



TL-749



IES LM-79-08

MEASUREMENT AND TEST REPORT

For

GREEN CREATIVE LTD

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

Test Model: LE079027DIM120VWD/ADR4BL

Report Type:	Electrical and Photometric tests including: Luminous Flux, Chromaticity, Luminous Intensity Distribution, THD
Test Engineer:	George Yang <i>George Yang</i>
Report Number:	RKSB190722002-10-3
Test Date:	2019-07-22
Report Date:	2019-07-29
Reviewed By:	Ray Gao/EE Engineer <i>Ray Gao</i>
Prepared By:	Bay Area Compliance Laboratories Corp. (Kunshan). No.248 Chenghu Road, Kunshan, Jiangsu province, China. Tel: +86-0512-86175000 Fax: +86-0512-88934268
Test Facility:	Test facility was located at No.248 Chenghu Road, Kunshan, Jiangsu province, China.
Accreditation:	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 2018-07-22 and used for testing.

Model Tested: LE079027DIM120VWD/ADR4BL
 Manufacturer: GREEN CREATIVE LTD
 Brand Name: GREEN CREATIVE
 Product Designation: LED Recessed Downlight
 Aging Time Before Test: 0hour(For New Products)

Rated Values:

Rated Voltage/Frequency: 120-277 VAC 60Hz
 Rated Power: 8W
 Nominal CCT: 2700K
 Nominal Lumen Output: 580lm

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.

4π 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 (γ) 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 $U_{rel}=2.6\%$ ($k=2$), at the 95% confidence level.

Fidelity Index and Gamut Index Calculation

The R_f , 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**

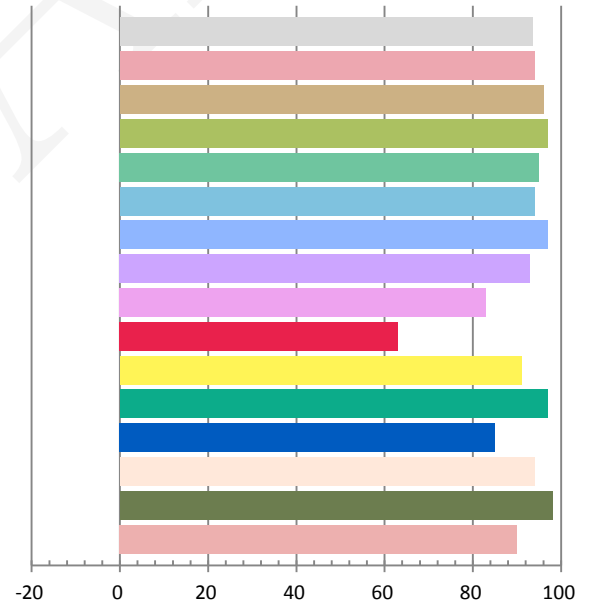
Photometric and Electrical Measurement Result

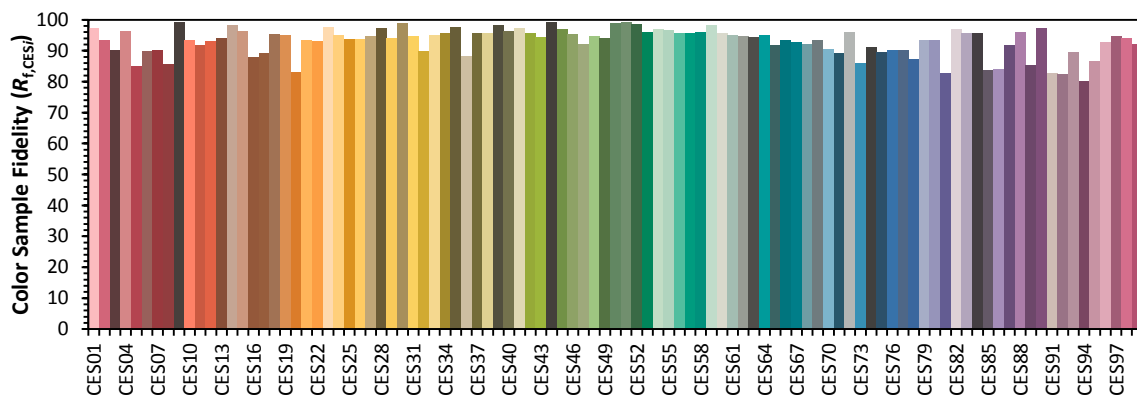
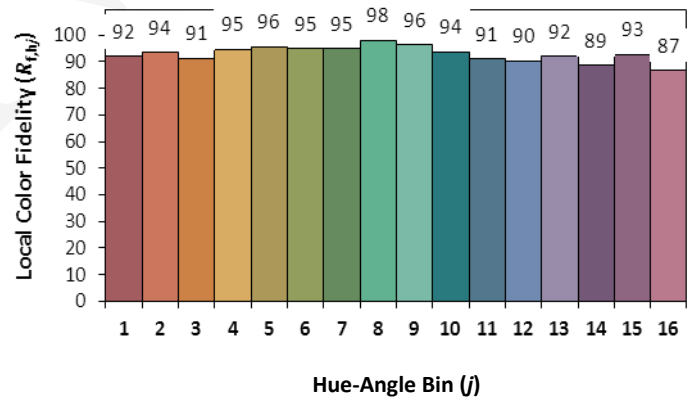
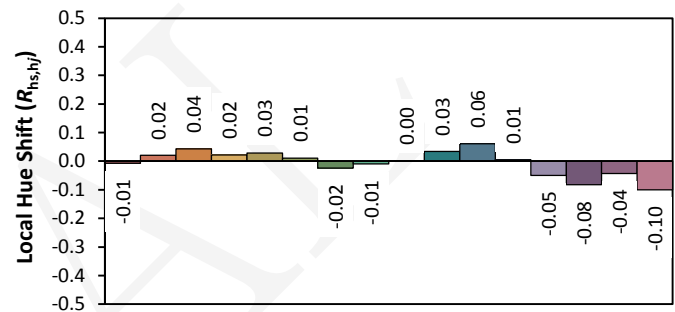
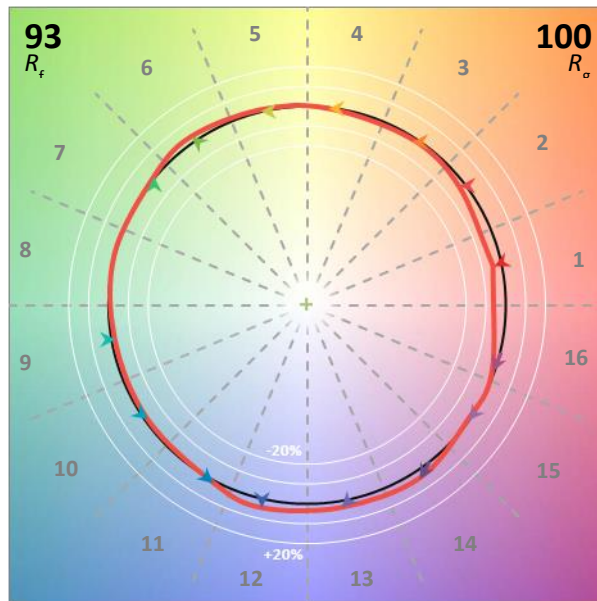
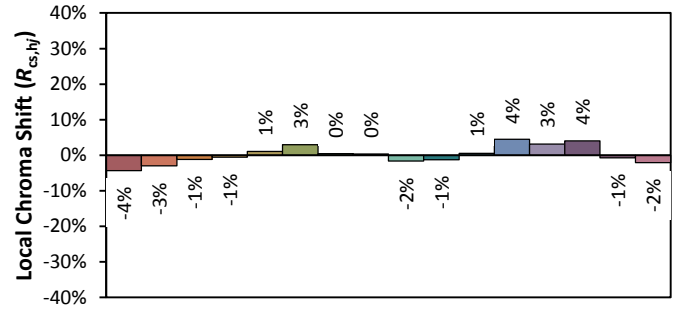
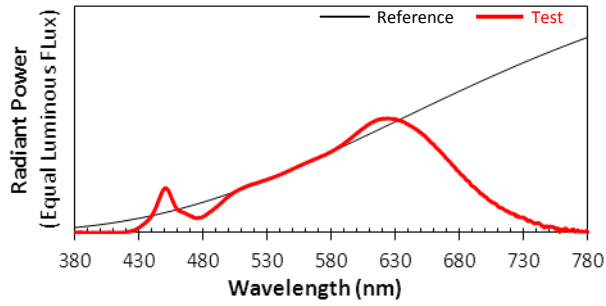
Voltage(V)	Frequency(Hz)	Current(A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy(lm/W)
120	60	0.0687	8.06	0.9777	630.73	78.25

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
2.202	2692	0.00089	0.4620	0.4135	0.2626	0.5288

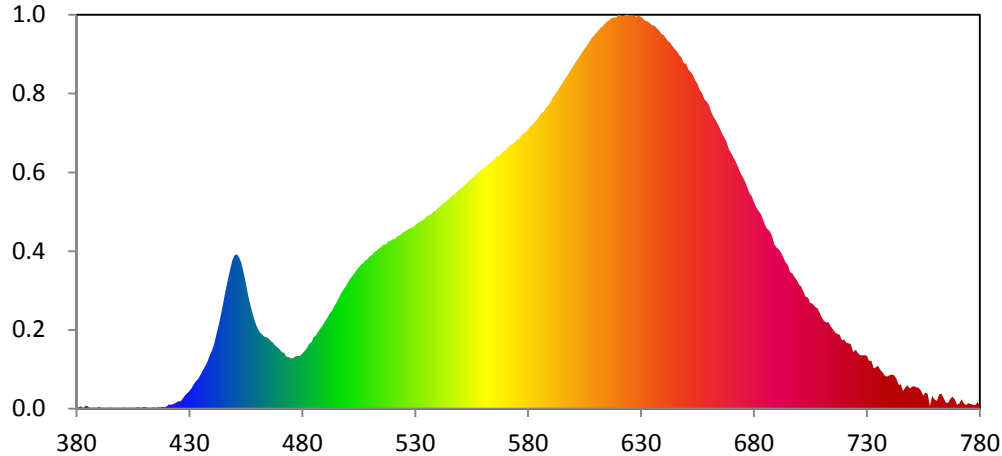
Color Rendering Index

Ra			
93.6			
R1	R2	R3	R4
94	96	97	95
R5	R6	R7	R8
94	97	93	83
R9	R10	R11	R12
63	91	97	85
R13	R14	R15	
94	98	90	





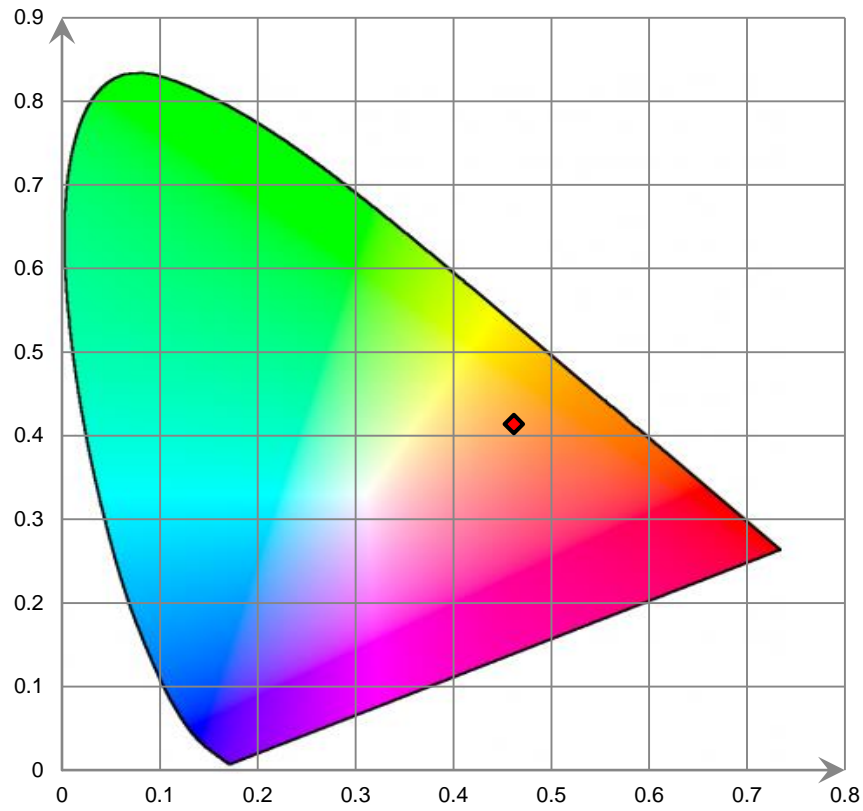
Relative Spectral Power Distribution



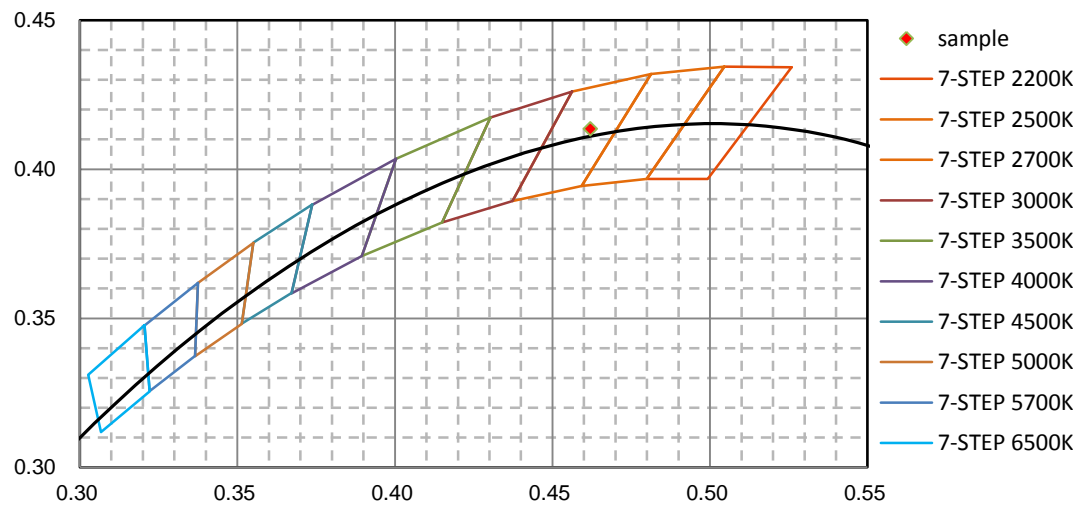
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	1.850E-02	421	1.419E-01	462	2.641E+00	503	4.796E+00	544	7.372E+00
381	4.260E-02	422	1.300E-01	463	2.553E+00	504	4.921E+00	545	7.444E+00
382	7.210E-02	423	1.659E-01	464	2.530E+00	505	5.006E+00	546	7.529E+00
383	7.500E-03	424	2.070E-01	465	2.483E+00	506	5.105E+00	547	7.577E+00
384	1.019E-01	425	2.651E-01	466	2.394E+00	507	5.168E+00	548	7.656E+00
385	7.430E-02	426	2.509E-01	467	2.339E+00	508	5.260E+00	549	7.732E+00
386	4.600E-03	427	3.491E-01	468	2.232E+00	509	5.321E+00	550	7.799E+00
387	2.560E-02	428	4.623E-01	469	2.174E+00	510	5.412E+00	551	7.876E+00
388	1.800E-03	429	5.464E-01	470	2.096E+00	511	5.465E+00	552	7.940E+00
389	1.000E-04	430	6.241E-01	471	2.003E+00	512	5.569E+00	553	8.022E+00
390	6.180E-02	431	7.265E-01	472	1.970E+00	513	5.610E+00	554	8.090E+00
391	1.240E-02	432	8.722E-01	473	1.840E+00	514	5.686E+00	555	8.176E+00
392	5.000E-04	433	9.721E-01	474	1.830E+00	515	5.744E+00	556	8.223E+00
393	0.000E+00	434	1.069E+00	475	1.786E+00	516	5.822E+00	557	8.318E+00
394	1.170E-02	435	1.202E+00	476	1.791E+00	517	5.830E+00	558	8.375E+00
395	3.670E-02	436	1.361E+00	477	1.857E+00	518	5.933E+00	559	8.461E+00
396	1.740E-02	437	1.502E+00	478	1.862E+00	519	5.953E+00	560	8.511E+00
397	7.000E-04	438	1.662E+00	479	1.876E+00	520	6.005E+00	561	8.573E+00
398	0.000E+00	439	1.875E+00	480	1.957E+00	521	6.021E+00	562	8.656E+00
399	0.000E+00	440	2.079E+00	481	2.047E+00	522	6.109E+00	563	8.706E+00
400	0.000E+00	441	2.332E+00	482	2.150E+00	523	6.145E+00	564	8.796E+00
401	2.830E-02	442	2.669E+00	483	2.291E+00	524	6.206E+00	565	8.835E+00
402	1.680E-02	443	2.990E+00	484	2.351E+00	525	6.265E+00	566	8.960E+00
403	2.250E-02	444	3.359E+00	485	2.529E+00	526	6.320E+00	567	8.960E+00
404	1.050E-02	445	3.768E+00	486	2.589E+00	527	6.359E+00	568	9.034E+00
405	3.650E-02	446	4.185E+00	487	2.716E+00	528	6.409E+00	569	9.130E+00
406	3.300E-03	447	4.567E+00	488	2.834E+00	529	6.444E+00	570	9.170E+00
407	6.000E-02	448	4.928E+00	489	2.946E+00	530	6.506E+00	571	9.264E+00
408	3.100E-03	449	5.262E+00	490	3.093E+00	531	6.577E+00	572	9.331E+00
409	3.540E-02	450	5.441E+00	491	3.200E+00	532	6.632E+00	573	9.395E+00
410	6.070E-02	451	5.471E+00	492	3.349E+00	533	6.670E+00	574	9.450E+00
411	3.160E-02	452	5.374E+00	493	3.470E+00	534	6.725E+00	575	9.526E+00
412	1.490E-02	453	5.176E+00	494	3.626E+00	535	6.805E+00	576	9.572E+00
413	7.000E-04	454	4.842E+00	495	3.750E+00	536	6.856E+00	577	9.683E+00
414	4.270E-02	455	4.478E+00	496	3.903E+00	537	6.898E+00	578	9.769E+00
415	1.860E-02	456	4.047E+00	497	4.063E+00	538	6.990E+00	579	9.818E+00
416	4.330E-02	457	3.690E+00	498	4.201E+00	539	7.022E+00	580	9.919E+00
417	3.380E-02	458	3.351E+00	499	4.317E+00	540	7.107E+00	581	1.000E+01
418	5.450E-02	459	3.075E+00	500	4.446E+00	541	7.167E+00	582	1.009E+01
419	4.450E-02	460	2.879E+00	501	4.588E+00	542	7.241E+00	583	1.018E+01
420	8.400E-02	461	2.711E+00	502	4.692E+00	543	7.304E+00	584	1.026E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	1.039E+01	626	1.396E+01	667	9.610E+00	708	3.570E+00	749	7.096E-01
586	1.049E+01	627	1.394E+01	668	9.448E+00	709	3.419E+00	750	7.697E-01
587	1.055E+01	628	1.390E+01	669	9.202E+00	710	3.230E+00	751	7.922E-01
588	1.069E+01	629	1.395E+01	670	9.060E+00	711	3.114E+00	752	7.480E-01
589	1.077E+01	630	1.390E+01	671	8.896E+00	712	3.049E+00	753	7.329E-01
590	1.089E+01	631	1.384E+01	672	8.744E+00	713	3.067E+00	754	6.381E-01
591	1.105E+01	632	1.376E+01	673	8.559E+00	714	2.913E+00	755	4.540E-01
592	1.115E+01	633	1.374E+01	674	8.357E+00	715	2.818E+00	756	5.631E-01
593	1.126E+01	634	1.368E+01	675	8.220E+00	716	2.706E+00	757	5.177E-01
594	1.141E+01	635	1.361E+01	676	8.060E+00	717	2.645E+00	758	9.390E-02
595	1.152E+01	636	1.358E+01	677	7.876E+00	718	2.627E+00	759	4.374E-01
596	1.166E+01	637	1.350E+01	678	7.640E+00	719	2.416E+00	760	3.148E-01
597	1.176E+01	638	1.341E+01	679	7.540E+00	720	2.449E+00	761	2.679E-01
598	1.189E+01	639	1.330E+01	680	7.339E+00	721	2.337E+00	762	5.131E-01
599	1.204E+01	640	1.326E+01	681	7.157E+00	722	2.319E+00	763	5.195E-01
600	1.216E+01	641	1.314E+01	682	7.018E+00	723	2.282E+00	764	3.713E-01
601	1.230E+01	642	1.304E+01	683	6.918E+00	724	2.008E+00	765	2.179E-01
602	1.241E+01	643	1.297E+01	684	6.726E+00	725	2.089E+00	766	2.051E-01
603	1.254E+01	644	1.286E+01	685	6.495E+00	726	1.971E+00	767	3.487E-01
604	1.265E+01	645	1.275E+01	686	6.373E+00	727	1.893E+00	768	4.222E-01
605	1.277E+01	646	1.268E+01	687	6.307E+00	728	1.886E+00	769	3.197E-01
606	1.288E+01	647	1.254E+01	688	6.147E+00	729	1.896E+00	770	1.382E-01
607	1.300E+01	648	1.246E+01	689	5.823E+00	730	1.876E+00	771	1.815E-01
608	1.314E+01	649	1.226E+01	690	5.712E+00	731	1.688E+00	772	3.303E-01
609	1.322E+01	650	1.224E+01	691	5.643E+00	732	1.699E+00	773	1.802E-01
610	1.333E+01	651	1.204E+01	692	5.527E+00	733	1.432E+00	774	1.264E-01
611	1.342E+01	652	1.196E+01	693	5.366E+00	734	1.468E+00	775	1.976E-01
612	1.351E+01	653	1.185E+01	694	5.193E+00	735	1.515E+00	776	1.626E-01
613	1.356E+01	654	1.164E+01	695	5.083E+00	736	1.376E+00	777	1.343E-01
614	1.367E+01	655	1.152E+01	696	4.839E+00	737	1.280E+00	778	1.253E-01
615	1.373E+01	656	1.130E+01	697	4.805E+00	738	1.167E+00	779	2.355E-01
616	1.379E+01	657	1.119E+01	698	4.665E+00	739	1.133E+00	780	8.800E-02
617	1.386E+01	658	1.099E+01	699	4.552E+00	740	1.183E+00		
618	1.388E+01	659	1.091E+01	700	4.401E+00	741	1.205E+00		
619	1.388E+01	660	1.079E+01	701	4.332E+00	742	1.189E+00		
620	1.397E+01	661	1.055E+01	702	4.138E+00	743	1.061E+00		
621	1.394E+01	662	1.037E+01	703	3.963E+00	744	8.541E-01		
622	1.392E+01	663	1.025E+01	704	3.936E+00	745	8.453E-01		
623	1.397E+01	664	1.010E+01	705	3.745E+00	746	6.286E-01		
624	1.398E+01	665	9.936E+00	706	3.720E+00	747	7.438E-01		
625	1.395E+01	666	9.744E+00	707	3.615E+00	748	8.270E-01		

CIE 1931xy Chromaticity Diagram



7-Step Chromaticity Quadrangles



[Goniophotometer System]

Total operating time for luminous intensity distribution: **2.0hour**

Test orientation: **Downward**

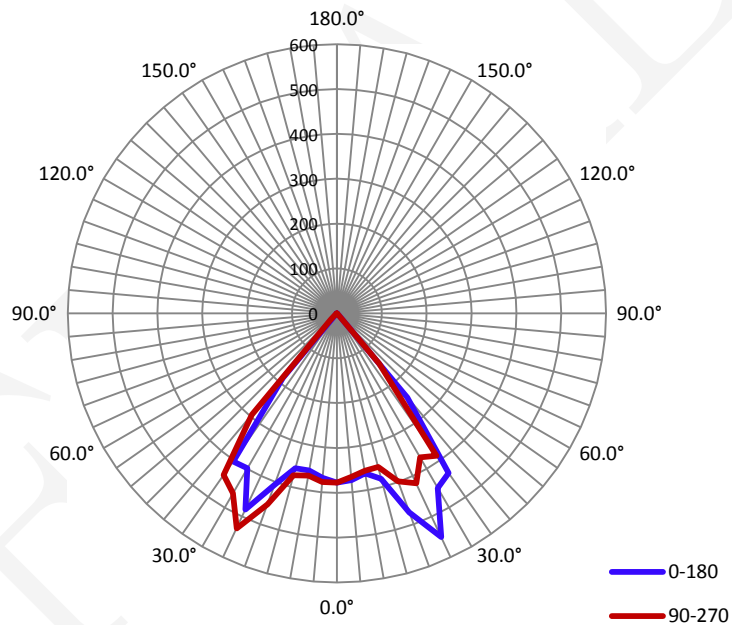
Electrical Measurement

Input Voltage(V)	Frequency(Hz)	Input Current(A)	Power (W)	Power Factor
119.9	60	0.0720	8.08	0.9330

Photometric Measurement

Luminous Flux(lm)	Efficacy(lm/W)	$I_{max}(cd)$	S/MH(C0/180)	S/MH(C90/270)
633.6	78.46	559.8	1.48	1.47

Luminous Intensity Distribution



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle(50% I_{max}):	77.2	78.1	78.1	76.9	77.6
Field Angle(10% I_{max}):	87.6	87.7	87.7	87.4	87.6

Luminous Intensity (cd) Distribution Data

C γ	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0.0°	377	377	377	377	377	377	377	377
5.0°	373	370	368	367	366	366	367	368
10.0°	362	359	359	357	356	355	355	355
15.0°	382	378	372	364	354	348	348	353
20.0°	472	463	437	419	398	380	378	389
25.0°	550	537	496	451	418	407	420	454
30.0°	449	433	413	388	371	371	372	378
35.0°	434	420	409	396	387	385	383	392
40.0°	245	209	176	154	146	147	159	186
45.0°	6	5	4	4	4	4	4	4
50.0°	3	3	3	2	2	2	2	2
55.0°	2	2	2	1	1	1	1	1
60.0°	1	1	1	1	1	1	1	1
65.0°	1	1	1	1	0	1	0	1
70.0°	0	0	0	0	0	0	0	0
75.0°	0	0	0	0	0	0	0	0
80.0°	0	0	0	0	0	0	0	0
85.0°	0	0	0	0	0	0	0	0
90.0°	0	0	0	0	0	0	0	0
95.0°	0	0	0	0	0	0	0	0
100.0°	0	0	0	0	0	0	0	0
105.0°	0	0	0	0	0	0	0	0
110.0°	0	0	0	0	0	0	0	0
115.0°	0	0	0	0	0	0	0	0
120.0°	0	0	0	0	0	0	0	0
125.0°	0	0	0	0	0	0	0	0
130.0°	0	0	0	0	0	0	0	0
135.0°	0	0	0	0	0	0	0	0
140.0°	0	0	0	0	0	0	0	0
145.0°	0	0	0	0	0	0	0	0
150.0°	0	0	0	0	0	0	0	0
155.0°	0	0	0	0	0	0	0	0
160.0°	0	0	0	0	0	0	0	0
165.0°	0	0	0	0	0	0	0	0
170.0°	0	0	0	0	0	0	0	0
175.0°	0	0	0	0	0	0	0	0
180.0°	0	0	0	0	0	0	0	0

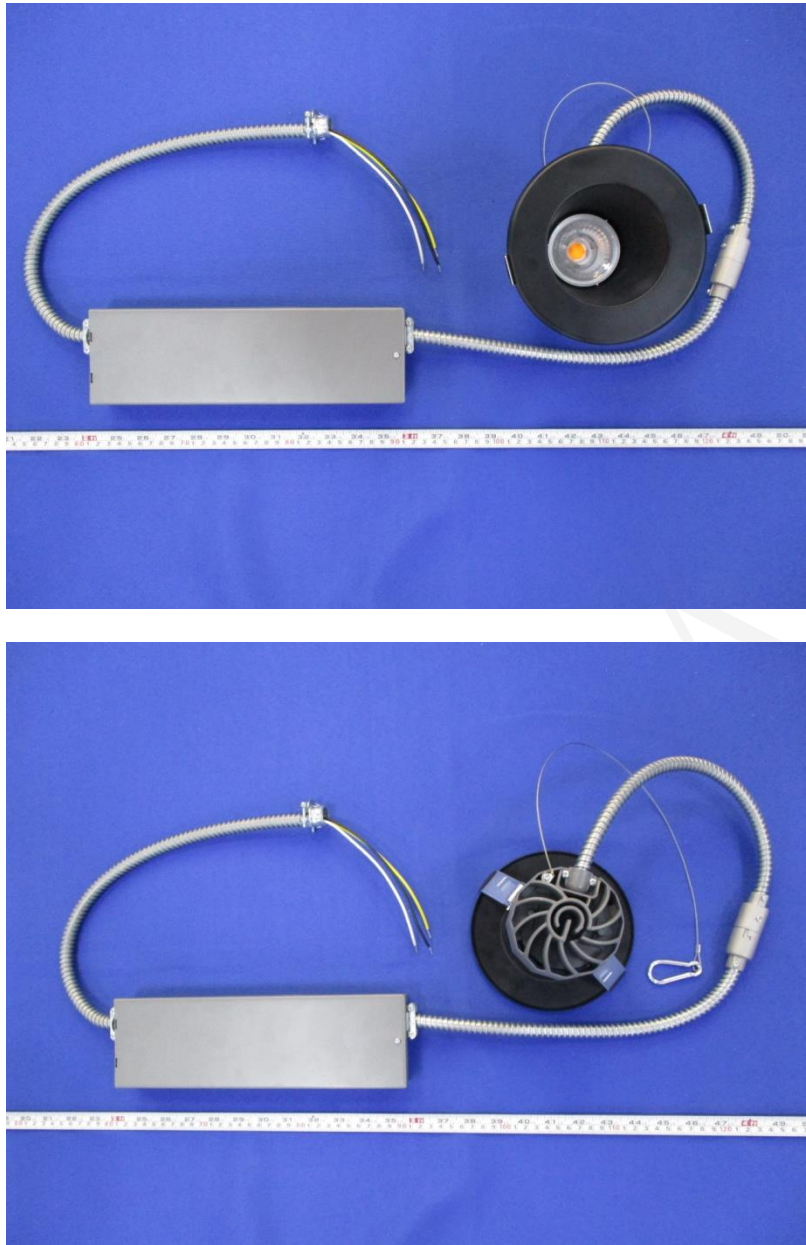
Luminous Intensity (cd) Distribution Data (cont.)

C Y	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
0.0°	377	377	377	377	377	377	377	377
5.0°	368	371	373	375	377	378	377	375
10.0°	356	358	361	364	367	368	366	364
15.0°	357	362	368	372	374	371	374	382
20.0°	407	422	431	444	453	463	474	476
25.0°	482	521	532	530	529	541	560	557
30.0°	399	418	440	454	463	482	490	467
35.0°	403	416	427	433	440	442	438	434
40.0°	188	226	265	284	295	289	267	246
45.0°	4	5	7	12	19	18	9	7
50.0°	3	3	3	3	4	4	3	3
55.0°	2	2	2	2	2	2	2	2
60.0°	1	1	1	1	1	1	1	1
65.0°	1	1	1	1	1	1	1	1
70.0°	0	0	0	1	1	1	1	0
75.0°	0	0	0	0	0	0	0	0
80.0°	0	0	0	0	0	0	0	0
85.0°	0	0	0	0	0	0	0	0
90.0°	0	0	0	0	0	0	0	0
95.0°	0	0	0	0	0	0	0	0
100.0°	0	0	0	0	0	0	0	0
105.0°	0	0	0	0	0	0	0	0
110.0°	0	0	0	0	0	0	0	0
115.0°	0	0	0	0	0	0	0	0
120.0°	0	0	0	0	0	0	0	0
125.0°	0	0	0	0	0	0	0	0
130.0°	0	0	0	0	0	0	0	0
135.0°	0	0	0	0	0	0	0	0
140.0°	0	0	0	0	0	0	0	0
145.0°	0	0	0	0	0	0	0	0
150.0°	0	0	0	0	0	0	0	0
155.0°	0	0	0	0	0	0	0	0
160.0°	0	0	0	0	0	0	0	0
165.0°	0	0	0	0	0	0	0	0
170.0°	0	0	0	0	0	0	0	0
175.0°	0	0	0	0	0	0	0	0
180.0°	0	0	0	0	0	0	0	0

Zonal Lumen Density Measurement

Deg	Flux (lm)	%	Deg	Flux (lm)	%
0-5	8.9	1.41	0-5	8.9	1.41
5-10	26.2	4.13	0-10	35.1	5.54
10-15	43.1	6.80	0-15	78.2	12.34
15-20	65.7	10.38	0-20	143.9	22.72
20-25	97.6	15.41	0-25	241.5	38.12
25-30	116.8	18.44	0-30	358.4	56.56
30-35	123.5	19.50	0-35	481.9	76.06
35-40	105.5	16.65	0-40	587.4	92.71
40-45	41.6	6.57	0-45	629.0	99.28
45-50	2.0	0.32	0-50	631.1	99.61
50-55	1.0	0.16	0-55	632.1	99.76
55-60	0.6	0.10	0-60	632.7	99.86
60-65	0.4	0.06	0-65	633.1	99.92
65-70	0.2	0.04	0-70	633.3	99.96
70-75	0.2	0.02	0-75	633.5	99.99
75-80	0.1	0.01	0-80	633.6	100.00
80-85	0.0	0.00	0-85	633.6	100.00
85-90	0.0	0.00	0-90	633.6	100.00
90-95	0.0	0.00	0-95	633.6	100.00
95-100	0.0	0.00	0-100	633.6	100.00
100-105	0.0	0.00	0-105	633.6	100.00
105-110	0.0	0.00	0-110	633.6	100.00
110-115	0.0	0.00	0-115	633.6	100.00
115-120	0.0	0.00	0-120	633.6	100.00
120-125	0.0	0.00	0-125	633.6	100.00
125-130	0.0	0.00	0-130	633.6	100.00
130-135	0.0	0.00	0-135	633.6	100.00
135-140	0.0	0.00	0-140	633.6	100.00
140-145	0.0	0.00	0-145	633.6	100.00
145-150	0.0	0.00	0-150	633.6	100.00
150-155	0.0	0.00	0-155	633.6	100.00
155-160	0.0	0.00	0-160	633.6	100.00
160-165	0.0	0.00	0-165	633.6	100.00
165-170	0.0	0.00	0-170	633.6	100.00
170-175	0.0	0.00	0-175	633.6	100.00
175-180	0.0	0.00	0-180	633.6	100.00

6. Product Photo



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