



LM-79-08 Test Report

for

GREEN CREATIVE LTD

756 North Zhongshan Rd., Unit B301 Zhabei District, Shanghai

LED Tube

Model: 13PLL/835/GL/DIR

Laboratory: Leading Testing Laboratories

NVLAP CODE: 200960-0

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Report No.: HZ19020002t

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

Review by:

Engineer: April Zou
Feb. 21, 2019

Approved by:



Manager: Jim Zhang
Feb. 21, 2019

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: 13PLL/835/GL/DIR

Luminous Efficacy (Lumens /Watt)	Total Luminous Flux (Lumens)	Power (Watts)/2	Power Factor
135.0	2203.0	16.32	0.9935
CCT (K)	CRI	Stabilization Time (Light & Power)	
3425	82.0	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 : Feb. 01, 2019

Date of Test : Feb. 13, 2019

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

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Sample Photo

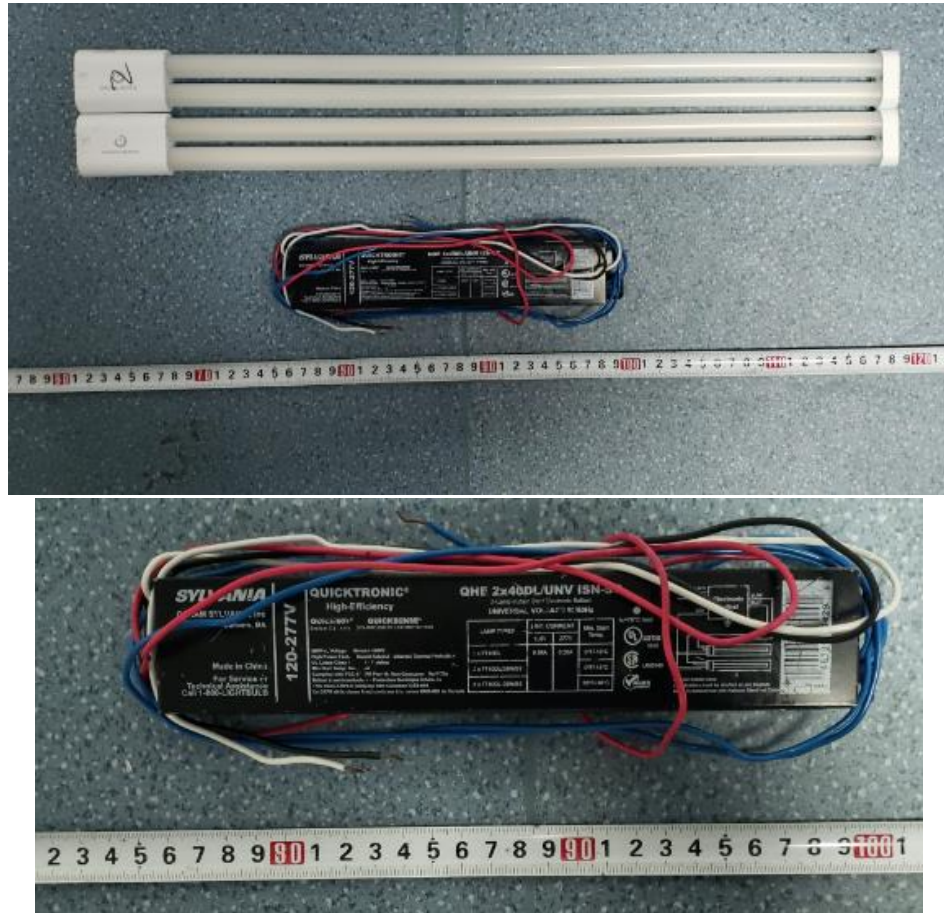


Figure 1- Overview of the sample

Equipment Under Test(EUT)

Name	: LED Tube
Model	: 13PLL/835/GL/DIR
Electrical Ratings	: 120-277V, 50/60Hz, 13W
Product Description	: 3500K LED Tubes supplied by a high frequency fluorescent lamp ballast: QHE 2x40DL/UNV ISN-SC
Manufacturer	: GREEN CREATIVE LTD
Address	: 756 North Zhongshan Rd., Unit B301 Zhabei District, Shanghai

TEST RESULTS

Test ambient temperature was 25.0°C.

Base orientation was Light down. 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 70 minutes.

Sphere-Spectroradiometer Method

Parameter	Result	
Test Voltage (V)	120.0	277.0
Voltage frequency (Hz)	60	60
Test Current (A)	0.274	0.132
Power Factor	0.9935	0.9237
Test Power (W)/2	16.32	16.84
THD A%	10.72	23.27
Luminous Efficacy (lm/W)	135.0	130.8
Total Luminous Flux (lm)	2203.0	2203.0
Color Rendering Index (CRI)	82.0	
R9	1.4	
Correlated Color Temperature (CCT)(K)	3425	
Chromaticity Chroma x	0.4106	
Chromaticity Chroma y	0.3959	
Chromaticity Chroma u	0.2370	
Chromaticity Chroma v	0.3428	
Duv	0.0007	
Chromaticity Chroma u'	0.2370	
Chromaticity Chroma v'	0.5142	

Special Color Rendering Indices	
R1	80.5
R2	91.6
R3	95.3
R4	78.8
R5	80.6
R6	89
R7	82.3
R8	58.1
R9	1.4
R10	80.2
R11	77.8
R12	65.4
R13	83.5
R14	98.1
Rf	83
Rg	93

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 25.1 °C.

The photometric distance is 2.47m.

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)	0.274
Power Factor	0.9940
Test Power (W)/2	16.33
Luminous Efficacy (lm/W)	134.6
Total Luminous Flux (lm)	2197.5
Beam Angle (°)	110.1
Center Beam Candle Power (cd)	644
Spacing Criteria	1.21 (0 °-180 °)/ 1.29 (90 °-270 °)
Zonal Lumens in the 0 °-60 °Zone	66.21%
Zonal Lumens in the 60 °-90 °Zone	21.46%
Zonal Lumens in the 90 °-120 °Zone	7.16%
Zonal Lumens in the 120 °-180 °Zone	5.17%

Table 3: Test data per Goniophotometer Method

Spectral Power Distribution - Sphere Spectroradiometer Method

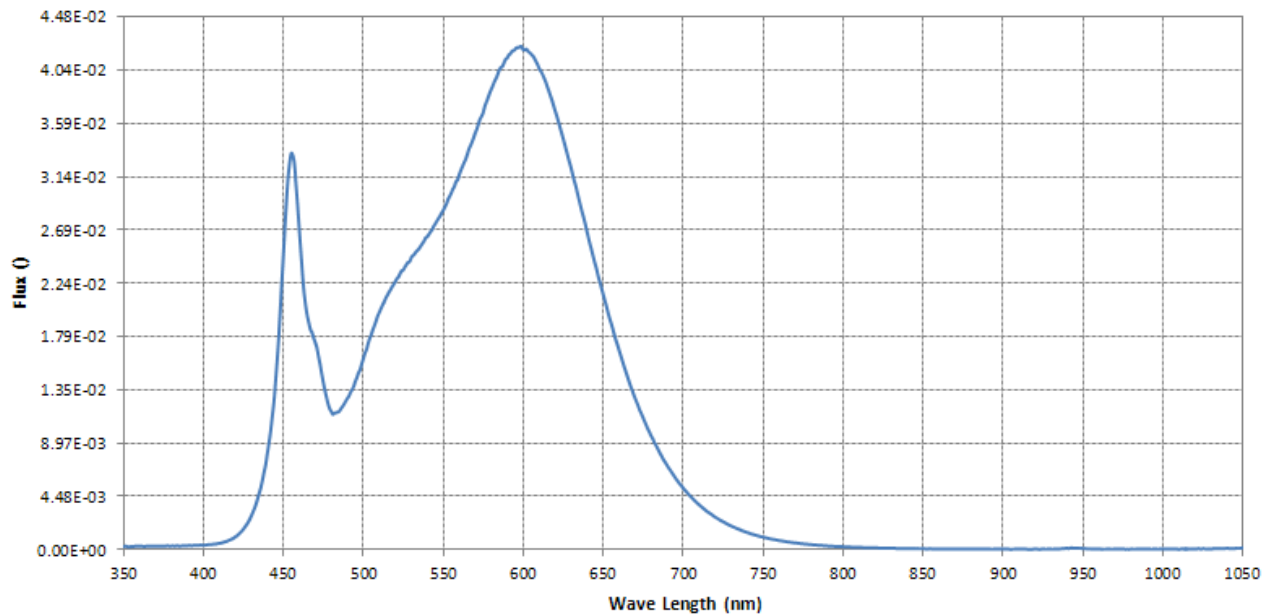
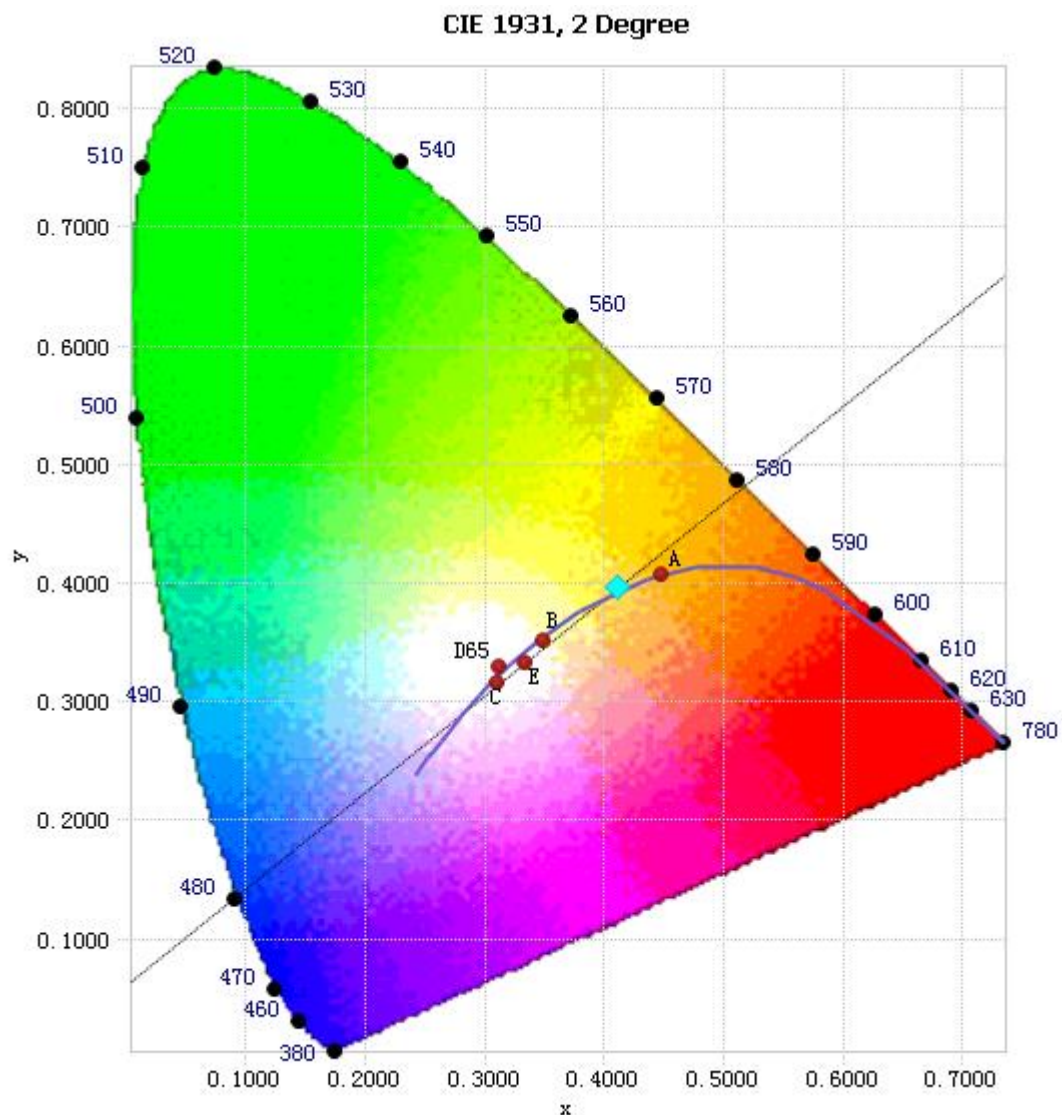


Chart 1: Spectral Power Distribution

Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	3.09E-04	485	1.16E-02	590	4.14E-02	695	6.08E-03
385	2.98E-04	490	1.27E-02	595	4.21E-02	700	5.19E-03
390	3.33E-04	495	1.41E-02	600	4.21E-02	705	4.44E-03
395	3.72E-04	500	1.60E-02	605	4.17E-02	710	3.79E-03
400	3.65E-04	505	1.81E-02	610	4.05E-02	715	3.22E-03
405	4.39E-04	510	1.99E-02	615	3.90E-02	720	2.75E-03
410	5.34E-04	515	2.14E-02	620	3.69E-02	725	2.35E-03
415	7.23E-04	520	2.25E-02	625	3.46E-02	730	2.00E-03
420	1.08E-03	525	2.35E-02	630	3.21E-02	735	1.72E-03
425	1.70E-03	530	2.46E-02	635	2.94E-02	740	1.45E-03
430	2.83E-03	535	2.53E-02	640	2.67E-02	745	1.23E-03
435	4.78E-03	540	2.63E-02	645	2.41E-02	750	1.06E-03
440	8.09E-03	545	2.74E-02	650	2.15E-02	755	9.05E-04
445	1.38E-02	550	2.85E-02	655	1.91E-02	760	7.76E-04
450	2.45E-02	555	3.00E-02	660	1.68E-02	765	6.62E-04
455	3.34E-02	560	3.15E-02	665	1.47E-02	770	5.69E-04
460	2.69E-02	565	3.32E-02	670	1.28E-02	775	4.93E-04
465	1.97E-02	570	3.50E-02	675	1.11E-02	780	4.32E-04
470	1.74E-02	575	3.68E-02	680	9.59E-03		
475	1.41E-02	580	3.87E-02	685	8.27E-03		
480	1.16E-02	585	4.03E-02	690	7.10E-03		

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

Chromaticity Diagram - Sphere Spectroradiometer Method



Tristimulus values(x, y): (0.4106, 0.3959)

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

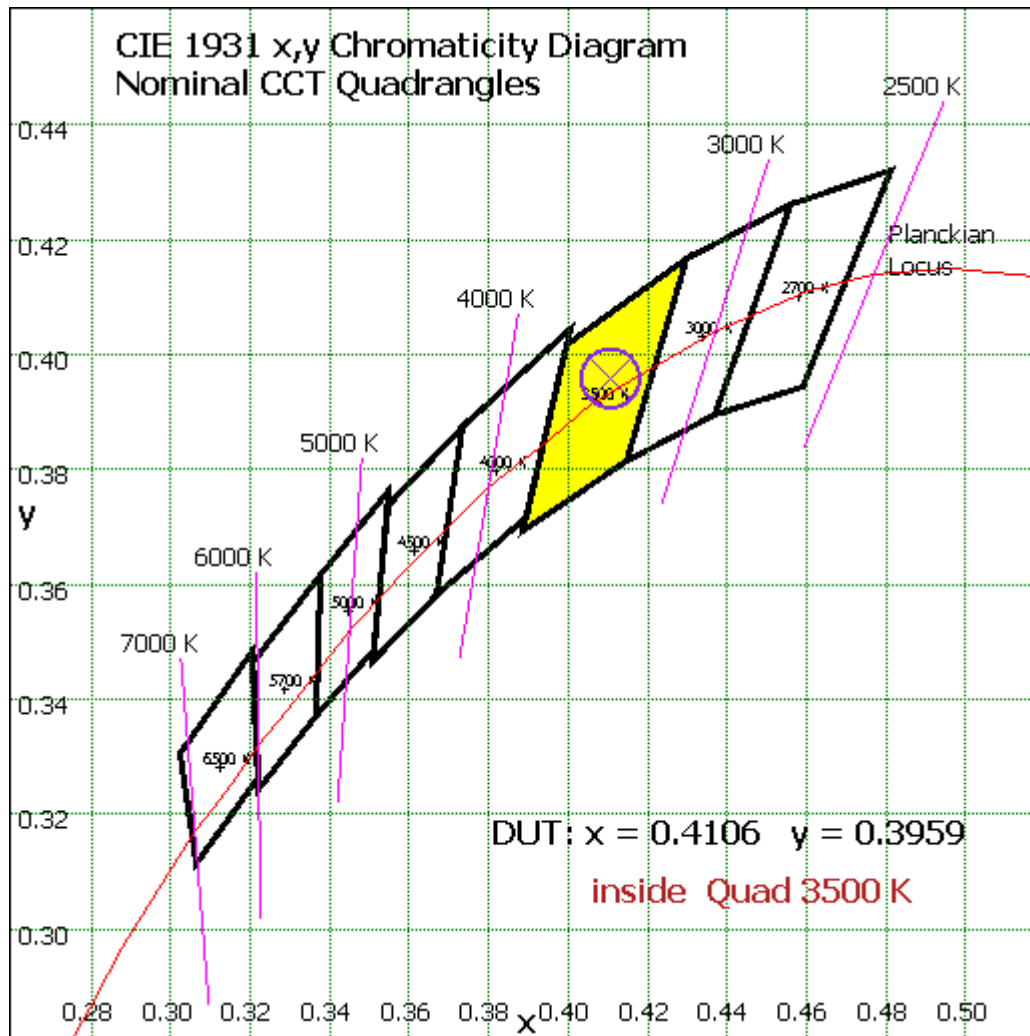


Chart 3: Plot of Lamp x/y coordinates on CIE 1931 Chromaticity Diagram

Color Vector – Sphere Spectroradiometer Method

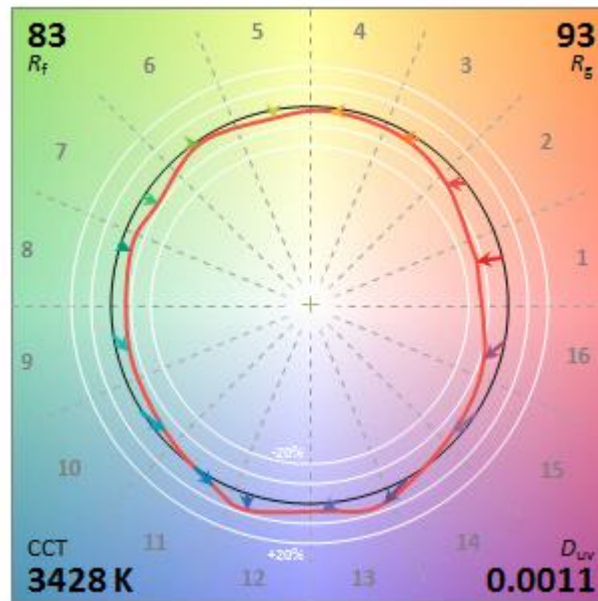


Chart 4: Color Vector Diagram of TM-30-18

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	60.996	2.78%
10- 20	175.147	7.97%
20- 30	266.643	12.13%
30- 40	323.25	14.71%
40- 50	334.494	15.22%
50- 60	294.423	13.40%
60- 70	223.436	10.17%
70- 80	153.119	6.97%
80- 90	95.022	4.32%
90-100	64.066	2.92%
100-110	50.512	2.30%
110-120	42.777	1.95%
120-130	37.327	1.70%
130-140	30.521	1.39%
140-150	22.416	1.02%
150-160	14.194	0.65%
160-170	7.369	0.34%
170-180	1.773	0.08%
Total	2197.5	100%

$\gamma(^{\circ})$	Lumens	% Total
0- 60	1454.953	66.21%
60- 90	471.577	21.46%
0-90	1926.53	87.67%
90- 180	270.955	12.33%
0- 180	2197.5	100%

Table 5: Zonal Lumen

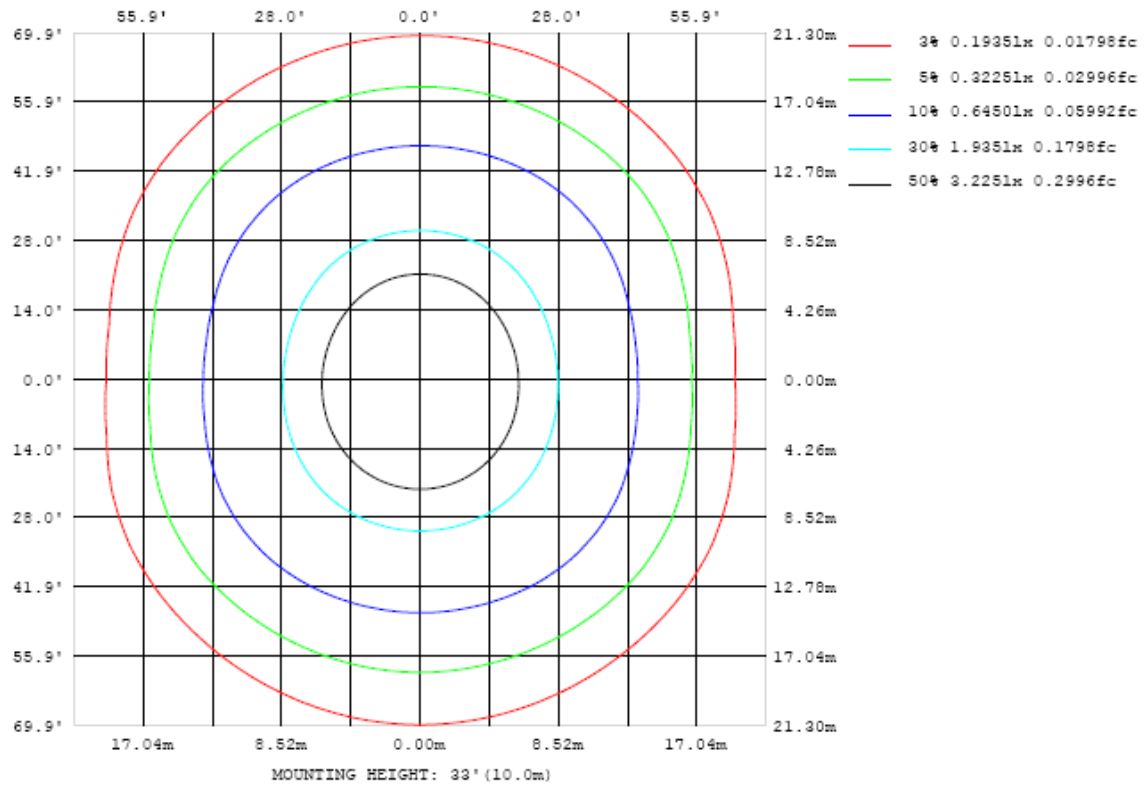


Chart 5: Illuminance Plot (Footcandles)

Luminous Intensity Distribution Plots- Goniophotometer Method

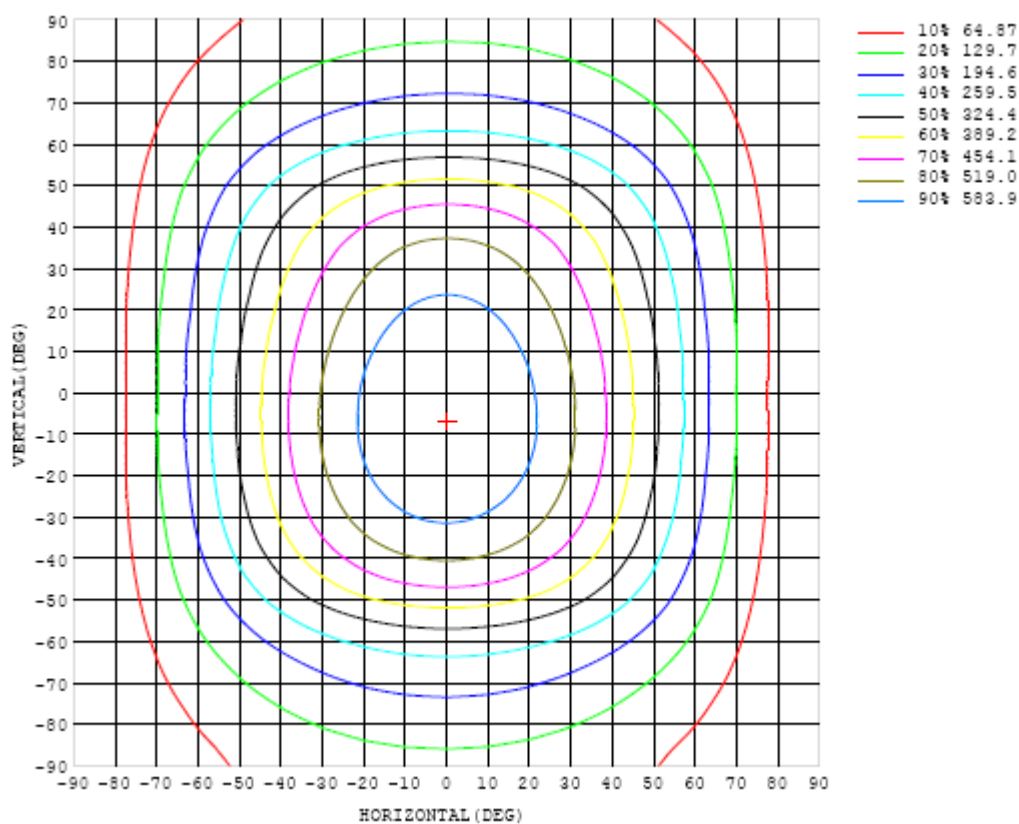


Chart 6: Isocandela Plot

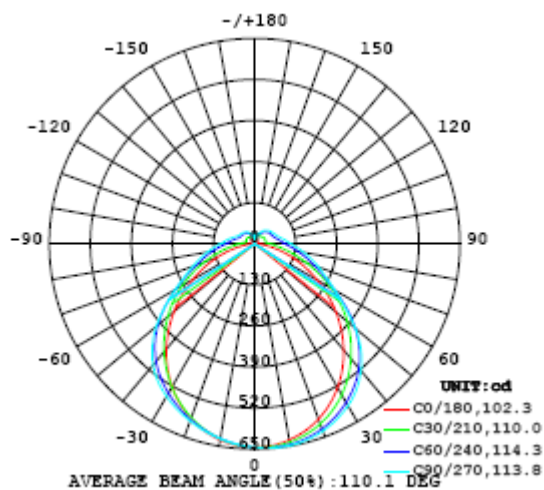


Chart 7: Polar Candela Distribution

Luminous Intensity Data- Goniophotometer Method

Table--1

UNIT: cd

C (DEG) y (DEG)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
0	644	644	644	644	644	644	644	644	644	644	644	644	644	644	644	644	644	644	644
5	641	642	643	644	645	646	647	648	648	648	648	648	647	646	645	644	643	642	641
10	630	633	635	638	640	643	645	646	647	648	647	646	645	643	640	638	635	632	630
15	614	617	621	625	629	633	637	640	641	642	641	640	637	633	629	625	620	616	613
20	590	595	601	607	613	618	623	627	630	631	630	627	624	619	612	606	599	593	589
25	561	566	574	582	590	598	604	609	612	614	613	609	604	597	589	581	572	564	559
30	525	532	541	552	562	571	579	585	590	592	590	586	579	571	560	549	538	529	522
35	484	491	503	515	528	540	550	557	561	562	561	557	550	539	526	513	500	488	481
40	438	447	460	475	490	504	513	519	522	524	522	519	512	502	488	472	456	443	435
45	389	398	413	430	447	460	468	473	475	476	475	473	467	458	445	427	409	394	385
50	336	346	363	383	400	410	416	417	417	416	416	416	414	408	397	380	359	342	333
55	282	292	311	333	347	354	355	351	349	348	348	349	352	351	343	329	308	289	279
60	229	239	260	280	291	293	293	292	292	292	292	291	290	290	287	276	258	237	226
65	177	187	209	226	233	238	242	246	248	250	248	245	241	236	230	223	208	186	175
70	128	139	160	174	184	193	201	209	214	216	214	209	201	192	182	172	159	139	127
75	83.8	96.0	115	129	143	157	169	178	183	186	184	178	169	157	143	129	114	97.0	83.3
80	45.9	59.0	75.7	93.5	111	127	140	150	156	159	157	151	141	127	112	94.3	76.5	60.1	45.4
85	16.5	27.8	46.8	66.5	84.7	102	116	126	132	134	132	127	117	103	86.2	67.9	48.5	29.5	17.0
90	0.88	10.7	28.7	48.3	67.1	83.4	96.9	107	113	115	113	108	98.2	85.0	69.2	50.8	31.2	12.7	0.58
95	1.82	7.63	22.6	40.6	58.1	73.2	85.9	95.0	101	103	101	96.1	87.5	75.2	60.5	43.2	25.3	9.72	2.05
100	3.21	9.38	21.3	36.3	51.5	65.5	76.5	84.8	90.0	91.7	90.6	86.1	78.2	67.6	54.0	38.9	23.9	12.0	3.74
105	4.86	11.5	23.1	35.2	48.1	60.1	70.0	76.6	81.0	82.7	81.6	78.0	71.7	62.1	50.5	37.7	25.5	15.0	5.65
110	6.75	12.1	23.1	35.9	46.9	56.9	65.2	71.2	74.7	75.9	75.1	72.6	66.8	58.8	48.9	38.2	28.1	16.9	7.65
115	8.56	14.0	25.9	36.7	46.6	55.4	62.3	67.4	70.5	71.7	71.0	68.4	63.7	56.9	48.5	39.6	30.1	18.4	9.57
120	10.2	17.0	24.8	35.1	46.4	54.3	60.5	64.8	67.4	68.5	67.8	65.7	61.6	55.8	48.7	40.4	30.6	19.8	11.2
125	11.7	19.2	22.9	35.7	44.1	53.2	58.8	62.6	64.9	65.8	65.2	63.3	59.8	54.8	48.3	40.6	30.1	21.1	12.6
130	13.0	20.7	25.2	33.8	43.1	50.0	56.6	60.2	62.4	63.2	62.7	60.9	57.8	53.2	47.3	39.3	29.8	22.3	13.8
135	14.1	22.1	24.9	30.3	40.2	47.8	52.8	56.6	59.0	60.1	59.6	58.0	55.3	51.2	45.4	37.2	29.5	23.0	14.8
140	14.8	23.1	26.9	31.6	37.1	44.0	49.9	53.2	55.3	56.1	55.7	54.4	52.1	47.9	41.9	35.4	29.2	22.8	15.4
145	15.3	22.8	26.4	30.2	35.1	39.1	44.1	48.3	50.8	51.9	51.7	50.4	47.5	43.2	37.9	33.4	28.8	23.6	15.8
150	15.6	21.6	25.3	30.3	32.6	36.7	37.5	42.2	44.4	45.3	45.1	43.7	40.7	38.9	35.5	31.0	24.5	23.0	15.8
155	15.9	19.4	23.7	28.4	32.4	33.7	36.6	38.1	39.2	39.8	39.9	39.4	38.1	35.2	32.6	28.5	22.8	19.9	15.9
160	16.4	16.9	20.6	24.5	28.1	32.7	33.6	34.1	34.7	35.0	35.1	34.8	33.8	32.5	29.7	25.9	22.6	16.9	16.0
165	16.5	15.7	17.5	21.8	25.0	27.0	29.2	30.9	32.1	32.4	32.0	31.3	29.6	28.4	26.6	23.8	18.6	15.9	15.7
170	16.0	15.5	15.5	15.4	19.3	24.6	25.4	27.1	27.7	27.6	27.2	26.9	25.2	20.2	16.7	14.9	14.1	14.5	15.5
175	15.0	15.2	15.2	14.9	14.7	14.5	15.8	18.1	19.5	19.9	13.5	11.7	12.0	12.2	12.5	12.7	13.1	14.3	14.4
180	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86

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	644	644	644	644	644	644	644	644	644	644	644	644	644	644	644	644	644		
5	640	639	638	638	637	637	637	637	637	637	637	637	637	638	638	639	640		
10	629	627	627	626	626	626	626	626	626	626	626	626	626	626	626	628	629		
15	611	609	609	609	610	611	612	612	613	613	612	611	610	609	609	610	612		
20	587	585	586	587	589	592	595	596	597	597	595	593	591	588	587	587	588		
25	556	555	557	561	566	571	575	578	579	578	576	572	568	563	560	558	558		
30	519	520	524	530	538	546	552	556	558	557	553	548	541	534	527	524	523		
35	478	480	487	496	507	518	526	531	533	532	528	520	511	501	491	485	482		
40	432	436	446	459	474	486	494	498	500	499	495	489	478	465	452	442	437		
45	383	390	403	420	435	446	453	457	459	458	455	450	440	426	410	396	389		
50	332	342	359	377	391	400	405	407	407	408	407	403	396	383	366	348	338		
55	280	293	313	330	341	346	347	346	346	347	349	350	346	336	320	300	286		
60	229	246	266	279	286	288	289	290	290	291	291	292	291	286	272	253	235		
65	180	200	217	227	233	238	241	243	244	244	243	241	238	233	223	206	186		
70	136	156	170	180	189	197	203	207	209	208	205	200	193	185	175	161	141		
75	95.0	114	128	142	154	164	171	176	178	177	173	167	158	146	133	118	99.5		
80	59.3	76.4	93.6	110	124	136	145	150	152	151	146	138	127	113	97.5	80.3	62.8		
85	28.9	47.3	66.0	83.6	99.1	112	121	127	129	127	123	114	102	86.9	69.4	50.6	31.5		
90	10.9	27.9	46.0	63.5	78.8	91.3	100	106	108	106	102	93.3	81.3	66.2	48.8	30.2	12.7		
95	6.27	21.3	38.2	54.6	68.9	80.4	88.7	93.5	95.4	94.1	89.7	81.8	70.6	56.6	40.3	23.2	7.41		
100	6.98	16.7	31.9	47.1	60.3	71.1	78.8	83.4	85.1	84.0	79.8	72.4	62.0	48.8	33.8	18.7	7.50		
105	8.47	16.9	27.9	40.7	52.5	62.2	69.3	73.5	75.1	74.0	70.1	63.4	53.9	42.4	30.2	18.7	9.07		
110	9.23	18.6	27.8	37.4	47.0	55.1	61.0	64.7	65.9	65.0	61.6	56.0	48.4	39.5	29.9	20.3	9.85		
115	10.1	20.1	28.9	37.2	44.7	51.2	55.8	58.5	59.5	58.7	56.1	51.8	46.2	39.1	31.0	22.0	10.7		
120	11.2	20.7	29.9	37.5	44.3	49.7	53.5	55.4	56.1	55.6	53.7	50.4	45.5	39.4	32.0	22.8	11.7		
125	12.2	20.7	30.5	37.6	43.8	48.8	52.3	54.0	54.6	54.1	52.4	49.4	45.0	39.6	32.7	22.7	12.7		
130	13.1	20.7	30.0	37.3	42.9	47.4	50.7	52.3	53.0	52.4	50.8	48.1	44.4	39.5	32.4	22.8	13.8		
135	13.9	20.8	28.7	36.7	41.8	45.8	48.8	50.2	50.8	50.3	48.9	46.6	43.6	38.9	31.1	23.0	15.0		
140	14.9	21.1	27.7	34.4	40.5	44.3	46.8	48.0	48.4	48.1	47.0	45.1	42.4	36.7	30.0	23.3	16.2		
145	15.7	21.4	26.8	32.2	37.4	42.0	44.8	45.9	46.3	46.0	45.0	42.9	39.3	34.6	29.2	23.7	17.4		
150	15.9	21.7	26.2	30.4	34.4	38.1	40.9	42.3	42.8	42.4	41.1	39.0	36.3	32.8	28.7	24.3	18.1		
155	17.0	20.0	25.1	28.9	31.9	34.7	36.9	37.9	38.4	38.2	37.3	35.9	34.0	31.6	28.5	24.4	19.1		
160	17.0	20.7	24.0	26.5	29.9	31.8	33.5	34.4	34.8	34.7	34.2	33.4	32.2	30.7	28.7	24.4	19.8		
165	16.6	20.6	23.8	25.1	26.3	29.6	30.8	31.6	31.9	32.0	31.8	31.4	30.9	30.0	28.1	24.6	20.0		
170	15.5	16.0	17.5	19.6	21.8	24.2	28.0	29.7	29.9	30.0	30.0	29.8	29.1	28.3	25.3	20.2	17.2		
175	14.6	14.8	14.9	14.7	14.6	14.8	15.9	19.6	25.2	27.4	27.6	26.0	23.0	19.1	15.9	14.8	15.0		
180	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86		

Table 7: Luminous Intensity Data

EQUIPMENT LIST

Test Equipment	Model	Equipment No.	Calibration Date	Calibration Due date
Goniophotometer system	GO-R5000	HZTE011-01	Aug. 14, 2018	Aug. 13, 2019
Digital Power Meter	PF2010A	HZTE028-01	Sep. 12, 2018	Sep. 11, 2019
AC Power Supply	DPS1060	HZTE001-06	Aug. 09, 2018	Aug. 08, 2019
DC Power Supply	WY12010	HZTE004-03	Aug. 09, 2018	Aug. 08, 2019
Temperature recorder	JM624U	HZTE018-08	Aug. 09, 2018	Aug. 08, 2019
Temperature and humidity recorder	JR900	HZTE018-01	Aug. 09, 2018	Aug. 08, 2019
Standard source	D908	HZTE012-01	Aug. 14, 2018	Aug. 13, 2019
Integrate Sphere system	3M	HZTE015-04	Aug. 16, 2018	Aug. 15, 2019
Digital Power Meter	WT210	HZTE008-01	Aug. 02, 2018	Aug. 01, 2019
AC Power Supply	PCR 500L	HZTE001-07	Aug. 09, 2018	Aug. 08, 2019
DC Power Supply	IT6154	HZTE004-04	Aug. 09, 2018	Aug. 08, 2019
Standard source	SCL-1400	HZTE012-02	Aug. 16, 2018	Aug. 15, 2019
Temperature and humidity recorder	JR900	HZTE018-02	Aug. 09, 2018	Aug. 08, 2019
Temperature Meter	TES1310	HZTE017-01	Aug. 09, 2018	Aug. 08, 2019

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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