

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/830/UEB

Laboratory: Leading Testing Laboratories

NVLAP CODE: 200960-0

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Report No.: HZ23030039n

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

Review by:



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Apr. 06, 2023

Approved by:



Manager: Jim Zhang

Apr. 06, 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/830/UEB**

Luminous Efficacy (Lumens /Watt)	Total Luminous Flux (Lumens)	Power (Watts)	Power Factor
132.8	1111.5	8.37	0.9873
CCT (K)	CRI	Stabilization Time (Light & Power)	
3124	82.1	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	: Mar. 28, 2023
Date of Test	: Mar. 28, 2023
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

TABLE OF CONTENT

LM-79-19 TEST REPORT.....	1
TEST SUMMARY	2
SAMPLE PHOTO	4
TEST RESULTS	5
Sphere-Spectroradiometer Method.....	5
Goniophotometer Method	6
Spectral Power Distribution - Sphere Spectroradiometer Method	7
Chromaticity Diagram - Sphere Spectroradiometer Method.....	8
Nominal CCT Quadrangles – Sphere Spectroradiometer Method	9
Color Rendition Report – Sphere Spectroradiometer Method	10
Zonal Lumen Tabulation- Goniophotometer Method	11
Illuminance Plots- Goniophotometer Method	12
Luminous Intensity Distribution Plots- Goniophotometer Method.....	13
Luminous Intensity Data- Goniophotometer Method	14
EQUIPMENT LIST	16
TEST METHODS	16
Seasoning of SSL Product.....	16
Sphere-Spectroradiometer Method- Photometric and Electrical Measurements.....	16
Goniophotometer Method	17
Photometric and Electrical Measurements	17
Color Characteristics Measurements.....	17

SAMPLE PHOTO



Figure 1- Overview of the sample

Equipment Under Test(EUT)

Name	: LED Tube
Model	: 8.5T8/2F/830/UEB
Electrical Ratings	: 120-277V, 50/60Hz, 8.5W
Product Description	: 3000K

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	0.9873	0.9250
Test Power (W)	8.37	8.65
THD A%	11.23	19.78
Luminous Efficacy (lm/W)	132.8	131.0
Total Luminous Flux (lm)	1111.5	1133.5
Color Rendering Index (CRI)	82.1	
R9	3.4	
Correlated Color Temperature (CCT)(K)	3124	
Chromaticity Chroma x	0.4294	
Chromaticity Chroma y	0.4035	
Chromaticity Chroma u	0.2460	
Chromaticity Chroma v	0.3467	
Duv	0.0009	
Chromaticity Chroma u'	0.2460	
Chromaticity Chroma v'	0.5200	

Special Color Rendering Indices	
R1	80.2
R2	90.7
R3	96.1
R4	79.7
R5	80.5
R6	88.7
R7	82.6
R8	58
R9	3.4
R10	79.1
R11	79
R12	69.1
R13	82.8
R14	98.4

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)	0.071
Power Factor	0.9877
Power (W)	8.37
Luminous Efficacy (lm/W)	133.9
Total Luminous Flux (lm)	1121.1
Beam Angle (°)	106.0 (0°-180°) / 202.0 (90°-270°)
Center Beam Candle Power (cd)	208
Maximum Beam Candle Power (cd)	209.0 (At: C=20.0, Gamma=4.0)
Spacing Criteria	1.17 (0°-180°) / 1.38 (90°-270°)
Zonal Lumens in the 0 °-60 °Zone	45.54%
Zonal Lumens in the 60 °-90 °Zone	26.43%
Zonal Lumens in the 90 °-120 °Zone	16.95%
Zonal Lumens in the 120 °-180 °Zone	11.08%

Table 3: Test data per Goniophotometer Method

Spectral Power Distribution - Sphere Spectroradiometer Method

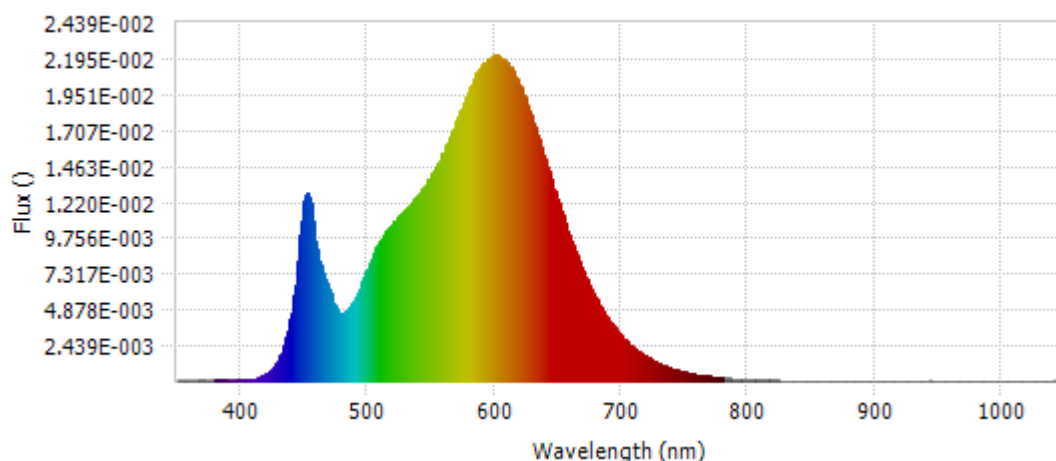
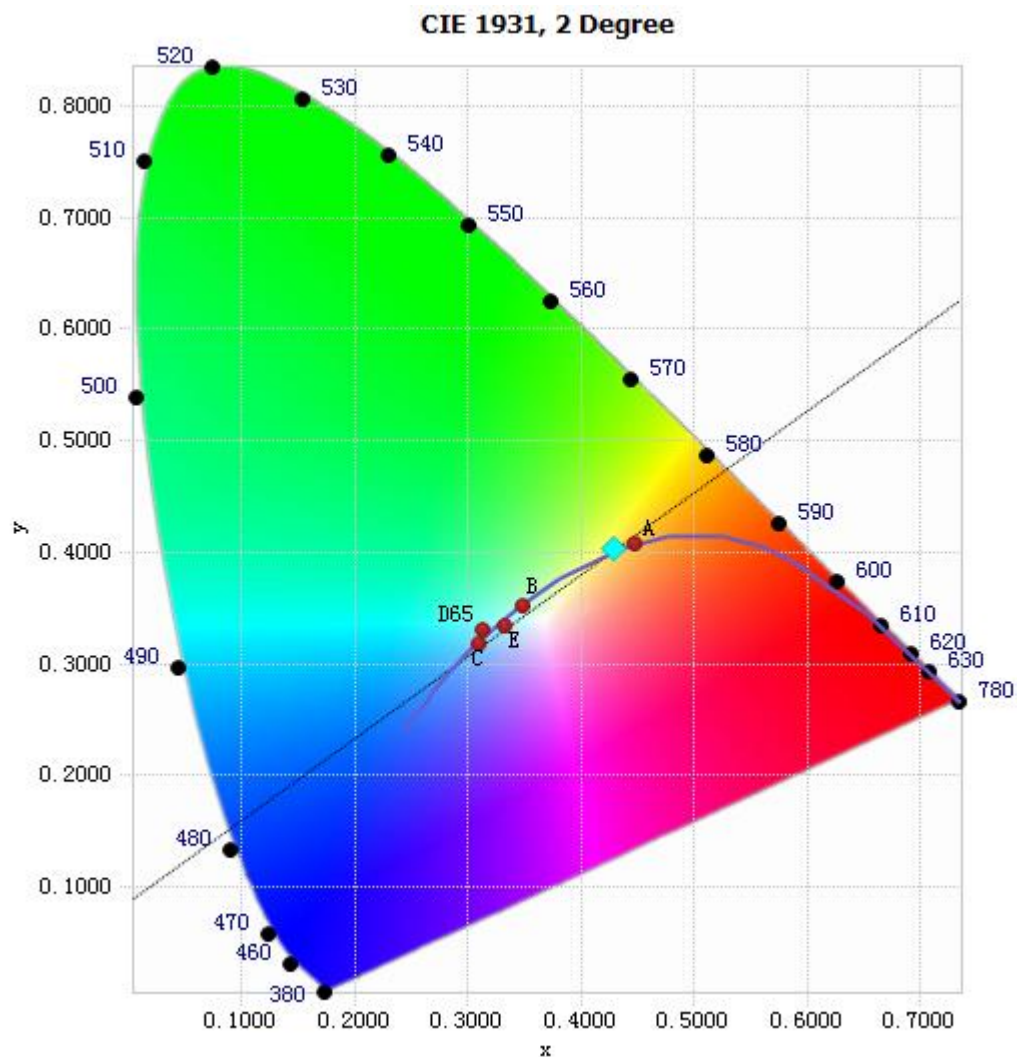


Chart 1: Spectral Power Distribution

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	7.32E-05	485	4.98E-03	590	2.15E-02	695	3.65E-03
385	8.11E-05	490	5.63E-03	595	2.19E-02	700	3.13E-03
390	6.76E-05	495	6.56E-03	600	2.21E-02	705	2.68E-03
395	7.48E-05	500	7.68E-03	605	2.20E-02	710	2.29E-03
400	6.81E-05	505	8.67E-03	610	2.17E-02	715	1.96E-03
405	9.47E-05	510	9.53E-03	615	2.11E-02	720	1.67E-03
410	1.57E-04	515	1.03E-02	620	2.01E-02	725	1.43E-03
415	2.79E-04	520	1.07E-02	625	1.91E-02	730	1.22E-03
420	5.01E-04	525	1.13E-02	630	1.78E-02	735	1.04E-03
425	8.95E-04	530	1.17E-02	635	1.65E-02	740	8.78E-04
430	1.56E-03	535	1.22E-02	640	1.52E-02	745	7.49E-04
435	2.72E-03	540	1.27E-02	645	1.38E-02	750	6.37E-04
440	4.68E-03	545	1.33E-02	650	1.24E-02	755	5.48E-04
445	8.21E-03	550	1.39E-02	655	1.10E-02	760	4.64E-04
450	1.23E-02	555	1.47E-02	660	9.77E-03	765	4.00E-04
455	1.21E-02	560	1.56E-02	665	8.61E-03	770	3.45E-04
460	9.04E-03	565	1.67E-02	670	7.51E-03	775	2.87E-04
465	7.39E-03	570	1.77E-02	675	6.55E-03	780	2.50E-04
470	6.21E-03	575	1.88E-02	680	5.69E-03		
475	4.95E-03	580	1.98E-02	685	4.94E-03		
480	4.62E-03	585	2.09E-02	690	4.26E-03		

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

Chromaticity Diagram - Sphere Spectroradiometer Method



Tristimulus values(x, y): (0.4294, 0.4035)

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

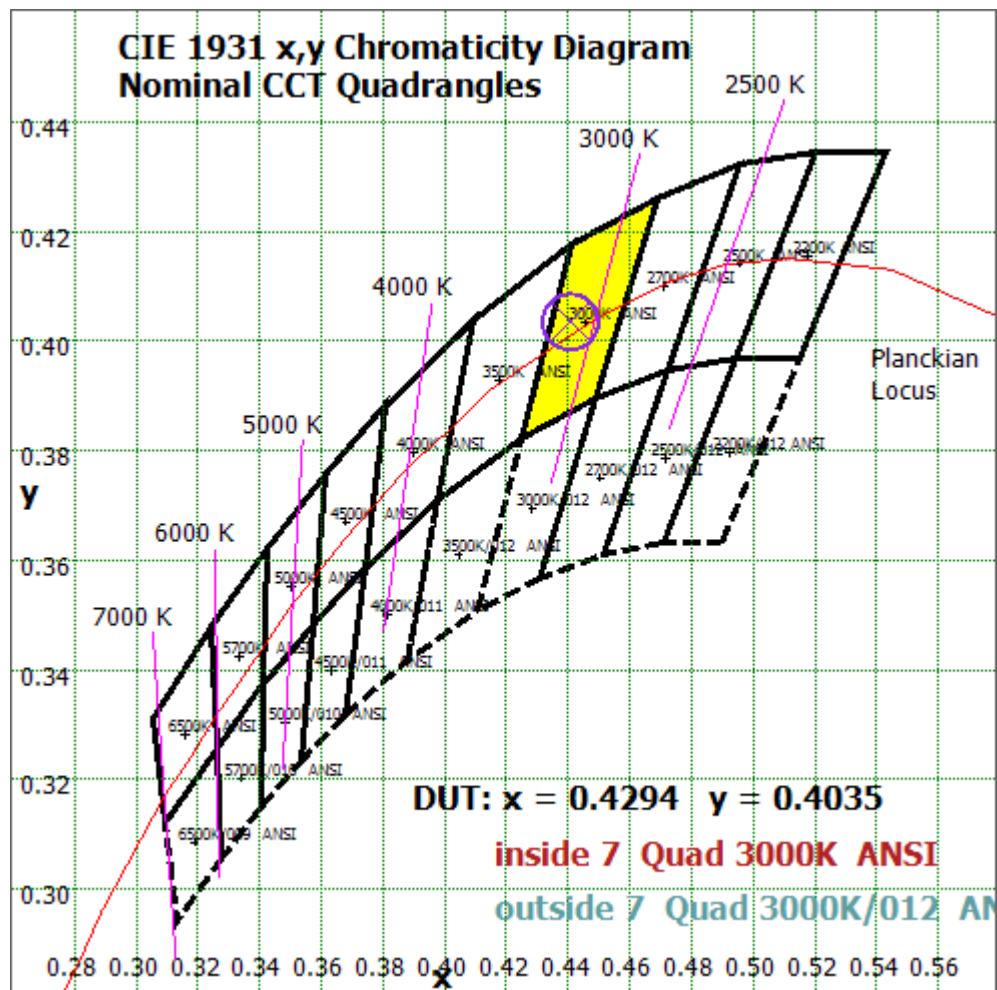


Chart 3: Plot of Lamp x/y coordinates on CIE 1931 Chromaticity Diagram

Color Rendition Report – Sphere Spectroradiometer Method

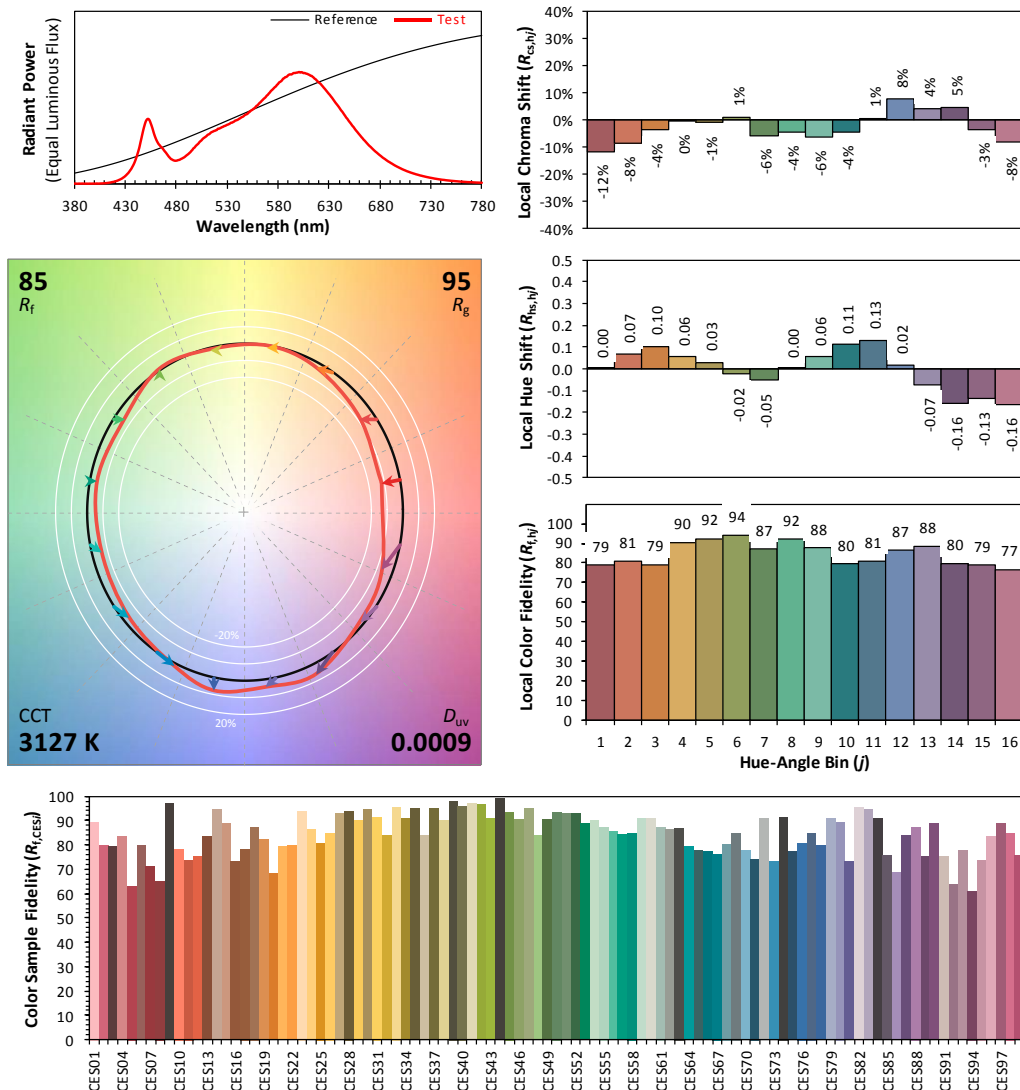
ANSI/IES TM-30-18 Color Rendition Report

Source: LED

Manufacturer: GREEN CREATIVE LTD

Date: 2023/03/28

Model: 8.5T8/2F/830/UEB



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

x 0.4294
 y 0.4035
 u' 0.2460
 v' 0.5200

CIE 13.3-1995
(CRI)
 R_a 82
 R_9 4

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	19.743	1.76%
10- 20	56.897	5.08%
20- 30	87.349	7.79%
30- 40	108.327	9.66%
40- 50	118.83	10.60%
50- 60	119.329	10.64%
60- 70	111.823	9.98%
70- 80	99.184	8.85%
80- 90	85.274	7.61%
90-100	73.417	6.55%
100-110	63.052	5.62%
110-120	53.53	4.78%
120-130	44.12	3.94%
130-140	34.491	3.08%
140-150	24.74	2.21%
150-160	14.491	1.29%
160-170	5.47	0.49%
170-180	0.934	0.08%
Total	1121.0	100%

$\gamma(^{\circ})$	Lumens	% Total
0- 60	510.475	45.54%
60- 90	296.281	26.43%
0-90	806.756	71.97%
90- 180	314.245	28.03%
0- 180	1121.0	100%

Table 5: Zonal Lumen

Note: The Flux in this table might be a little different from the total flux in Table 2 due to rounding.

Illuminance Plots- Goniophotometer Method

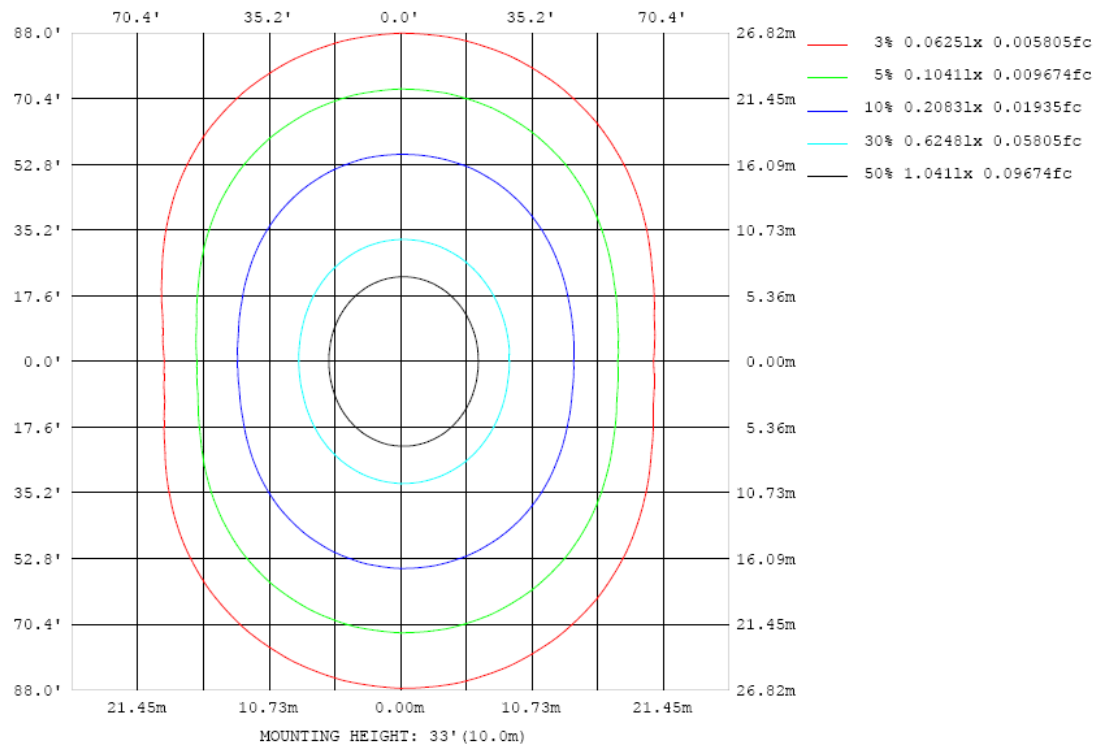


Chart 5: Illuminance Plot (Footcandles)

Luminous Intensity Distribution Plots- Goniophotometer Method

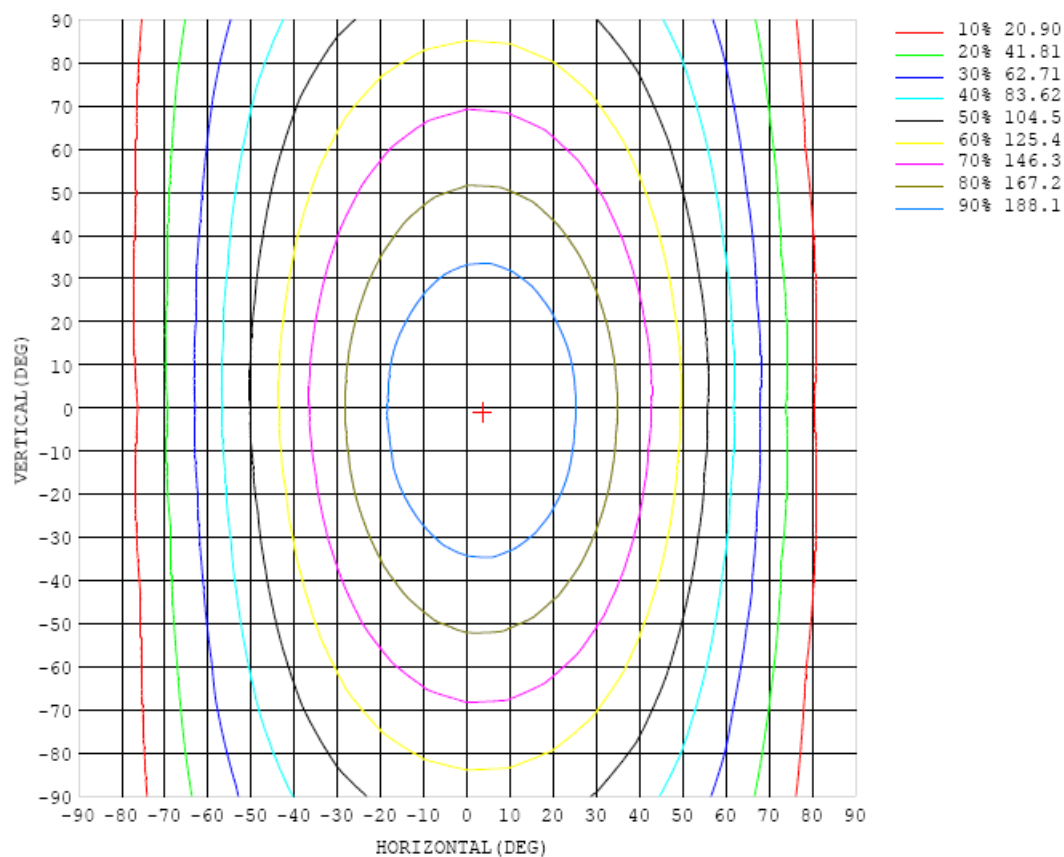


Chart 6: Isocandela Plot

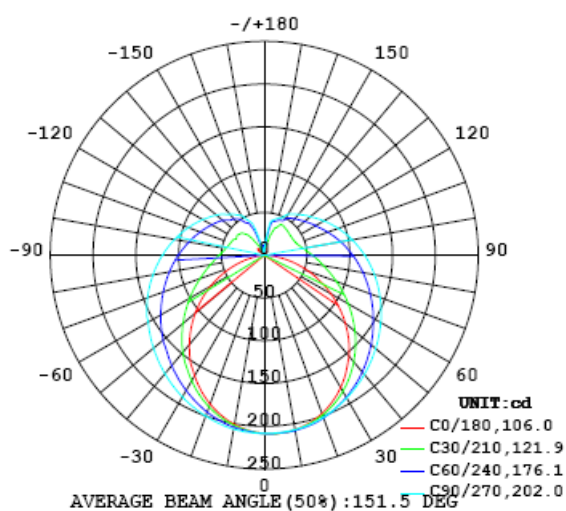


Chart 7: Polar Candela Distribution

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	209	209	209	209	209	209	209	208	208	208	208	207	207	207	206	206	206	206	206
10	207	207	207	207	207	208	208	208	207	207	206	205	205	204	203	202	202	201	201
15	203	203	203	204	205	206	206	206	206	205	204	203	201	200	198	196	195	194	194
20	197	197	198	199	200	202	202	203	202	202	200	198	196	194	191	189	187	186	185
25	189	189	190	192	194	196	197	198	198	197	196	193	190	187	183	180	177	175	175
30	179	179	181	184	187	189	192	193	193	193	191	187	183	179	174	170	166	163	163
35	167	167	170	174	178	182	185	187	188	187	185	181	176	170	164	158	154	151	151
40	154	154	158	163	168	174	178	181	183	182	179	175	169	161	154	147	140	137	136
45	139	140	144	151	158	165	171	174	176	176	173	168	161	152	143	134	127	122	121
50	124	125	130	138	147	156	163	168	170	170	167	161	153	143	133	122	112	107	105
55	107	109	116	126	137	147	155	161	164	164	160	154	145	134	122	110	98.3	90.8	89.1
60	89.8	92.7	101	113	126	138	147	154	157	157	154	147	138	126	112	97.8	84.3	75.0	72.6
65	72.3	76.1	86.9	101	116	129	139	147	151	151	147	140	130	118	103	86.6	71.2	60.0	55.9
70	55.3	60.6	73.3	89.7	106	121	132	139	144	144	141	134	123	110	94.1	76.7	59.5	45.0	39.8
75	38.2	44.9	61.2	79.3	97.2	113	124	132	137	137	134	127	117	103	86.3	67.8	48.6	31.4	24.5
80	22.1	30.9	50.0	70.1	89.0	105	117	126	130	131	128	121	110	96.2	79.4	60.8	39.7	20.1	11.3
85	9.26	19.8	41.0	62.9	81.5	97.7	110	119	123	124	121	114	104	90.0	73.2	54.5	33.2	12.7	2.30
90	0.94	12.8	34.4	56.3	74.9	91.1	103	112	117	117	114	108	97.7	84.2	68.2	49.5	28.9	9.51	0.23
95	0.45	8.97	29.6	50.8	69.3	84.8	97.0	105	110	111	108	102	92.0	78.9	63.9	45.7	25.9	8.55	0.21
100	0.40	6.91	26.0	46.4	64.5	78.9	90.7	98.9	104	104	102	95.9	86.6	74.1	59.6	42.0	24.6	9.71	0.31
105	0.56	7.49	24.0	42.8	59.8	73.4	84.6	92.6	97.1	98.1	95.8	90.1	81.4	69.6	55.8	40.3	24.9	9.80	0.39
110	0.91	8.87	23.8	40.3	55.7	68.9	79.0	86.6	91.0	91.9	89.9	84.6	76.5	66.4	53.5	39.5	25.8	14.6	1.18
115	1.51	10.6	24.5	39.0	52.4	64.6	73.8	80.9	85.0	86.0	84.1	79.3	71.9	62.9	51.4	39.1	26.2	17.3	1.99
120	2.23	12.7	25.8	38.4	50.1	60.7	69.4	75.4	79.3	80.4	78.8	74.4	68.5	59.9	49.6	39.1	25.5	19.8	3.29
125	1.33	12.3	27.6	38.3	48.4	57.6	65.3	70.5	74.0	75.1	73.7	69.9	64.8	57.2	48.4	38.7	30.3	23.9	5.59
130	0.00	9.68	29.8	38.5	47.2	54.9	61.6	66.6	69.0	70.1	69.0	66.4	61.4	54.9	47.6	37.0	31.6	26.9	9.62
135	0.00	11.3	32.0	39.2	46.3	52.7	58.3	62.7	65.4	66.3	65.3	62.6	58.4	53.0	45.9	39.5	34.9	26.1	10.8
140	0.00	14.0	33.7	39.9	45.6	50.9	55.5	59.1	61.3	62.2	61.4	59.2	55.8	51.2	43.5	39.0	36.9	24.0	9.42
145	2.74	13.6	31.6	40.6	45.3	49.4	53.0	55.9	57.7	58.5	57.9	56.2	53.3	47.3	41.5	38.7	36.7	23.1	8.53
150	5.13	7.68	28.2	41.0	43.8	45.5	48.0	52.7	54.4	55.2	54.6	52.7	47.6	44.0	41.9	39.1	35.8	21.4	5.84
155	4.54	4.63	22.6	36.9	40.8	43.3	45.2	46.5	47.8	48.2	47.9	46.6	45.3	43.6	41.9	40.2	33.4	15.2	4.61
160	4.98	6.45	12.1	31.2	39.2	41.2	43.0	44.6	45.5	45.9	45.6	44.8	43.8	42.7	41.4	38.9	28.5	11.2	5.58
165	8.67	6.40	7.77	17.4	31.0	39.7	41.3	41.8	42.6	42.9	42.8	42.3	41.6	41.0	38.7	30.8	17.5	7.92	5.22
170	4.74	7.34	6.78	9.36	14.5	22.2	29.7	33.3	35.8	37.2	37.0	35.5	33.2	29.4	20.7	13.4	8.66	5.26	5.25
175	3.82	5.78	7.80	8.29	8.15	7.45	8.25	10.2	11.7	12.4	12.5	11.9	10.4	8.28	6.52	5.46	4.31	3.40	4.67
180	5.84	5.84	5.84	5.84	5.84	5.84	5.84	5.84	5.84	5.84	5.84	5.84	5.84	5.84	5.84	5.84	5.84	5.84	5.84

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	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208	208		
5	206	206	206	206	206	207	207	208	208	208	208	208	209	209	209	209	209		
10	201	201	202	203	203	204	205	206	206	207	207	207	207	207	207	207	207		
15	194	195	196	198	199	200	202	203	204	204	205	205	205	204	204	204	203	203	
20	185	187	189	191	193	195	197	199	200	201	201	201	200	199	198	198	197		
25	175	177	180	183	186	189	192	194	196	197	196	196	194	193	191	190	189		
30	164	166	170	174	178	183	187	190	191	192	192	190	188	185	183	181	179		
35	152	155	159	164	170	176	180	184	186	187	186	184	180	177	173	170	167		
40	138	142	148	155	162	168	174	178	181	181	180	177	172	167	162	158	156		
45	123	129	136	145	154	161	168	172	175	175	173	169	164	158	151	145	142		
50	108	115	124	135	145	154	161	166	169	169	167	162	156	148	139	131	126		
55	92.5	101	112	125	137	147	155	160	163	163	160	155	147	137	127	117	111		
60	76.8	87.1	101	115	128	140	149	155	157	156	154	148	138	127	114	102	93.9		
65	61.5	74.1	89.8	106	120	133	142	149	152	151	147	140	129	117	102	87.7	77.1		
70	46.9	62.1	80.0	97.4	113	126	136	142	145	145	140	132	121	107	90.5	73.8	60.7		
75	33.7	51.7	71.3	89.8	106	119	129	136	139	138	133	125	113	97.9	80.1	61.0	45.0		
80	22.9	43.1	64.0	83.0	99.4	113	123	129	132	131	127	118	106	89.9	70.9	49.9	30.6		
85	15.8	36.7	57.9	77.0	93.4	106	116	123	126	125	120	111	98.8	82.7	63.2	41.0	19.4		
90	11.3	32.0	52.8	71.7	87.7	101	110	117	119	118	113	105	92.3	76.3	56.8	34.9	12.9		
95	8.98	28.8	48.9	67.0	82.6	94.9	104	110	113	112	107	98.4	86.3	70.6	51.8	30.8	10.6		
100	8.99	26.9	45.9	63.0	77.8	89.6	98.5	104	106	105	101	92.5	80.7	65.7	47.9	28.5	10.8		
105	9.60	26.3	43.6	59.5	73.4	84.5	92.9	98.3	100	99.3	94.7	86.8	75.6	61.5	45.0	27.6	12.0		
110	10.2	26.4	42.1	56.6	69.4	79.8	87.5	92.6	94.5	93.4	89.0	81.6	71.0	57.9	43.0	27.8	13.7		
115	10.6	25.9	41.0	54.2	65.8	75.3	82.4	87.0	88.7	87.6	83.5	76.6	66.9	55.0	41.7	28.6	15.6		
120	8.56	25.7	38.1	51.7	62.7	71.1	77.6	81.7	83.3	82.1	78.3	72.0	63.2	52.6	41.1	30.0	17.3		
125	1.04	22.6	39.3	48.8	59.4	67.3	73.0	76.7	78.0	77.0	73.5	67.8	60.0	50.8	40.9	31.5	18.6		
130	0.00	19.2	38.3	46.7	55.2	63.3	68.9	72.1	73.1	72.1	69.0	63.6	56.7	48.9	40.8	30.9	15.3		
135	0.77	17.2	36.6	45.3	52.4	58.1	63.7	67.0	67.9	66.6	63.1	58.9	53.6	46.7	41.4	25.7	5.60		
140	4.72	14.9	31.7	43.0	50.1	55.2	59.0	61.6	62.3	61.8	59.2	55.1	50.5	46.1	39.2	17.4	0.00		
145	6.43	4.35	20.7	40.6	46.1	51.4	54.7	56.8	57.7	56.7	54.8	51.7	49.1	45.6	32.4	12.4	2.28		
150	7.91	0.76	10.8	33.5	41.4	44.1	48.6	52.0	53.5	53.1	52.3	49.8	47.8	39.8	20.1	8.48	6.20		
155	10.2	7.56	7.48	12.8	32.6	39.6	42.5	44.2	45.5	46.9	47.5	46.4	39.8	23.7	6.53	4.49	7.12		
160	10.4	7.52	2.73	7.96	5.26	15.8	26.7	34.3	36.0	36.2	32.7	27.4	17.9	6.20	3.94	3.48	7.55		
165	8.94	10.1	10.7	4.53	5.86	7.25	2.74	3.36	5.82	6.77	5.64	3.61	4.55	4.82	5.02	4.09	10.3		
170	4.86	8.62	11.6	5.71	7.77	7.52	2.19	1.84	3.12	6.27	6.04	5.25	3.63	3.74	8.58	11.6	12.3		
175	6.02	5.29	3.79	3.19	8.89	11.6	13.4	11.3	3.17	7.22	7.52	6.59	6.64	7.47	12.5	12.4	6.81		
180	5.84	5.84	5.84	5.84	5.84	5.84	5.84	5.84	5.84	5.84	5.84	5.84	5.84	5.84	5.84	5.84	5.84		

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 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 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 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 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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