

# IES LM-79-08

## MEASUREMENT AND TEST REPORT

For

### GREEN CREATIVE LTD

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

**Test Model: CLK6/940/DIM120V**

<b>Report Type:</b>	Electrical and Photometric tests including: Luminous Flux, Chromaticity, Luminous Intensity Distribution
<b>Test Engineer:</b>	George Yang <i>George Yang</i>
<b>Report Number:</b>	PKS191009080-10-4
<b>Test Date:</b>	2019-10-11
<b>Report Date:</b>	2019-10-16
<b>Reviewed By:</b>	Ray Gao/EE Engineer <i>Ry Gao</i>
<b>Prepared By:</b>	Bay Area Compliance Laboratories Corp. (Kunshan). No.248 Chenghu Road, Kunshan, Jiangsu province, China. Tel: +86-0512-86175000 Fax: +86-0512-88934268
<b>Accreditation:</b>	The IAS Accreditation Number TL-749.

**Note:** The test data was only valid for the test sample(s). This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Kunshan). This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

## 1. Product Description

### General Information:

One sample was received on 2019-10-09 and used for testing.

Model Tested: CLK6/940/DIM120V  
Manufacturer: GREEN CREATIVE LTD  
Brand Name: GREEN CREATIVE  
Product Designation: SSL Downlight Retrofits  
Burning Time Before Test: 0hour(For New Products)

### Rated Values:

Rated Voltage/Frequency: 120 VAC 60Hz  
Rated Power: 11W  
Nominal CCT: 4000K  
Nominal Lumen Output: 902lm

## 2. Standards Used

- IES LM-79-08: Approved Method: Electrical & Photometric Measurement of Solid-state Lighting Products
- ANSI C82.77-10-2014: Harmonic Emission Limits – Related Power Quality Requirements for Lighting Equipment
- IES TM-30-18: IES Method for Evaluating Light Source Color Rendition

## 3. Description of Test Equipment

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
Integrating Sphere	INVENTFINE	Dia 1.5m	JWWCV090112	2019-01-23	2020-01-22
Power Meter	INVENTFINE	WT500	GSJWQ20009	2019-04-23	2020-04-22
Spectral photometer	INVENTFINE	CMS-3S	GSGSE100017	2019-01-23	2020-01-22
AC Power Supply	INVENTFINE	CHP500	JWJSD010071	2019-04-23	2020-04-22
Standard Light Source	INVENTFINE	N/A	JWWCR020106	2018-12-24	2019-12-23
Thermal Meter	KEJIAN	TA298	N/A	2018-12-01	2019-11-30
DC Power Supply	INVENTFINE	WL3005	JWWCP020069	2019-04-23	2020-04-22
AC Power Supply	INVENTFINE	CHP-5KVA	900511765	2019-04-23	2020-04-22
DC Power Supply	INVENTFINE	WL3010	JWDMP030001	2019-04-23	2020-04-22
Power Meter	INVENTFINE	WT500	GSDSQ200007	2019-04-23	2020-04-22
Goniophotometer	INVENTFINE	GPM-1900	YWGCF120001	2019-01-24	2020-01-23
Wireless Weather Station	ZHONGXING	KG218	N/A	2018-12-01	2019-11-30
Standard Light Source	INVENTFINE	N/A	JWBYR040008	2019-03-08	2020-03-07

Statement of Traceability: Bay Area Compliance Laboratories Corp. (Kunshan) attested that all calibration has been performed using suitable standards traceable to National Primary Standards and International System of Units (SI).

## 4. Test Method

Product was tested with no seasoning. All stabilization and measurements were made in compliance with IES LM-79-08. The product was operated at rated voltage or at voltage required by manufacturer. The ambient temperature of the sample was maintained at  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$  during measurement. And relative humidity is less than 65%.

### Integrating Sphere System

The system includes AC power source, digital power meter, DC power supply, Spectroradiometer, and integrating sphere. The integrating sphere system is calibrated by standard spectrum light source before measurement.

$4\pi$  geometry was used during measurement. The product was operated in its intended orientation in application and was recorded in this report.

The uncertainty of the light output (luminous flux) measurements is  $U_{re}=2.61\%$  ( $k=2$ ), at the 95% confidence level. The uncertainty of the correlated color temperature measurements is  $U=34\text{K}$  ( $k=2$ ), at the 95% confidence level. The uncertainty of the CRI is  $U=2.5(k=2)$ , at the 95% confidence level.

The uncertainty of power meter AC current  $U_{re}=0.48\%$  of rdg, AC Voltage  $U_{re}=0.25\%$  of rdg, Power  $U_{re}=0.44\%$ , ( $k=2$ ), at the 95% confidence level.

### Goniophotometer System

The goniophotometer system is calibrated by standard light source before measurement.

Type C goniophotometer was used for measuring total luminous flux, luminous intensity distribution, and color spatial uniformity. The product was operated in its intended orientation in application and was recorded in this report. The vertical angle ( $\gamma$ ) test intervals were set no more than 1 degree while data for 5 degree intervals is reported. The horizontal angle (C plane) test intervals were set no more than 22.5 degree.

The uncertainty of the luminous flux is  $U_{re}=2.6\%$  ( $k=2$ ), at the 95% confidence level.

### Fidelity Index and Gamut Index Calculation

The  $R_i$ ,  $R_g$  was calculated according to IES TM-30-15 by using calculation tools. The calculation was based on the measured SPD from 380nm to 780nm with 1nm intervals. All the colors in this report is for reference only.

## 5. Test Result

### [Integrating Sphere System]

Total operating time for integrating sphere test: **1.0 hour**

Test orientation: **Downward**

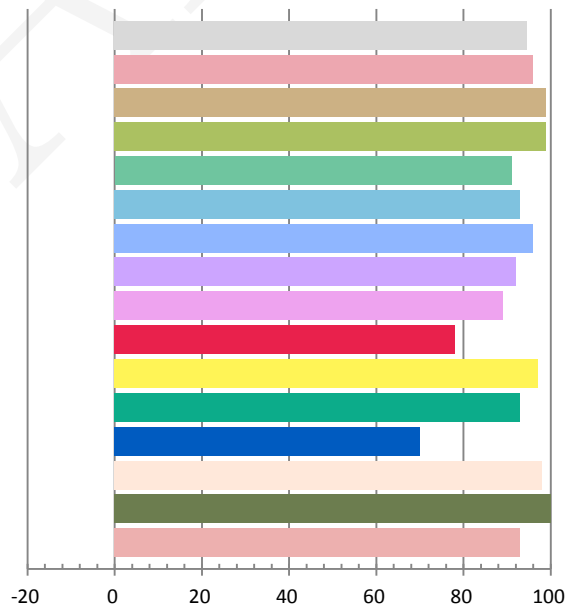
### Photometric and Electrical Measurement Result

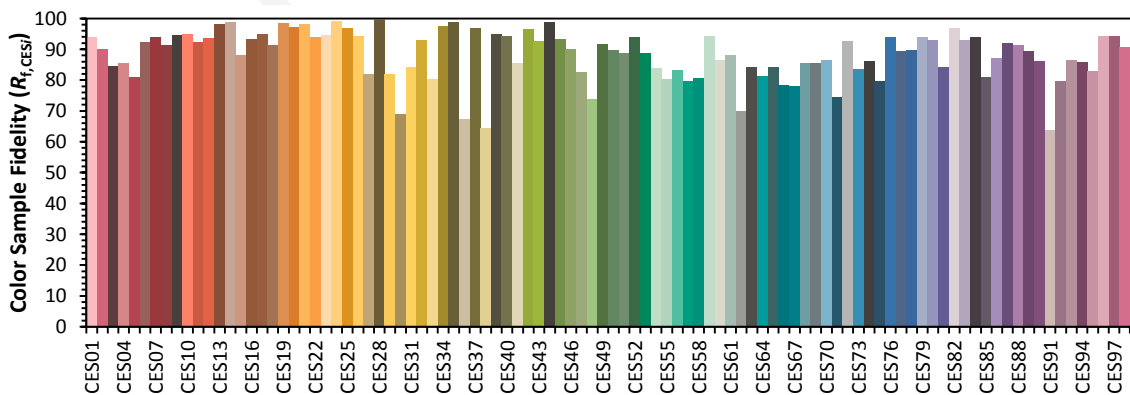
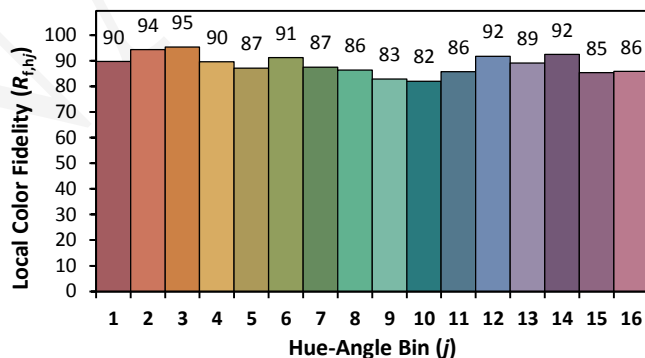
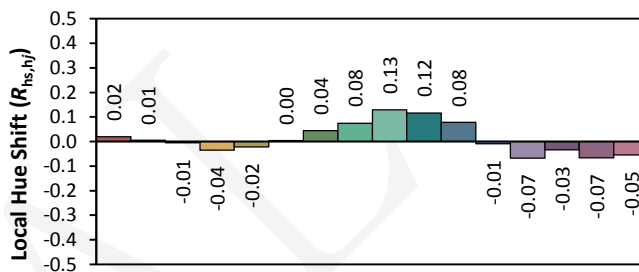
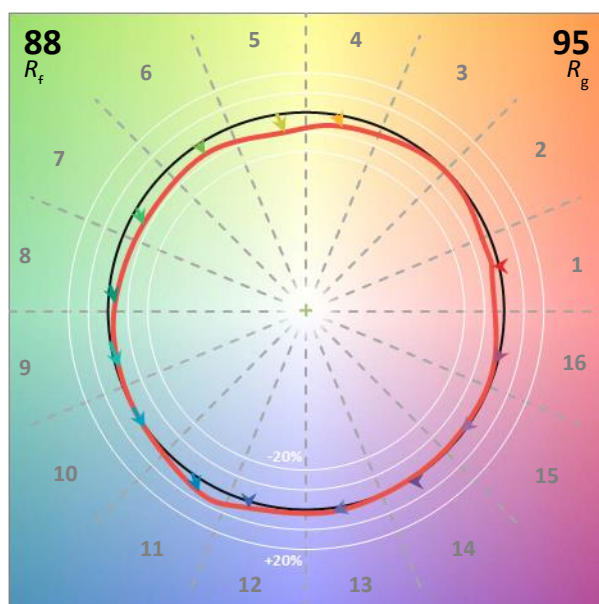
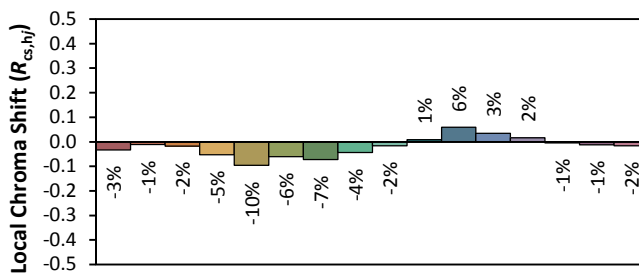
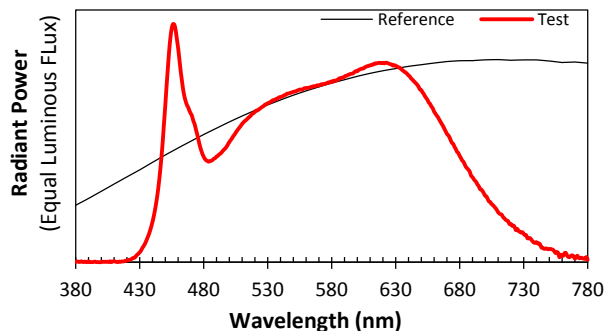
Voltage(V)	Frequency(Hz)	Current(A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy(lm/W)
120.0	60	0.1003	11.07	0.9197	903.18	81.59

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
3.116	4022	0.00174	0.3807	0.3806	0.2237	0.5033

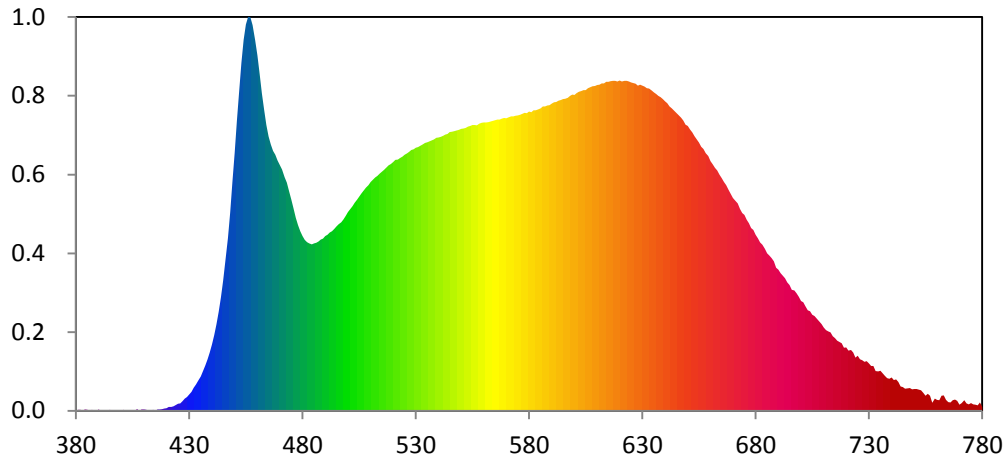
### Color Rendering Index

<b>Ra</b>			
<b>94.5</b>			
<b>R1</b>	<b>R2</b>	<b>R3</b>	<b>R4</b>
96	99	99	91
<b>R5</b>	<b>R6</b>	<b>R7</b>	<b>R8</b>
93	96	92	89
<b>R9</b>	<b>R10</b>	<b>R11</b>	<b>R12</b>
78	97	93	70
<b>R13</b>	<b>R14</b>	<b>R15</b>	
98	100	93	





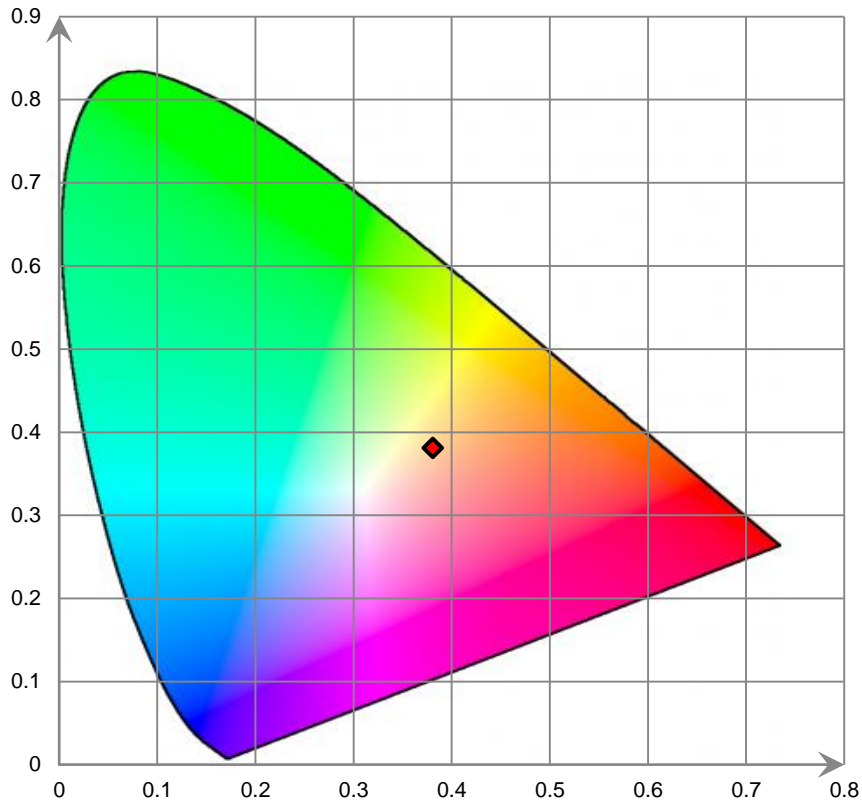
### Relative Spectral Power Distribution



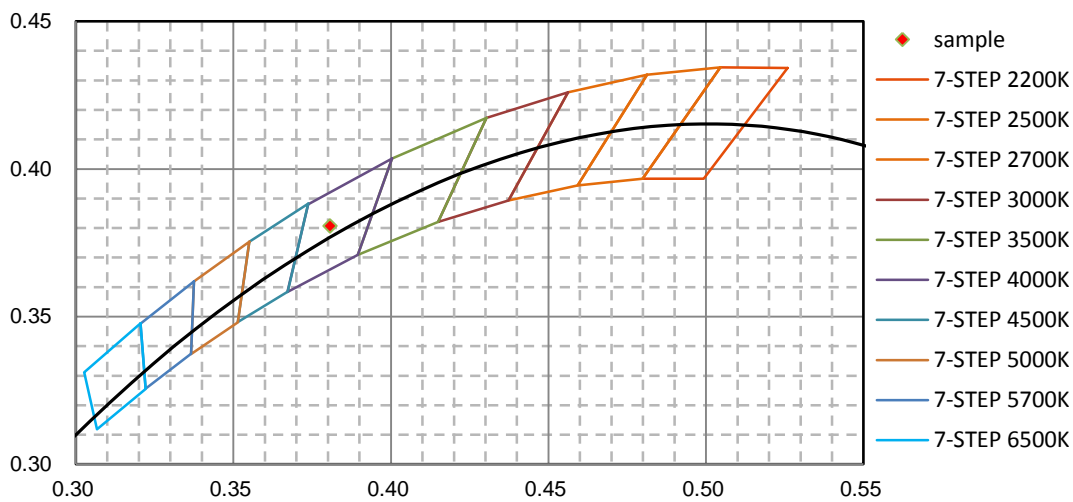
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	2.340E-02	421	1.653E-01	462	1.407E+01	503	9.220E+00	544	1.227E+01
381	3.840E-02	422	1.635E-01	463	1.334E+01	504	9.344E+00	545	1.236E+01
382	4.270E-02	423	1.932E-01	464	1.266E+01	505	9.493E+00	546	1.237E+01
383	2.900E-03	424	2.513E-01	465	1.216E+01	506	9.630E+00	547	1.240E+01
384	5.940E-02	425	3.124E-01	466	1.180E+01	507	9.761E+00	548	1.243E+01
385	3.590E-02	426	3.207E-01	467	1.152E+01	508	9.878E+00	549	1.245E+01
386	5.000E-03	427	4.299E-01	468	1.135E+01	509	1.000E+01	550	1.249E+01
387	4.090E-02	428	5.340E-01	469	1.109E+01	510	1.014E+01	551	1.251E+01
388	1.180E-02	429	6.148E-01	470	1.090E+01	511	1.024E+01	552	1.253E+01
389	1.500E-03	430	7.170E-01	471	1.070E+01	512	1.034E+01	553	1.259E+01
390	6.020E-02	431	8.360E-01	472	1.035E+01	513	1.042E+01	554	1.262E+01
391	1.030E-02	432	1.019E+00	473	1.012E+01	514	1.051E+01	555	1.266E+01
392	6.100E-03	433	1.160E+00	474	9.727E+00	515	1.060E+01	556	1.266E+01
393	1.200E-03	434	1.325E+00	475	9.366E+00	516	1.068E+01	557	1.265E+01
394	1.460E-02	435	1.521E+00	476	8.958E+00	517	1.078E+01	558	1.272E+01
395	4.050E-02	436	1.760E+00	477	8.555E+00	518	1.088E+01	559	1.276E+01
396	9.800E-03	437	1.994E+00	478	8.231E+00	519	1.094E+01	560	1.278E+01
397	3.100E-03	438	2.265E+00	479	7.956E+00	520	1.102E+01	561	1.278E+01
398	1.000E-04	439	2.584E+00	480	7.746E+00	521	1.112E+01	562	1.279E+01
399	0.000E+00	440	2.939E+00	481	7.576E+00	522	1.113E+01	563	1.282E+01
400	0.000E+00	441	3.349E+00	482	7.474E+00	523	1.120E+01	564	1.286E+01
401	3.470E-02	442	3.830E+00	483	7.417E+00	524	1.126E+01	565	1.288E+01
402	2.130E-02	443	4.383E+00	484	7.373E+00	525	1.134E+01	566	1.291E+01
403	2.880E-02	444	5.021E+00	485	7.419E+00	526	1.141E+01	567	1.291E+01
404	2.000E-02	445	5.777E+00	486	7.440E+00	527	1.147E+01	568	1.295E+01
405	2.870E-02	446	6.656E+00	487	7.504E+00	528	1.156E+01	569	1.298E+01
406	8.100E-03	447	7.664E+00	488	7.587E+00	529	1.159E+01	570	1.296E+01
407	6.870E-02	448	8.794E+00	489	7.634E+00	530	1.166E+01	571	1.300E+01
408	3.500E-03	449	1.016E+01	490	7.739E+00	531	1.169E+01	572	1.305E+01
409	5.430E-02	450	1.144E+01	491	7.798E+00	532	1.174E+01	573	1.305E+01
410	5.970E-02	451	1.287E+01	492	7.893E+00	533	1.180E+01	574	1.308E+01
411	4.400E-02	452	1.416E+01	493	7.958E+00	534	1.188E+01	575	1.309E+01
412	1.870E-02	453	1.542E+01	494	8.050E+00	535	1.190E+01	576	1.313E+01
413	3.300E-03	454	1.643E+01	495	8.166E+00	536	1.194E+01	577	1.317E+01
414	4.480E-02	455	1.712E+01	496	8.267E+00	537	1.198E+01	578	1.320E+01
415	2.170E-02	456	1.746E+01	497	8.358E+00	538	1.202E+01	579	1.319E+01
416	5.020E-02	457	1.744E+01	498	8.486E+00	539	1.210E+01	580	1.327E+01
417	4.860E-02	458	1.709E+01	499	8.643E+00	540	1.211E+01	581	1.324E+01
418	6.670E-02	459	1.643E+01	500	8.805E+00	541	1.214E+01	582	1.331E+01
419	1.038E-01	460	1.577E+01	501	8.939E+00	542	1.219E+01	583	1.332E+01
420	1.134E-01	461	1.493E+01	502	9.065E+00	543	1.224E+01	584	1.336E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	1.340E+01	626	1.452E+01	667	9.998E+00	708	3.971E+00	749	9.484E-01
586	1.349E+01	627	1.450E+01	668	9.803E+00	709	3.847E+00	750	9.644E-01
587	1.349E+01	628	1.442E+01	669	9.619E+00	710	3.681E+00	751	9.682E-01
588	1.353E+01	629	1.445E+01	670	9.430E+00	711	3.574E+00	752	9.386E-01
589	1.354E+01	630	1.441E+01	671	9.318E+00	712	3.521E+00	753	9.010E-01
590	1.361E+01	631	1.437E+01	672	9.185E+00	713	3.472E+00	754	7.995E-01
591	1.367E+01	632	1.429E+01	673	8.956E+00	714	3.306E+00	755	6.679E-01
592	1.369E+01	633	1.428E+01	674	8.758E+00	715	3.218E+00	756	7.463E-01
593	1.375E+01	634	1.419E+01	675	8.675E+00	716	3.111E+00	757	6.702E-01
594	1.378E+01	635	1.412E+01	676	8.470E+00	717	3.051E+00	758	3.599E-01
595	1.382E+01	636	1.404E+01	677	8.309E+00	718	2.994E+00	759	5.422E-01
596	1.383E+01	637	1.396E+01	678	8.098E+00	719	2.789E+00	760	4.763E-01
597	1.387E+01	638	1.390E+01	679	8.010E+00	720	2.812E+00	761	4.706E-01
598	1.396E+01	639	1.382E+01	680	7.805E+00	721	2.664E+00	762	6.596E-01
599	1.402E+01	640	1.371E+01	681	7.652E+00	722	2.686E+00	763	6.772E-01
600	1.400E+01	641	1.363E+01	682	7.462E+00	723	2.586E+00	764	4.876E-01
601	1.409E+01	642	1.349E+01	683	7.367E+00	724	2.348E+00	765	3.829E-01
602	1.414E+01	643	1.340E+01	684	7.172E+00	725	2.445E+00	766	3.668E-01
603	1.418E+01	644	1.330E+01	685	6.979E+00	726	2.289E+00	767	4.739E-01
604	1.421E+01	645	1.320E+01	686	6.882E+00	727	2.237E+00	768	4.925E-01
605	1.422E+01	646	1.311E+01	687	6.765E+00	728	2.170E+00	769	4.416E-01
606	1.430E+01	647	1.300E+01	688	6.628E+00	729	2.202E+00	770	2.665E-01
607	1.434E+01	648	1.286E+01	689	6.341E+00	730	2.097E+00	771	3.347E-01
608	1.439E+01	649	1.268E+01	690	6.253E+00	731	1.988E+00	772	4.729E-01
609	1.440E+01	650	1.263E+01	691	6.099E+00	732	1.985E+00	773	3.274E-01
610	1.445E+01	651	1.247E+01	692	5.981E+00	733	1.755E+00	774	2.832E-01
611	1.445E+01	652	1.234E+01	693	5.871E+00	734	1.748E+00	775	3.333E-01
612	1.452E+01	653	1.216E+01	694	5.692E+00	735	1.772E+00	776	2.816E-01
613	1.451E+01	654	1.203E+01	695	5.573E+00	736	1.654E+00	777	2.670E-01
614	1.459E+01	655	1.189E+01	696	5.358E+00	737	1.539E+00	778	2.418E-01
615	1.458E+01	656	1.170E+01	697	5.326E+00	738	1.445E+00	779	3.724E-01
616	1.461E+01	657	1.160E+01	698	5.203E+00	739	1.412E+00	780	1.699E-01
617	1.462E+01	658	1.141E+01	699	5.046E+00	740	1.471E+00		
618	1.462E+01	659	1.130E+01	700	4.865E+00	741	1.364E+00		
619	1.460E+01	660	1.106E+01	701	4.813E+00	742	1.382E+00		
620	1.463E+01	661	1.092E+01	702	4.626E+00	743	1.275E+00		
621	1.459E+01	662	1.077E+01	703	4.452E+00	744	1.070E+00		
622	1.462E+01	663	1.065E+01	704	4.407E+00	745	1.055E+00		
623	1.463E+01	664	1.047E+01	705	4.257E+00	746	9.749E-01		
624	1.460E+01	665	1.031E+01	706	4.193E+00	747	9.935E-01		
625	1.456E+01	666	1.014E+01	707	4.079E+00	748	1.005E+00		

CIE 1931xy Chromaticity Diagram



7-Step Chromaticity Quadrangles





### [Goniophotometer System]

Total operating time for luminous intensity distribution: **1.0hour**

Test orientation: **Downward**

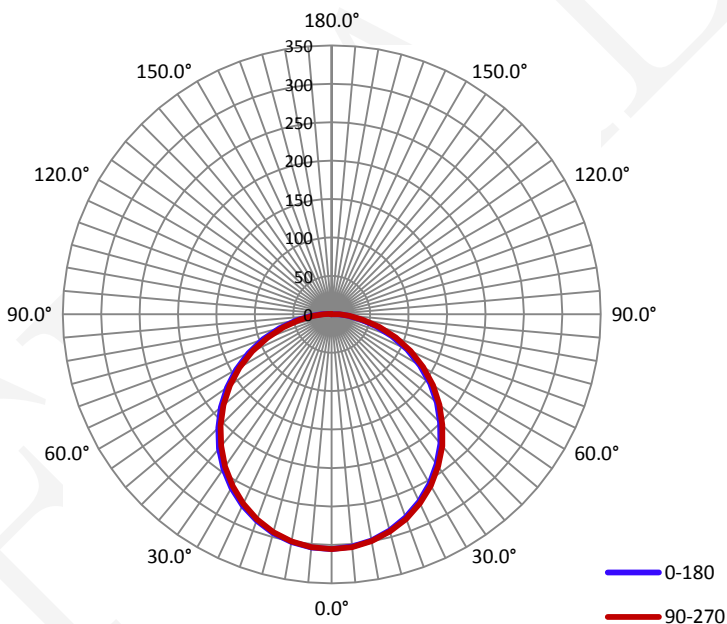
### Electrical Measurement

Input Voltage(V)	Frequency(Hz)	Input Current(A)	Power (W)	Power Factor
120.0	60	0.1	11.09	0.919

### Photometric Measurement

Luminous Flux(lm)	Efficacy(lm/W)	$I_{max}(cd)$	S/MH(C0/180)	S/MH(C90/270)
903.9	81.56	305.5	1.25	1.25

### Luminous Intensity Distribution



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle(50% $I_{max}$ ):	113.7	113.7	113.7	113.7	113.7
Field Angle(10% $I_{max}$ ):	166.4	166.3	166.3	166.2	166.3

**Luminous Intensity (cd) Distribution Data**

C y	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0.0°	305.5	305.5	305.5	305.5	305.5	305.5	305.5	305.5
5.0°	303.5	303.6	303.6	303.7	304.1	304.3	304.6	304.8
10.0°	298.7	298.7	298.9	299.2	299.7	300.3	300.9	301.2
15.0°	291.3	291.3	291.6	292.2	292.8	293.7	294.5	295.1
20.0°	281.3	281.2	281.5	282.2	283.4	284.4	285.4	286.3
25.0°	269.0	268.9	269.5	270.3	271.5	272.6	273.9	275.1
30.0°	254.6	254.4	254.8	255.7	257.5	258.8	260.4	261.8
35.0°	238.2	237.9	238.4	239.5	241.4	243.0	244.7	246.0
40.0°	219.9	219.7	220.2	221.4	223.6	225.2	227.3	228.7
45.0°	199.7	200.0	200.5	201.9	203.7	206.1	208.2	209.7
50.0°	178.7	178.8	179.5	180.9	182.9	185.5	187.8	189.4
55.0°	156.3	156.4	157.1	158.7	160.8	163.6	166.0	167.8
60.0°	132.7	132.9	133.7	135.3	137.5	140.4	143.0	144.8
65.0°	108.3	108.0	108.8	111.1	113.4	116.0	119.2	121.1
70.0°	83.6	83.4	84.1	86.3	88.7	91.4	94.6	96.6
75.0°	59.5	59.4	60.1	61.7	64.5	67.0	69.7	72.2
80.0°	37.7	37.6	38.2	39.6	41.9	44.3	46.8	49.1
85.0°	20.2	20.1	20.6	21.6	23.3	25.1	27.2	28.7
90.0°	8.6	8.6	8.9	9.5	10.2	11.5	12.4	13.9
95.0°	2.6	2.7	2.0	0.7	3.4	3.2	4.2	5.0
100.0°	0.4	0.1	0.0	0.0	0.1	0.2	0.0	0.9
105.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
110.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
115.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
120.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
125.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
130.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
135.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
140.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
145.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
155.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Luminous Intensity (cd) Distribution Data (cont.)

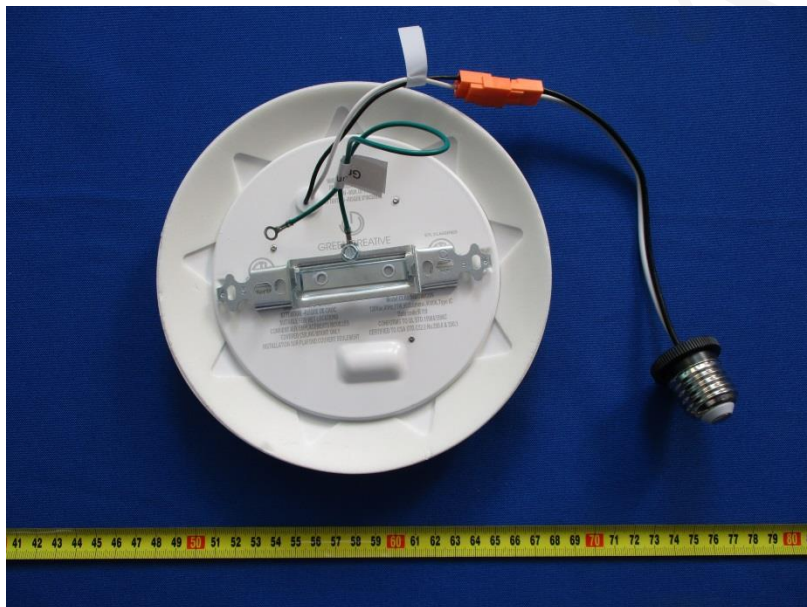
C y	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
0.0°	305.5	305.5	305.5	305.5	305.5	305.5	305.5	305.5
5.0°	304.6	304.7	304.6	304.4	304.2	303.8	303.7	303.4
10.0°	301.1	301.2	300.9	300.5	300.1	299.5	298.9	298.5
15.0°	294.8	294.8	294.5	293.9	293.3	292.4	291.5	290.9
20.0°	285.7	285.9	285.5	284.8	283.9	282.8	281.7	280.9
25.0°	274.5	274.7	274.3	273.3	272.0	270.6	269.3	268.3
30.0°	260.9	260.9	260.6	259.4	258.0	256.5	254.9	253.6
35.0°	245.3	245.5	244.9	243.7	242.0	240.2	238.5	237.3
40.0°	228.1	227.9	227.3	226.0	224.0	222.0	220.2	218.8
45.0°	208.9	208.9	208.2	206.5	204.5	202.4	200.5	198.9
50.0°	188.3	188.2	187.4	186.0	183.9	181.3	179.1	177.5
55.0°	166.5	166.4	165.6	164.0	161.8	158.9	156.6	155.0
60.0°	143.5	143.4	142.6	140.9	138.6	135.6	133.1	131.3
65.0°	119.8	119.6	118.7	116.9	114.0	111.4	108.8	106.9
70.0°	94.9	95.2	94.3	92.0	89.4	86.7	84.1	82.3
75.0°	70.6	70.9	69.5	67.7	65.2	62.5	59.6	57.8
80.0°	47.7	48.0	46.7	45.0	42.7	39.8	37.7	36.3
85.0°	28.0	28.2	27.1	25.7	23.8	21.7	20.1	19.1
90.0°	13.5	13.6	12.9	11.9	10.7	9.4	8.4	7.9
95.0°	4.9	4.9	4.6	4.1	3.5	2.9	2.5	2.4
100.0°	1.2	1.2	0.5	0.5	0.8	0.6	0.0	0.0
105.0°	0.1	0.0	0.0	0.1	0.3	0.1	0.0	0.0
110.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
115.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
120.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
125.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
130.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
135.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
140.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
145.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
155.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

### Zonal Lumen Density Measurement

Deg	Flux (lm)	%
0-5	7.3	0.81
5-10	21.6	2.39
10-15	35.2	3.89
15-20	47.5	5.26
20-25	58.2	6.44
25-30	67.0	7.41
30-35	73.5	8.13
35-40	77.7	8.59
40-45	79.3	8.77
45-50	78.3	8.67
50-55	75.0	8.29
55-60	69.2	7.66
60-65	61.3	6.78
65-70	51.4	5.69
70-75	40.3	4.46
75-80	28.7	3.18
80-85	18.0	1.99
85-90	9.5	1.05
90-95	3.9	0.43
95-100	1.0	0.11
100-105	0.1	0.01
105-110	0.0	0.00
110-115	0.0	0.00
115-120	0.0	0.00
120-125	0.0	0.00
125-130	0.0	0.00
130-135	0.0	0.00
135-140	0.0	0.00
140-145	0.0	0.00
145-150	0.0	0.00
150-155	0.0	0.00
155-160	0.0	0.00
160-165	0.0	0.00
165-170	0.0	0.00
170-175	0.0	0.00
175-180	0.0	0.00

Deg	Flux (lm)	%
0-5	7.3	0.81
0-10	28.9	3.20
0-15	64.1	7.09
0-20	111.6	12.34
0-25	169.8	18.79
0-30	236.8	26.20
0-35	310.4	34.33
0-40	388.0	42.92
0-45	467.3	51.69
0-50	545.6	60.36
0-55	620.6	68.65
0-60	689.8	76.31
0-65	751.0	83.09
0-70	802.5	88.78
0-75	842.7	93.23
0-80	871.5	96.41
0-85	889.4	98.40
0-90	898.9	99.44
0-95	902.8	99.87
0-100	903.8	99.99
0-105	903.9	100.00
0-110	903.9	100.00
0-115	903.9	100.00
0-120	903.9	100.00
0-125	903.9	100.00
0-130	903.9	100.00
0-135	903.9	100.00
0-140	903.9	100.00
0-145	903.9	100.00
0-150	903.9	100.00
0-155	903.9	100.00
0-160	903.9	100.00
0-165	903.9	100.00
0-170	903.9	100.00
0-175	903.9	100.00
0-180	903.9	100.00

## 6. Product Photo



\*\*\*\*\*END OF REPORT\*\*\*\*\*