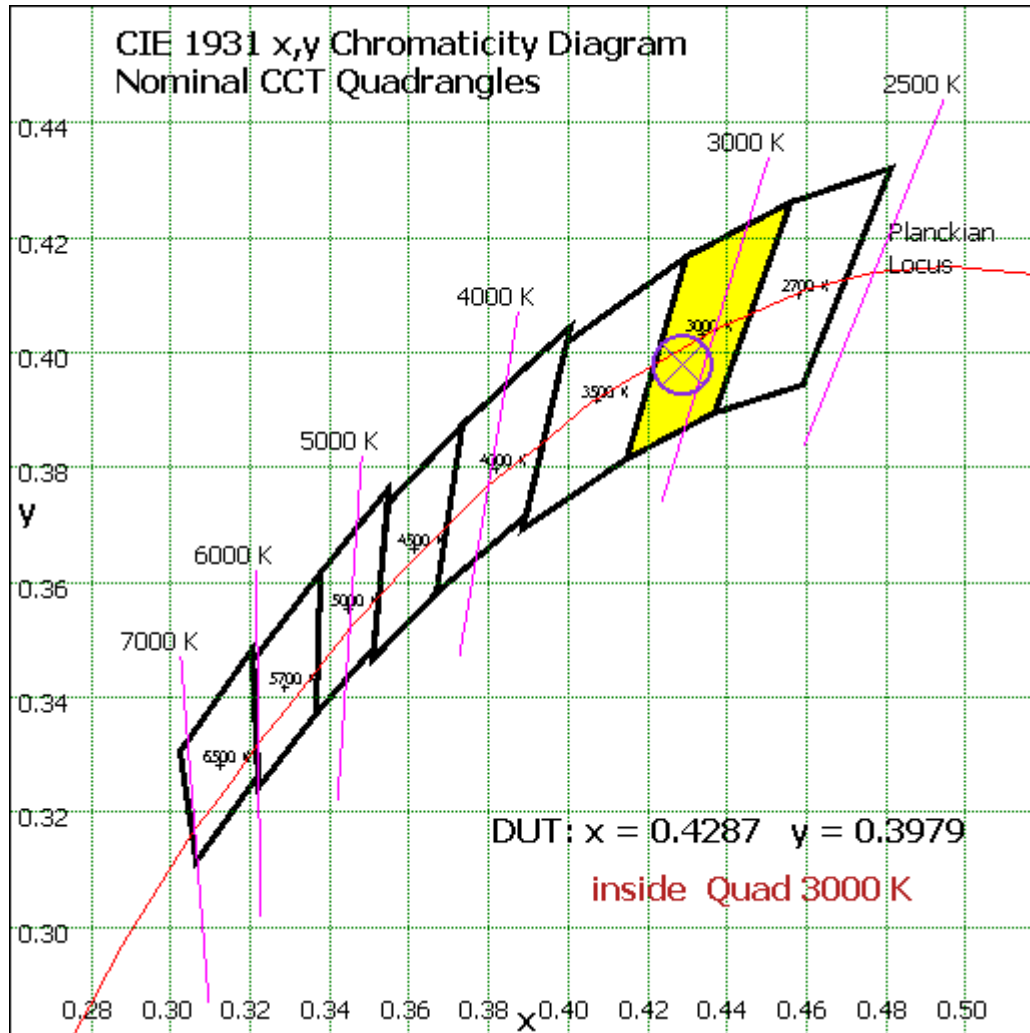


Chart 3: Plot of Lamp x/y coordinates on CIE 1931 Chromaticity Diagram

Zonal Lumen Tabulation- Goniophotometer Method

$\gamma(^{\circ})$	Lumens	% Total
0- 10	26.713	3.15%
10- 20	75.092	8.85%
20- 30	110.12	12.98%
30- 40	127.565	15.04%
40- 50	127.941	15.08%
50- 60	114.855	13.54%
60- 70	92.635	10.92%
70- 80	66.308	7.82%
80- 90	41.871	4.94%
90-100	25.567	3.01%
100-110	16.843	1.99%
110-120	10.833	1.28%
120-130	6.438	0.76%
130-140	3.407	0.40%
140-150	1.507	0.18%
150-160	0.499	0.06%
160-170	0.143	0.02%
170-180	0.039	0.00%
Total	848.4	100%

$\gamma(^{\circ})$	Lumens	% Total
0- 60	582.286	68.64%
60- 90	200.814	23.67%
0-90	783.1	92.31%
90- 180	65.276	7.69%
0- 180	848.4	100%

Table 5: Zonal Lumen Data

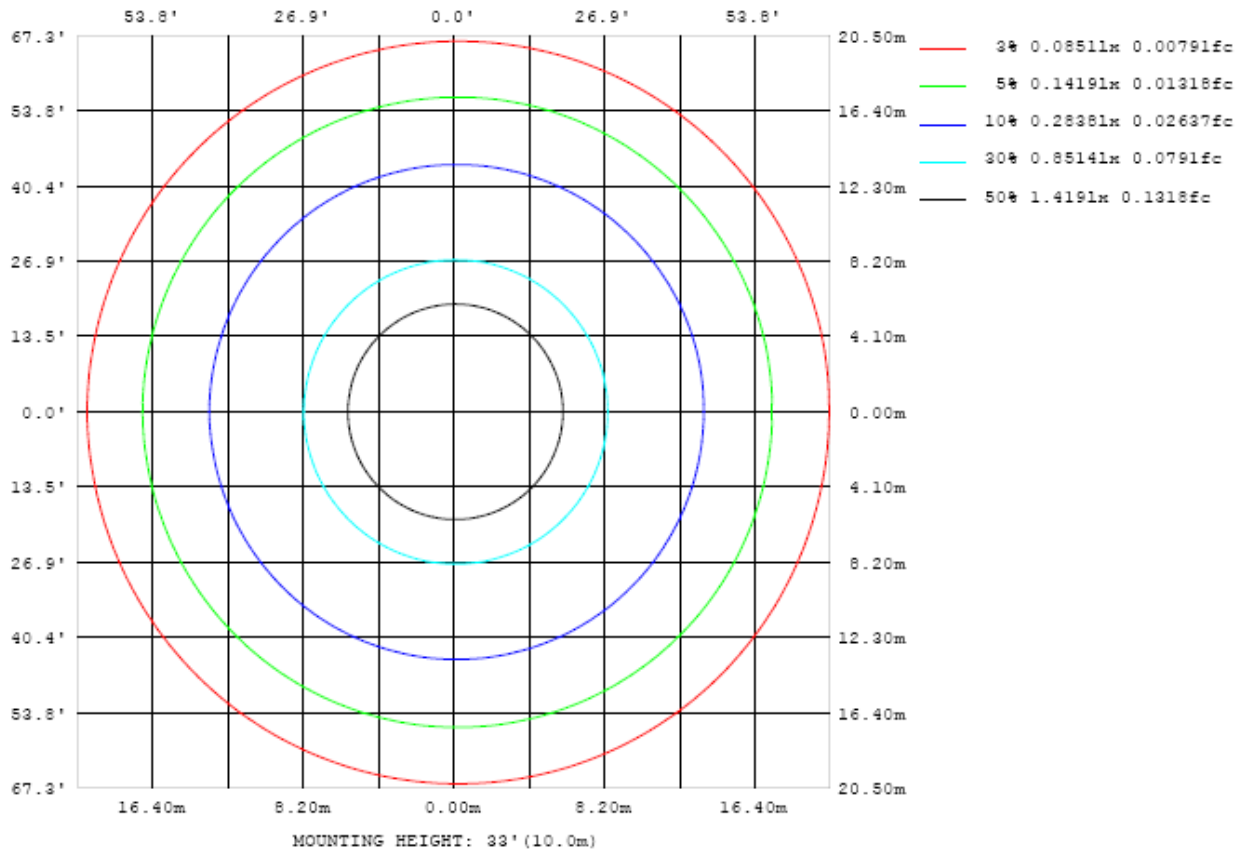


Chart 4: Illuminance Plot (Footcandles)

Luminous Intensity Distribution Plots- Goniophotometer Method

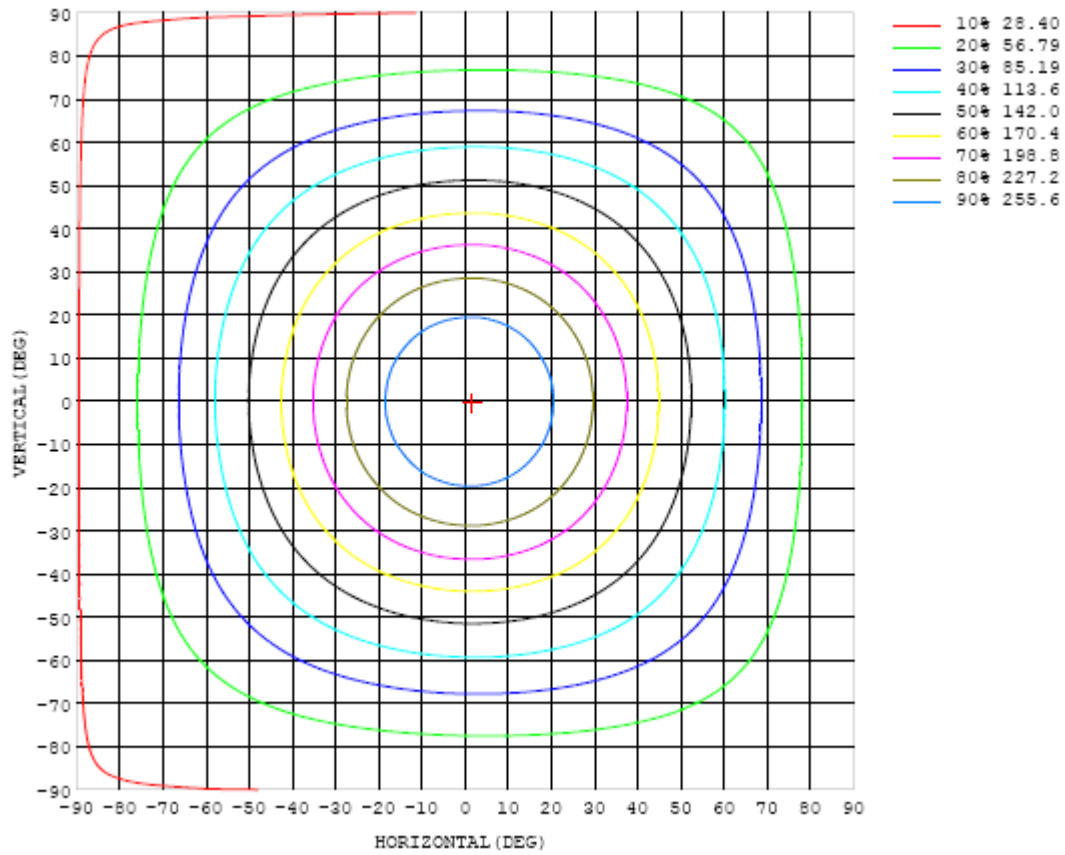


Chart 5: Isocandela Plot

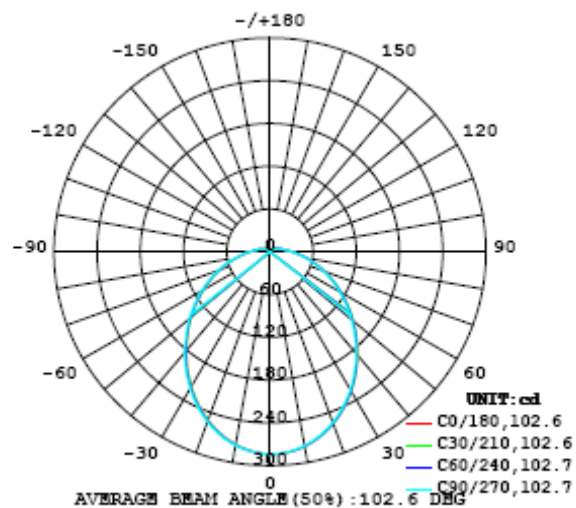


Chart 6: Polar Candela Distribution

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	284	284	284	284	284	284	284	284	284	284	284	284	284	284	284	284	284	284	284
5	282	283	283	282	282	282	282	282	282	282	282	282	281	281	281	281	281	281	281
10	277	277	277	277	277	277	277	277	276	276	276	276	275	275	275	275	275	275	274
15	268	268	268	268	268	268	268	267	267	266	266	266	266	265	265	265	265	265	264
20	257	257	257	256	256	256	256	255	255	254	254	253	253	252	252	252	252	252	251
25	242	242	242	242	242	242	241	241	240	239	238	238	237	237	236	236	236	236	236
30	226	226	226	226	225	225	225	224	224	223	222	222	221	220	219	219	219	219	218
35	208	208	208	208	207	207	207	206	205	205	204	203	203	202	201	200	200	200	200
40	189	189	189	189	189	188	188	187	187	186	185	184	183	183	182	181	181	181	181
45	170	170	170	170	169	169	169	168	167	167	166	165	164	163	163	162	162	161	161
50	151	151	151	151	150	150	150	149	148	147	147	146	145	144	144	143	143	142	143
55	132	132	132	132	132	131	131	130	130	129	128	127	127	126	125	125	124	124	124
60	114	114	114	114	114	113	113	112	112	111	110	110	109	108	107	107	106	106	107
65	96.9	96.9	96.9	96.9	96.7	96.4	96.0	95.5	94.9	94.2	93.6	92.8	92.1	91.4	90.7	90.2	89.8	89.5	89.9
70	80.6	80.7	80.7	80.7	80.5	80.2	79.8	79.3	78.8	78.2	77.5	76.9	76.2	75.6	74.9	74.4	74.0	73.7	73.9
75	65.7	65.9	65.9	65.9	65.8	65.6	65.2	64.8	64.3	63.8	63.2	62.5	61.9	61.4	60.7	60.2	59.8	59.5	59.4
80	51.9	52.0	52.1	52.2	52.1	51.8	51.6	51.1	50.8	50.2	49.7	49.1	48.7	48.2	47.6	47.1	46.9	46.6	46.4
85	40.1	40.2	40.4	40.3	40.2	40.1	39.8	39.5	39.2	38.7	38.4	37.9	37.5	37.2	36.7	36.4	36.2	35.9	35.8
90	30.8	30.8	30.9	30.9	30.9	30.8	30.5	30.4	30.2	29.8	29.6	29.3	29.0	28.7	28.3	28.3	27.9	27.8	27.7
95	24.0	24.1	24.1	24.1	24.1	24.1	23.9	23.8	23.7	23.5	23.4	23.1	23.0	22.7	22.5	22.4	22.2	22.2	22.1
100	19.5	19.6	19.6	19.6	19.6	19.6	19.5	19.4	19.4	19.3	19.1	19.0	18.9	18.8	18.6	18.5	18.4	18.3	18.3
105	16.3	16.3	16.3	16.4	16.4	16.4	16.3	16.3	16.2	16.1	16.0	15.9	15.8	15.7	15.6	15.5	15.4	15.4	15.4
110	13.5	13.5	13.6	13.6	13.6	13.6	13.6	13.5	13.6	13.5	13.4	13.3	13.2	13.1	13.0	12.9	12.9	12.8	12.7
115	11.1	11.2	11.2	11.2	11.3	11.2	11.2	11.2	11.1	11.1	11.1	11.0	10.9	10.8	10.7	10.7	10.6	10.6	10.5
120	9.08	9.12	9.14	9.16	9.14	9.21	9.17	9.15	9.11	9.09	9.05	8.98	8.94	8.87	8.78	8.74	8.69	8.65	8.59
125	7.27	7.31	7.33	7.33	7.36	7.38	7.36	7.36	7.33	7.31	7.27	7.22	7.17	7.10	7.04	6.96	6.93	6.91	6.92
130	5.70	5.72	5.75	5.78	5.79	5.80	5.80	5.80	5.79	5.77	5.74	5.70	5.66	5.62	5.56	5.51	5.49	5.46	5.48
135	4.39	4.42	4.44	4.46	4.48	4.48	4.49	4.48	4.48	4.47	4.45	4.43	4.39	4.35	4.30	4.26	4.23	4.21	4.25
140	3.27	3.29	3.32	3.33	3.34	3.35	3.36	3.37	3.37	3.36	3.36	3.33	3.30	3.26	3.22	3.19	3.17	3.15	3.20
145	2.32	2.34	2.36	2.38	2.39	2.40	2.41	2.42	2.42	2.42	2.42	2.41	2.38	2.36	2.32	2.29	2.28	2.26	2.31
150	1.55	1.56	1.58	1.60	1.61	1.61	1.62	1.63	1.65	1.65	1.65	1.64	1.63	1.61	1.58	1.56	1.55	1.54	1.58
155	0.95	0.96	0.97	0.99	0.99	1.00	1.01	1.03	1.04	1.06	1.06	1.06	1.05	1.04	1.03	1.01	1.01	1.00	1.03
160	0.53	0.55	0.56	0.56	0.57	0.59	0.60	0.62	0.64	0.66	0.67	0.67	0.67	0.67	0.67	0.67	0.66	0.66	0.68
165	0.33	0.33	0.33	0.34	0.35	0.37	0.40	0.43	0.45	0.47	0.48	0.49	0.50	0.50	0.51	0.52	0.53	0.54	0.54
170	0.29	0.29	0.30	0.31	0.32	0.34	0.36	0.39	0.41	0.43	0.44	0.45	0.46	0.47	0.48	0.48	0.49	0.50	0.50
175	0.30	0.29	0.29	0.29	0.31	0.33	0.34	0.36	0.38	0.40	0.42	0.43	0.44	0.45	0.45	0.46	0.46	0.47	0.48
180	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35

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	284	284	284	284	284	284	284	284	284	284	284	284	284	284	284	284	284		
5	281	281	281	281	281	281	281	282	282	282	282	282	282	282	282	282	282		
10	275	275	275	275	275	275	275	276	276	276	276	277	277	277	277	277	277		
15	264	265	265	265	265	266	266	266	267	267	267	267	268	268	268	268	269		
20	251	252	252	252	252	253	253	254	254	255	255	255	256	256	256	256	257		
25	236	236	236	236	237	237	238	238	239	240	240	241	241	241	242	242	242		
30	218	219	219	219	220	220	221	221	222	223	223	224	224	225	225	226	226		
35	200	200	200	200	201	202	202	203	204	204	205	206	206	207	207	208	208		
40	180	181	181	181	182	182	183	184	184	185	186	187	187	188	188	189	189		
45	161	161	162	162	162	163	164	164	165	166	166	167	168	168	169	170	170		
50	143	143	143	143	144	144	145	146	147	147	148	149	149	150	151	151	151		
55	124	124	124	125	125	126	126	127	128	129	129	130	131	131	132	132	133		
60	106	107	107	107	107	108	108	109	110	111	111	112	113	113	114	114	115		
65	89.7	89.6	89.7	90.0	90.4	91.0	91.5	92.0	92.7	93.5	94.1	94.8	95.3	95.9	96.5	96.9	97.3		
70	73.9	73.8	73.9	74.1	74.4	74.9	75.4	75.9	76.5	77.3	77.9	78.5	79.1	79.5	80.1	80.6	80.9		
75	59.3	59.1	59.2	59.5	59.7	60.2	60.6	61.1	61.6	62.2	62.8	63.3	63.9	64.3	64.8	65.3	65.5		
80	46.3	46.3	46.3	46.5	46.7	47.1	47.4	47.9	48.2	48.8	49.2	49.8	50.2	50.6	51.1	51.5	51.8		
85	35.6	35.7	35.7	35.8	36.0	36.2	36.6	36.9	37.2	37.7	38.0	38.4	38.7	39.1	39.4	39.8	39.9		
90	27.7	27.6	27.7	27.7	27.8	28.0	28.2	28.4	28.6	29.0	29.2	29.4	29.7	30.0	30.2	30.5	30.7		
95	22.1	22.0	22.0	22.1	22.2	22.3	22.4	22.5	22.6	22.8	23.0	23.2	23.3	23.5	23.7	23.8	23.9		
100	18.3	18.3	18.3	18.3	18.4	18.5	18.5	18.6	18.7	18.8	18.9	19.0	19.1	19.2	19.3	19.4	19.4		
105	15.3	15.3	15.4	15.3	15.4	15.4	15.5	15.6	15.6	15.7	15.8	15.9	16.0	16.0	16.1	16.2	16.3		
110	12.7	12.7	12.7	12.7	12.7	12.7	12.8	12.8	12.9	12.9	13.0	13.0	13.1	13.2	13.3	13.3	13.4		
115	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.6	10.6	10.7	10.7	10.7	10.8	10.9	10.9	11.0	11.0		
120	8.56	8.56	8.56	8.55	8.55	8.57	8.58	8.60	8.62	8.66	8.69	8.74	8.78	8.83	8.88	8.93	8.98		
125	6.91	6.91	6.90	6.89	6.89	6.90	6.90	6.92	6.93	6.95	6.98	7.01	7.05	7.09	7.13	7.18	7.21		
130	5.48	5.47	5.46	5.46	5.46	5.46	5.46	5.47	5.47	5.49	5.51	5.53	5.57	5.59	5.63	5.67	5.69		
135	4.26	4.24	4.24	4.23	4.22	4.23	4.23	4.23	4.23	4.24	4.25	4.26	4.28	4.31	4.34	4.38	4.40		
140	3.22	3.20	3.19	3.18	3.18	3.18	3.18	3.17	3.17	3.17	3.17	3.18	3.20	3.22	3.25	3.28	3.29		
145	2.34	2.33	2.32	2.31	2.30	2.30	2.29	2.29	2.28	2.28	2.27	2.28	2.29	2.31	2.33	2.35	2.35		
150	1.63	1.61	1.61	1.60	1.59	1.59	1.58	1.57	1.56	1.55	1.54	1.54	1.54	1.55	1.58	1.60	1.58		
155	1.09	1.08	1.07	1.07	1.06	1.06	1.05	1.03	1.01	1.00	0.98	0.97	0.96	0.94	0.92	0.96	0.96		
160	0.75	0.74	0.74	0.74	0.73	0.73	0.71	0.69	0.67	0.65	0.63	0.61	0.59	0.56	0.50	0.50	0.51		
165	0.61	0.61	0.61	0.61	0.60	0.59	0.58	0.56	0.53	0.51	0.48	0.45	0.43	0.41	0.39	0.38	0.32		
170	0.52	0.56	0.55	0.55	0.54	0.54	0.53	0.51	0.49	0.46	0.43	0.41	0.38	0.36	0.35	0.31	0.29		
175	0.48	0.49	0.49	0.50	0.49	0.48	0.46	0.37	0.35	0.34	0.33	0.32	0.32	0.31	0.31	0.31	0.30		
180	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35		

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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