

## LM-79-19 TEST REPORT

for

### GREEN CREATIVE LTD

Room 3603, Level 36, Tower 1, Enterprise Square Five, 38 Wang Chiu Road, Kowloon Bay, KL,  
Hong Kong

### LED Tube

**Model: 8.5T8/2F/850/UEB**

### Laboratory: Leading Testing Laboratories

**NVLAP CODE: 200960-0**

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

Tel: +86571 86376106

www.ltlqa.com

Report No.: HZ23030039c

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

Review by:



Engineer: April Zou

Apr. 04, 2023

Approved by:



Manager: Jim Zhang

Apr. 04, 2023

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: **8.5T8/2F/850/UEB**

Luminous Efficacy (Lumens /Watt)	Total Luminous Flux (Lumens)	Power (Watts)	Power Factor
132.2	1108.0	8.38	0.9878
CCT (K)	CRI	Stabilization Time (Light & Power)	
5106	83.1	50	

Table 1: Executive Data Summary

Note: The above results are recorded/ derived from measurements made using an Integrating Sphere.

### Test specifications:

<b>Date of Receipt</b>	: Mar. 28, 2023
<b>Date of Test</b>	: Mar. 30, 2023
<b>Test item</b>	: Total Luminous Flux, Luminous Distribution Intensity, Luminous Efficacy, Correlated Color Temperature, Color Rendering Index, Chromaticity Coordinate, Electrical parameters
<b>Reference Standard</b>	: IESNA LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products ANSI/IES TM-30-18 IES Method for Evaluating Light Source Color Rendition

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## SAMPLE PHOTO



Figure 1- Overview of the sample

### Equipment Under Test(EUT)

<b>Name</b>	: LED Tube
<b>Model</b>	: 8.5T8/2F/850/UEB
<b>Electrical Ratings</b>	: 120-277V, 50/60Hz, 8.5W
<b>Product Description</b>	: 5000K
<b>Manufacturer</b>	: GREEN CREATIVE LTD
<b>Address</b>	: Room 3603, Level 36, Tower 1, Enterprise Square Five, 38 Wang Chiu Road, Kowloon Bay, KL, Hong Kong

## TEST RESULTS

Test ambient temperature was 26.0 °C.

Base orientation was base up. Test was conducted without a dimmer in the circuit.

The stabilization time of the sample was 50 minutes, and the total operating time including stabilization was 55 minutes.

### Sphere-Spectroradiometer Method

Parameter	Result	
Test Voltage (V)	120.0	277.0
Voltage frequency (Hz)	60	60
Test Current (A)	0.071	0.034
Power Factor	0.9878	0.9305
Test Power (W)	8.38	8.67
THD A%	12.15	15.76
Luminous Efficacy (lm/W)	132.2	130.3
Total Luminous Flux (lm)	1108.0	1130.1
Color Rendering Index (CRI)	83.1	
R9	8.9	
Correlated Color Temperature (CCT)(K)	5106	
Chromaticity Chroma x	0.3424	
Chromaticity Chroma y	0.3537	
Chromaticity Chroma u	0.2088	
Chromaticity Chroma v	0.3235	
Duv	0.0021	
Chromaticity Chroma u'	0.2088	
Chromaticity Chroma v'	0.4853	

Special Color Rendering Indices	
R1	81.4
R2	88.3
R3	92.5
R4	82.6
R5	81.9
R6	83.1
R7	87
R8	67.8
R9	8.9
R10	71.7
R11	81.7
R12	60.7
R13	83.2
R14	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 24.8 °C.

The photometric distance is 30 m.

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)	0.071
Power Factor	0.9879
Power (W)	8.41
Luminous Efficacy (lm/W)	132.6
Total Luminous Flux (lm)	1115.4
Beam Angle (°)	107.3 (0°-180°) / 210.1 (90°-270°)
Center Beam Candle Power (cd)	201
Maximum Beam Candle Power (cd)	201.7 (At: C=60.0, Gamma=3.0)
Spacing Criteria	1.23 (0°-180°) / 1.39 (90°-270°)
Zonal Lumens in the 0°-60° Zone	44.69%
Zonal Lumens in the 60°-90° Zone	26.48%
Zonal Lumens in the 90°-120° Zone	17.26%
Zonal Lumens in the 120°-180° Zone	11.57%

Table 3: Test data per Goniophotometer Method

## Spectral Power Distribution - Sphere Spectroradiometer Method

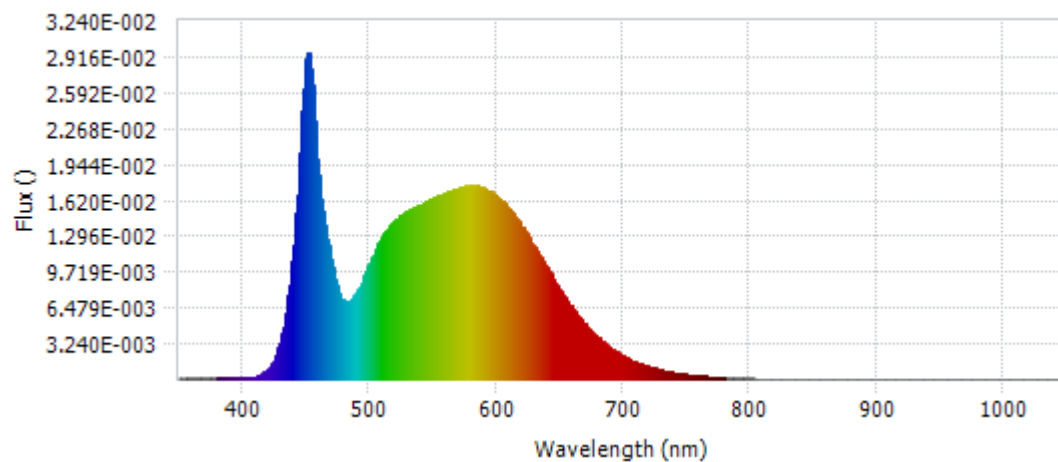
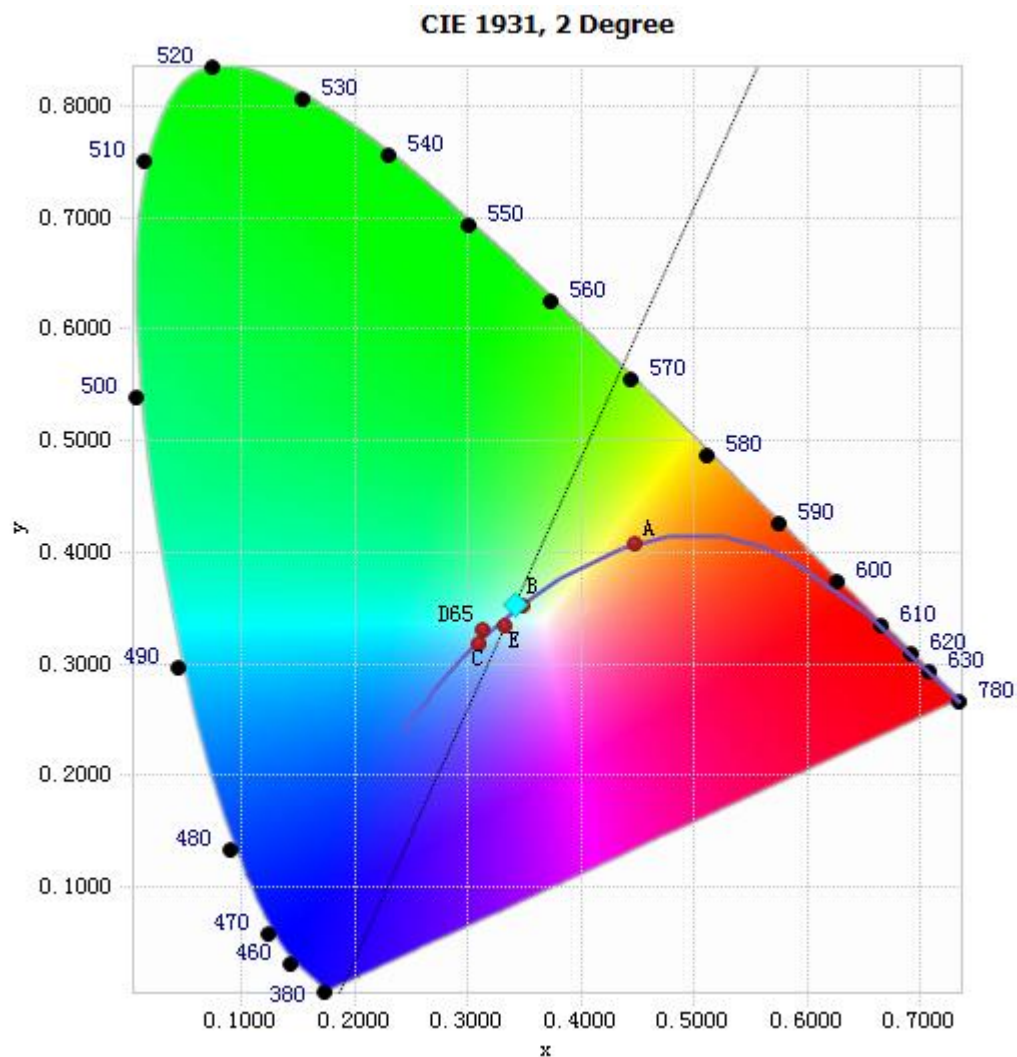


Chart 1: Spectral Power Distribution

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	1.38E-04	485	7.23E-03	590	1.73E-02	695	2.46E-03
385	1.28E-04	490	7.91E-03	595	1.70E-02	700	2.12E-03
390	1.28E-04	495	9.09E-03	600	1.66E-02	705	1.83E-03
395	1.22E-04	500	1.05E-02	605	1.61E-02	710	1.57E-03
400	1.18E-04	505	1.18E-02	610	1.54E-02	715	1.34E-03
405	1.36E-04	510	1.29E-02	615	1.47E-02	720	1.15E-03
410	2.51E-04	515	1.38E-02	620	1.38E-02	725	1.00E-03
415	5.24E-04	520	1.43E-02	625	1.30E-02	730	8.55E-04
420	9.83E-04	525	1.48E-02	630	1.20E-02	735	7.33E-04
425	1.95E-03	530	1.52E-02	635	1.10E-02	740	6.24E-04
430	3.73E-03	535	1.55E-02	640	1.01E-02	745	5.35E-04
435	6.81E-03	540	1.58E-02	645	9.12E-03	750	4.49E-04
440	1.20E-02	545	1.61E-02	650	8.16E-03	755	3.92E-04
445	2.04E-02	550	1.63E-02	655	7.28E-03	760	3.38E-04
450	2.89E-02	555	1.66E-02	660	6.46E-03	765	2.88E-04
455	2.66E-02	560	1.68E-02	665	5.68E-03	770	2.50E-04
460	1.85E-02	565	1.71E-02	670	5.00E-03	775	2.12E-04
465	1.39E-02	570	1.72E-02	675	4.36E-03	780	1.86E-04
470	1.08E-02	575	1.74E-02	680	3.80E-03		
475	8.10E-03	580	1.75E-02	685	3.31E-03		
480	7.07E-03	585	1.75E-02	690	2.88E-03		

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

## Chromaticity Diagram - Sphere Spectroradiometer Method



Tristimulus values(x, y): (0.3424, 0.3537)

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

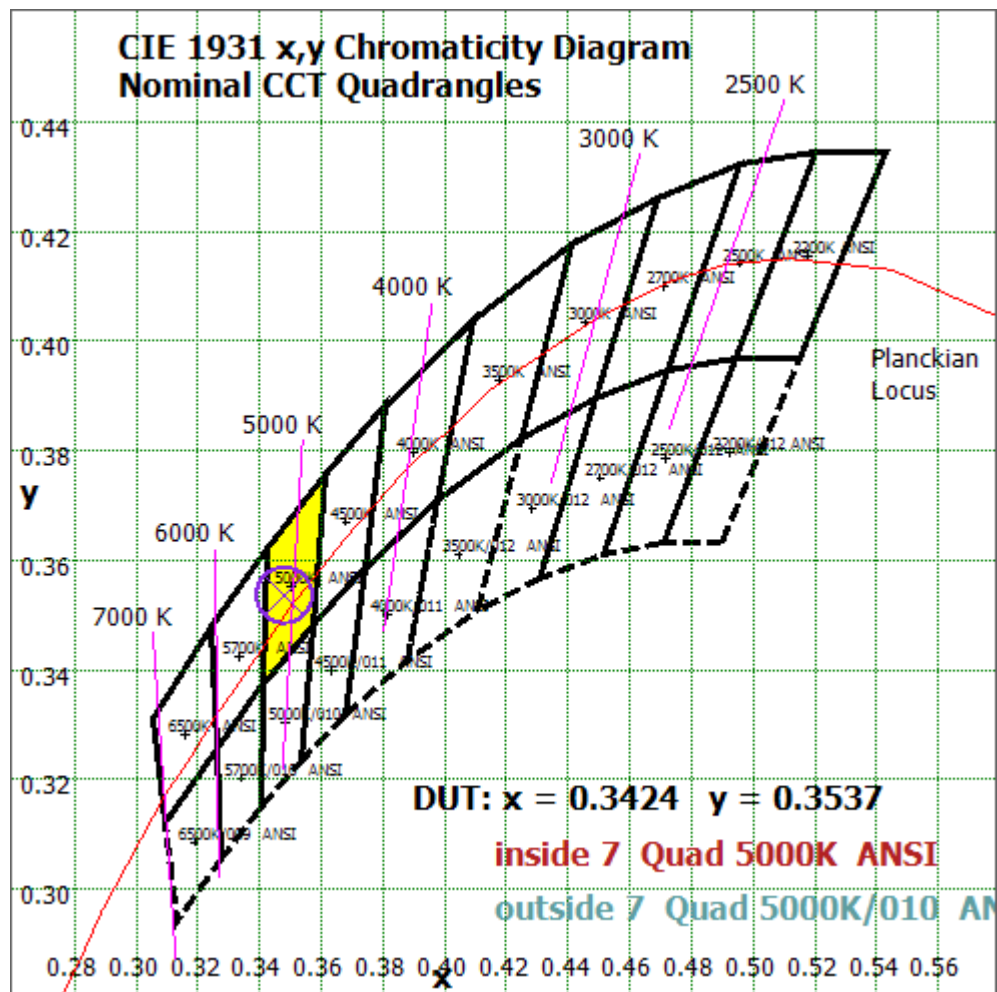


Chart 3: Plot of Lamp x/y coordinates on CIE 1931 Chromaticity Diagram

# Color Rendition Report – Sphere Spectroradiometer Method

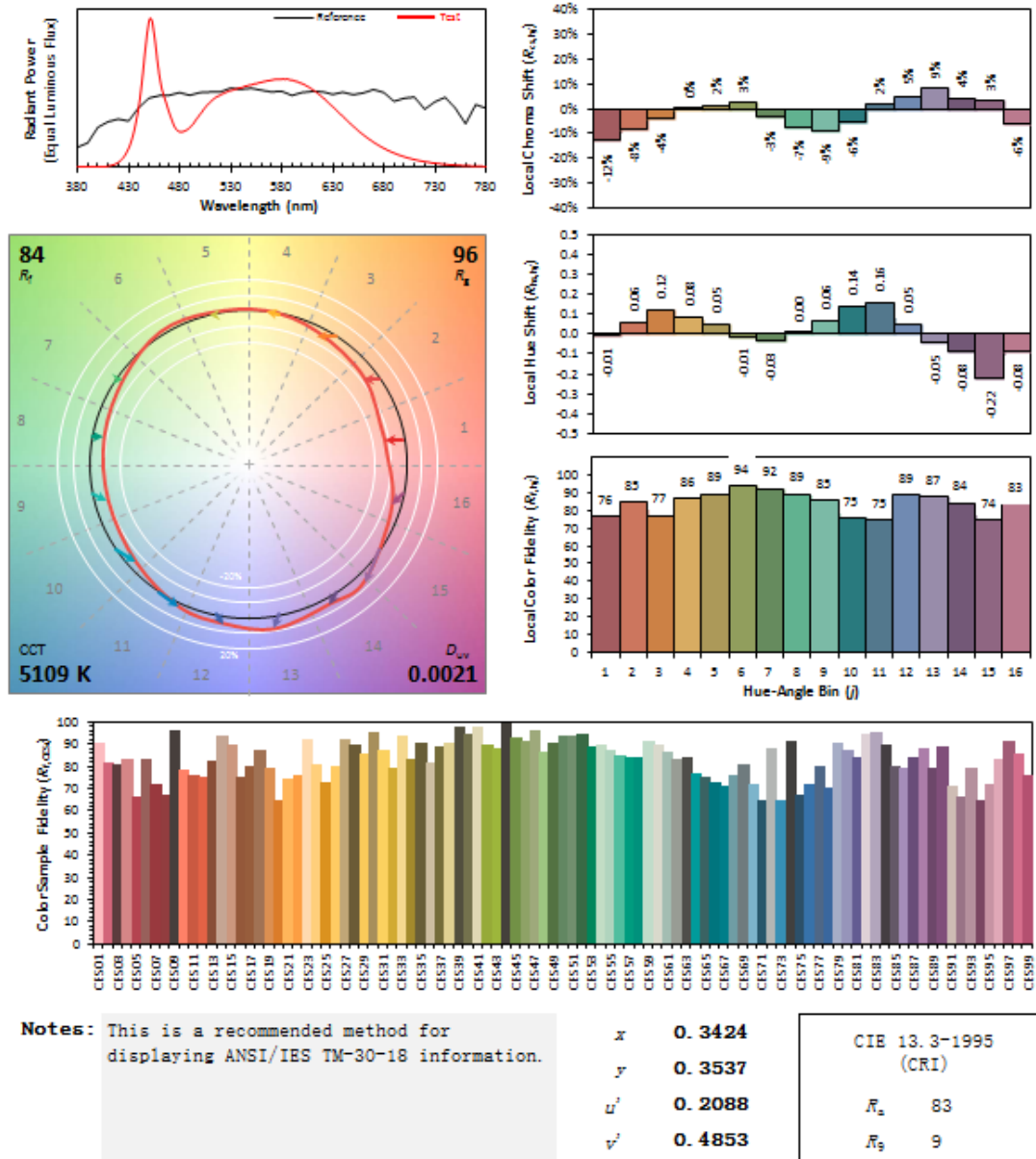
## ANSI/IES TM-30-18 Color Rendition Report

Source: LED

Manufacturer: GREEN CREATIVE LTD

Date: 2023/03/30

Model: 8.5T8/2F/850/UEB



Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.

Chart 4: Full Report Created with the IES TM-30 Calculator

Note: The values in this diagram might be a little different from the values in Table 2 due to rounding.

### Zonal Lumen Tabulation- Goniophotometer Method

$\gamma(^{\circ})$	Lumens	% Total
0- 10	19.103	1.71%
10- 20	55.09	4.94%
20- 30	84.769	7.60%
30- 40	105.564	9.46%
40- 50	116.416	10.44%
50- 60	117.56	10.54%
60- 70	110.853	9.94%
70- 80	98.931	8.87%
80- 90	85.528	7.67%
90-100	73.975	6.63%
100-110	63.884	5.73%
110-120	54.665	4.90%
120-130	45.599	4.09%
130-140	35.66	3.20%
140-150	26.007	2.33%
150-160	14.967	1.34%
160-170	5.746	0.52%
170-180	1.026	0.09%
Total	1115.3	100%

$\gamma(^{\circ})$	Lumens	% Total
0- 60	498.502	44.69%
60- 90	295.312	26.48%
0-90	793.814	71.17%
90- 180	321.529	28.83%
0- 180	1115.3	100%

Table 5: Zonal Lumen

## Illuminance Plots- Goniophotometer Method

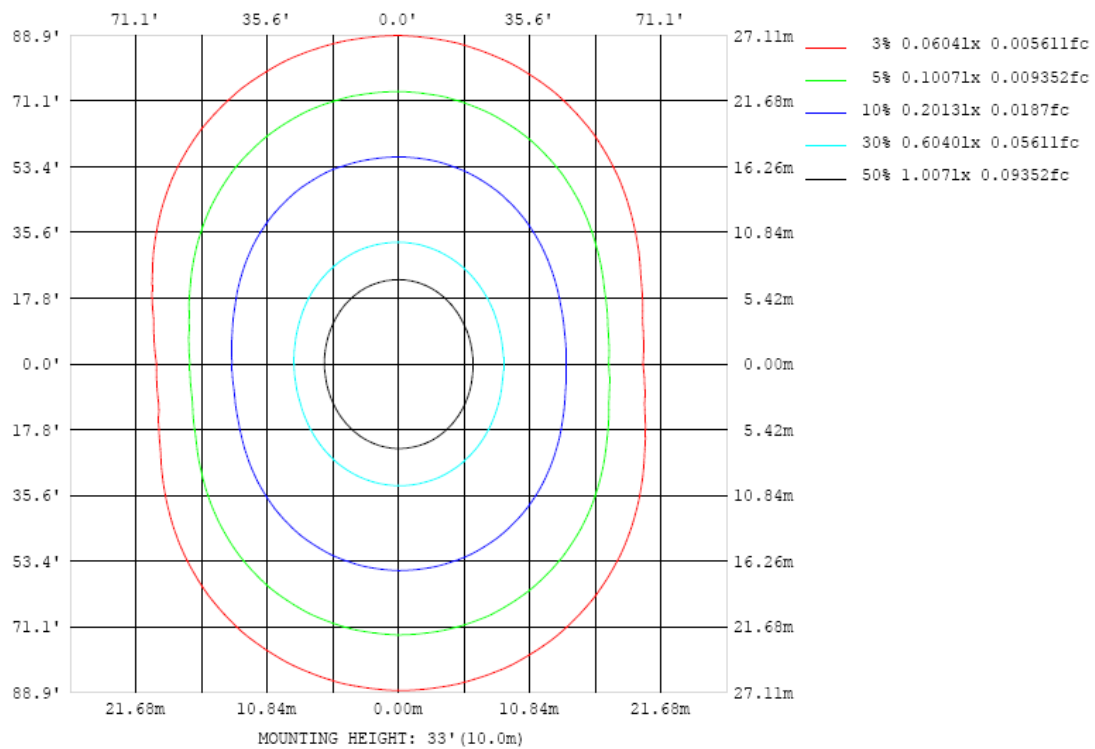


Chart 5: Illuminance Plot (Footcandles)

## Luminous Intensity Distribution Plots- Goniophotometer Method

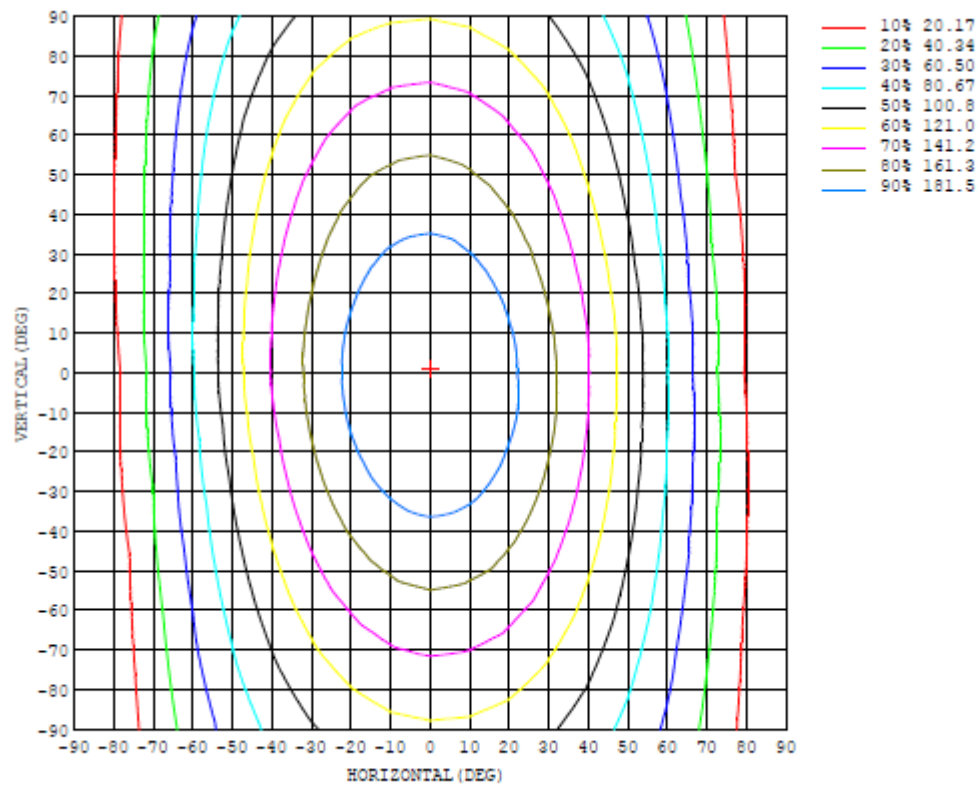


Chart 6: Isocandela Plot

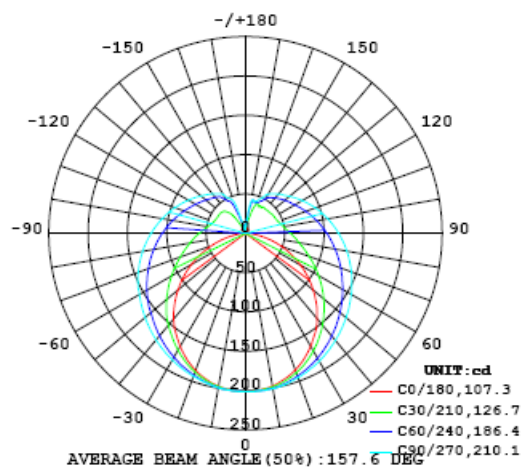


Chart 7: Polar Candela Distribution

## 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	201	201	201	201	201	201	201	201	201	201	201	201	201	201	201	201	201	201	201
5	200	200	201	201	201	201	201	201	202	201	201	202	201	201	201	201	201	200	200
10	197	197	198	198	199	200	200	200	201	201	200	200	200	199	199	198	198	198	198
15	192	192	193	194	195	197	197	198	198	198	198	198	197	196	195	194	193	193	192
20	185	186	187	189	190	192	193	195	195	195	195	194	193	191	190	188	187	186	185
25	176	177	179	181	184	186	189	191	191	192	191	190	188	185	183	180	178	177	177
30	166	167	170	173	176	180	183	186	187	188	187	185	182	178	174	171	168	166	166
35	154	155	159	163	168	173	177	181	182	183	182	179	175	170	165	161	157	155	155
40	142	143	147	152	159	165	171	175	177	178	176	173	168	162	155	149	144	142	142
45	128	129	134	141	149	157	164	169	172	172	171	167	161	154	145	137	131	128	128
50	112	115	121	130	140	149	157	163	166	167	165	160	154	145	135	125	117	112	112
55	96.9	99.9	108	119	130	141	150	157	160	161	159	154	146	136	124	113	102	96.3	95.9
60	80.7	84.9	94.6	107	120	133	143	150	154	155	153	147	139	127	114	100	88.0	80.2	79.3
65	64.7	69.8	81.7	96.5	111	125	136	144	148	149	147	141	131	119	104	88.9	73.9	64.1	62.4
70	48.6	56.0	69.7	86.3	103	117	129	137	142	143	141	134	124	111	95.2	78.1	61.6	48.5	45.7
75	32.9	42.1	59.1	77.2	94.7	110	122	131	136	137	134	128	117	104	87.1	68.3	49.5	33.6	29.7
80	18.5	30.0	49.4	69.1	87.5	103	116	125	129	131	128	121	111	97.0	79.9	60.9	39.4	20.8	15.6
85	6.91	20.4	41.7	62.9	81.1	96.8	109	118	123	125	122	115	105	91.0	73.5	54.1	32.0	11.6	4.96
90	0.75	14.9	36.1	57.2	75.2	91.0	104	112	117	119	116	109	99.1	85.2	68.8	49.0	27.3	7.50	1.02
95	0.43	11.9	32.3	52.6	70.1	85.5	97.7	106	111	112	110	103	93.5	79.9	64.1	45.1	24.8	7.22	0.20
100	0.49	10.0	29.5	49.0	66.3	80.3	92.1	100	105	106	104	97.6	88.1	75.1	60.1	42.3	23.9	8.56	0.30
105	0.85	10.8	27.9	46.2	62.4	75.5	86.7	94.7	99.0	100	97.8	92.1	83.1	70.9	56.9	40.6	24.2	10.8	0.56
110	1.28	11.5	27.9	44.1	59.0	71.2	81.6	89.2	93.3	94.4	92.1	86.8	78.3	67.8	54.3	39.6	25.3	13.5	1.15
115	2.74	14.2	28.5	42.8	56.2	67.9	76.9	83.8	87.7	88.8	86.7	81.6	73.9	64.3	52.2	39.2	26.9	16.6	2.08
120	4.67	16.9	28.4	42.3	53.9	64.3	72.4	78.6	82.3	83.3	81.3	76.7	69.9	61.3	50.6	39.3	28.9	20.1	3.45
125	5.99	19.3	29.4	41.8	52.0	61.3	68.8	73.8	77.1	78.1	76.4	72.2	66.8	58.8	49.4	39.9	31.2	23.2	5.38
130	4.53	17.9	30.6	40.7	50.6	58.5	65.3	70.0	72.2	73.1	71.7	68.6	63.6	56.6	48.6	40.7	33.8	21.1	6.24
135	0.07	15.8	33.3	40.4	48.7	56.1	61.9	66.1	67.9	68.6	67.9	65.0	60.5	54.7	48.2	41.7	36.3	20.9	6.49
140	0.30	20.2	35.6	40.1	46.8	53.4	58.8	62.4	64.5	65.3	64.1	61.5	57.9	53.2	47.6	41.8	38.5	22.2	4.17
145	2.64	21.4	36.2	40.5	45.7	50.5	55.4	58.7	60.6	61.3	60.5	58.5	55.7	49.8	43.9	39.9	37.6	23.5	3.62
150	6.37	13.5	35.4	39.6	41.2	45.5	50.6	54.6	56.7	57.4	56.9	55.0	50.1	45.9	42.8	40.2	36.0	18.8	6.18
155	5.08	6.93	31.3	37.8	39.2	41.9	44.9	47.3	48.8	49.3	48.7	47.6	46.0	43.7	42.1	41.2	35.1	13.1	7.92
160	5.60	8.07	19.0	39.3	40.8	40.1	42.0	42.4	43.0	43.5	42.9	43.2	42.8	42.0	43.0	41.1	26.2	9.69	5.89
165	8.39	7.25	11.2	24.9	38.4	42.8	43.0	41.5	40.6	41.0	41.1	42.6	43.8	43.3	40.9	30.4	15.9	7.67	6.32
170	6.57	8.94	8.78	11.8	18.7	28.3	34.2	38.0	40.5	41.4	41.0	39.1	36.1	31.4	22.2	13.9	8.38	5.56	6.53
175	5.35	8.96	9.43	9.29	8.34	7.93	9.69	11.7	12.8	13.3	13.3	12.6	11.1	8.96	7.37	6.39	4.97	5.13	6.69
180	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10

Table 6: Luminous Intensity Data

Table--2

UNIT: cd

C (DEG) γ (DEG)	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350		
0	201	201	201	201	201	201	201	201	201	201	201	201	201	201	201	201	201		
5	200	201	201	201	201	201	201	201	201	201	201	201	201	201	201	201	201		
10	198	198	198	198	199	199	199	199	199	199	199	199	199	198	197	197	197		
15	193	193	194	195	195	196	196	196	197	196	196	196	195	194	193	192	192		
20	186	187	188	189	190	192	193	193	194	193	192	191	190	188	187	186	185		
25	177	179	180	182	185	187	189	190	190	189	188	186	184	181	179	177	176		
30	167	169	172	175	179	182	184	186	186	185	183	180	177	173	170	167	166		
35	156	158	162	167	172	176	180	181	182	181	178	174	169	164	160	157	155		
40	144	147	153	158	164	170	174	176	177	176	172	168	162	156	150	146	143		
45	130	135	142	150	157	164	169	171	172	171	166	161	155	147	139	133	129		
50	115	122	131	141	150	157	163	166	167	165	160	155	146	137	127	119	114		
55	100	108	120	132	142	151	157	160	161	159	155	148	138	127	115	105	99.1		
60	84.5	95.3	109	122	135	145	152	155	156	154	149	141	130	117	103	91.4	83.7		
65	69.1	82.4	98.1	114	127	138	146	150	151	149	143	134	122	107	92.2	77.8	67.7		
70	54.4	70.5	88.4	105	120	131	140	144	145	143	136	127	114	98.5	81.5	64.8	52.2		
75	40.9	59.8	79.5	97.7	113	125	133	138	139	136	130	120	107	90.2	71.8	52.7	37.5		
80	29.5	50.7	71.8	90.5	106	118	127	131	133	130	124	113	99.6	82.8	63.4	42.4	24.2		
85	21.3	43.6	65.1	84.0	99.7	112	121	125	126	124	117	107	93.4	76.1	56.2	34.4	14.1		
90	15.9	37.5	58.8	77.8	93.6	106	114	119	120	117	111	101	87.1	70.2	50.4	28.8	8.51		
95	11.6	32.5	53.3	72.1	87.7	99.8	108	113	114	111	105	95.0	81.5	65.1	46.0	25.5	7.35		
100	10.3	28.8	48.8	66.9	82.1	94.1	102	107	108	105	98.9	89.4	76.5	60.7	42.7	24.1	8.28		
105	10.6	27.2	45.2	62.4	77.1	88.4	96.3	100	102	99.1	93.2	84.2	71.9	57.0	40.5	24.0	10.1		
110	11.1	27.1	43.1	58.6	72.3	83.1	90.7	94.5	95.5	93.3	87.6	79.2	67.8	54.1	39.2	24.9	12.2		
115	11.6	27.6	41.8	55.8	68.2	78.1	85.1	88.9	89.8	87.6	82.4	74.5	64.1	51.8	38.6	26.5	14.1		
120	11.6	28.2	41.2	53.7	64.7	73.6	80.0	83.3	84.2	82.2	77.5	70.4	61.0	50.0	38.7	28.5	15.7		
125	9.90	27.8	41.1	51.9	61.7	69.6	75.3	78.2	78.9	77.1	72.9	66.6	58.3	48.8	39.4	29.4	15.0		
130	5.60	22.2	40.7	50.6	58.9	65.8	70.9	73.4	74.0	72.5	68.7	63.1	55.9	47.9	40.8	26.8	8.88		
135	2.69	16.1	39.6	49.4	56.7	62.5	66.8	69.0	69.5	68.1	64.9	60.2	54.1	47.5	41.8	21.0	2.06		
140	4.77	13.4	34.9	45.7	54.8	59.6	63.1	64.9	65.3	64.2	61.4	57.5	52.5	47.7	39.1	13.9	0.00		
145	6.71	8.85	26.9	42.2	49.7	56.7	59.7	61.1	61.5	60.6	58.4	55.2	51.3	47.3	28.6	9.67	3.89		
150	8.41	4.25	10.9	37.1	44.4	48.3	53.2	56.1	57.0	56.2	55.3	53.1	49.8	39.1	15.7	6.77	6.82		
155	9.25	3.70	5.14	14.6	35.4	43.5	47.0	48.8	49.2	48.8	48.1	46.6	37.8	19.0	5.34	5.23	8.14		
160	8.39	10.8	7.78	5.05	6.95	18.9	31.5	39.4	41.6	40.1	35.3	27.9	14.1	5.54	4.14	5.70	7.59		
165	4.53	10.4	9.15	7.92	4.00	6.01	4.75	4.04	5.41	5.07	4.16	4.61	3.52	5.98	3.26	10.3	14.2		
170	6.05	5.52	10.1	9.56	9.44	8.52	3.84	1.65	1.40	4.42	4.99	4.34	2.89	4.68	12.2	9.94	8.73		
175	6.37	4.92	3.59	3.10	5.08	8.14	10.2	12.1	3.72	14.6	13.1	9.22	5.94	8.25	13.1	10.3	4.09		
180	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10		

Table 7: Luminous Intensity Data



## EQUIPMENT LIST

Test Equipment	Model	Equipment No.	Calibration Date	Calibration Due date
Goniophotometer system	GO-R5000	HZTE011-01	Aug. 05, 2022	Aug. 04, 2023
Digital Power Meter	PF2010A	HZTE028-01	Aug. 05, 2022	Aug. 04, 2023
AC Power Supply	DPS1060	HZTE001-06	Aug. 05, 2022	Aug. 04, 2023
DC Power Supply	WY12010	HZTE004-03	Aug. 05, 2022	Aug. 04, 2023
Temperature recorder	JM624U	HZTE018-08	Aug. 05, 2022	Aug. 04, 2023
Temperature and humidity recorder	JR900	HZTE018-01	Aug. 05, 2022	Aug. 04, 2023
Standard source	D908	HZTE012-01	Aug. 05, 2022	Aug. 04, 2023
Integrate Sphere system	3M	HZTE015-04	Aug. 05, 2022	Aug. 04, 2023
Digital Power Meter	WT210	HZTE008-01	Aug. 05, 2022	Aug. 04, 2023
AC Power Supply	PCR 500L	HZTE001-07	Aug. 05, 2022	Aug. 04, 2023
DC Power Supply	IT6154	HZTE004-04	Aug. 05, 2022	Aug. 04, 2023
Standard source	SCL-1400	HZTE012-02	Aug. 05, 2022	Aug. 04, 2023
Temperature and humidity recorder	JR900	HZTE018-02	Aug. 05, 2022	Aug. 04, 2023
Temperature Meter	TES1310	HZTE017-01	Aug. 05, 2022	Aug. 04, 2023

Table 7: 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 3 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  $4\pi$ . 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 Tubes) 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 20 min, taken 10 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 Tubes) 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 20 min, taken 10 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.

\*\*\* End of Report \*\*\*

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