

## 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: 9.5T5HE/2F/840/BYP/R**

### Laboratory: Leading Testing Laboratories

**NVLAP CODE: 200960-0**

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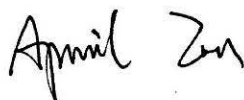
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[www.ledtestlab.com](http://www.ledtestlab.com)

Report No.: HZ22070025p

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

Review by:



Engineer: April Zou  
Aug. 17, 2022

Approved by:



Manager: Jim Zhang  
Aug. 17, 2022

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: **9.5T5HE/2F/840/BYP/R**

Luminous Efficacy (Lumens /Watt)	Total Luminous Flux (Lumens)	Power (Watts)	Power Factor
137.0	1303.0	9.51	0.9771
CCT (K)	CRI	Stabilization Time (Light & Power)	
4084	82.6	50	

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. 20, 2022

**Date of Test** : Aug. 15, 2022

**Test item** : Total Luminous Flux, Luminous Distribution Intensity, Luminous Efficacy, Correlated Color Temperature, Color Rendering Index, Chromaticity Coordinate, Electrical parameters

**Reference Standard** : IESNA LM-79-2019 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

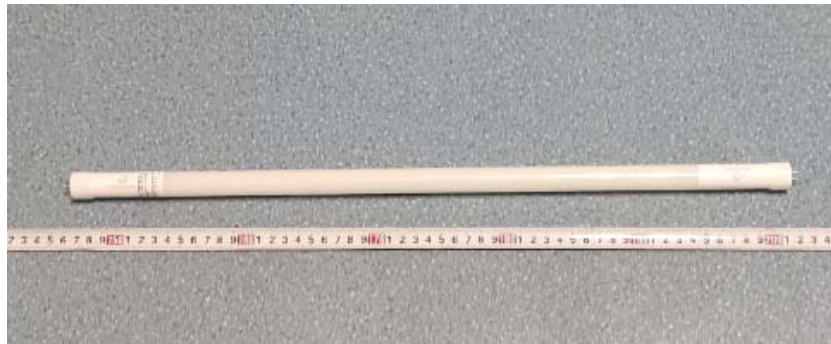


Figure 1- Overview of the sample

### Equipment Under Test(EUT)

<b>Name</b>	: LED Tube
<b>Model</b>	: 9.5T5HE/2F/840/BYP/R
<b>Electrical Ratings</b>	: 120-277V, 50/60Hz
<b>Product Description</b>	: 4000K
<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)	0.081	0.039
Power Factor	0.9771	0.8982
Test Power (W)	9.51	9.59
THD A%	16.24	19.47
Luminous Efficacy (lm/W)	137.0	135.6
Total Luminous Flux (lm)	1303.0	1300.8
Color Rendering Index (CRI)	82.6	
R9	4.7	
Correlated Color Temperature (CCT)(K)	4084	
Chromaticity Chroma x	0.3774	
Chromaticity Chroma y	0.3773	
Chromaticity Chroma u	0.2229	
Chromaticity Chroma v	0.3342	
Duv	0.0012	
Chromaticity Chroma u'	0.2229	
Chromaticity Chroma v'	0.5014	

Special Color Rendering Indices	
R1	80.5
R2	88.6
R3	94.9
R4	81.7
R5	80.9
R6	84.5
R7	85.9
R8	63.6
R9	4.7
R10	73.3
R11	80.9
R12	62.9
R13	82.5
R14	97.4

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)	0.081
Power Factor	0.9775
Power (W)	9.56
Luminous Efficacy (lm/W)	137.1
Total Luminous Flux (lm)	1310.5
Beam Angle (°)	111.5 (0°-180°) / 236.7 (90°-270°)
Center Beam Candle Power (cd)	208
Maximum Beam Candle Power (cd)	208.3 (At: C=0.0, Gamma=4.0)
Spacing Criteria	1.22 (0°-180°) / 1.50 (90°-270°)
Zonal Lumens in the 0°-60°Zone	41.76%
Zonal Lumens in the 60°-90°Zone	27.13%
Zonal Lumens in the 90°-120°Zone	17.54%
Zonal Lumens in the 120°-180°Zone	13.57%

Table 3: Test data per Goniophotometer Method

## Spectral Power Distribution - Sphere Spectroradiometer Method

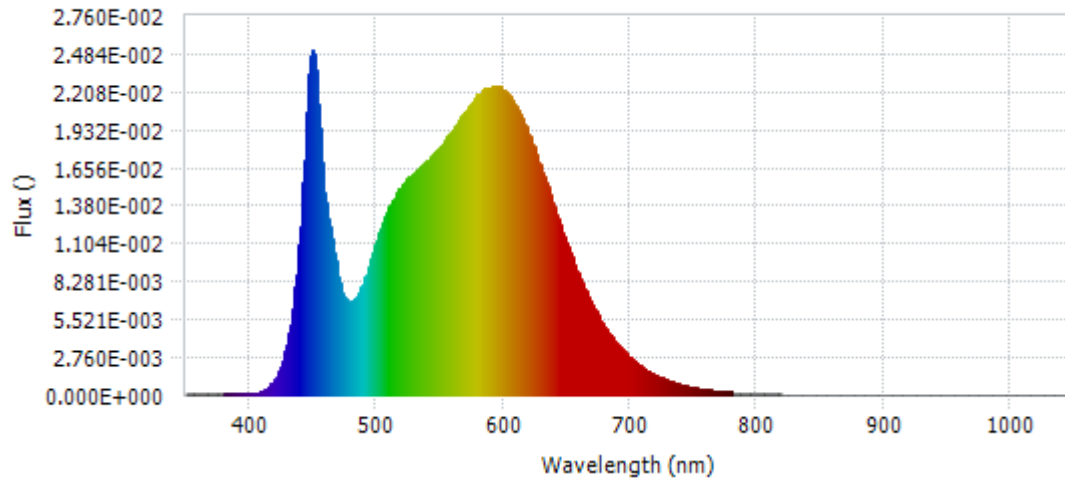
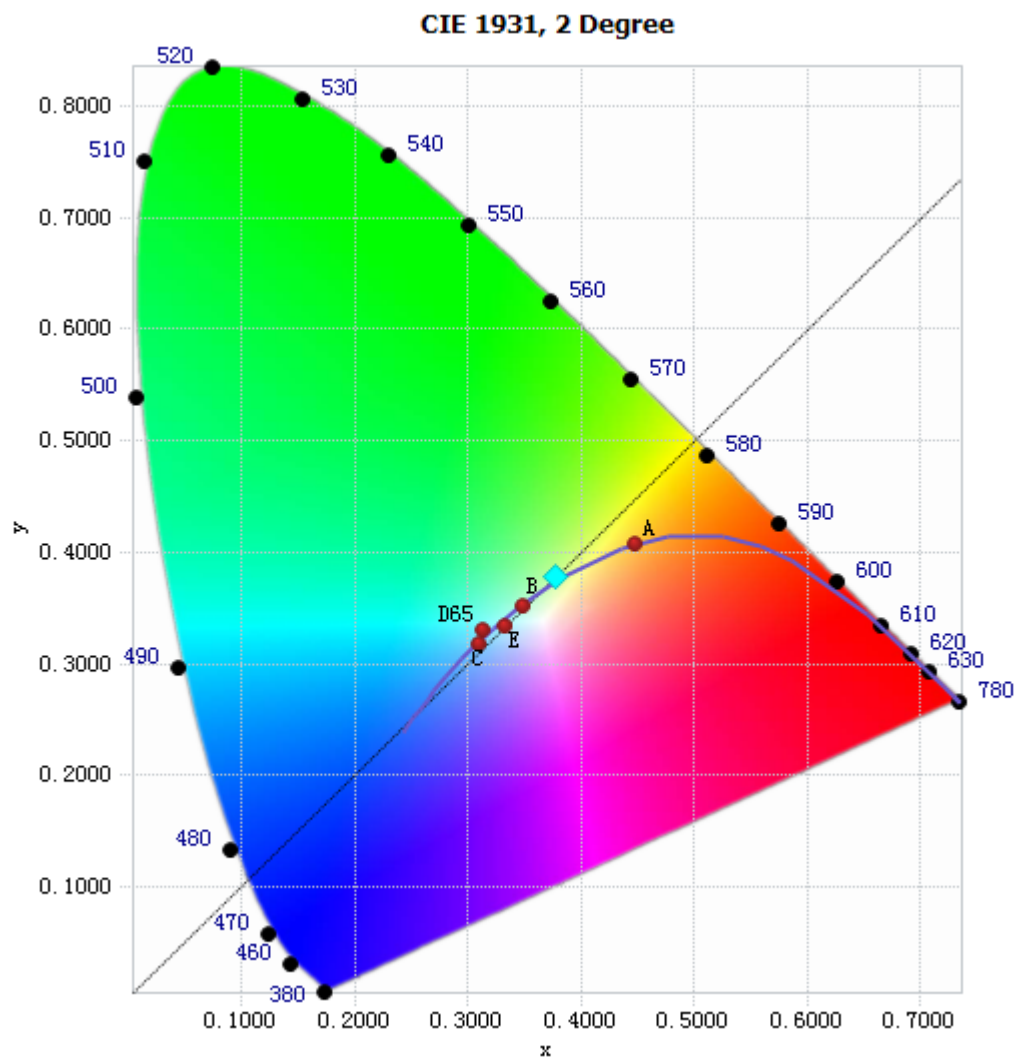


Chart 1: Spectral Power Distribution

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	1.19E-04	485	7.34E-03	590	2.24E-02	695	3.19E-03
385	1.04E-04	490	8.23E-03	595	2.24E-02	700	2.73E-03
390	1.07E-04	495	9.71E-03	600	2.22E-02	705	2.34E-03
395	1.06E-04	500	1.12E-02	605	2.18E-02	710	2.00E-03
400	1.03E-04	505	1.26E-02	610	2.10E-02	715	1.71E-03
405	1.49E-04	510	1.37E-02	615	2.01E-02	720	1.46E-03
410	3.20E-04	515	1.47E-02	620	1.90E-02	725	1.25E-03
415	6.29E-04	520	1.53E-02	625	1.78E-02	730	1.06E-03
420	1.23E-03	525	1.58E-02	630	1.65E-02	735	8.97E-04
425	2.29E-03	530	1.62E-02	635	1.51E-02	740	7.65E-04
430	4.09E-03	535	1.66E-02	640	1.37E-02	745	6.50E-04
435	7.14E-03	540	1.71E-02	645	1.23E-02	750	5.50E-04
440	1.23E-02	545	1.76E-02	650	1.11E-02	755	4.76E-04
445	2.06E-02	550	1.82E-02	655	9.81E-03	760	3.97E-04
450	2.51E-02	555	1.87E-02	660	8.64E-03	765	3.44E-04
455	1.94E-02	560	1.92E-02	665	7.59E-03	770	2.91E-04
460	1.40E-02	565	2.00E-02	670	6.63E-03	775	2.54E-04
465	1.14E-02	570	2.06E-02	675	5.77E-03	780	2.20E-04
470	8.62E-03	575	2.13E-02	680	5.01E-03		
475	7.01E-03	580	2.18E-02	685	4.32E-03		
480	6.84E-03	585	2.23E-02	690	3.72E-03		

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

# Chromaticity Diagram - Sphere Spectroradiometer Method



Tristimulus values(x, y): (0.3774, 0.3773)

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

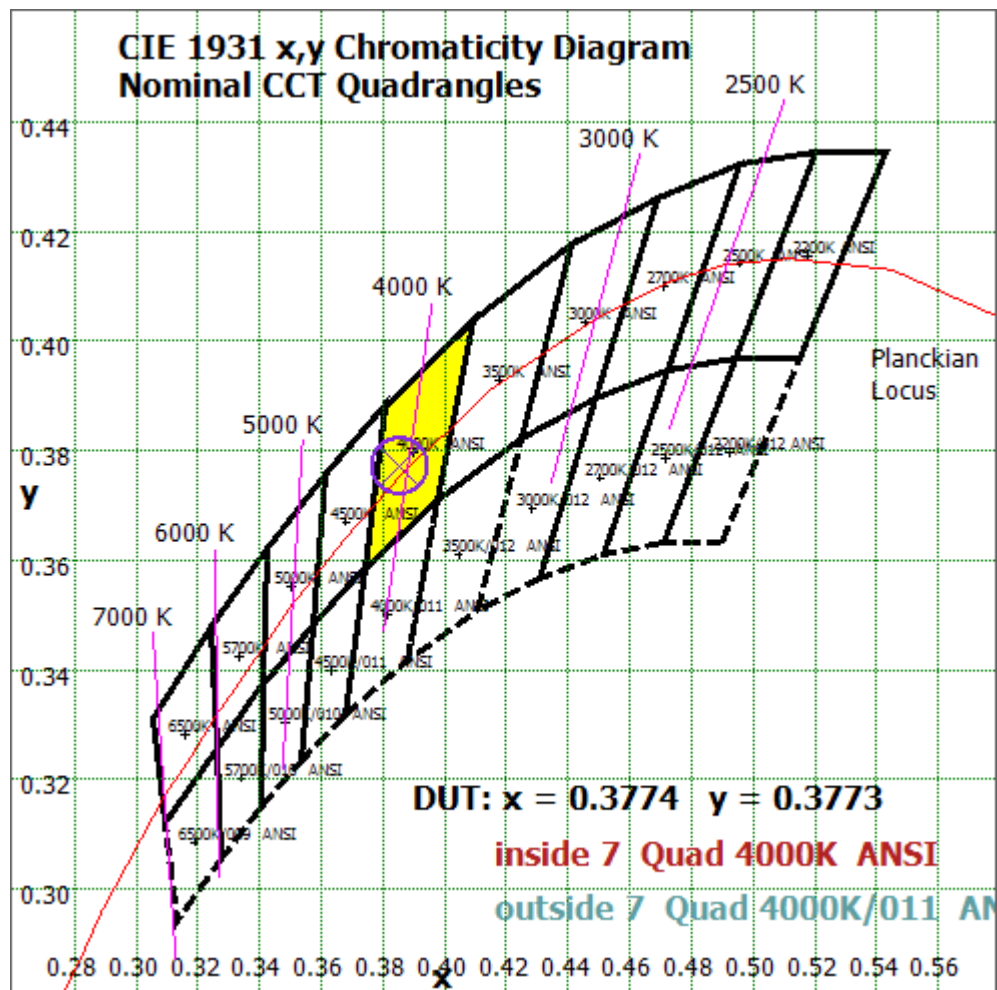


Chart 3: Plot of Lamp x/y coordinates on CIE 1931 Chromaticity Diagram

# Color Rendition Report – Sphere Spectroradiometer Method

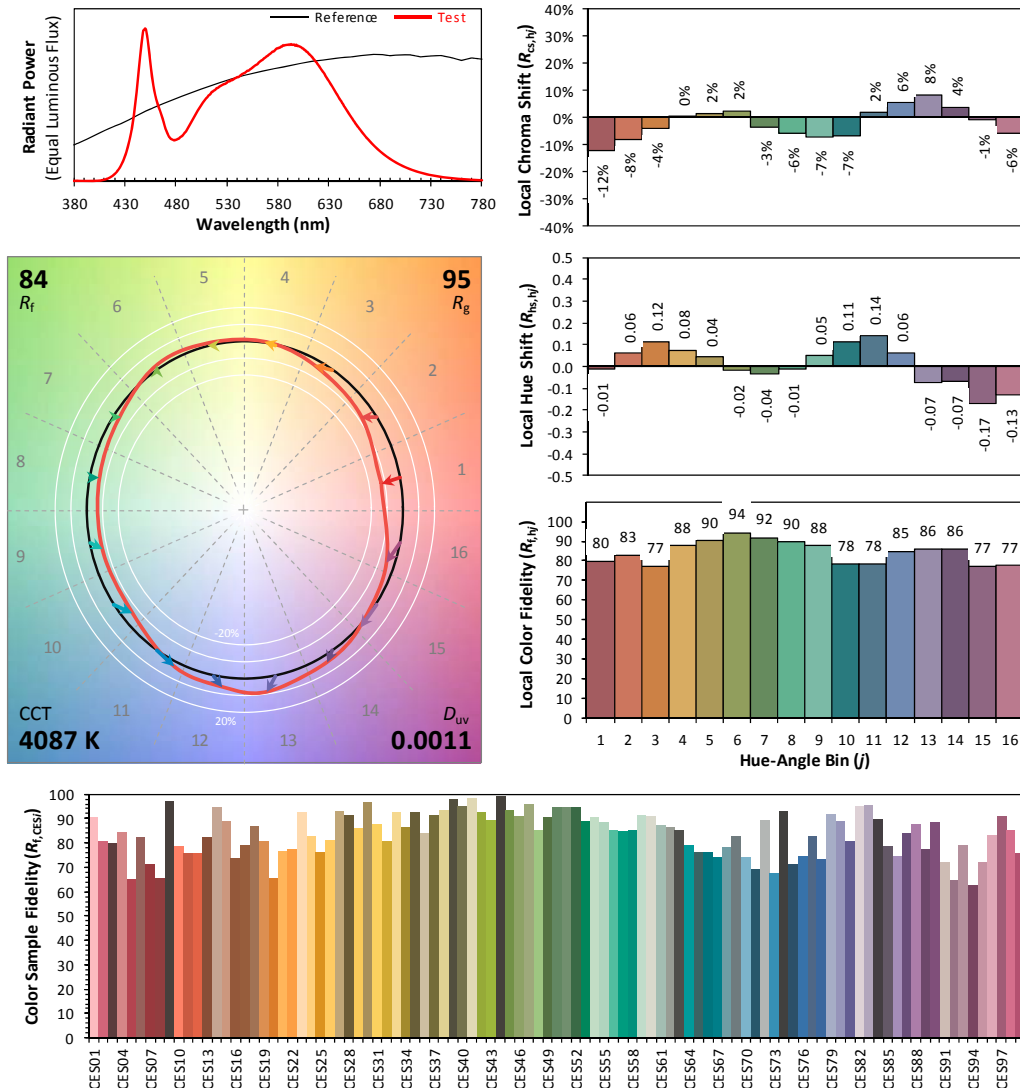
## ANSI/IES TM-30-18 Color Rendition Report

Source: LED

Manufacturer: GREEN CREATIVE LTD

Date: 2022/08/15

Model: 9.5T5HE/2F/840/BYP/R



**Notes:** This is a recommended method for displaying ANSI/IES TM-30-18 information.

$x$  0.3774  
 $y$  0.3773  
 $u'$  0.2229  
 $v'$  0.5014

CIE 13.3-1995  
(CRI)  
 $R_a$  83  
 $R_9$  5

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	19.736	1.51%
10- 20	57.4	4.38%
20- 30	89.94	6.86%
30- 40	114.677	8.75%
40- 50	130.09	9.93%
50- 60	135.402	10.33%
60- 70	131.51	10.04%
70- 80	120.309	9.18%
80- 90	103.767	7.92%
90-100	87.254	6.66%
100-110	76.223	5.82%
110-120	66.368	5.06%
120-130	55.841	4.26%
130-140	44.909	3.43%
140-150	34.313	2.62%
150-160	22.875	1.75%
160-170	14.638	1.12%
170-180	5.221	0.40%
Total	1310.5	100%

$\gamma(^{\circ})$	Lumens	% Total
0- 60	547.245	41.76%
60- 90	355.586	27.13%
0-90	902.831	68.89%
90- 180	407.642	31.11%
0- 180	1310.5	100%

Table 5: Zonal Lumen

### Illuminance Plots- Goniophotometer Method

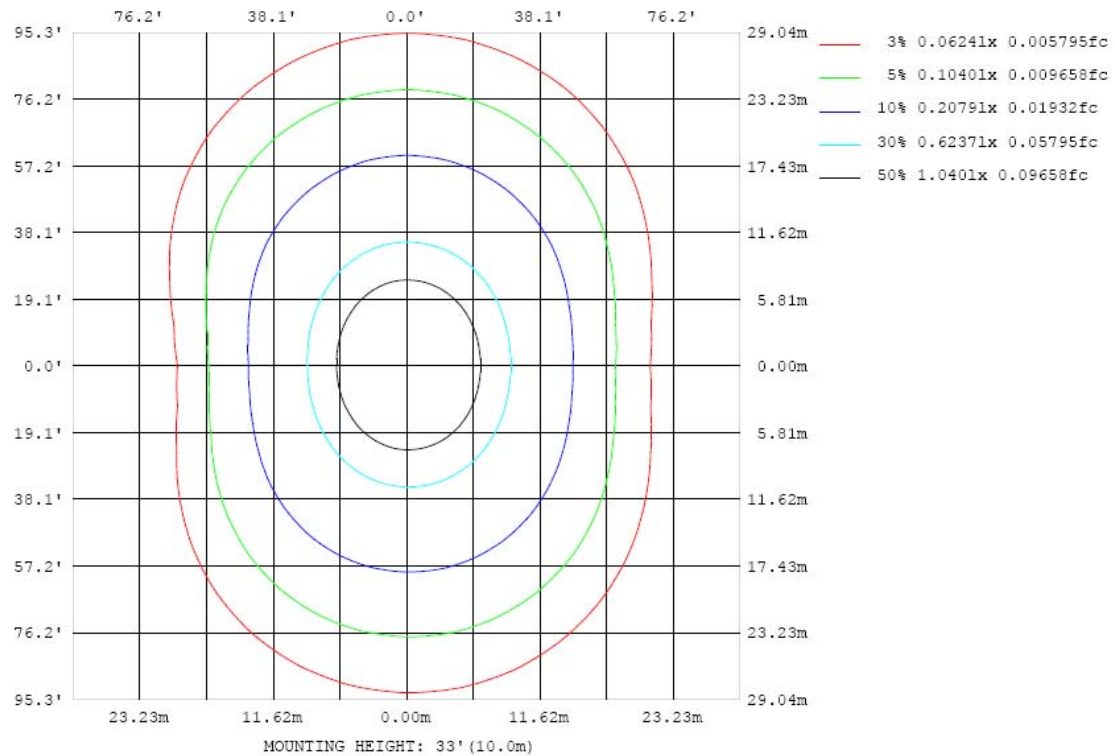


Chart 5: Illuminance Plot (Footcandles)

## Luminous Intensity Distribution Plots- Goniophotometer Method

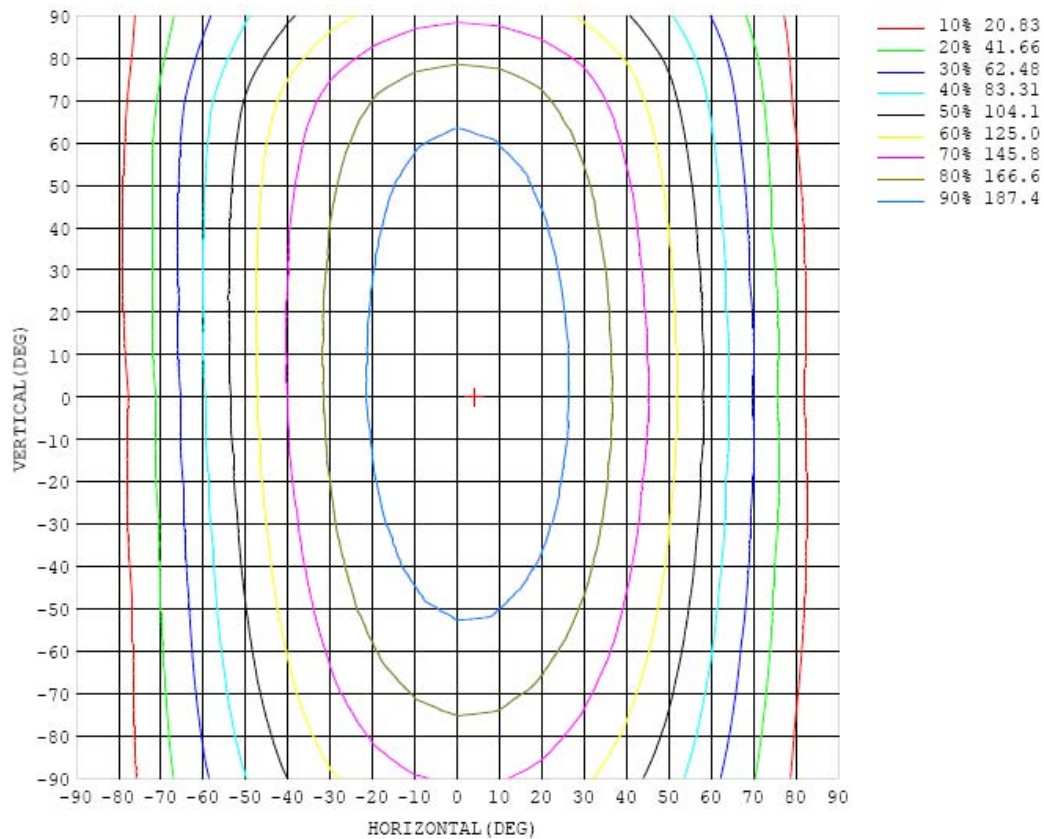


Chart 6: Isocandela Plot

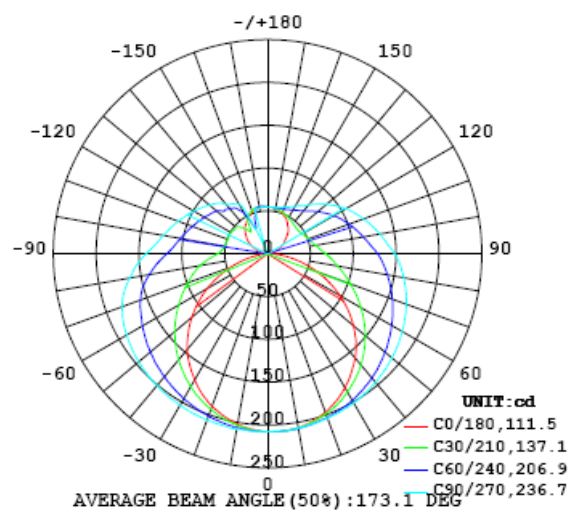


Chart 7: Polar Candela Distribution

## 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	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208
5	208	208	208	208	208	208	207	208	208	208	207	207	207	206	206	206	206	206	206
10	206	206	206	206	207	207	207	207	207	207	206	206	205	204	203	203	202	202	202
15	202	203	203	204	204	205	206	206	206	206	205	203	203	201	200	198	197	197	197
20	197	197	198	199	200	203	204	204	205	204	204	202	200	197	195	193	191	190	190
25	190	190	191	194	196	198	201	203	203	203	201	199	196	192	189	185	182	181	181
30	181	181	184	187	190	194	198	200	201	201	199	196	192	187	182	177	173	171	170
35	170	171	174	178	184	189	194	197	198	198	197	192	187	181	174	167	162	159	159
40	159	160	164	169	176	183	189	193	196	196	193	189	182	174	165	157	152	147	146
45	146	147	152	159	168	177	184	190	193	193	190	185	177	167	157	146	138	133	131
50	131	133	139	149	159	170	179	185	189	189	186	180	171	160	147	135	124	117	115
55	115	117	126	137	150	163	173	181	185	186	182	175	165	152	138	122	110	101	98.7
60	97.5	101	112	126	141	156	167	176	181	182	178	170	159	145	128	111	95.2	84.6	81.4
65	79.5	84.0	97.3	114	132	148	161	171	176	177	173	165	153	137	119	99.7	80.7	67.4	63.4
70	61.3	68.3	83.6	103	123	141	155	166	171	172	168	160	147	130	110	89.1	67.7	51.1	45.8
75	43.6	52.4	70.6	92.6	114	133	148	160	166	167	163	154	141	123	103	79.4	56.1	35.9	28.9
80	26.7	37.7	59.3	83.1	106	126	142	153	160	161	158	149	135	117	95.4	71.6	46.3	23.2	14.2
85	12.3	25.7	49.9	75.3	98.8	119	135	147	154	156	151	143	129	111	89.1	64.8	39.0	14.8	4.28
90	2.57	17.7	42.7	68.2	91.9	112	128	140	147	148	145	136	122	104	82.7	59.3	34.2	11.2	1.40
95	2.11	13.9	37.1	61.6	83.6	104	120	132	139	140	136	128	115	97.4	76.7	54.4	31.0	10.4	2.78
100	3.72	12.8	33.8	56.7	78.2	97.6	114	125	132	133	130	122	109	92.2	72.4	51.5	29.9	11.8	5.45
105	6.38	13.6	32.1	53.6	73.3	92.2	107	118	125	126	123	116	104	87.7	69.7	49.6	29.4	14.5	9.05
110	10.2	15.9	31.2	51.1	70.3	86.9	101	111	118	119	116	110	98.1	83.5	66.5	47.8	29.9	18.3	13.9
115	15.4	19.2	31.2	48.8	66.2	82.0	95.4	105	111	113	110	103	92.6	78.9	63.0	46.1	31.1	22.4	19.5
120	20.3	22.5	32.2	46.7	62.8	76.7	89.1	98.2	104	105	103	96.6	86.9	74.5	60.3	45.1	33.3	26.2	24.5
125	23.6	26.3	33.9	45.3	59.1	71.9	82.7	91.0	96.2	97.6	95.6	89.8	80.9	70.0	57.3	45.1	35.8	30.3	29.1
130	27.8	30.4	36.1	45.0	55.8	66.9	76.6	84.1	88.6	89.7	88.0	83.1	75.1	65.6	55.0	45.7	38.3	34.2	32.9
135	33.4	34.3	38.5	45.5	53.7	62.7	70.7	76.9	80.9	82.0	80.6	76.1	69.7	61.8	54.0	46.7	40.9	37.8	37.1
140	37.7	37.8	41.0	46.3	52.8	59.4	65.6	70.4	73.5	74.6	73.1	69.9	65.3	59.4	53.4	47.8	43.5	41.0	40.9
145	40.9	41.4	43.6	47.4	52.3	57.2	61.8	65.5	67.9	68.4	67.7	65.4	62.0	57.7	53.2	49.0	45.9	44.1	43.6
150	44.9	44.7	46.2	48.9	52.2	55.8	59.1	61.9	63.6	64.1	63.5	61.9	59.4	56.3	53.2	50.2	48.0	46.8	46.7
155	47.9	47.5	48.5	50.2	52.4	54.7	57.0	59.0	60.1	60.5	60.1	59.1	57.3	55.4	53.3	51.4	50.0	49.3	49.3
160	50.5	50.0	50.4	51.3	52.8	54.1	55.6	56.8	57.6	57.9	57.6	57.0	56.0	54.8	53.6	52.5	51.6	51.4	51.7
165	52.3	52.0	52.2	52.5	53.2	54.0	54.7	55.4	55.9	56.1	56.0	55.6	55.2	54.6	53.9	53.4	53.1	53.0	53.1
170	53.7	53.5	53.5	53.7	53.9	54.1	54.5	54.8	55.0	55.1	55.1	55.0	54.7	54.5	54.4	54.1	54.2	54.0	54.2
175	54.6	54.6	54.6	54.6	54.6	54.6	54.6	54.6	54.7	54.7	54.7	54.7	54.7	54.8	54.8	54.7	54.7	54.7	54.7
180	54.7	54.7	54.7	54.7	54.7	54.7	54.7	54.7	54.7	54.7	54.7	54.7	54.7	54.7	54.7	54.7	54.7	54.7	54.7

Table 6: Luminous Intensity Data



Table--2		UNIT: cd																	
$\gamma$ (DEG)	C (DEG)	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	
0		208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	
5		206	206	207	207	207	207	208	208	208	208	208	208	208	208	208	208	208	
10		202	203	203	204	205	206	207	208	208	208	208	208	207	207	207	207	206	
15		197	198	199	201	202	204	206	207	207	208	207	207	206	205	204	203	203	
20		190	192	194	196	199	202	204	206	207	206	206	205	204	202	200	199	197	
25		182	184	187	191	195	199	202	204	206	206	204	203	200	197	195	192	190	
30		172	175	179	184	190	196	200	203	204	204	203	200	196	191	188	184	182	
35		161	165	171	177	185	191	197	201	203	202	200	196	191	186	180	175	171	
40		148	155	162	170	179	187	195	199	201	200	198	193	186	178	171	164	160	
45		135	142	152	162	173	183	191	197	199	198	194	188	180	171	161	153	148	
50		120	129	142	155	167	179	188	194	196	195	191	183	173	162	151	140	133	
55		104	116	131	147	161	174	184	191	194	192	187	178	167	154	140	127	118	
60		87.9	102	120	139	155	169	180	187	190	188	183	173	161	146	129	113	102	
65		71.6	88.6	109	130	148	163	175	183	186	184	178	167	153	136	117	98.5	84.7	
70		55.7	75.9	99.2	122	142	158	169	178	181	179	172	161	146	127	106	84.5	67.8	
75		41.0	64.4	89.7	114	134	151	162	170	173	172	165	155	139	118	94.9	71.0	50.8	
80		28.7	54.3	80.1	104	124	140	153	161	163	162	157	145	130	109	84.9	58.9	35.5	
85		19.6	43.4	68.4	91.8	112	129	142	150	154	152	145	134	118	97.7	74.2	48.7	22.8	
90		12.4	34.3	58.4	81.2	101	118	130	139	142	140	134	122	106	85.4	61.9	37.3	14.6	
95		11.1	31.5	53.4	74.9	93.8	109	121	128	131	129	122	111	95.1	75.3	52.7	29.2	9.49	
100		13.4	31.4	51.0	71.0	88.6	103	114	121	123	121	115	103	87.9	68.6	47.2	27.3	10.0	
105		14.9	32.7	50.3	68.1	84.5	98.2	108	115	117	115	108	97.4	81.9	63.4	44.8	27.7	12.2	
110		15.8	33.9	49.8	66.0	80.9	93.4	103	109	111	109	103	92.1	77.2	60.5	45.0	29.3	13.5	
115		17.2	34.4	49.7	64.1	77.7	89.1	97.8	104	105	103	97.2	87.5	74.0	59.7	45.9	30.6	14.3	
120		20.7	33.3	49.7	62.3	74.9	85.2	92.9	97.9	99.5	97.5	92.2	83.5	71.9	59.3	46.4	31.1	18.6	
125		24.8	30.5	47.9	60.0	72.2	81.4	88.2	92.6	94.0	92.1	87.1	79.6	69.6	58.5	46.7	30.3	21.3	
130		30.0	28.1	48.1	58.2	64.1	77.7	83.5	87.4	88.7	87.0	82.4	75.9	67.1	57.5	46.4	27.5	26.1	
135		36.0	29.6	43.8	56.7	63.8	71.3	79.1	82.3	83.4	82.2	77.2	69.3	63.7	56.6	43.4	29.8	32.9	
140		40.1	35.5	35.9	56.8	62.6	68.3	74.7	76.7	74.9	72.5	69.9	68.0	62.3	53.6	36.1	36.6	38.2	
145		42.7	43.4	34.7	47.3	60.6	65.1	68.5	70.8	71.0	70.0	68.3	65.3	60.5	47.3	36.4	41.4	38.4	
150		46.4	46.9	48.5	34.5	50.9	54.8	56.9	58.5	66.6	66.1	65.5	63.2	53.5	35.7	44.3	41.9	42.8	
155		49.1	50.4	51.3	53.1	39.6	32.3	34.3	31.9	26.2	36.0	39.0	37.0	40.3	46.8	46.4	44.8	47.0	
160		52.2	53.0	53.5	54.3	52.8	44.7	31.6	30.1	4.34	32.1	31.8	35.6	49.2	49.0	47.4	47.9	50.9	
165		53.7	54.6	55.3	55.3	55.1	53.1	47.4	46.0	53.9	53.3	53.2	51.8	49.9	49.4	49.9	51.7	52.8	
170		54.4	54.8	55.4	55.7	55.8	55.4	55.3	54.9	54.2	53.0	51.9	51.5	51.6	52.3	53.5	54.3	54.0	
175		54.9	55.0	55.2	55.4	55.5	55.8	55.9	55.9	55.7	55.5	55.3	55.3	55.1	55.0	54.8	54.7		
180		54.7	54.7	54.7	54.7	54.7	54.7	54.7	54.7	54.7	54.7	54.7	54.7	54.7	54.7	54.7	54.7		

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 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 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 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 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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