

LM-79-08 Test Report

for

GREEN CREATIVE LTD

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

LED Tube System

Model: 11.5T8/4F/835/EXT/A2

(LED tube model: 11.5T8/4F/835/EXT 2pcs and LED driver model: 15T8T5HEDRIVER/2CH 1pcs)

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.: HZ18080024am

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

Review by:



Engineer: April Zou

Aug. 29, 2018

Approved by:



Manager: Jim Zhang

Aug. 29, 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: 11.5T8/4F/835/EXT/A2

Luminous Efficacy (Lumens /Watt)	Luminous Flux per lamp (Lumens)	Power (Watts)/2	Power Factor
136.4	1810.0	13.27	0.9934
CCT (K)	CRI	Stabilization Time (Light & Power)	
3500	81.9	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	: Jul. 30, 2018
Date of Test	: Aug. 03, 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

TABLE OF CONTENT

LM-79-08 Test Report.....	1
Test Summary.....	2
Sample Photos.....	4
TEST RESULTS	5
Goniophotometer Method	6
Spectral Power Distribution - Sphere Spectroradiometer Method	7
Chromaticity Diagram - Sphere Spectroradiometer Method.....	8
Nominal CCT Quadrangles – Sphere Spectroradiometer Method	9
Zonal Lumen Tabulation- Goniophotometer Method	10
Luminous Intensity Distribution Plots- Goniophotometer Method.....	12
Luminous Intensity Data- Goniophotometer Method.....	13
EQUIPMENT LIST	15
TEST METHODS	15
Seasoning of SSL Product.....	15
Sphere-Spectroradiometer Method- Photometric and Electrical Measurements.....	15
Goniophotometer Method	16
Photometric and Electrical Measurements.....	16
Color Characteristics Measurements.....	16
Color Spatial Uniformity	16

Sample Photos

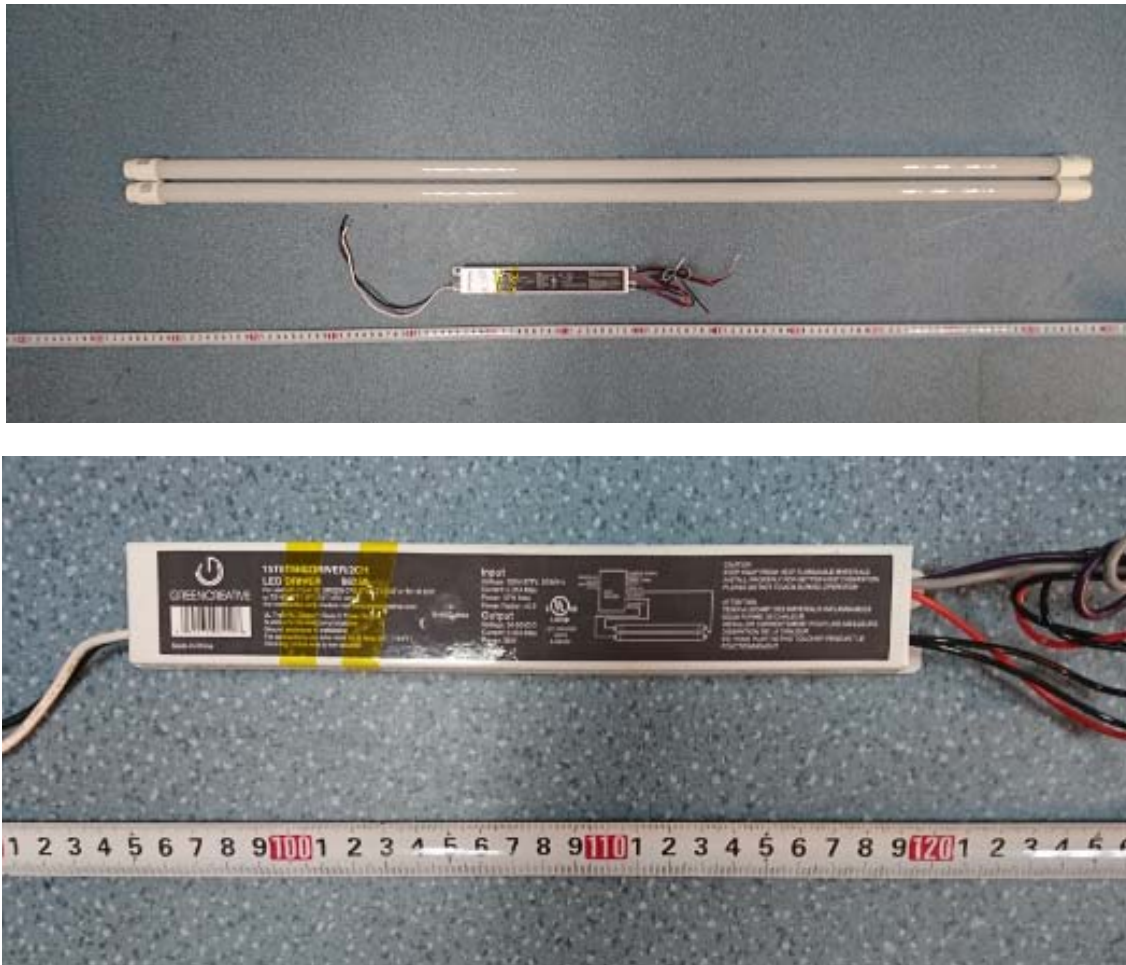


Figure 1- Overview of the sample

Equipment Under Test (EUT)

Name	: LED Tube System
Model	: 11.5T8/4F/835/EXT/A2
Electrical Ratings	: 120-277V, 50/60Hz
Product Description	: 3500K LED tube model: 11.5T8/4F/835/EXT 2 LED tubes supplied by a LED driver: 15T8T5HEDRIVER/2CH
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 horizontal. 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)	0.223	0.104
Power Factor	0.9934	0.9457
Test Power (W)/2	13.27	13.62
THD A%	4.37	9.57
Luminous Efficacy (lm/W)	136.4	132.9
Luminous Flux per lamp (lm)	1810.0	1810.0
Color Rendering Index (CRI)	81.9	
R9	0.9	
Correlated Color Temperature (CCT)(K)	3500	
Chromaticity Chroma x	0.4075	
Chromaticity Chroma y	0.3956	
Chromaticity Chroma u	0.2352	
Chromaticity Chroma v	0.3424	
Duv	0.0016	
Chromaticity Chroma u'	0.2352	
Chromaticity Chroma v'	0.5136	

Special Color Rendering Indices	
R1	78.9
R2	88.1
R3	96.1
R4	81.7
R5	81.4
R6	87.3
R7	82.9
R8	58.6
R9	0.9
R10	73.4
R11	78.1
R12	60.8
R13	80.5
R14	97.9
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 25.0°C.

The photometric distance is 30m.

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)	0.223
Power Factor	0.9926
Test Power (W)/2	13.25
Luminous Efficacy (lm/W)	134.6
Luminous Flux per lamp (lm)	1783.9
Beam Angle (°)	169.9
Center Beam Candle Power (cd)	291
Spacing Criteria	1.27 (0°-180°)/ 1.44 (90°-270°)
Zonal Lumens in the 0°-60°Zone	42.60%
Zonal Lumens in the 60°-90°Zone	26.91%
Zonal Lumens in the 90°-120°Zone	17.68%
Zonal Lumens in the 120°-180°Zone	12.82%

Table 3: Test data per Goniophotometer Method

Spectral Power Distribution - Sphere Spectroradiometer Method

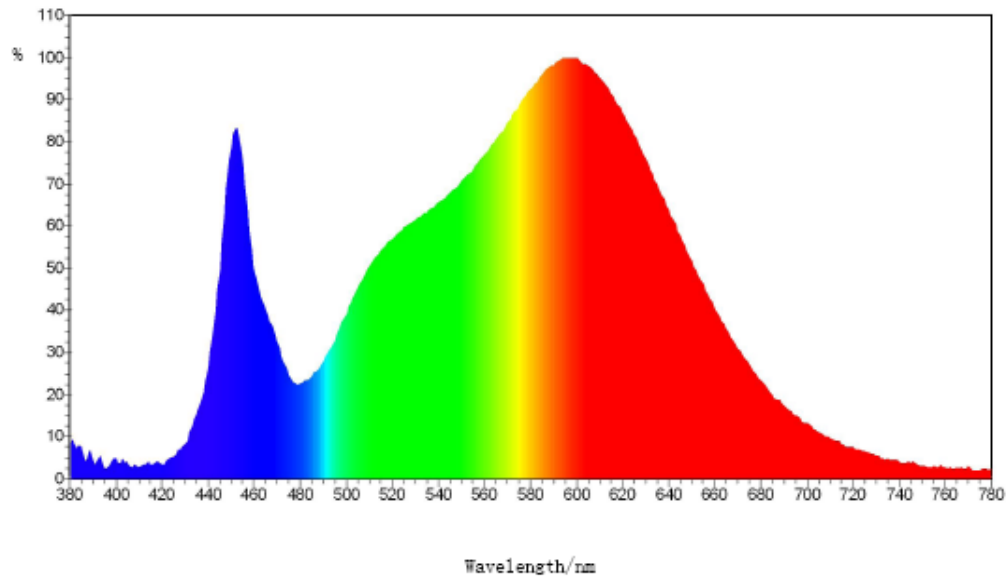
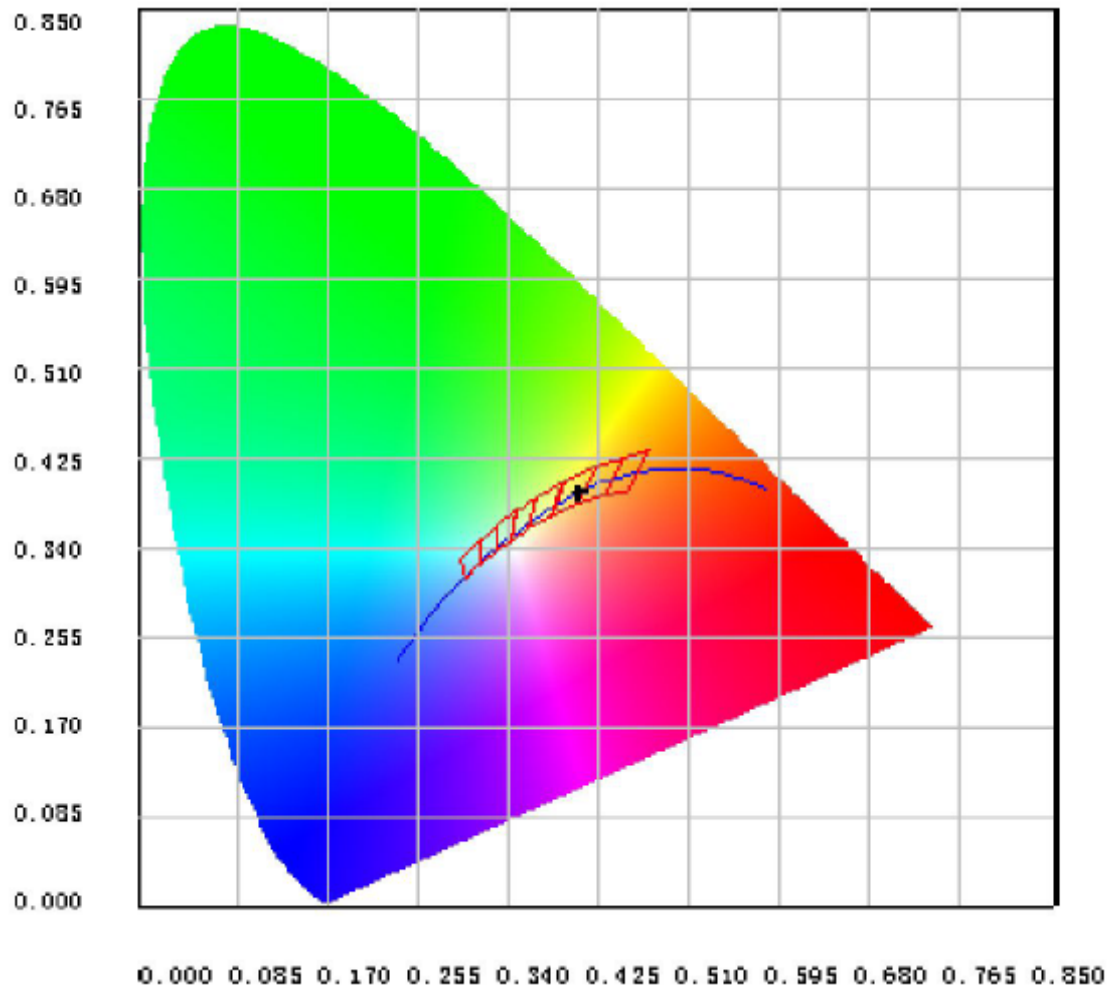


Chart 1: Spectral Power Distribution

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	2.89E-03	485	8.27E-03	590	3.34E-02	695	5.08E-03
385	2.63E-03	490	9.51E-03	595	3.40E-02	700	4.48E-03
390	1.53E-03	495	1.12E-02	600	3.39E-02	705	3.77E-03
395	8.88E-04	500	1.33E-02	605	3.34E-02	710	3.29E-03
400	1.61E-03	505	1.53E-02	610	3.24E-02	715	2.90E-03
405	1.42E-03	510	1.71E-02	615	3.11E-02	720	2.63E-03
410	9.50E-04	515	1.84E-02	620	2.95E-02	725	2.20E-03
415	1.15E-03	520	1.93E-02	625	2.78E-02	730	1.95E-03
420	1.18E-03	525	2.03E-02	630	2.59E-02	735	1.61E-03
425	1.84E-03	530	2.09E-02	635	2.37E-02	740	1.37E-03
430	2.88E-03	535	2.15E-02	640	2.17E-02	745	1.36E-03
435	5.23E-03	540	2.23E-02	645	1.96E-02	750	1.13E-03
440	8.96E-03	545	2.31E-02	650	1.75E-02	755	1.06E-03
445	1.69E-02	550	2.40E-02	655	1.56E-02	760	9.72E-04
450	2.68E-02	555	2.50E-02	660	1.38E-02	765	9.29E-04
455	2.53E-02	560	2.61E-02	665	1.21E-02	770	1.02E-03
460	1.71E-02	565	2.74E-02	670	1.06E-02	775	7.42E-04
465	1.38E-02	570	2.87E-02	675	9.25E-03	780	8.33E-04
470	1.11E-02	575	3.02E-02	680	7.95E-03		
475	8.37E-03	580	3.14E-02	685	6.81E-03		
480	7.67E-03	585	3.26E-02	690	5.96E-03		

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

Chromaticity Diagram - Sphere Spectroradiometer Method



Tristimulus values(x, y): (0.4075, 0.3956)

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

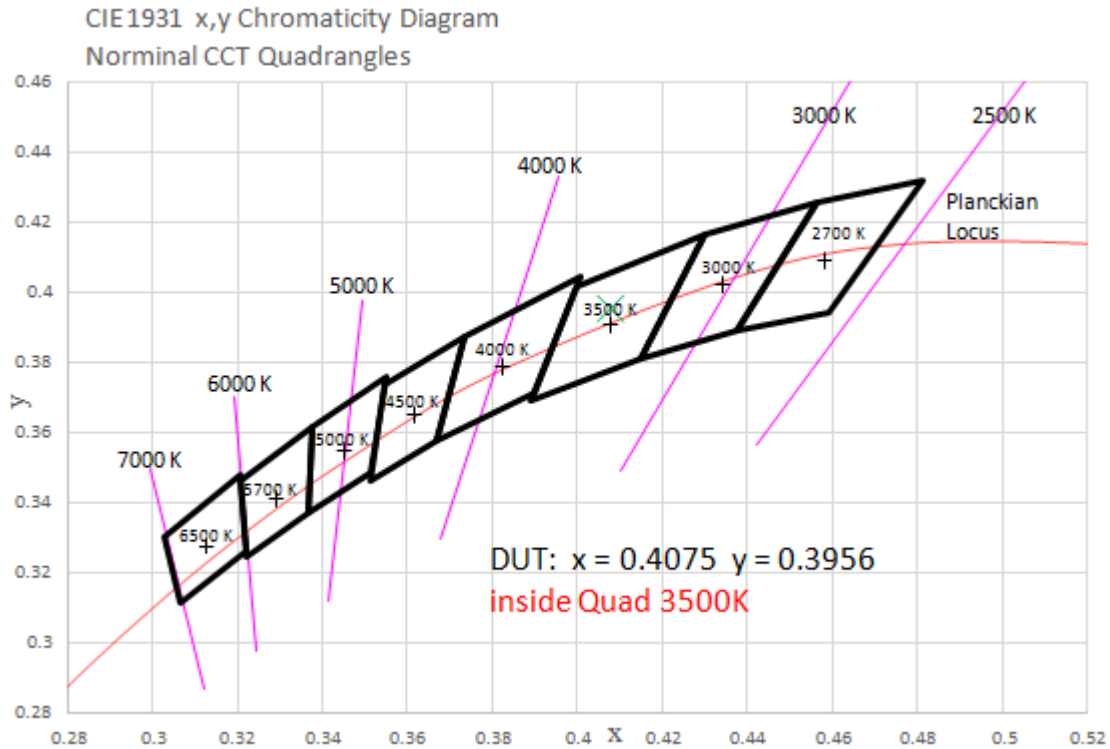


Chart 3: Plot of Lamp x/y coordinates on CIE 1931 Chromaticity Diagram

Zonal Lumen Tabulation- Goniophotometer Method

$\gamma(^{\circ})$	Lumens	% Total
0- 10	27.643	1.55%
10- 20	80.374	4.51%
20- 30	125.751	7.05%
30- 40	159.865	8.96%
40- 50	180.228	10.10%
50- 60	186.031	10.43%
60- 70	178.494	10.01%
70- 80	161.222	9.04%
80- 90	140.284	7.86%
90-100	121.883	6.83%
100-110	104.925	5.88%
110-120	88.55	4.96%
120-130	73.145	4.10%
130-140	58.659	3.29%
140-150	44.52	2.50%
150-160	30.798	1.73%
160-170	16.613	0.93%
170-180	4.886	0.27%
Total	1783.9	100%

$\gamma(^{\circ})$	Lumens	% Total
0- 60	759.892	42.60%
60- 90	480	26.91%
0-90	1239.892	69.51%
90- 180	543.979	30.49%
0- 180	1783.9	100%

Table 5: Zonal Lumen Data

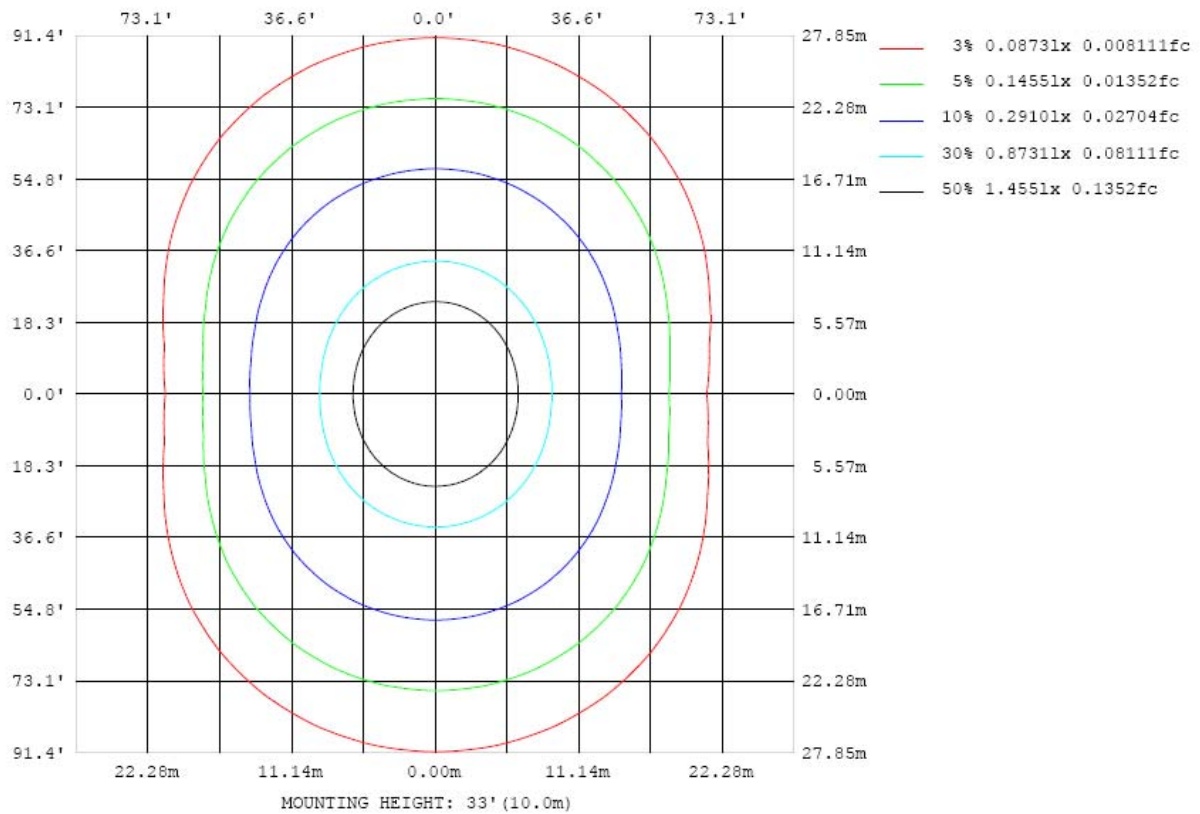


Chart 4: Illuminance Plot (Footcandles)

Luminous Intensity Distribution Plots- Goniophotometer Method

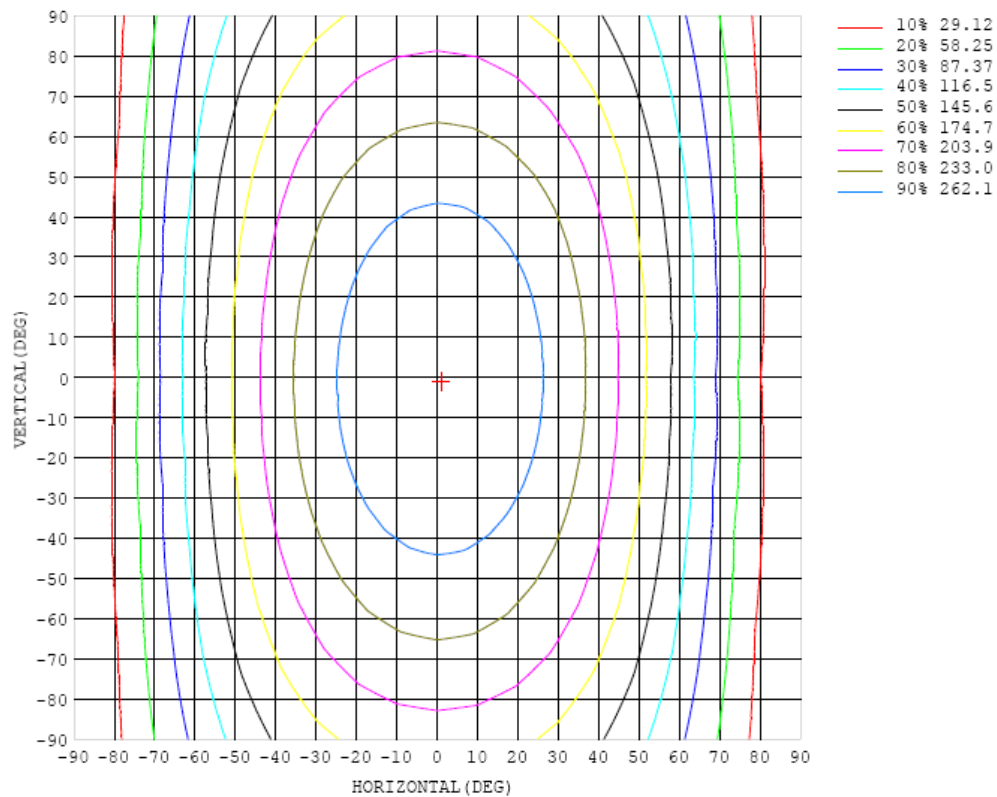


Chart 5: Isocandela Plot

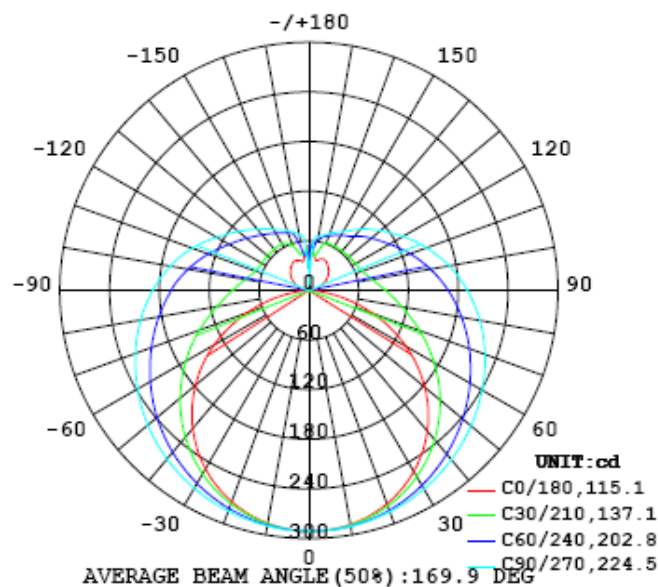


Chart 6: Polar Candela Distribution

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	291	291	291	291	291	291	291	291	291	291	291	291	291	291	291	291	291	291	291
5	290	290	290	291	291	291	291	291	291	291	291	291	291	290	290	290	290	290	290
10	287	287	288	288	289	289	289	290	290	290	290	289	289	288	288	287	286	286	286
15	282	282	283	284	285	286	287	287	288	288	287	287	286	285	283	282	281	280	280
20	275	275	276	278	279	281	283	284	285	285	285	283	282	280	278	275	274	272	272
25	265	265	267	270	273	275	278	280	281	281	281	279	277	274	270	267	264	262	262
30	253	254	256	260	264	269	272	275	277	277	276	274	271	266	262	257	253	250	249
35	238	240	243	249	255	260	266	269	272	272	271	268	264	258	252	245	240	236	234
40	222	224	229	236	244	251	258	263	266	267	266	262	256	249	241	233	225	220	218
45	203	206	212	222	232	242	250	256	260	261	259	255	249	240	229	218	209	201	199
50	182	186	194	206	219	232	242	249	254	255	253	248	240	230	217	203	191	181	178
55	159	164	175	190	207	221	233	242	247	248	246	240	231	219	204	188	172	160	156
60	135	140	155	174	194	211	224	234	239	241	239	232	222	208	191	172	152	137	132
65	109	116	134	158	180	200	215	226	232	233	231	224	213	198	179	156	133	113	106
70	81.9	91.1	114	142	168	189	206	217	224	226	223	216	204	187	166	141	113	89.2	79.4
75	55.5	67.4	95.5	127	156	179	196	209	215	217	215	208	195	177	154	126	95.3	66.6	52.8
80	30.1	45.5	78.9	114	144	169	187	200	207	209	206	199	186	167	143	114	79.6	46.1	28.5
85	9.87	28.7	66.0	102	133	159	177	190	198	200	197	190	177	158	133	103	67.6	30.7	8.63
90	0.45	19.5	56.3	92.3	124	149	168	181	189	191	188	181	167	149	124	93.4	58.5	22.4	0.43
95	2.08	16.2	49.6	84.0	115	140	158	171	179	181	179	171	158	139	115	85.5	52.2	19.3	1.94
100	5.34	17.2	45.4	77.1	106	130	149	162	169	171	169	161	149	130	107	79.0	48.3	20.0	5.06
105	9.59	19.2	43.7	72.2	98.7	122	139	152	159	161	159	151	139	122	99.8	74.2	46.5	21.9	9.32
110	14.2	23.0	44.0	68.3	92.0	113	130	142	149	151	149	142	130	114	93.3	70.4	46.6	25.6	13.7
115	18.9	28.1	44.5	66.1	86.5	105	121	132	139	141	139	132	121	106	87.9	68.1	47.0	29.8	17.9
120	23.5	31.7	46.3	65.0	82.4	98.6	112	122	129	131	129	123	113	99.4	83.8	66.4	48.4	33.5	22.0
125	27.3	34.4	47.7	63.8	79.2	93.1	105	114	119	121	119	114	105	94.0	80.2	64.9	50.5	36.5	25.6
130	30.7	36.4	50.0	63.1	76.5	88.6	98.4	106	111	112	111	106	99.0	89.0	76.9	64.1	52.6	39.1	28.7
135	33.7	38.2	51.3	62.8	73.6	83.8	92.3	99.0	103	105	103	99.5	93.0	84.1	74.1	64.3	54.2	41.1	31.6
140	36.3	40.5	52.5	62.6	71.8	78.7	85.7	91.7	95.4	96.8	95.8	92.5	86.6	79.2	72.4	64.0	55.3	42.3	34.3
145	38.7	42.8	53.4	62.3	69.7	75.8	80.5	84.3	87.1	88.4	87.6	85.1	81.1	76.1	70.7	64.0	56.3	43.6	36.7
150	41.0	45.5	54.3	61.8	68.0	73.4	77.1	80.1	81.8	82.4	81.9	80.2	77.3	73.8	69.3	62.6	53.3	44.9	38.9
155	41.6	43.6	53.9	61.4	66.2	70.3	73.7	76.3	77.5	77.7	77.3	76.1	74.4	71.4	67.5	60.4	52.2	41.9	39.5
160	40.4	39.9	51.6	61.0	64.9	68.0	70.3	72.0	73.3	73.7	73.4	72.6	71.2	66.9	56.5	50.1	45.0	38.4	38.5
165	37.6	37.4	41.3	52.8	62.9	64.9	67.0	68.6	69.3	69.6	69.7	68.5	61.0	50.5	46.6	42.3	37.4	35.1	37.0
170	40.5	40.3	40.8	42.0	49.9	59.5	61.8	63.9	65.9	66.2	64.9	51.3	44.6	46.1	45.0	42.9	37.9	37.8	37.6
175	48.4	49.1	51.0	50.7	49.8	50.9	52.7	51.5	51.2	54.2	30.1	44.3	48.7	49.5	49.3	48.4	49.1	48.8	48.5
180	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8

Table 6: Luminous Intensity Data

Table--2

UNIT: cd

γ (DEG) \ C (DEG)	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350		
0	291	291	291	291	291	291	291	291	291	291	291	291	291	291	291	291	291		
5	290	290	290	290	290	290	290	290	290	291	291	291	291	290	291	290	290		
10	286	286	287	287	288	288	289	289	289	289	289	289	289	288	288	288	287		
15	280	281	282	283	284	285	286	287	287	287	287	286	285	284	283	283	282		
20	272	273	275	277	279	281	282	283	284	284	283	282	281	279	277	276	275		
25	262	264	266	269	273	276	278	280	280	280	279	277	275	272	269	267	265		
30	250	252	256	261	265	270	273	275	276	276	274	272	268	264	260	256	254		
35	236	239	245	251	257	263	267	270	272	271	269	265	260	254	248	243	240		
40	219	224	232	240	248	255	261	265	266	265	263	258	251	244	236	229	224		
45	201	208	218	228	239	247	254	258	260	259	256	250	242	232	222	213	206		
50	181	190	203	216	228	239	247	251	253	252	248	241	232	220	207	195	186		
55	161	172	187	203	218	230	239	244	246	245	240	232	221	207	191	176	165		
60	138	153	171	190	207	221	230	236	239	237	231	222	209	194	175	157	143		
65	114	133	156	177	196	211	222	228	231	229	223	212	198	180	160	137	118		
70	89.2	113	140	165	186	202	213	220	223	221	214	203	187	167	144	117	94.0		
75	65.8	94.6	126	153	175	193	205	212	214	212	205	193	176	155	128	98.4	70.2		
80	44.9	78.3	113	142	166	184	196	203	206	204	196	184	167	144	114	81.3	48.8		
85	28.9	65.5	101	132	157	175	187	195	197	195	187	174	157	133	103	67.7	31.8		
90	20.4	56.5	92.2	123	148	166	178	186	188	186	178	166	148	123	93.0	57.9	22.0		
95	17.3	50.3	84.5	114	139	157	169	177	179	177	169	157	139	115	84.8	51.0	17.9		
100	18.4	46.2	77.8	106	130	148	160	167	169	167	160	147	130	106	77.7	46.2	18.1		
105	21.9	44.8	72.3	98.8	121	138	151	158	160	157	150	138	121	98.3	71.8	44.0	21.1		
110	26.1	45.3	68.8	92.0	113	129	141	147	149	147	140	128	112	91.2	67.6	43.8	25.1		
115	30.3	47.1	66.7	86.7	105	120	131	137	139	137	130	119	104	85.5	64.9	44.9	29.4		
120	34.5	48.8	65.7	82.8	98.5	111	121	127	129	127	120	110	97.2	81.1	63.4	46.7	33.6		
125	39.1	51.0	65.4	79.7	93.2	104	113	118	119	117	112	103	91.8	77.8	63.0	49.1	38.4		
130	42.4	52.8	65.1	77.4	88.6	98.2	105	110	111	109	105	97.0	87.1	75.5	62.9	51.7	43.1		
135	45.6	54.8	65.1	75.4	84.8	92.7	98.6	102	103	102	97.9	91.5	83.4	73.8	63.5	54.2	46.9		
140	49.4	57.0	65.1	73.3	81.4	87.9	92.7	95.7	96.7	95.5	92.1	86.9	80.2	72.1	64.2	56.6	50.1		
145	51.5	55.6	65.4	71.9	78.1	83.7	87.6	89.9	90.7	89.8	87.0	82.6	77.1	71.1	64.6	58.7	52.6		
150	55.0	59.4	65.6	70.9	75.7	80.0	83.0	84.8	85.4	84.3	82.0	78.8	74.8	70.2	65.1	60.2	55.4		
155	53.0	57.7	63.1	69.7	73.5	76.7	79.0	80.3	80.8	80.0	78.1	75.7	72.8	69.2	65.8	62.2	55.0		
160	46.7	52.2	58.6	65.7	71.7	74.0	75.5	76.5	76.9	76.6	74.9	73.0	70.9	68.6	65.9	63.9	53.4		
165	41.2	44.7	47.8	52.8	61.2	69.3	72.2	72.8	73.2	73.1	72.4	71.0	69.3	67.1	65.6	64.1	52.4		
170	37.9	42.1	45.5	46.2	46.2	50.6	59.4	67.6	68.5	68.6	68.4	67.9	66.6	64.4	62.7	58.9	48.2		
175	47.6	47.8	48.1	46.7	46.2	42.3	39.1	44.0	58.8	65.0	66.3	63.5	59.2	57.7	54.2	51.4	49.8		
180	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8		

Table 7: Luminous Intensity Data

EQUIPMENT LIST

Test Equipment	Model	Equipment No.	Calibration Date	Calibration Due date
Goniophotometer system	GO-R5000	HZTE011-01	Aug. 23, 2017	Aug. 22, 2018
Digital Power Meter	PF2010A	HZTE028-01	Aug. 10, 2017	Aug. 09, 2018
AC Power Supply	DPS1060	HZTE001-06	Aug. 10, 2017	Aug. 09, 2018
DC Power Supply	WY12010	HZTE004-03	Aug. 10, 2017	Aug. 09, 2018
Temperature recorder	JM624U	HZTE018-08	Aug. 17, 2017	Aug. 16, 2018
Temperature and humidity recorder	JR900	HZTE018-01	Aug. 16, 2017	Aug. 15, 2018
Standard source	D908	HZTE012-01	Aug. 20, 2017	Aug. 19, 2018
Integrate Sphere system	2M	HZTE015-01	Aug. 23, 2017	Aug. 22, 2018
Digital Power Meter	WT210	HZTE008-01	Aug. 10, 2017	Aug. 09, 2018
AC Power Supply	PCR 500L	HZTE001-07	Aug. 10, 2017	Aug. 09, 2018
DC Power Supply	IT6154	HZTE004-04	Aug. 10, 2017	Aug. 09, 2018
Standard source	SCL-1400	HZTE012-02	Aug. 20, 2017	Aug. 19, 2018
Temperature and humidity recorder	JR900	HZTE018-02	Aug. 16, 2017	Aug. 15, 2018
Temperature Meter	TES1310	HZTE017-01	Aug. 17, 2017	Aug. 16, 2018

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

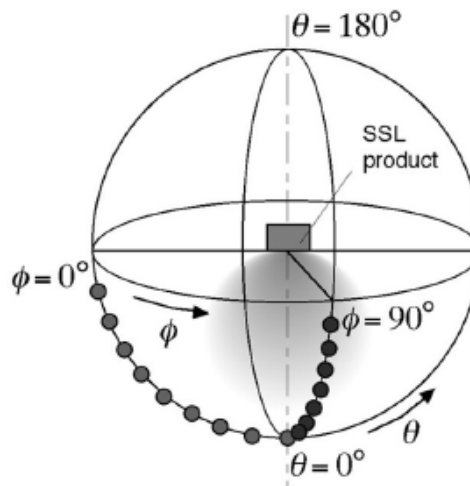
The color characteristics of SSL products include chromaticity coordinates, correlated color temperature, and color rendering index. These characteristics of SSL products may be spatially non-uniform, and thus, in order that they can be specified accurately, the color quantities shall be measured as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

This report is considered invalidated without the Special Seal for Inspection of the LTL. This report shall not be altered, increased or deleted. The results shown in this test report refer only to the sample(s) tested. Without written approval of LTL, this test report shall not be copied except in full and published as advertisement.