



IES LM-79-19

MEASUREMENT AND TEST REPORT

For

LED One Corporation

12437 Bellegrave Ave, Eastvale, CA 91752

Test Model: LOC-8DL-MW(32/42/52)MCCT(30/40/50)D-HO

Report Type:	Electrical and Photometric tests including: Luminous Flux, Chromaticity, Luminous Intensity Distribution
Project Engineer:	Bay Wang
Report Number:	RKSB230306008-10
Test Date:	2022-02-16 to 2022-02-17
Report Date:	2023-03-17
Reviewed By:	Seven Xia / EE Engineer
Prepared By:	Bay Area Compliance Laboratories Corp. (Kunshan). No.248 Chenghu Road, Kunshan, Jiangsu, People's Republic of China. Tel: +86-0512-86175000 Fax: +86-0512-88934268
Accreditation:	The IAS Accreditation Number TL-1044.

1. Product Description#

General Information:

One sample was received on 2022-02-16 and used for testing.

Model Tested:	LOC-8DL-MW(32/42/52)MCCT(30/40/50)D-HO
Manufacturer:	LED One Corporation
Brand Name:	LED One
Product Designation:	LED Recessed Downlight
Burning Time Before Test:	0hour(For New Products)
Color Tunable:	White-Tunable
CCT Range:	3000K, 3500K, 4000K
Least Efficient Setting:	3000K
Most Consumptive Setting:	4000K
Default Setting:	3000K

Rated Values:

Rated Voltage/Frequency:	120-277V 50/60Hz
Rated Power:	32W/42W/52W
Nominal CCT:	3000K, 3500K, 4000K
Nominal Lumen Output:	5000lm

Note:

1. The applicant *LED One Corporation* declared that their products are the same to the product in report# RKS220216030-10-1 and is authorized by original applicant to use their test data.
2. All the data in previous report (RKS220216030-10-1) is shared in report.

2. Standards Used

- IES LM-79-19: Approved Method: Optical and Electrical Measurements 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
2.0m integrating sphere	EVERFINE	R98	G121960CS1361154D	2021-11-02	2022-11-01
spectroradiometer	EVERFINE	HAAS-2000	M12048CS1361148	2021-11-02	2022-11-01
Digital CC&CV DC Power Supply	EVERFINE	WY305	G115986CN1361134	2021-11-02	2022-11-01
Thermal Meter	ANYMETRE	TH-20E	N/A	2021-11-19	2022-11-18
Standard Light Source	Osram	24V/50W	JWWCR020106	2021-09-15	2022-09-14
Digital Power Meter	YOKOGAWA	WT210	91KB35700	2021-11-13	2022-11-12
Intelligence ac power supply	EVERFINE	DPS1005	G119890CS1361121	2021-11-02	2022-11-01

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
AC Power Supply	INVENTFINE	CHP-5KVA	900511765	2021-11-02	2022-11-01
DC Power Supply	INVENTFINE	WL3010	JWDMP030001	2021-11-02	2022-11-01
Power Meter	INVENTFINE	WT500	GSDSQ200007	2021-03-16	2022-03-15
Goniophotometer	INVENTFINE	GPM-1900	YWGCF120001	2021-11-15	2022-11-14
Wireless Weather Station	ZHONGXING	KG218	N/A	2021-11-02	2022-11-01
Standard Light Source	INVENTFINE	N/A	JWBYR040008	2021-12-23	2022-12-22

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 ANSI/IES LM-79-19. The product was operated at rated voltage or at voltage required by manufacturer. The ambient temperature of the sample was maintained at $25^{\circ}\text{C} \pm 1.2^{\circ}\text{C}$ during measurement. And relative humidity is maintained between 10% 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 $U_{rel}=2.7\%$ ($k=2$), at the 95% confidence level. The uncertainty of the correlated color temperature measurements is $U=27\text{K}$ ($k=2$), at the 95% confidence level. The uncertainty of the CRI is $U=2.7(k=2)$, at the 95% confidence level.

The uncertainty of power meter AC current $U_{rel}=0.27\%$ of rdg, AC Voltage $U_{rel}=0.26\%$ of rdg, Power $U_{rel}=0.41\%$ ($k=2$), 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. For measurement of luminous intensity distribution, The horizontal angle (C plane) test intervals were set 22.5 degree, the vertical angle (γ) test intervals were set 1 degree while data for 5 degree intervals is reported.

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_i , R_g was calculated according to IES TM-30-18 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]

Control Setting: 3000K

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

Test orientation: **Downward**

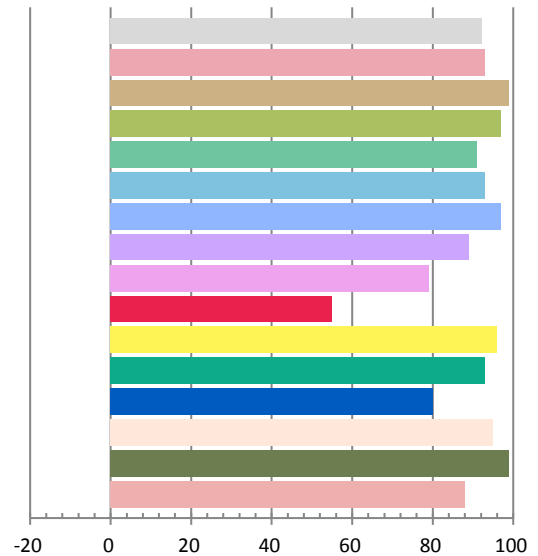
Photometric and Electrical Measurement Result

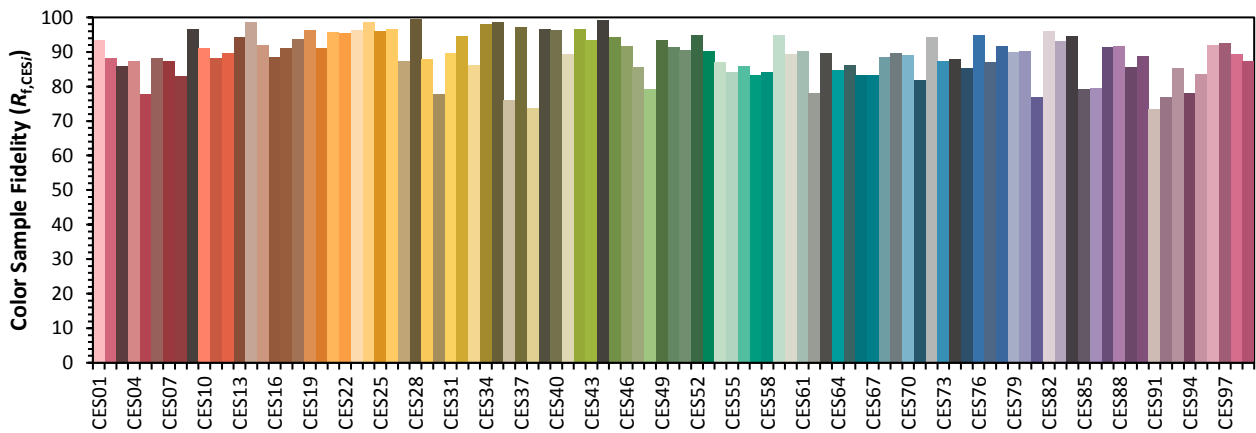
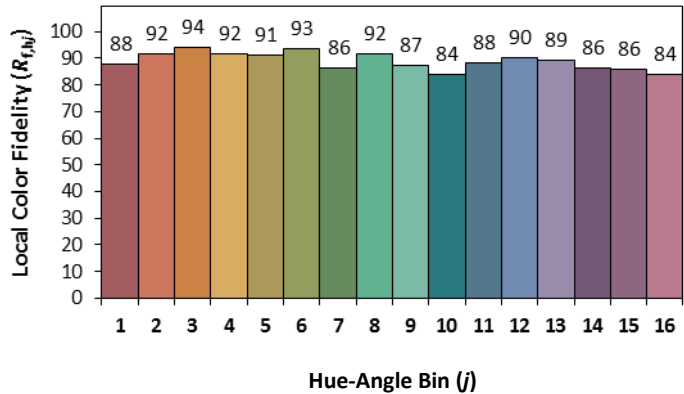
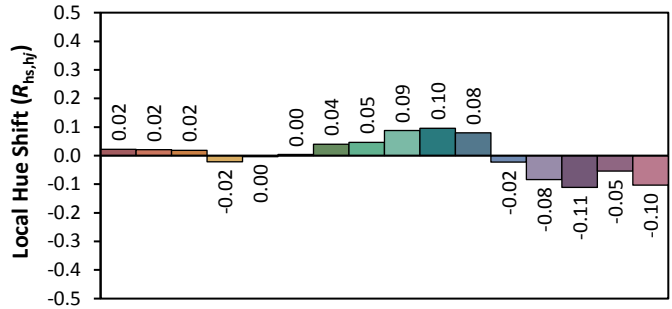
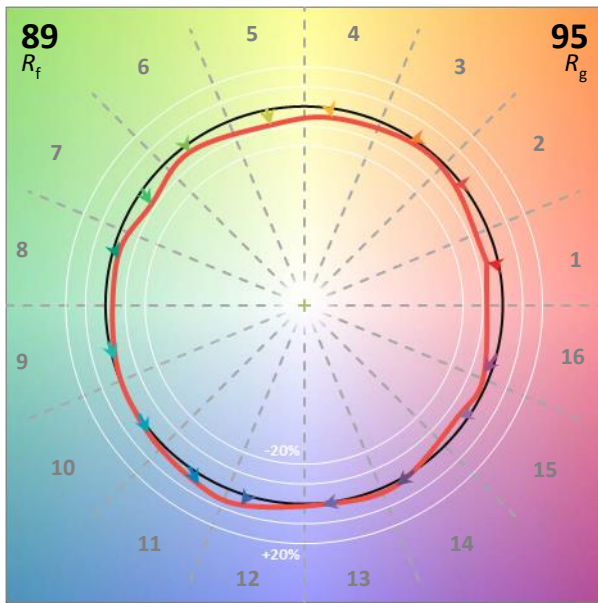
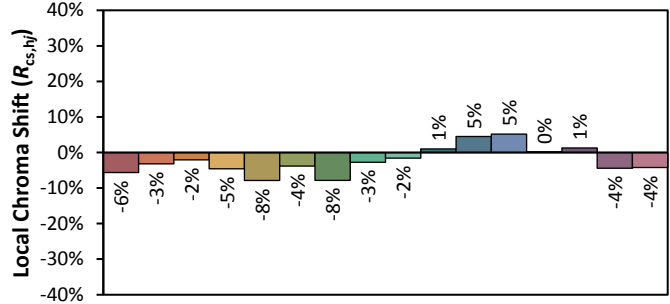
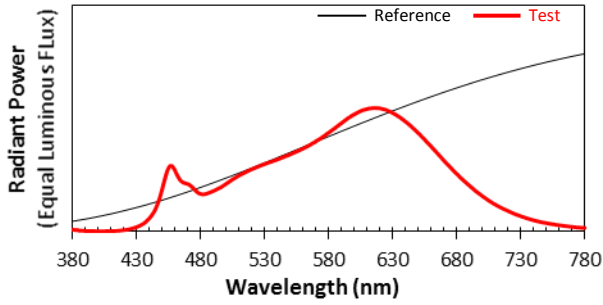
Voltage(V)	Frequency(Hz)	Current(A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy(lm/W)
120	60	0.4342	51.91	0.9962	5081.5	97.90

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
17.263	3024	0.00068	0.4363	0.4056	0.2495	0.5219

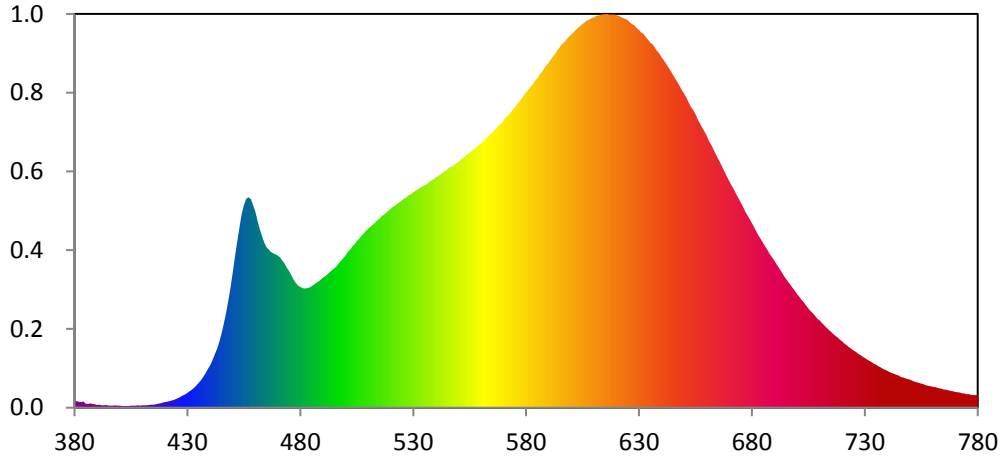
Color Rendering Index

Ra			
92.2			
R1	R2	R3	R4
93	99	97	91
R5	R6	R7	R8
93	97	89	79
R9	R10	R11	R12
55	96	93	80
R13	R14	R15	
95	99	88	





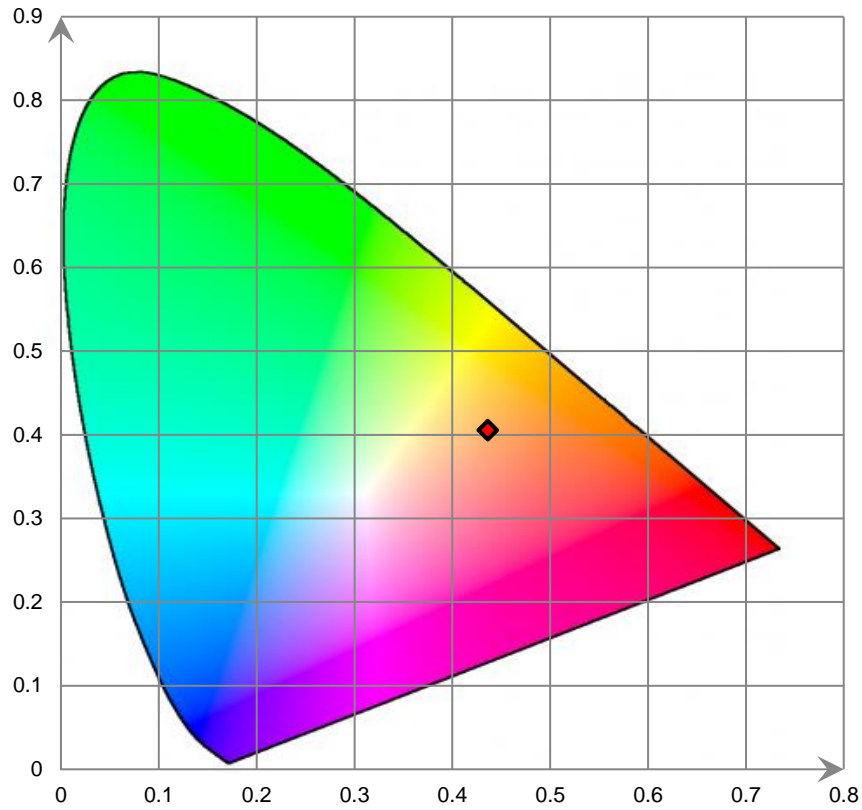
Relative Spectral Power Distribution



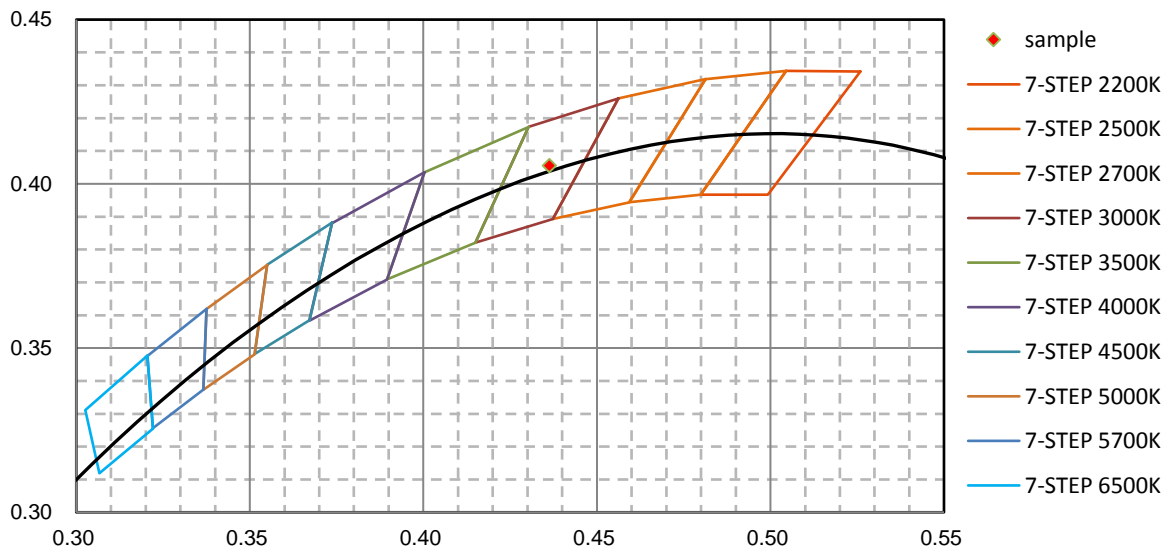
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	1.676E+00	421	1.542E+00	462	4.614E+01	503	4.159E+01	544	6.108E+01
381	1.682E+00	422	1.675E+00	463	4.432E+01	504	4.219E+01	545	6.128E+01
382	1.542E+00	423	1.879E+00	464	4.261E+01	505	4.300E+01	546	6.196E+01
383	1.425E+00	424	2.025E+00	465	4.145E+01	506	4.359E+01	547	6.222E+01
384	1.622E+00	425	2.274E+00	466	4.084E+01	507	4.426E+01	548	6.263E+01
385	1.065E+00	426	2.544E+00	467	4.018E+01	508	4.488E+01	549	6.300E+01
386	9.583E-01	427	2.854E+00	468	3.987E+01	509	4.550E+01	550	6.349E+01
387	1.112E+00	428	3.169E+00	469	3.958E+01	510	4.609E+01	551	6.400E+01
388	9.754E-01	429	3.433E+00	470	3.926E+01	511	4.666E+01	552	6.439E+01
389	8.637E-01	430	3.858E+00	471	3.884E+01	512	4.721E+01	553	6.491E+01
390	7.180E-01	431	4.264E+00	472	3.805E+01	513	4.767E+01	554	6.536E+01
391	7.616E-01	432	4.653E+00	473	3.725E+01	514	4.830E+01	555	6.580E+01
392	6.302E-01	433	5.203E+00	474	3.623E+01	515	4.875E+01	556	6.624E+01
393	6.413E-01	434	5.762E+00	475	3.519E+01	516	4.944E+01	557	6.679E+01
394	7.427E-01	435	6.411E+00	476	3.413E+01	517	4.983E+01	558	6.728E+01
395	5.440E-01	436	7.075E+00	477	3.302E+01	518	5.028E+01	559	6.777E+01
396	5.447E-01	437	7.872E+00	478	3.220E+01	519	5.084E+01	560	6.816E+01
397	5.251E-01	438	8.814E+00	479	3.149E+01	520	5.135E+01	561	6.872E+01
398	5.916E-01	439	9.849E+00	480	3.114E+01	521	5.180E+01	562	6.940E+01
399	5.131E-01	440	1.090E+01	481	3.087E+01	522	5.217E+01	563	6.982E+01
400	5.054E-01	441	1.220E+01	482	3.075E+01	523	5.267E+01	564	7.046E+01
401	4.580E-01	442	1.365E+01	483	3.087E+01	524	5.301E+01	565	7.101E+01
402	4.533E-01	443	1.511E+01	484	3.100E+01	525	5.346E+01	566	7.165E+01
403	4.683E-01	444	1.683E+01	485	3.137E+01	526	5.399E+01	567	7.231E+01
404	4.781E-01	445	1.899E+01	486	3.177E+01	527	5.431E+01	568	7.292E+01
405	5.572E-01	446	2.140E+01	487	3.213E+01	528	5.479E+01	569	7.336E+01
406	5.175E-01	447	2.412E+01	488	3.258E+01	529	5.515E+01	570	7.411E+01
407	5.345E-01	448	2.729E+01	489	3.299E+01	530	5.556E+01	571	7.493E+01
408	6.390E-01	449	3.067E+01	490	3.356E+01	531	5.598E+01	572	7.544E+01
409	5.623E-01	450	3.457E+01	491	3.391E+01	532	5.629E+01	573	7.609E+01
410	6.030E-01	451	3.865E+01	492	3.438E+01	533	5.672E+01	574	7.683E+01
411	5.920E-01	452	4.253E+01	493	3.497E+01	534	5.706E+01	575	7.751E+01
412	6.341E-01	453	4.622E+01	494	3.553E+01	535	5.743E+01	576	7.829E+01
413	6.666E-01	454	4.972E+01	495	3.596E+01	536	5.770E+01	577	7.895E+01
414	7.812E-01	455	5.214E+01	496	3.650E+01	537	5.829E+01	578	7.973E+01
415	7.955E-01	456	5.379E+01	497	3.726E+01	538	5.857E+01	579	8.066E+01
416	8.777E-01	457	5.424E+01	498	3.793E+01	539	5.888E+01	580	8.126E+01
417	1.001E+00	458	5.384E+01	499	3.863E+01	540	5.940E+01	581	8.201E+01
418	1.102E+00	459	5.233E+01	500	3.929E+01	541	5.972E+01	582	8.283E+01
419	1.285E+00	460	5.066E+01	501	4.015E+01	542	6.012E+01	583	8.353E+01
420	1.415E+00	461	4.827E+01	502	4.076E+01	543	6.053E+01	584	8.442E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	8.506E+01	626	9.939E+01	667	6.196E+01	708	2.364E+01	749	7.368E+00
586	8.599E+01	627	9.892E+01	668	6.084E+01	709	2.294E+01	750	7.217E+00
587	8.673E+01	628	9.861E+01	669	5.954E+01	710	2.248E+01	751	6.970E+00
588	8.752E+01	629	9.798E+01	670	5.851E+01	711	2.180E+01	752	6.738E+00
589	8.840E+01	630	9.744E+01	671	5.726E+01	712	2.124E+01	753	6.605E+00
590	8.904E+01	631	9.680E+01	672	5.622E+01	713	2.066E+01	754	6.412E+00
591	8.989E+01	632	9.644E+01	673	5.509E+01	714	2.008E+01	755	6.237E+00
592	9.070E+01	633	9.567E+01	674	5.407E+01	715	1.958E+01	756	6.093E+00
593	9.144E+01	634	9.500E+01	675	5.294E+01	716	1.903E+01	757	5.860E+00
594	9.235E+01	635	9.427E+01	676	5.186E+01	717	1.857E+01	758	5.687E+00
595	9.305E+01	636	9.372E+01	677	5.063E+01	718	1.813E+01	759	5.600E+00
596	9.379E+01	637	9.284E+01	678	4.966E+01	719	1.755E+01	760	5.416E+00
597	9.430E+01	638	9.201E+01	679	4.863E+01	720	1.711E+01	761	5.311E+00
598	9.509E+01	639	9.133E+01	680	4.755E+01	721	1.655E+01	762	5.175E+00
599	9.577E+01	640	9.034E+01	681	4.658E+01	722	1.613E+01	763	5.015E+00
600	9.628E+01	641	8.964E+01	682	4.541E+01	723	1.567E+01	764	4.886E+00
601	9.685E+01	642	8.872E+01	683	4.437E+01	724	1.526E+01	765	4.673E+00
602	9.751E+01	643	8.779E+01	684	4.344E+01	725	1.477E+01	766	4.629E+00
603	9.802E+01	644	8.687E+01	685	4.247E+01	726	1.441E+01	767	4.468E+00
604	9.853E+01	645	8.593E+01	686	4.145E+01	727	1.390E+01	768	4.368E+00
605	9.902E+01	646	8.489E+01	687	4.064E+01	728	1.362E+01	769	4.216E+00
606	9.944E+01	647	8.397E+01	688	3.959E+01	729	1.318E+01	770	4.129E+00
607	9.995E+01	648	8.304E+01	689	3.868E+01	730	1.284E+01	771	4.010E+00
608	1.001E+02	649	8.194E+01	690	3.787E+01	731	1.240E+01	772	3.912E+00
609	1.005E+02	650	8.100E+01	691	3.683E+01	732	1.208E+01	773	3.758E+00
610	1.007E+02	651	8.005E+01	692	3.607E+01	733	1.175E+01	774	3.643E+00
611	1.011E+02	652	7.884E+01	693	3.512E+01	734	1.136E+01	775	3.546E+00
612	1.012E+02	653	7.767E+01	694	3.417E+01	735	1.108E+01	776	3.483E+00
613	1.013E+02	654	7.672E+01	695	3.332E+01	736	1.072E+01	777	3.359E+00
614	1.015E+02	655	7.563E+01	696	3.250E+01	737	1.041E+01	778	3.279E+00
615	1.015E+02	656	7.437E+01	697	3.173E+01	738	1.005E+01	779	3.285E+00
616	1.016E+02	657	7.326E+01	698	3.093E+01	739	9.800E+00	780	3.291E+00
617	1.015E+02	658	7.220E+01	699	3.017E+01	740	9.505E+00		
618	1.014E+02	659	7.119E+01	700	2.933E+01	741	9.242E+00		
619	1.014E+02	660	7.013E+01	701	2.857E+01	742	8.953E+00		
620	1.013E+02	661	6.872E+01	702	2.790E+01	743	8.685E+00		
621	1.011E+02	662	6.780E+01	703	2.719E+01	744	8.474E+00		
622	1.008E+02	663	6.656E+01	704	2.637E+01	745	8.257E+00		
623	1.005E+02	664	6.544E+01	705	2.565E+01	746	7.921E+00		
624	1.003E+02	665	6.428E+01	706	2.496E+01	747	7.770E+00		
625	1.000E+02	666	6.318E+01	707	2.435E+01	748	7.554E+00		

CIE 1931xy Chromaticity Diagram



7-Step Chromaticity Quadrangles



[Goniophotometer System]

Control Setting: 3000K

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

Test orientation: **Downward**

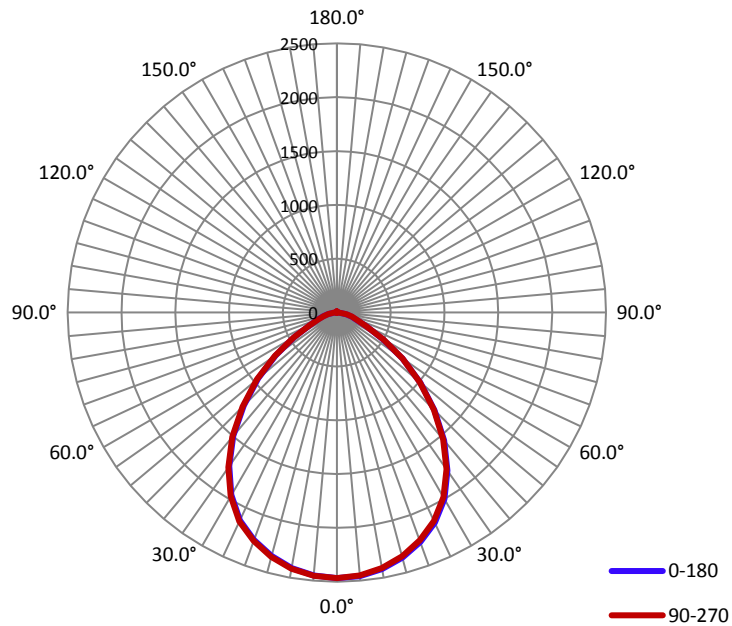
Electrical Measurement

Input Voltage(V)	Frequency(Hz)	Input Current(A)	Power (W)	Power Factor
120.0	60	0.4360	52.42	0.9970

Photometric Measurement

Luminous Flux(lm)	Efficacy(lm/W)	$I_{max}(cd)$	S/MH(C0/180)	S/MH(C90/270)
5085.1	97.06	2467.5	1.19	1.19

Luminous Intensity Distribution



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle(50% I_{max}):	90.9	90.9	90.9	91.0	90.9
Field Angle(10% I_{max}):	132.7	132.9	132.9	132.8	132.8

Luminous Intensity (cd) Distribution Data

C \ Y	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0.0°	2466	2466	2466	2466	2466	2466	2466	2466
5.0°	2456	2454	2454	2451	2451	2451	2450	2449
10.0°	2418	2417	2414	2413	2410	2409	2409	2408
15.0°	2355	2354	2348	2346	2342	2342	2343	2343
20.0°	2268	2264	2258	2255	2252	2250	2249	2249
25.0°	2154	2154	2147	2142	2135	2136	2134	2133
30.0°	1999	1997	1989	1985	1979	1978	1973	1969
35.0°	1792	1794	1787	1781	1777	1772	1768	1761
40.0°	1550	1549	1546	1546	1539	1532	1532	1519
45.0°	1286	1288	1285	1288	1276	1272	1262	1254
50.0°	1014	1014	1014	1015	1008	1002	989	979
55.0°	745	749	756	753	745	739	727	716
60.0°	501	506	512	510	503	492	481	476
65.0°	303	306	308	310	305	298	291	286
70.0°	194	197	198	197	196	195	193	191
75.0°	142	144	145	145	145	144	141	140
80.0°	92	93	94	94	94	92	91	89
85.0°	41	42	43	43	42	40	39	37
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	1	0	0	0	1	0
135.0°	1	1	2	2	2	1	2	2
140.0°	2	2	3	3	3	3	3	3
145.0°	3	4	5	4	4	4	4	4
150.0°	5	6	6	6	6	6	6	6
155.0°	6	7	7	6	7	7	7	6
160.0°	8	7	9	8	8	8	8	8
165.0°	8	9	8	8	9	9	8	8
170.0°	9	8	10	10	9	10	9	9
175.0°	10	10	10	10	10	10	10	10
180.0°	0	0	0	0	0	0	0	0

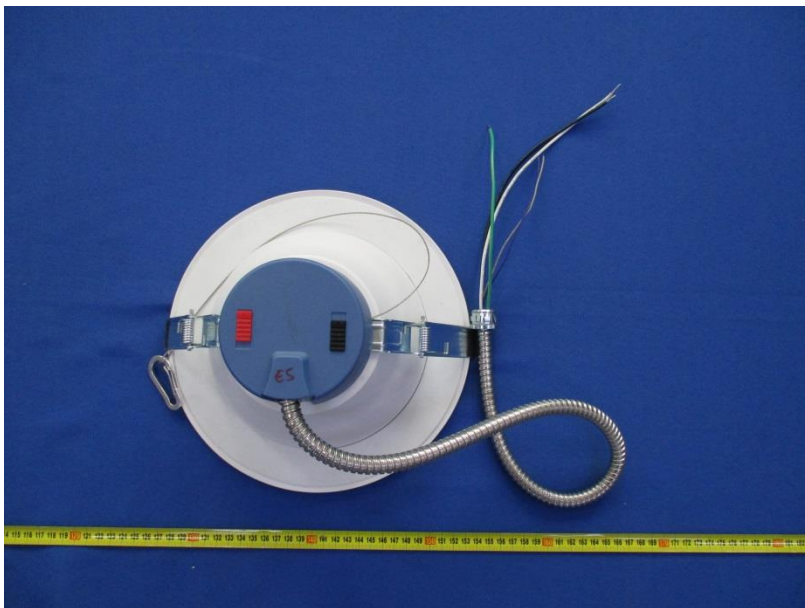
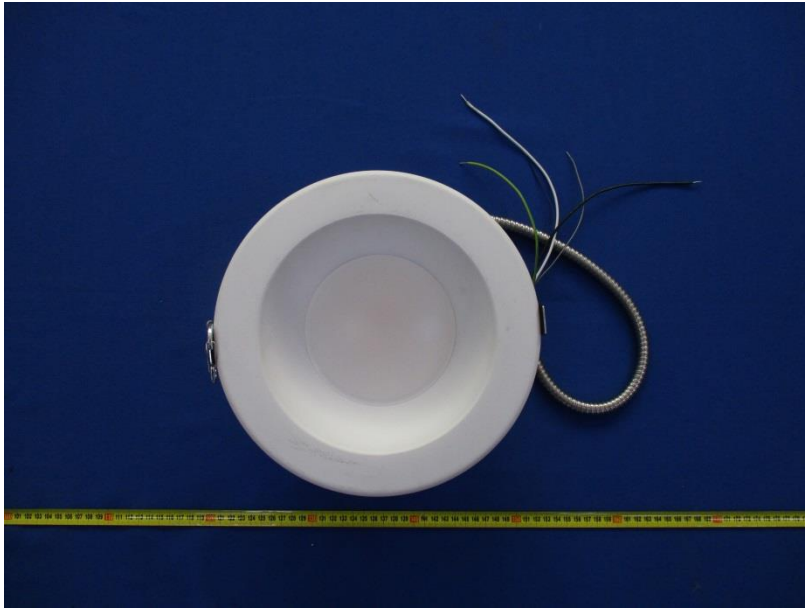
Luminous Intensity (cd) Distribution Data (cont.)

C Y	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
0.0°	2466	2466	2466	2466	2466	2466	2466	2466
5.0°	2452	2453	2451	2454	2455	2456	2456	2454
10.0°	2410	2410	2411	2414	2417	2417	2418	2420
15.0°	2341	2345	2345	2350	2349	2354	2356	2355
20.0°	2248	2253	2255	2256	2258	2264	2270	2267
25.0°	2130	2131	2134	2135	2140	2147	2152	2153
30.0°	1956	1957	1958	1961	1969	1979	1987	1987
35.0°	1741	1740	1737	1745	1755	1768	1774	1779
40.0°	1494	1491	1489	1497	1509	1518	1529	1534
45.0°	1223	1221	1223	1232	1238	1251	1262	1263
50.0°	952	952	952	956	966	978	986	988
55.0°	690	690	693	695	703	711	713	721
60.0°	454	456	455	461	466	467	472	478
65.0°	268	269	270	274	276	276	280	283
70.0°	181	181	179	177	178	180	183	185
75.0°	131	130	129	128	128	130	133	134
80.0°	80	80	78	78	79	80	83	84
85.0°	29	28	29	29	31	32	33	35
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	1	1	1	1	1	0
140.0°	1	2	2	2	2	2	2	2
145.0°	2	3	3	3	4	3	4	3
150.0°	4	4	5	5	5	5	5	5
155.0°	5	6	6	6	6	6	6	6
160.0°	6	7	7	8	7	7	7	7
165.0°	7	8	8	9	8	9	9	9
170.0°	9	9	9	10	9	9	10	10
175.0°	9	10	11	11	10	10	11	11
180.0°	0	0	0	0	0	0	0	0

Zonal Lumen Density Measurement

Deg	Flux (lm)	%	Deg	Flux (lm)	%
0-5	58.9	1.16	0-5	58.8	1.16
5-10	174.2	3.43	0-10	232.9	4.58
10-15	282.5	5.55	0-15	515.3	10.13
15-20	379.6	7.46	0-20	894.9	17.60
20-25	461.4	9.08	0-25	1356.3	26.67
25-30	521.6	10.26	0-30	1878.0	36.93
30-35	551.4	10.84	0-35	2429.5	47.78
35-40	548.8	10.79	0-40	2978.3	58.57
40-45	514.5	10.13	0-45	3492.9	68.69
45-50	452.8	8.89	0-50	3945.6	77.59
50-55	370.2	7.28	0-55	4315.9	84.87
55-60	276.2	5.44	0-60	4592.1	90.31
60-65	183.8	3.61	0-65	4775.9	93.92
65-70	115.3	2.26	0-70	4891.2	96.19
70-75	84.7	1.65	0-75	4975.8	97.85
75-80	59.8	1.17	0-80	5035.5	99.02
80-85	33.3	0.65	0-85	5068.7	99.68
85-90	6.9	0.14	0-90	5075.8	99.82
90-95	0.0	0.00	0-95	5075.8	99.82
95-100	0.0	0.00	0-100	5075.8	99.82
100-105	0.0	0.00	0-105	5075.8	99.82
105-110	0.0	0.00	0-110	5075.8	99.82
110-115	0.0	0.00	0-115	5075.8	99.82
115-120	0.0	0.00	0-120	5075.8	99.82
120-125	0.0	0.00	0-125	5075.8	99.82
125-130	0.0	0.00	0-130	5075.8	99.82
130-135	0.2	0.00	0-135	5076.0	99.82
135-140	0.6	0.00	0-140	5076.6	99.83
140-145	1.0	0.00	0-145	5077.6	99.85
145-150	1.4	0.03	0-150	5078.9	99.88
150-155	1.5	0.05	0-155	5080.3	99.91
155-160	1.5	0.05	0-160	5081.8	99.94
160-165	1.4	0.03	0-165	5083.1	99.96
165-170	1.0	0.00	0-170	5084.1	99.98
170-175	0.7	0.00	0-175	5084.8	100.00
175-180	0.2	0.00	0-180	5085.1	100.00

6. Product Photo



Directions

1. The information marked "superscript #" is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report.
2. This report may contain data that are not covered by the accreditation scope and shall be marked with an asterisk "★"
3. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.
4. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.
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*****END OF REPORT*****