

LM-79-08 TEST REPORT

for

RAB Lighting INC

170 Ludlow Avenue, Northvale, New Jersey 07647 USA

LED TUBE

Model: T5HE-13-48G-840-SE-BYP

Laboratory: Leading Testing Laboratories

NVLAP CODE: 200960-0

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Report No.: HZ20090061k

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

Review by:



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Sep. 29, 2020

Approved by:



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Sep. 29, 2020

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: T5HE-13-48G-840-SE-BYP

Luminous Efficacy (Lumens /Watt)	Total Luminous Flux (Lumens)	Power (Watts)	Power Factor
140.4	1863.3	13.27	0.9747
CCT (K)	CRI	Stabilization Time (Light & Power)	
3968	83.3	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	: Mar. 06, 2020
Date of Test	: Mar. 11, 2020
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

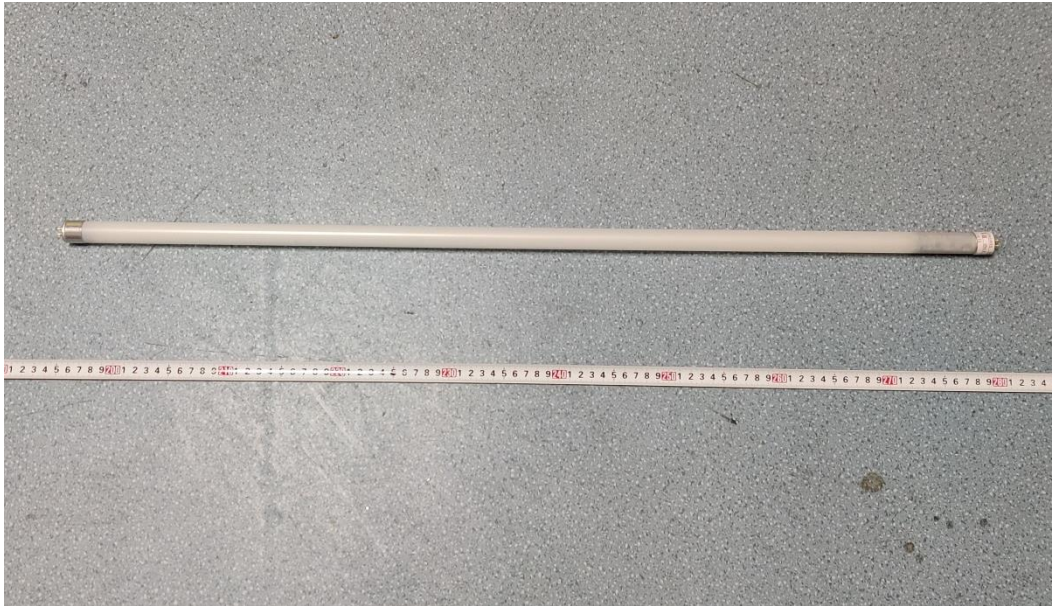


Figure 1- Overview of the sample

Equipment Under Test(EUT)

Name	: LED TUBE
Model	: T5HE-13-48G-840-SE-BYP
Electrical Ratings	: 120-277V(TYPE B), 50/60Hz, 13W
Product Description	: G5 Base, 4000K

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)	0.114	0.053
Power Factor	0.9747	0.9051
Test Power (W)	13.27	13.31
THD A%	19.78	16.68
Luminous Efficacy (lm/W)	140.4	140.7
Total Luminous Flux (lm)	1863.3	1872.1
Color Rendering Index (CRI)	83.3	
R9	7.8	
Correlated Color Temperature (CCT)(K)	3968	
Chromaticity Chroma x	0.3830	
Chromaticity Chroma y	0.3819	
Chromaticity Chroma u	0.2247	
Chromaticity Chroma v	0.3361	
Duv	0.0017	
Chromaticity Chroma u'	0.2247	
Chromaticity Chroma v'	0.5042	

Special Color Rendering Indices	
R1	81.9
R2	92
R3	95.7
R4	79.8
R5	81.6
R6	88.4
R7	84.4
R8	62.7
R9	7.8
R10	80.5
R11	78.8
R12	62
R13	84.8
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 25.0 °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)	0.113
Power Factor	0.9754
Power (W)	13.27
Luminous Efficacy (lm/W)	140.2
Total Luminous Flux (lm)	1860.5
Beam Angle (°)	104.4 (0°-180°) / 140.7 (90°-270°)
Center Beam Candle Power (cd)	452
Maximum Beam Candle Power (cd)	453.9 (At: C=120.0, Gamma=3.5)
Spacing Criteria	1.22 (0°-180°) / 1.32 (90°-270°)
Zonal Lumens in the 0 °-60 °Zone	56.77%
Zonal Lumens in the 60 °-90 °Zone	25.92%
Zonal Lumens in the 90 °-120 °Zone	11.53%
Zonal Lumens in the 120 °-180 °Zone	5.78%

Table 3: Test data per Goniophotometer Method

Spectral Power Distribution - Sphere Spectroradiometer Method

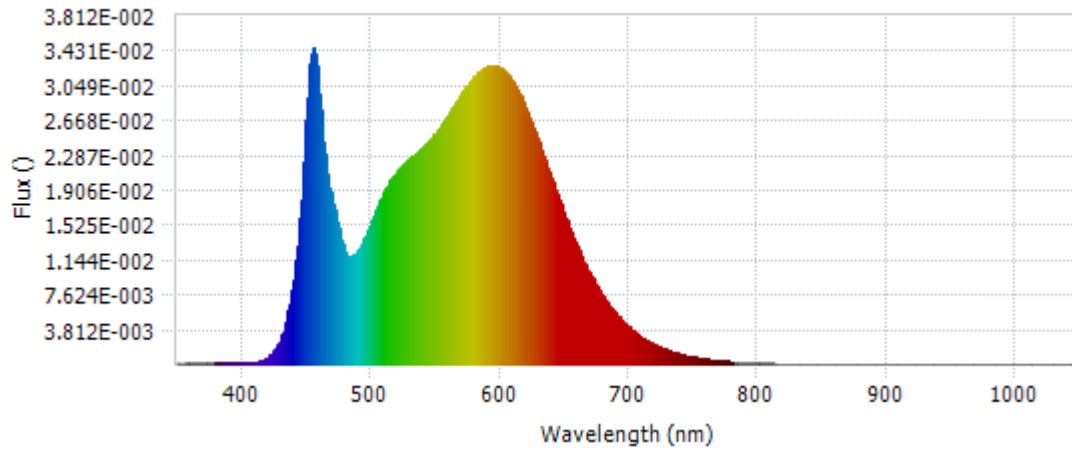
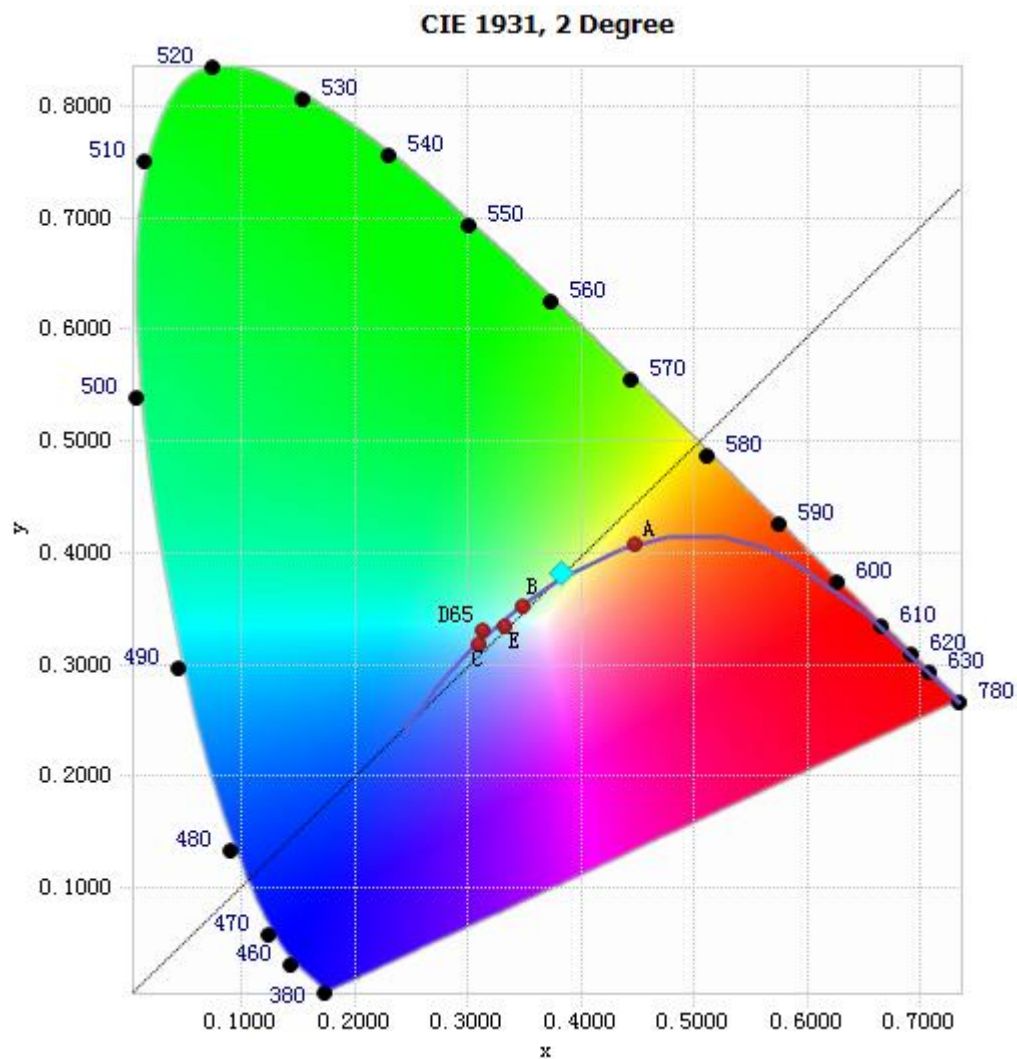


Chart 1: Spectral Power Distribution

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	1.62E-04	485	1.18E-02	590	3.26E-02	695	4.75E-03
385	1.63E-04	490	1.25E-02	595	3.26E-02	700	4.07E-03
390	1.54E-04	495	1.37E-02	600	3.25E-02	705	3.47E-03
395	1.48E-04	500	1.54E-02	605	3.19E-02	710	2.95E-03
400	1.43E-04	505	1.73E-02	610	3.08E-02	715	2.53E-03
405	1.44E-04	510	1.88E-02	615	2.96E-02	720	2.16E-03
410	2.10E-04	515	2.01E-02	620	2.80E-02	725	1.84E-03
415	3.94E-04	520	2.11E-02	625	2.63E-02	730	1.57E-03
420	7.65E-04	525	2.18E-02	630	2.44E-02	735	1.33E-03
425	1.52E-03	530	2.25E-02	635	2.23E-02	740	1.13E-03
430	2.86E-03	535	2.31E-02	640	2.03E-02	745	9.67E-04
435	5.21E-03	540	2.38E-02	645	1.83E-02	750	8.24E-04
440	9.22E-03	545	2.45E-02	650	1.64E-02	755	7.07E-04
445	1.60E-02	550	2.53E-02	655	1.46E-02	760	6.05E-04
450	2.68E-02	555	2.63E-02	660	1.29E-02	765	5.15E-04
455	3.47E-02	560	2.73E-02	665	1.13E-02	770	4.41E-04
460	2.96E-02	565	2.84E-02	670	9.86E-03	775	3.80E-04
465	2.19E-02	570	2.95E-02	675	8.57E-03	780	3.25E-04
470	1.81E-02	575	3.06E-02	680	7.45E-03		
475	1.49E-02	580	3.15E-02	685	6.42E-03		
480	1.23E-02	585	3.22E-02	690	5.52E-03		

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

Chromaticity Diagram - Sphere Spectroradiometer Method



Tristimulus values(x, y): (0.3830, 0.3819)

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

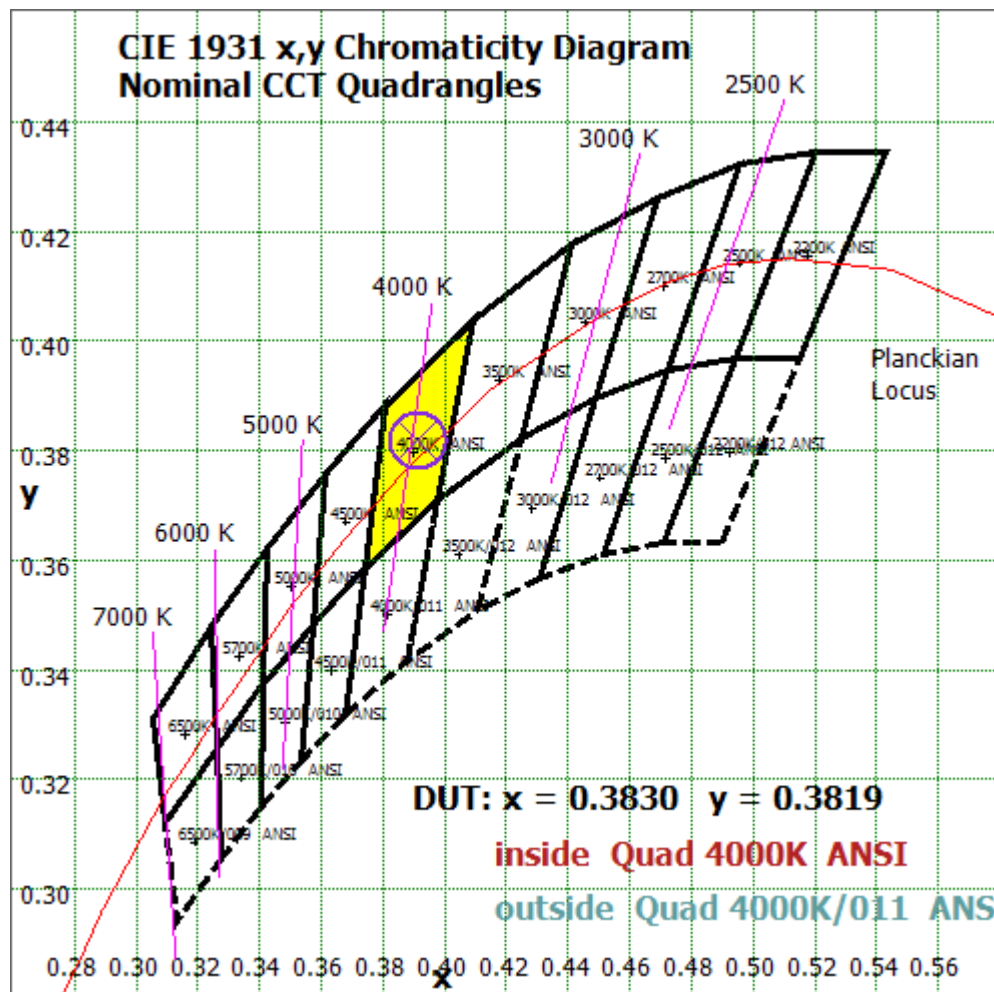
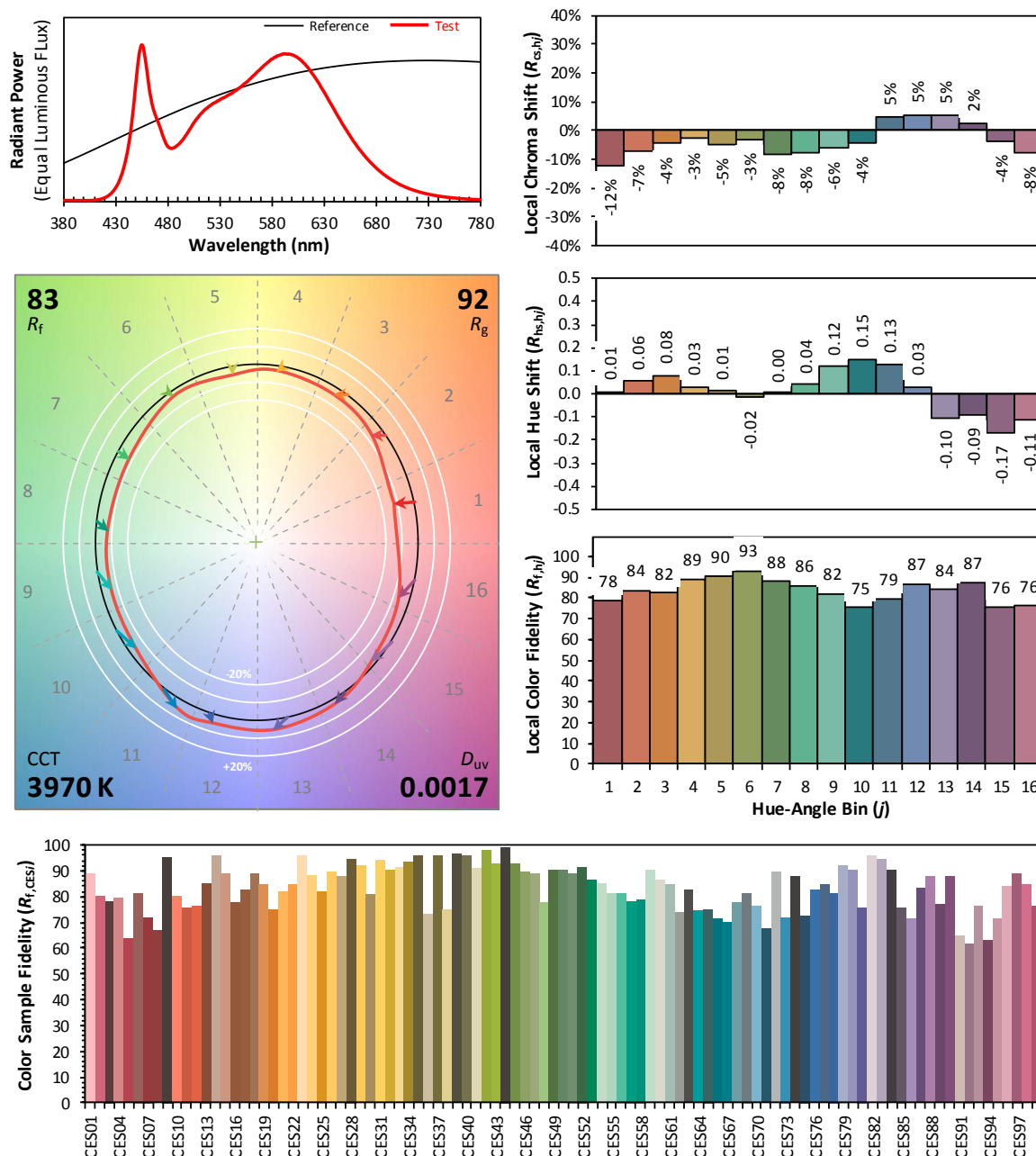


Chart 3: Plot of Lamp x/y coordinates on CIE 1931 Chromaticity Diagram

Color Rendition Report – Sphere Spectroradiometer Method



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

x 0.3830
 y 0.3819
 u' 0.2247
 v' 0.5042

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	42.863	2.30%
10- 20	123.314	6.63%
20- 30	188.073	10.11%
30- 40	228.999	12.31%
40- 50	242.487	13.03%
50- 60	230.454	12.39%
60- 70	199.86	10.74%
70- 80	160.361	8.62%
80- 90	122.014	6.56%
90-100	92.378	4.97%
100-110	69.734	3.75%
110-120	52.384	2.82%
120-130	39.266	2.11%
130-140	28.558	1.53%
140-150	19.645	1.06%
150-160	12.297	0.66%
160-170	6.17	0.33%
170-180	1.693	0.09%
Total	1860.6	100%

$\gamma(^{\circ})$	Lumens	% Total
0- 60	1056.19	56.77%
60- 90	482.235	25.92%
0-90	1538.425	82.69%
90- 180	322.125	17.31%
0- 180	1860.6	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

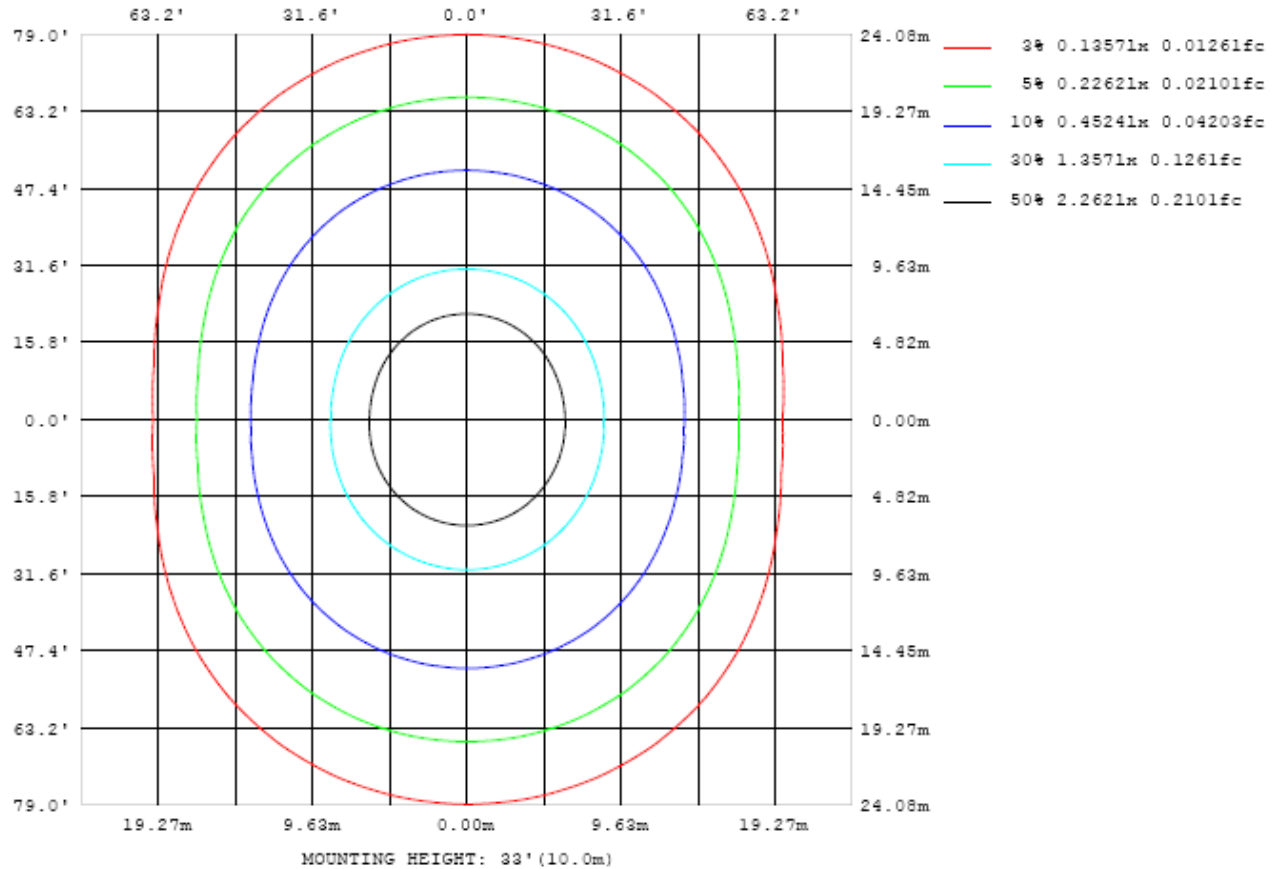


Chart 5: Illuminance Plot (Footcandles)

Luminous Intensity Distribution Plots- Goniophotometer Method

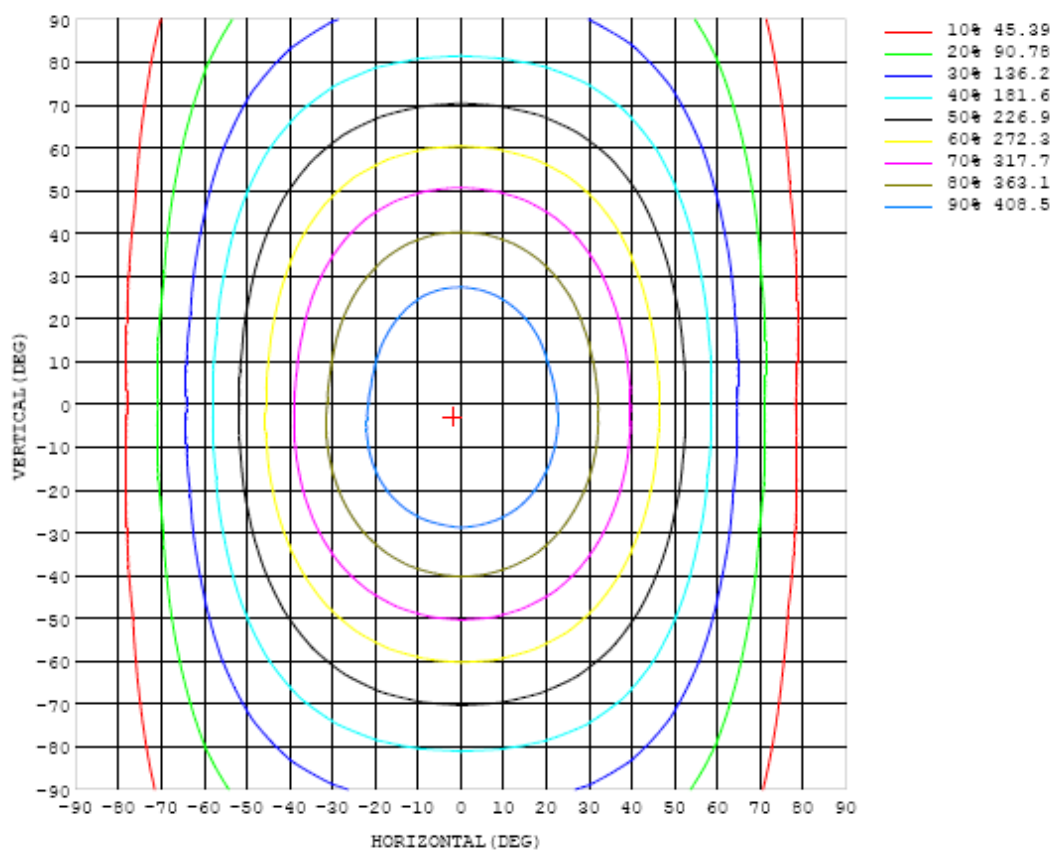


Chart 6: Isocandela Plot

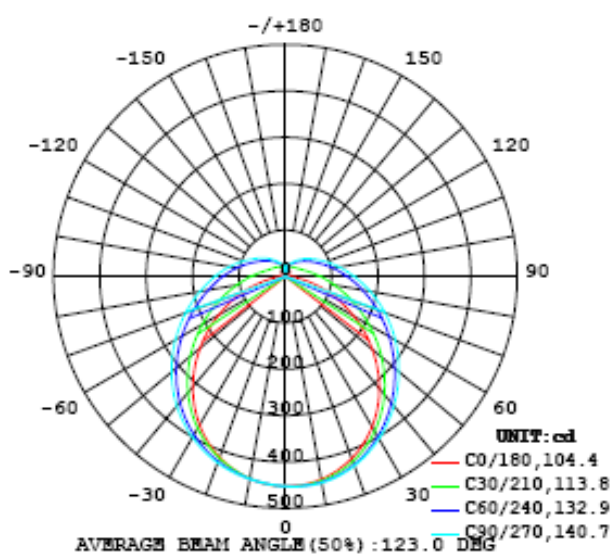


Chart 7: Polar Candela Distribution

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	452	452	452	452	452	452	452	452	452	452	452	452	452	452	452	452	452	452	452
5	451	451	451	452	452	453	453	454	454	454	454	454	453	453	452	452	451	450	450
10	444	445	446	447	448	449	450	451	451	452	452	451	451	450	449	447	445	444	443
15	433	434	436	438	440	442	443	445	445	445	445	445	444	443	440	438	435	433	431
20	418	419	422	425	427	430	432	433	434	435	434	434	432	430	427	424	421	418	415
25	398	400	403	407	410	414	417	419	420	421	420	419	417	414	410	406	402	398	394
30	374	376	381	385	390	395	399	401	403	404	403	402	399	395	389	384	379	374	370
35	346	350	354	360	366	373	378	382	384	385	384	382	378	372	366	358	352	346	342
40	315	318	325	332	340	349	356	360	363	364	363	360	355	348	339	330	322	315	310
45	281	285	292	302	313	323	332	337	341	342	340	337	330	322	312	300	289	281	276
50	245	249	258	271	285	297	307	314	318	319	317	314	306	295	283	269	256	245	240
55	208	212	224	239	256	271	283	290	295	297	294	289	281	269	254	238	222	209	203
60	170	175	190	209	228	245	258	267	272	274	271	266	256	243	226	207	188	173	166
65	133	140	157	180	201	220	234	244	249	251	249	243	233	218	200	178	156	137	130
70	97.6	106	127	153	176	196	211	221	227	228	226	220	210	195	175	152	127	104	94.9
75	64.3	75.2	101	128	153	174	190	199	205	207	204	199	188	173	153	129	101	74.9	61.9
80	35.9	49.7	78.2	107	133	154	169	179	184	186	184	178	168	153	133	108	79.5	50.9	33.5
85	12.4	29.9	60.6	89.8	115	136	150	160	165	166	165	159	150	135	116	91.4	62.7	32.5	11.2
90	0.51	17.8	47.2	75.4	99.9	119	133	142	147	149	147	142	133	119	101	77.2	50.0	21.1	0.23
95	0.86	12.0	37.6	64.0	86.7	105	118	127	131	133	131	127	118	106	88.1	65.8	40.4	14.9	1.12
100	2.36	10.4	30.8	54.4	75.1	92.1	105	113	117	118	117	113	105	92.8	76.5	56.4	33.5	13.2	2.64
105	4.02	10.5	27.0	46.8	65.3	80.7	92.2	99.6	104	105	104	99.8	92.4	81.5	66.6	48.8	29.5	12.6	4.54
110	5.89	11.5	24.4	41.3	57.5	70.7	81.2	88.3	92.2	93.3	92.1	88.5	81.7	71.7	59.0	43.3	27.0	13.3	6.19
115	7.74	12.8	22.9	37.1	51.1	63.1	71.8	78.1	81.9	83.0	81.8	78.5	72.4	64.0	52.7	39.1	25.3	14.2	8.12
120	9.46	13.7	22.2	33.7	45.9	56.4	65.0	69.7	73.0	74.0	73.0	70.1	65.2	57.5	47.4	35.8	24.2	15.1	9.85
125	10.9	14.8	22.0	31.1	41.3	50.5	57.9	62.9	65.5	66.4	65.5	63.3	58.6	51.7	42.9	33.0	23.5	15.9	11.2
130	12.2	15.7	21.9	29.2	37.4	45.4	51.8	56.3	59.1	59.9	59.2	56.8	52.5	46.5	39.0	30.8	23.1	16.8	12.2
135	13.3	16.4	21.9	27.7	34.2	40.8	46.3	50.3	52.7	53.6	52.8	50.7	46.9	41.8	35.5	28.9	22.7	17.5	12.8
140	14.1	17.6	21.6	26.5	31.6	36.8	41.3	44.7	46.8	47.5	46.9	45.1	41.9	37.7	32.7	27.4	22.2	18.3	13.3
145	14.8	17.8	21.6	25.5	29.4	33.4	36.9	39.6	41.3	42.0	41.4	40.0	37.4	34.1	30.2	26.1	22.0	18.9	13.7
150	14.7	18.0	21.5	24.2	27.5	30.5	33.1	35.2	36.6	37.0	36.6	35.5	33.5	31.0	28.1	24.7	21.6	19.5	13.8
155	14.3	17.3	21.3	23.5	25.5	28.0	29.9	31.4	32.4	32.7	32.5	31.6	30.2	28.4	26.0	23.5	20.7	19.1	13.7
160	13.7	15.0	21.1	22.7	24.3	25.7	27.1	28.3	29.0	29.2	29.0	28.5	27.6	26.1	23.6	20.7	18.4	17.3	13.4
165	13.1	13.0	16.3	22.3	23.0	24.2	25.1	25.9	26.3	26.4	26.3	26.0	25.4	22.1	20.0	17.2	16.1	14.8	13.0
170	13.0	12.1	13.0	16.4	20.6	22.1	22.9	23.8	24.3	24.4	24.4	22.9	19.2	16.1	16.1	16.1	15.6	13.6	13.2
175	16.9	16.4	15.4	15.2	16.8	16.5	17.3	18.6	21.4	22.0	16.9	12.3	13.9	16.0	16.3	17.2	16.5	16.0	17.0
180	8.61	8.61	8.61	8.61	8.61	8.61	8.61	8.61	8.61	8.61	8.61	8.61	8.61	8.61	8.61	8.61	8.61	8.61	8.61

Table 6: Luminous Intensity Data

Table--2

UNIT: cd

C (DEG) y (DEG)	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350		
0	452	452	452	452	452	452	452	452	452	452	452	452	452	452	452	452	452		
5	450	449	449	449	449	449	449	449	449	448	449	449	449	449	449	449	450		
10	442	441	442	442	443	443	443	444	443	444	444	443	443	442	442	443	443		
15	430	430	431	432	433	435	437	437	437	436	436	435	434	433	431	431	432		
20	414	415	417	419	422	424	426	427	427	427	426	424	422	420	418	417	417		
25	394	396	399	403	407	410	414	415	415	414	413	411	408	404	400	398	397		
30	370	373	378	384	389	394	398	400	401	400	398	394	390	385	380	376	374		
35	342	347	354	362	368	375	380	383	383	382	380	375	370	363	356	350	347		
40	311	318	327	337	346	354	360	363	364	363	360	354	347	339	329	322	316		
45	278	286	298	310	321	331	338	342	343	342	338	331	323	312	301	291	284		
50	243	254	268	283	296	307	315	319	321	319	315	308	297	285	271	258	249		
55	208	220	237	255	270	282	291	296	298	296	291	283	272	257	240	225	213		
60	171	187	207	227	244	258	267	272	274	272	267	259	246	230	210	192	177		
65	137	155	178	200	219	233	243	249	251	249	244	235	221	203	182	160	143		
70	104	126	151	175	195	210	221	227	229	227	221	212	197	178	155	131	109		
75	73.3	99.2	127	152	173	188	199	205	207	205	200	190	175	156	131	104	78.6		
80	47.7	76.6	106	132	153	169	179	185	187	185	180	170	155	136	110	81.5	52.7		
85	28.5	59.1	88.6	115	136	151	161	167	169	167	161	152	138	118	92.4	63.2	32.9		
90	17.5	46.1	74.4	99.5	120	135	145	150	152	150	146	136	122	102	77.8	49.5	20.5		
95	12.1	36.6	63.0	86.6	106	120	130	135	137	135	130	121	108	89.2	66.0	39.7	13.9		
100	10.9	30.0	53.4	75.2	93.1	107	116	121	122	121	116	108	94.9	77.5	56.0	32.3	11.7		
105	10.7	26.6	46.0	65.2	81.6	94.2	103	108	109	108	103	95.1	83.4	67.2	47.9	28.1	11.4		
110	11.8	24.6	40.9	57.3	71.6	83.0	90.9	95.4	96.8	95.5	91.4	83.9	73.1	58.9	42.3	25.4	12.2		
115	13.0	23.5	37.1	51.2	63.6	73.5	80.4	84.6	85.9	84.7	80.9	74.2	64.8	52.5	38.2	23.7	13.3		
120	14.4	22.8	34.2	46.2	57.0	65.7	71.8	75.4	76.6	75.6	72.2	66.3	58.0	47.2	34.8	23.0	14.5		
125	15.7	22.6	31.9	42.0	51.4	59.0	64.4	67.6	68.7	67.8	64.7	59.5	52.3	42.8	32.1	22.7	15.8		
130	16.8	22.4	30.0	38.4	46.3	52.9	57.7	60.6	61.6	60.8	58.1	53.4	47.0	38.9	30.2	22.7	16.9		
135	17.8	21.7	28.4	35.2	41.8	47.5	51.7	54.2	55.1	54.3	52.0	47.9	42.5	35.7	28.7	22.7	17.7		
140	18.8	22.2	27.2	32.6	37.9	42.6	46.1	48.2	49.0	48.4	46.4	42.9	38.4	33.0	27.5	22.7	18.6		
145	19.7	22.4	25.9	30.3	34.4	38.1	41.0	42.8	43.4	42.9	41.2	38.4	34.8	30.7	26.4	22.8	19.6		
150	19.9	22.4	23.9	28.3	31.4	34.2	36.4	37.8	38.3	37.9	36.7	34.5	31.8	28.7	25.6	22.7	20.4		
155	18.9	21.8	23.6	25.6	28.8	30.8	32.4	33.5	33.8	33.6	32.7	31.2	29.3	27.1	24.9	22.7	19.2		
160	15.8	19.1	20.8	21.7	25.8	27.9	29.0	29.8	30.1	30.0	29.5	28.5	27.3	25.9	24.3	23.0	17.2		
165	13.8	15.4	17.1	18.2	20.1	22.0	26.2	26.7	26.9	26.9	26.7	26.2	25.5	24.7	23.8	22.4	15.1		
170	13.4	13.6	15.3	16.7	16.9	16.3	18.1	22.8	24.7	24.7	24.7	24.5	23.6	22.8	21.6	16.8	13.5		
175	17.1	17.1	16.8	17.4	16.6	16.6	15.0	12.5	15.5	21.8	21.6	19.0	18.5	17.8	17.6	16.6	16.5		
180	8.61	8.61	8.61	8.61	8.61	8.61	8.61	8.61	8.61	8.61	8.61	8.61	8.61	8.61	8.61	8.61	8.61		

Table 7: Luminous Intensity Data

EQUIPMENT LIST

Test Equipment	Model	Equipment No.	Calibration Date	Calibration Due date
Goniophotometer system	GO-R5000	HZTE011-01	Aug. 02, 2019	Aug. 01, 2020
Digital Power Meter	PF2010A	HZTE028-01	Aug. 02, 2019	Aug. 01, 2020
AC Power Supply	DPS1060	HZTE001-06	Aug. 02, 2019	Aug. 01, 2020
DC Power Supply	WY12010	HZTE004-03	Aug. 02, 2019	Aug. 01, 2020
Temperature recorder	JM624U	HZTE018-08	Aug. 02, 2019	Aug. 01, 2020
Temperature and humidity recorder	JR900	HZTE018-01	Aug. 02, 2019	Aug. 01, 2020
Standard source	D908	HZTE012-01	Aug. 02, 2019	Aug. 01, 2020
Integrate Sphere system	3M	HZTE015-04	Aug. 02, 2019	Aug. 01, 2020
Digital Power Meter	WT210	HZTE008-01	Aug. 02, 2019	Aug. 01, 2020
AC Power Supply	PCR 500L	HZTE001-07	Aug. 02, 2019	Aug. 01, 2020
DC Power Supply	IT6154	HZTE004-04	Aug. 02, 2019	Aug. 01, 2020
Standard source	SCL-1400	HZTE012-02	Aug. 02, 2019	Aug. 01, 2020
Temperature and humidity recorder	JR900	HZTE018-02	Aug. 02, 2019	Aug. 01, 2020
Temperature Meter	TES1310	HZTE017-01	Aug. 02, 2019	Aug. 01, 2020

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

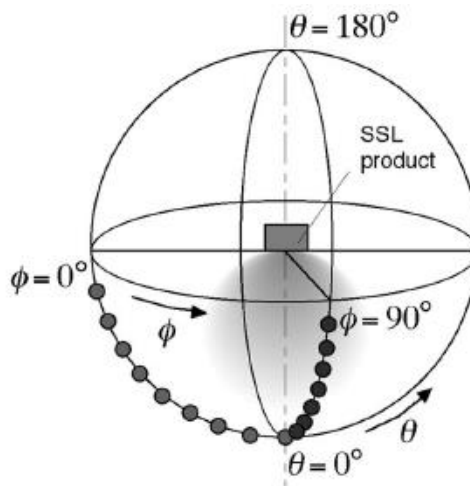
The color characteristics of SSL products include chromaticity coordinates, correlated color temperature, and color rendering index. These characteristics of SSL products may be spatially non-uniform, and thus, in order that they can be specified accurately, the color quantities shall be measured as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