

LM-79-08 TEST REPORT

for

IDEAL INDUSTRIES LIGHTING LLC, DBA CREE LIGHTING

4401 SILICON DRIVE, DURHAM, NC 27703, USA

LED Tube

Model: C-T836-A-25W-35K-B1

Laboratory: Leading Testing Laboratories

NVLAP CODE: 200960-0

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Hangzhou, Zhejiang Province, China 311100

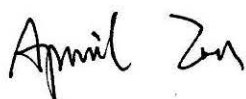
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www.ledtestlab.com

Report No.: HZ22030014d

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

Review by:



Engineer: April Zou

Mar. 04, 2022

Approved by:



Manager: Jim Zhang

Mar. 04, 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: **C-T836-A-25W-35K-B1**

Luminous Efficacy (Lumens /Watt)	Total Luminous Flux (Lumens)	Power (Watts)	Power Factor
132.0	1558.1	11.80	0.9860
CCT (K)	CRI	Stabilization Time (Light & Power)	
3489	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. 30, 2021

Date of Test : Dec. 01, 2021

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
ANSI/IES TM-30-18 IES Method for Evaluating Light Source Color Rendition

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SAMPLE PHOTO

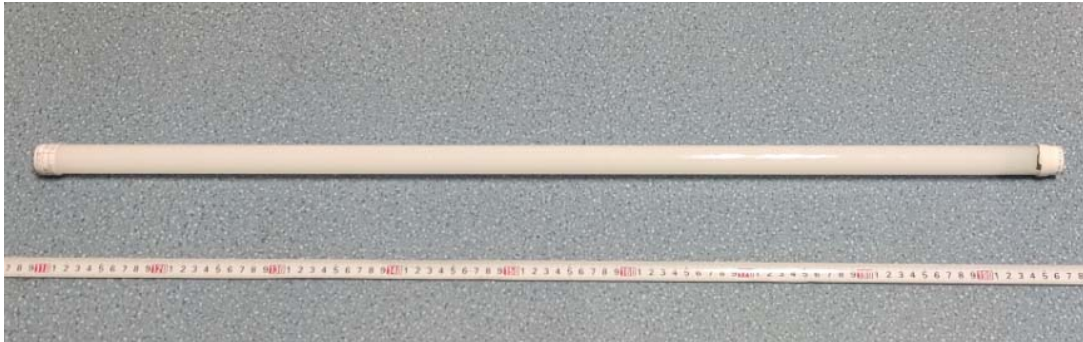


Figure 1- Overview of the sample

Equipment Under Test(EUT)

Name	: LED Tube
Model	: C-T836-A-25W-35K-B1
Electrical Ratings	: 120-277V, 50/60Hz, 12W
Product Description	: 3500K
	Manufacturer of light source: Bridgelux Inc.
	Model of LED light source: BXVN-35E-11L-3DV-000-00-00-0

TEST RESULTS

Test ambient temperature was 26.0°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 65 minutes.

Sphere-Spectroradiometer Method

Parameter	Result	
Test Voltage (V)	120.0	277.0
Voltage frequency (Hz)	60	60
Test Current (A)	0.100	0.046
Power Factor	0.9860	0.9270
Test Power (W)	11.80	11.90
THD A%	15.60	20.07
Luminous Efficacy (lm/W)	132.0	131.0
Total Luminous Flux (lm)	1558.1	1559.1
Color Rendering Index (CRI)	81.8	
R9	1.3	
Correlated Color Temperature (CCT)(K)	3489	
Chromaticity Chroma x	0.4064	
Chromaticity Chroma y	0.3926	
Chromaticity Chroma u	0.2356	
Chromaticity Chroma v	0.3415	
Duv	0.0006	
Chromaticity Chroma u'	0.2356	
Chromaticity Chroma v'	0.5122	

Special Color Rendering Indices	
R1	79.8
R2	89.8
R3	96.1
R4	79.6
R5	80
R6	86.5
R7	83.4
R8	59.1
R9	1.3
R10	76.4
R11	78.5
R12	65.1
R13	82.2
R14	98.3

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 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)	0.100
Power Factor	0.9816
Power (W)	11.83
Luminous Efficacy (lm/W)	129.7
Total Luminous Flux (lm)	1534.6
Beam Angle (°)	113.1 (0°-180°) / 247.1 (90°-270°)
Center Beam Candle Power (cd)	233
Maximum Beam Candle Power (cd)	233.8 (At: C=250.0, Gamma=2.5)
Spacing Criteria	1.27 (0°-180°) / 1.49 (90°-270°)
Zonal Lumens in the 0°-60°Zone	39.95%
Zonal Lumens in the 60°-90°Zone	26.30%
Zonal Lumens in the 90°-120°Zone	18.60%
Zonal Lumens in the 120°-180°Zone	15.15%

Table 3: Test data per Goniophotometer Method

Spectral Power Distribution - Sphere Spectroradiometer Method

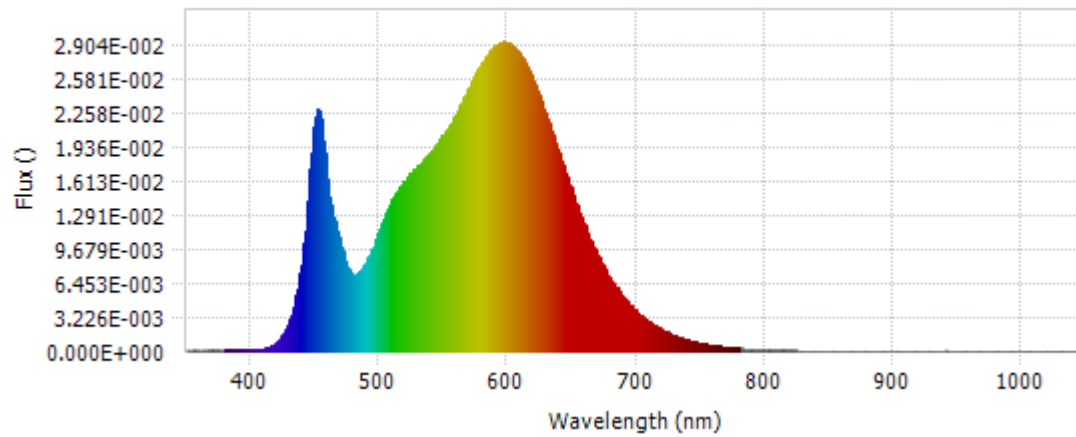
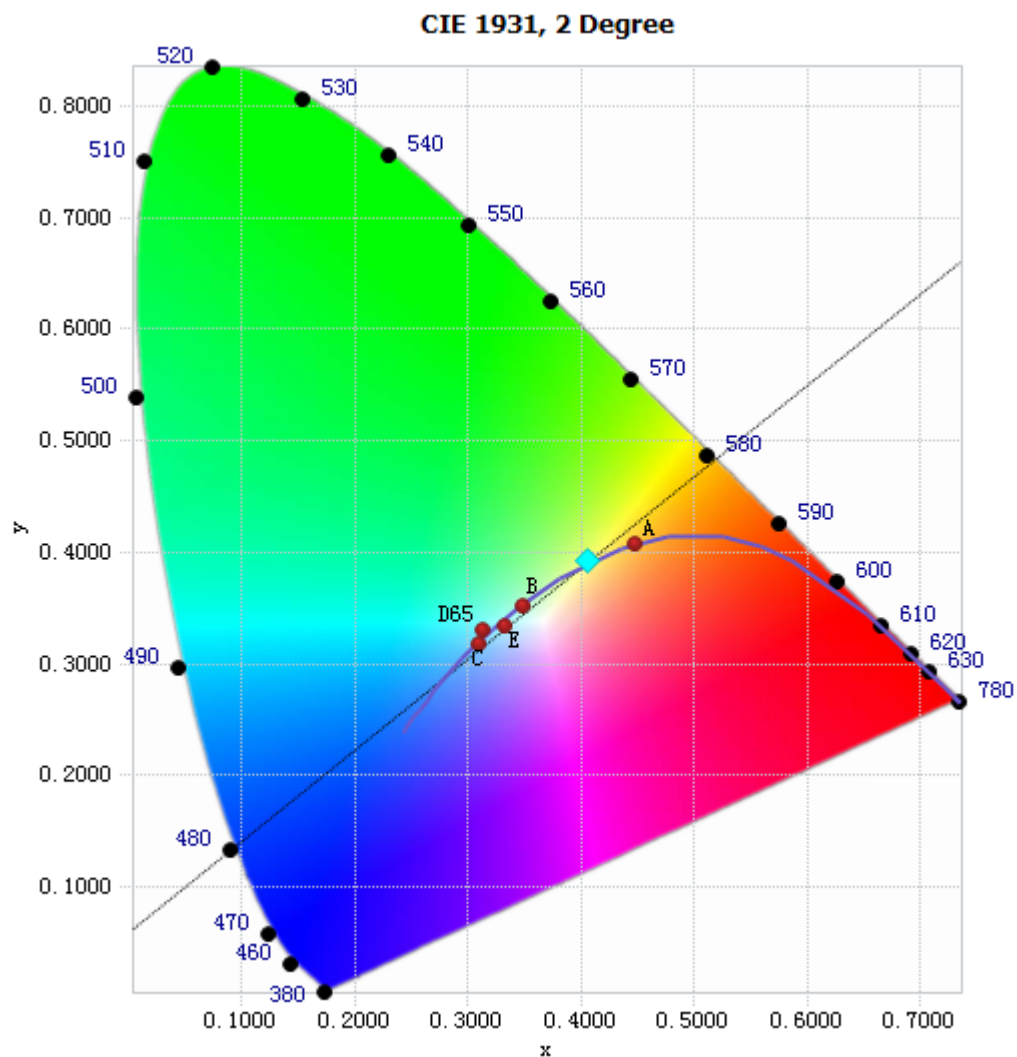


Chart 1: Spectral Power Distribution

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	7.63E-03	590	2.89E-02	695	4.44E-03
385	1.07E-04	490	8.57E-03	595	2.92E-02	700	3.79E-03
390	1.00E-04	495	9.96E-03	600	2.92E-02	705	3.26E-03
395	1.16E-04	500	1.16E-02	605	2.88E-02	710	2.77E-03
400	1.17E-04	505	1.31E-02	610	2.80E-02	715	2.38E-03
405	1.43E-04	510	1.43E-02	615	2.70E-02	720	2.04E-03
410	2.61E-04	515	1.55E-02	620	2.56E-02	725	1.75E-03
415	5.01E-04	520	1.62E-02	625	2.40E-02	730	1.48E-03
420	9.03E-04	525	1.69E-02	630	2.24E-02	735	1.26E-03
425	1.66E-03	530	1.76E-02	635	2.05E-02	740	1.07E-03
430	2.97E-03	535	1.82E-02	640	1.88E-02	745	9.13E-04
435	5.23E-03	540	1.89E-02	645	1.69E-02	750	7.81E-04
440	9.04E-03	545	1.97E-02	650	1.51E-02	755	6.73E-04
445	1.58E-02	550	2.05E-02	655	1.34E-02	760	5.66E-04
450	2.22E-02	555	2.15E-02	660	1.19E-02	765	4.96E-04
455	2.11E-02	560	2.25E-02	665	1.04E-02	770	4.25E-04
460	1.54E-02	565	2.38E-02	670	9.12E-03	775	3.64E-04
465	1.22E-02	570	2.50E-02	675	7.95E-03	780	3.16E-04
470	9.95E-03	575	2.63E-02	680	6.90E-03		
475	7.91E-03	580	2.73E-02	685	5.97E-03		
480	7.28E-03	585	2.83E-02	690	5.17E-03		

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

Chromaticity Diagram - Sphere Spectroradiometer Method



Tristimulus values(x, y): (0.4064, 0.3926)

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

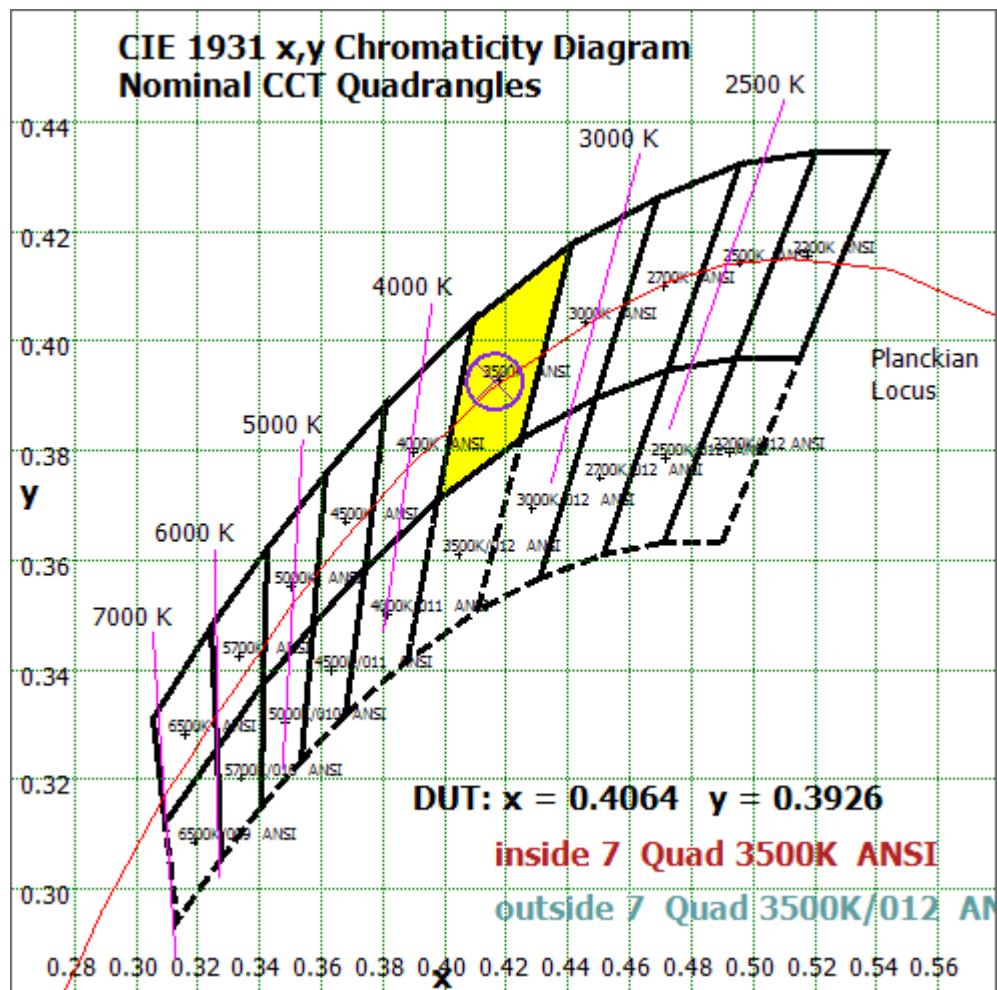


Chart 3: Plot of Lamp x/y coordinates on CIE 1931 Chromaticity Diagram

Color Rendition Report – Sphere Spectroradiometer Method

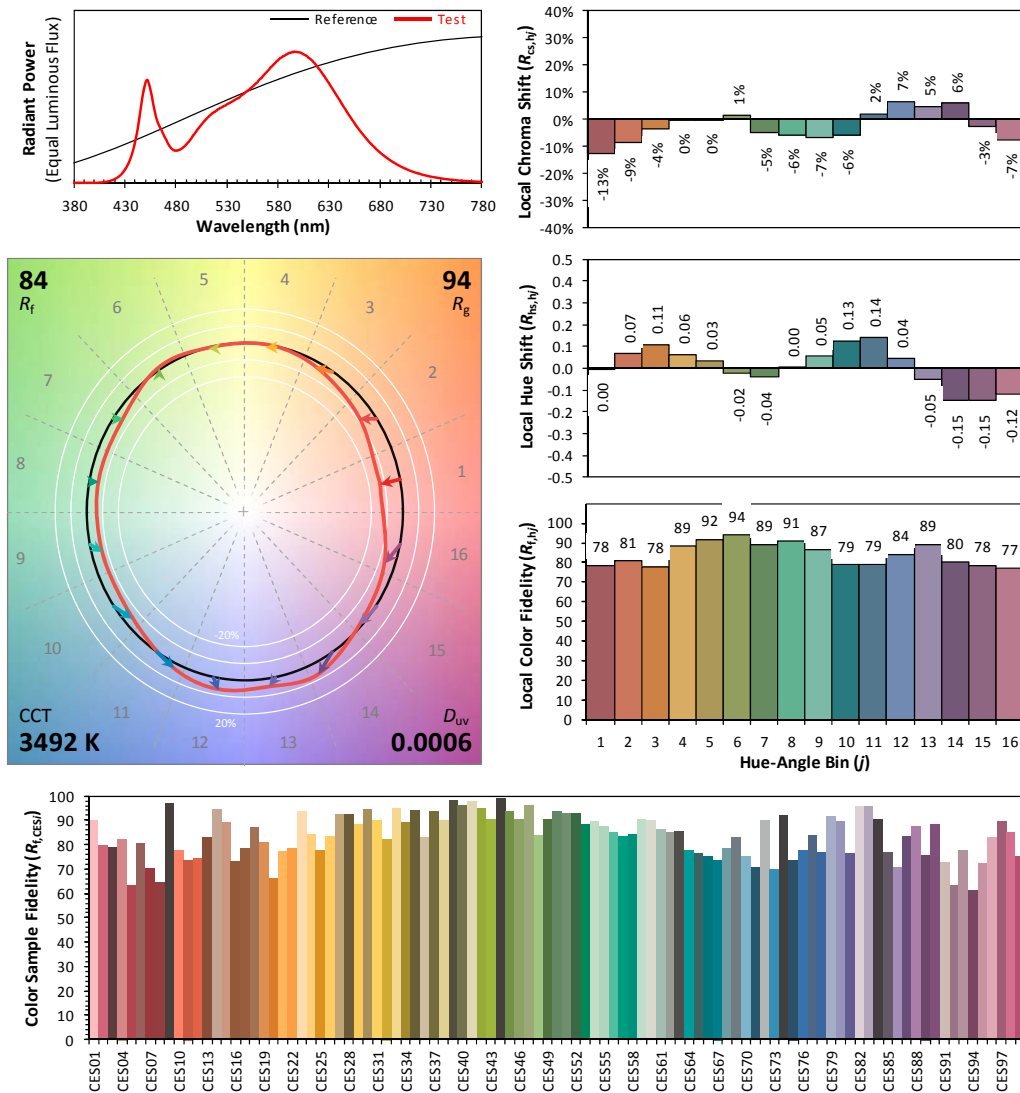
ANSI/IES TM-30-18 Color Rendition Report

Source: LED

Manufacturer: IDEAL INDUSTRIES LIGHTING LLC,
DBA CREE LIGHTING

Date: 2021/12/01

Model: C-T836-A-25W-35K-B1



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

x 0.4064
 y 0.3926
 u' 0.2356
 v' 0.5122

CIE 13.3-1995
(CRI)

R_a 82
 R_g 2

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.

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Zonal Lumen Tabulation- Goniophotometer Method

$\gamma(^{\circ})$	Lumens	% Total
0- 10	22.157	1.44%
10- 20	64.446	4.20%
20- 30	100.916	6.58%
30- 40	128.556	8.38%
40- 50	145.546	9.48%
50- 60	151.438	9.87%
60- 70	147.149	9.59%
70- 80	135.512	8.83%
80- 90	121.011	7.89%
90-100	107.829	7.03%
100-110	95.04	6.19%
110-120	82.503	5.38%
120-130	70.621	4.60%
130-140	58.658	3.82%
140-150	46.284	3.02%
150-160	33.233	2.17%
160-170	18.421	1.20%
170-180	5.267	0.34%
Total	1534.6	100%

$\gamma(^{\circ})$	Lumens	% Total
0- 60	613.059	39.95%
60- 90	403.672	26.30%
0-90	1016.73	66.25%
90- 180	517.856	33.75%
0- 180	1534.6	100%

Table 5: Zonal Lumen

Illuminance Plots- Goniophotometer Method

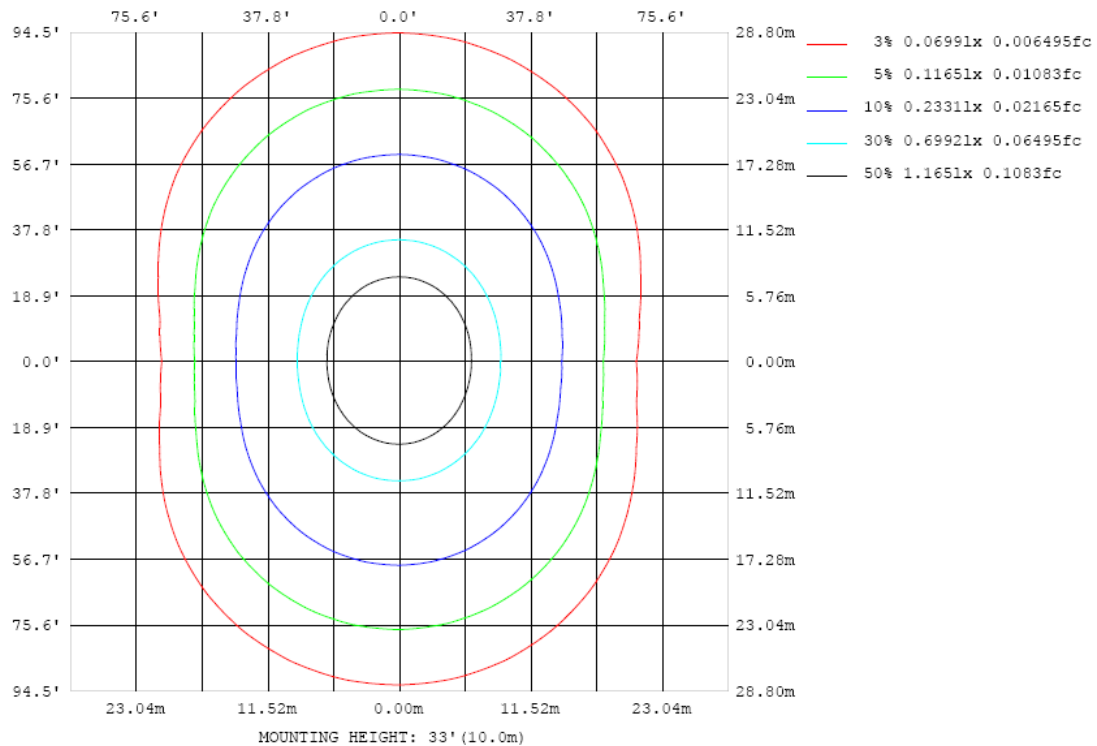


Chart 5: Illuminance Plot (Footcandles)

Luminous Intensity Distribution Plots- Goniophotometer Method

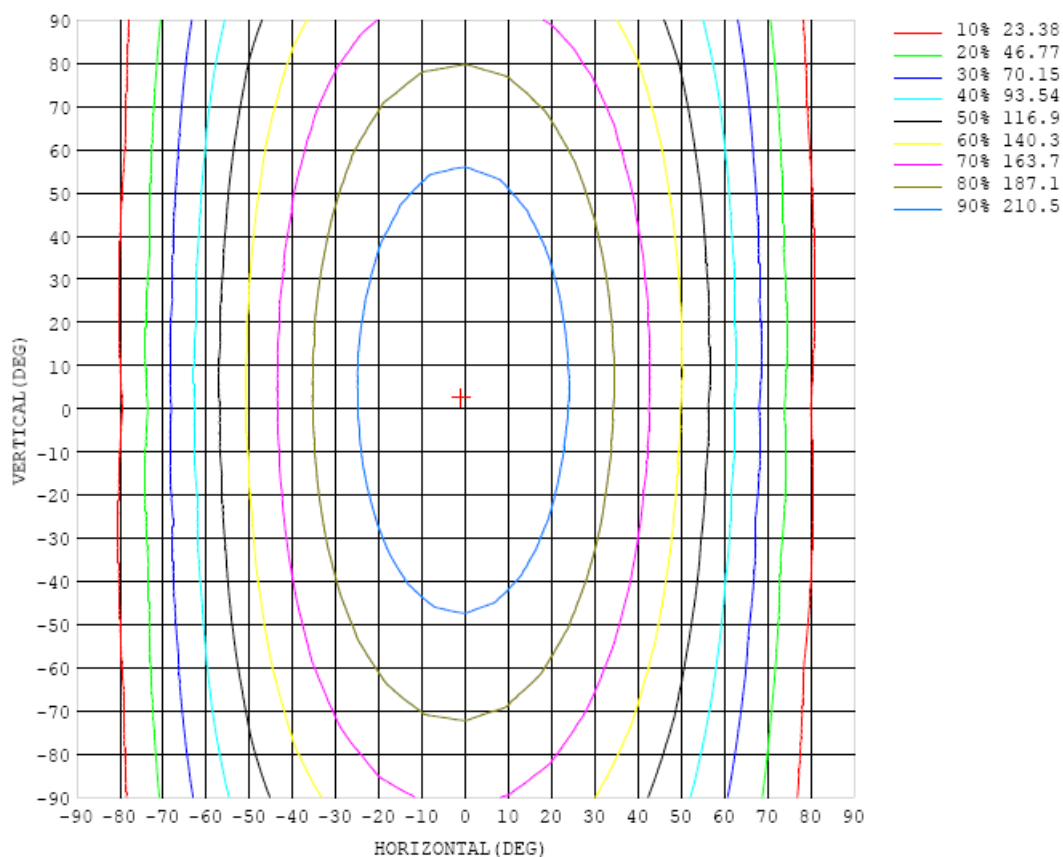


Chart 6: Isocandela Plot

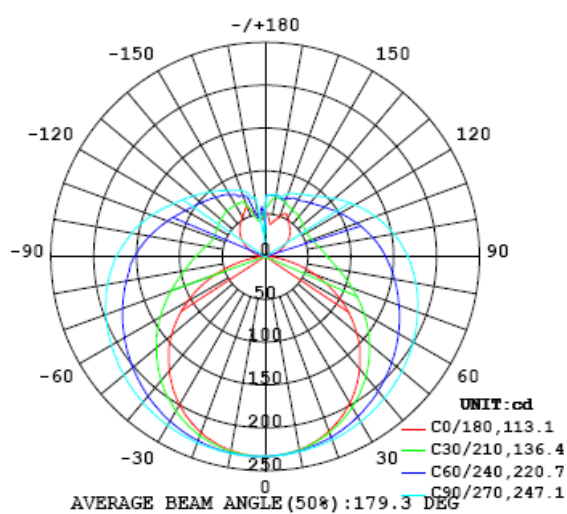


Chart 7: Polar Candela Distribution

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	233	233	233	233	233	233	233	233	233	233	233	233	233	233	233	233	233	233	233
5	232	232	232	232	232	232	232	232	232	233	233	233	233	233	232	232	232	232	232
10	229	229	229	229	229	230	231	231	231	231	231	231	231	231	231	230	229	230	230
15	224	224	224	225	226	227	228	229	230	230	230	229	229	228	227	226	226	225	225
20	217	217	218	219	221	223	225	227	228	228	228	227	226	224	223	221	220	219	219
25	208	208	210	212	215	218	221	223	225	226	226	224	222	220	217	214	212	210	210
30	197	198	200	203	207	212	216	219	222	223	222	221	218	214	210	206	203	200	200
35	185	186	189	194	199	205	211	215	218	220	219	217	213	208	202	197	192	189	188
40	171	172	176	183	190	198	205	211	215	216	215	213	208	201	194	186	180	175	174
45	156	157	163	171	181	190	199	206	211	212	212	208	202	194	185	175	166	160	159
50	140	141	148	159	171	182	193	201	206	208	208	203	196	186	175	163	152	144	143
55	121	124	133	146	160	174	186	195	202	204	203	198	190	179	165	151	137	127	124
60	102	106	117	133	150	166	180	190	197	199	198	193	184	171	155	138	121	108	104
65	82.3	86.9	101	120	140	158	173	184	192	195	193	187	177	163	146	126	105	89.2	83.3
70	62.5	68.4	85.9	108	130	150	166	179	186	189	188	182	171	156	136	114	90.1	70.1	62.2
75	42.3	50.7	71.6	97.0	121	142	159	173	181	184	183	176	165	149	128	103	76.2	52.5	40.8
80	23.4	34.2	59.8	87.1	113	135	153	167	175	179	177	170	158	142	120	93.5	64.9	36.4	21.3
85	8.25	21.5	49.9	78.8	106	128	147	160	169	172	171	164	152	135	113	85.7	55.7	24.6	6.22
90	0.92	14.6	43.2	72.2	99.3	122	141	154	163	166	165	158	146	129	106	79.4	49.4	18.7	0.49
95	1.95	12.6	39.3	68.1	93.6	116	134	148	156	160	158	152	140	123	101	74.3	45.5	17.0	2.24
100	5.32	13.3	36.8	63.7	88.2	110	128	141	149	153	151	145	133	116	95.0	70.8	43.3	17.7	5.97
105	10.0	16.9	36.0	60.4	83.2	104	121	133	142	145	143	137	126	110	90.1	67.4	42.6	21.5	10.9
110	15.4	21.9	35.7	58.1	78.8	98.0	114	126	134	137	136	129	119	104	85.6	65.2	42.2	27.1	16.3
115	20.6	26.1	37.6	56.4	75.2	92.5	107	119	126	129	128	122	112	98.5	81.7	63.7	43.1	31.4	21.9
120	26.4	32.6	40.3	55.4	72.7	87.7	101	111	118	121	120	115	106	93.4	78.9	62.2	46.6	35.3	27.1
125	32.1	38.2	44.0	56.3	70.0	83.2	95.3	105	111	113	112	107	99.5	89.2	76.8	61.8	50.3	42.0	33.0
130	37.1	43.0	46.6	57.2	68.9	79.6	90.1	98.1	103	105	105	101	94.2	85.6	74.5	62.8	53.3	46.0	37.8
135	41.6	46.4	49.9	59.5	68.1	76.8	85.5	92.4	96.8	98.5	98.1	95.1	89.7	82.8	73.4	65.0	55.9	50.2	42.1
140	44.5	50.4	53.4	60.6	68.2	74.9	81.8	86.9	90.4	92.0	91.9	89.9	86.4	80.2	73.1	66.4	58.0	54.2	46.1
145	48.3	55.1	57.2	62.2	68.8	73.4	78.6	82.6	85.4	87.3	87.8	86.6	83.6	78.5	73.1	67.5	60.9	58.1	49.5
150	52.9	59.5	60.0	63.1	69.2	73.1	76.6	79.6	82.1	84.1	84.9	83.7	81.3	77.1	72.1	66.4	62.1	61.6	53.1
155	55.7	62.2	64.4	64.2	67.9	72.4	75.5	78.3	80.2	81.4	81.8	80.9	79.3	75.1	70.1	66.9	65.3	64.0	57.6
160	49.1	63.8	67.1	67.8	67.4	69.0	72.7	74.8	76.7	77.9	77.6	76.6	75.2	71.2	68.9	69.1	67.0	65.7	61.1
165	43.9	58.9	68.4	69.4	70.1	71.5	71.0	70.3	71.3	71.1	71.8	71.1	71.4	71.7	69.5	67.6	63.9	59.7	53.6
170	39.1	53.2	66.9	70.3	70.7	71.6	72.1	72.8	73.3	73.3	73.2	72.9	72.0	70.0	66.5	61.3	55.8	51.8	47.2
175	45.3	48.0	55.5	63.2	68.5	70.8	71.7	72.0	72.2	72.2	72.2	71.7	70.4	64.2	53.9	48.2	45.8	45.5	44.9
180	54.0	54.0	54.0	54.0	54.0	54.0	54.0	54.0	54.0	54.0	54.0	54.0	54.0	54.0	54.0	54.0	54.0	54.0	54.0

Table 6: Luminous Intensity Data

Table--2		UNIT: cd																	
γ	C (DEG)	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	
0		233	233	233	233	233	233	233	233	233	233	233	233	233	233	233	233	233	
5		233	233	233	233	233	234	234	234	233	233	233	233	233	233	233	232	232	
10		230	230	231	232	232	233	233	234	234	233	233	232	232	231	230	230	229	
15		225	226	228	229	230	231	232	233	232	232	232	230	229	228	226	225	224	
20		219	221	223	224	227	229	231	232	232	231	230	228	226	223	221	219	218	
25		211	213	216	219	223	226	228	230	230	229	227	224	221	218	214	211	209	
30		201	204	208	213	218	222	225	227	228	227	224	221	216	211	206	202	199	
35		190	194	199	205	212	218	222	225	225	224	221	216	210	203	197	191	187	
40		176	181	189	197	205	213	218	222	222	221	217	211	203	195	186	179	174	
45		162	168	178	188	198	207	214	218	219	217	213	205	196	186	175	166	160	
50		146	155	165	178	191	202	209	214	215	213	208	200	189	176	164	153	144	
55		128	139	154	169	183	196	205	210	211	209	203	193	181	166	152	138	127	
60		110	123	141	160	176	190	200	206	207	205	198	187	173	158	140	122	109	
65		90.1	107	129	150	168	184	195	201	203	200	192	181	166	148	127	107	90.3	
70		70.5	91.6	117	141	161	177	189	196	198	195	187	175	159	139	116	91.6	71.5	
75		51.7	77.0	106	132	155	171	183	191	192	189	181	168	152	130	105	77.6	53.5	
80		35.1	64.7	95.9	124	148	164	177	185	187	183	175	162	145	122	94.9	65.3	37.5	
85		22.9	55.1	87.8	117	141	159	171	179	180	177	169	157	138	114	86.6	55.6	25.2	
90		16.8	48.6	81.2	110	134	153	164	172	174	170	162	150	131	108	79.8	48.8	18.2	
95		14.5	43.8	75.0	103	127	145	158	164	166	163	156	142	124	101	73.4	43.5	15.1	
100		16.8	40.9	69.9	96.6	119	137	150	157	158	156	148	134	116	93.9	67.9	39.8	15.3	
105		21.3	40.7	65.9	90.7	112	129	141	148	150	147	139	126	109	87.8	63.4	38.5	19.4	
110		26.4	43.6	64.0	85.8	105	121	133	139	141	138	131	119	102	82.5	60.7	40.2	24.5	
115		31.3	46.7	64.2	82.5	99.6	114	125	131	132	130	122	111	96.5	78.7	60.0	42.7	29.6	
120		36.2	50.2	64.9	80.3	95.1	108	117	122	124	121	115	105	92.1	76.5	60.5	46.2	34.2	
125		40.6	53.5	66.0	79.2	91.5	102	111	115	116	114	109	100	88.7	75.4	62.0	49.7	38.0	
130		44.9	56.9	67.4	78.3	88.8	97.7	105	109	110	108	103	95.6	86.0	74.9	63.9	53.0	41.2	
135		47.3	59.1	68.7	77.8	86.4	93.8	99.6	103	104	102	98.1	92.0	83.8	74.7	65.9	55.7	43.9	
140		49.2	61.6	69.8	77.4	84.2	90.3	94.9	98.0	98.6	97.5	93.9	88.7	82.1	74.9	67.4	58.1	46.6	
145		49.6	62.3	69.1	75.9	82.1	87.3	90.9	93.0	93.9	92.9	90.0	85.9	80.6	75.1	68.0	59.4	48.5	
150		49.2	64.2	70.0	74.7	79.1	83.8	87.4	88.9	89.4	88.8	86.8	83.6	79.7	74.9	68.8	62.0	50.2	
155		46.8	63.3	69.5	73.8	76.6	79.2	83.2	85.4	85.7	85.2	83.9	81.8	78.5	73.7	68.4	63.6	48.9	
160		44.2	64.4	69.5	75.0	75.7	74.5	80.2	82.1	82.0	81.0	79.4	77.0	73.6	70.5	65.6	55.6	41.8	
165		44.8	64.4	69.5	75.0	75.7	74.5	80.2	82.1	82.0	81.0	79.4	77.0	73.6	70.5	65.6	55.6	41.8	
170		42.6	61.6	67.4	72.8	74.2	74.8	80.2	82.1	82.0	81.0	79.4	77.0	73.6	70.5	65.6	55.6	41.8	
175		45.8	64.5	70.0	74.7	79.1	83.8	87.4	88.9	89.4	88.8	86.8	83.6	79.7	74.9	68.8	62.0	50.2	
180		54.0	64.0	74.0	84.0	94.0	104.0	114.0	124.0	134.0	144.0	154.0	164.0	174.0	184.0	194.0	204.0	214.0	

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, 2021	Aug. 04, 2022
Digital Power Meter	PF2010A	HZTE028-01	Aug. 05, 2021	Aug. 04, 2022
AC Power Supply	DPS1060	HZTE001-06	Aug. 05, 2021	Aug. 04, 2022
DC Power Supply	WY12010	HZTE004-03	Aug. 05, 2021	Aug. 04, 2022
Temperature recorder	JM624U	HZTE018-08	Aug. 05, 2021	Aug. 04, 2022
Temperature and humidity recorder	JR900	HZTE018-01	Aug. 05, 2021	Aug. 04, 2022
Standard source	D908	HZTE012-01	Aug. 05, 2021	Aug. 04, 2022
Integrate Sphere system	3M	HZTE015-04	Aug. 05, 2021	Aug. 04, 2022
Digital Power Meter	WT210	HZTE008-01	Aug. 05, 2021	Aug. 04, 2022
AC Power Supply	PCR 500L	HZTE001-07	Aug. 05, 2021	Aug. 04, 2022
DC Power Supply	IT6154	HZTE004-04	Aug. 05, 2021	Aug. 04, 2022
Standard source	SCL-1400	HZTE012-02	Aug. 05, 2021	Aug. 04, 2022
Temperature and humidity recorder	JR900	HZTE018-02	Aug. 05, 2021	Aug. 04, 2022
Temperature Meter	TES1310	HZTE017-01	Aug. 05, 2021	Aug. 04, 2022

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

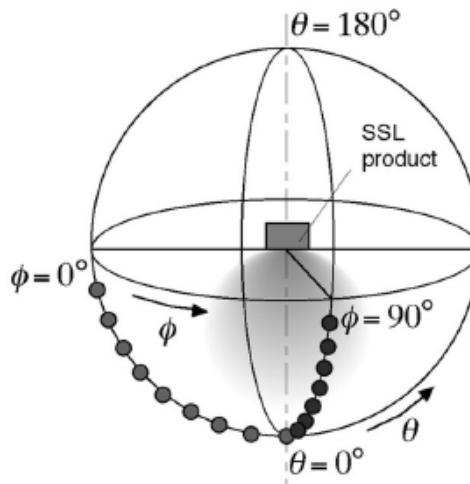
The color characteristics of SSL products include chromaticity coordinates, correlated color temperature, and color rendering index. These characteristics of SSL products may be spatially non-uniform, and thus, in order that they can be specified accurately, the color quantities shall be measured as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