

IES LM-79-08

MEASUREMENT AND TEST REPORT

For

GREEN CREATIVE LTD

Room 3603, Level 36, Tower 1, Enterprise Square Five, 38 Wang Chiu Road, Kowloon Bay, KL, Hong Kong, China

Test Model: 15.5PAR38DIM/940FL40/SL

Report Type:	Electrical and Photometric tests including: Luminous Flux, Chromaticity, Luminous Intensity Distribution, THD
Reviewed By:	Hill Liu <i>Hill Liu</i>
Report Number:	KS2230727-43683E-EE-1
Test Date:	2023-08-08 to 2023-08-09
Report Date:	2023-08-25
Approved by:	Blake Zhang / EE Engineer
Prepared By:	Bay Area Compliance Laboratories Corp. (Shenzhen) 5/F(B-West) -7/F, the 3rd Phase of Wan Li Industrial Building D, Shihua Road, Futian Free Trade Zone Shenzhen, Guangdong, China. Tel: +86-755-33320018 Fax: +86-755-33320008
Test Facility:	Test facility was located at No.12, Pulong East 1 st Road, Tangxia Town, Dongguan, Guangdong, China.

Note: 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.(Shenzhen). This report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, or any agency of the U.S. Government.

1. Product Description[#]

General Information:

Two test samples were in good condition and received on 2023-07-27, and used for testing. One was tested in integrating sphere and the other was tested in goniophotometer

Model Tested: 15.5PAR38DIM/940FL40/SL
Manufacturer: GREEN CREATIVE LTD
Brand Name: GREEN CREATIVE
Product Designation: Directional LED Lamp
Burning Time Before Test: 0hour(For New Products)

Rated Values:

Rated Voltage/Frequency: AC 120V 60Hz
Rated Power: 15.5W
Nominal CCT: 4000K
Nominal Lumen Output: 1420lm

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
- *IES TM-30-18: IES Method for Evaluating Light Source Color Rendition (This method is not in NVLAP accreditation scope)

3. Description of Test Equipment

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
2.0m integrating sphere	EVERFINE	R98	11010018	2022-11-10	2023-11-09
spectroradiometer	EVERFINE	HAAS-2000	G112048TS81331121	2022-11-10	2023-11-09
Digital Power Meter	EVERFINE	PF2010A	1011004	2022-11-10	2023-11-09
Digital CC&CV DC Power Supply	EVERFINE	WY305-V1	1101047	2022-11-10	2023-11-09
Standard Light Source	EVERFINE	D204	N/A	2023-05-12	2025-05-11
Special zero-voltage synchronous switching AC	EVERFINE	DPS1010-YF	1011001T	2022-11-10	2023-11-09
AC POWER SUPPLY	EVERFINE	VPS1030 PWM	1012017	2022-11-16	2023-11-15
Digital CC&CV DC Power Supply	EVERFINE	WY12010	1009009	2022-11-10	2023-11-09
Digital power meter	YOKOGAWA	WT-210	91j926132	2022-11-10	2023-11-09
full-field speed goniophotometer	EVERFINE	GO-R5000	YG108492N10120001	2022-11-10	2023-11-09
wireless remote thermohygrometer	N/A	AOK-5017B	N/A	2022-11-10	2023-11-09

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
Standard Light Source	EVERFINE	D908	1012003	2023-05-12	2025-05-11

Statement of Traceability: Bay Area Compliance Laboratories Corp. (Shenzhen) 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 $U=2.1\%$ ($K=2$), at the 95% confidence level. The uncertainty of the correlated color temperature measurements is $U=22\text{K}$ ($K=2$), at the 95% confidence level. The uncertainty of the CRI is $U=2.1(K=2)$, at the 95% confidence level.

The uncertainty of power meter AC current $U=0.19\%$ of rdg, AC Voltage $U=0.18\%$ of rdg, Power $U=0.46\%$ ($K=2$), 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 intensity is $U=2.00\%$ ($K=2$), at the 95% confidence level.

Additional Test

The Additional Test item may not be covered by IESNA LM-79-2008. Additional test including power factor, off-state power and THD, was measured by Digital Power Meter after stabilized at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. Test voltage for THD and power factor test would be equal to rated voltage or, in case of a voltage range, maximum value of that range.

The uncertainty of power meter AC current $U=0.19\%$ of rdg, AC Voltage $U=0.18\%$ of rdg, Power $U=0.46\%$ ($K=2$), 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]

The Stabilization time: **30 minutes**

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

Test orientation: **Base Up**

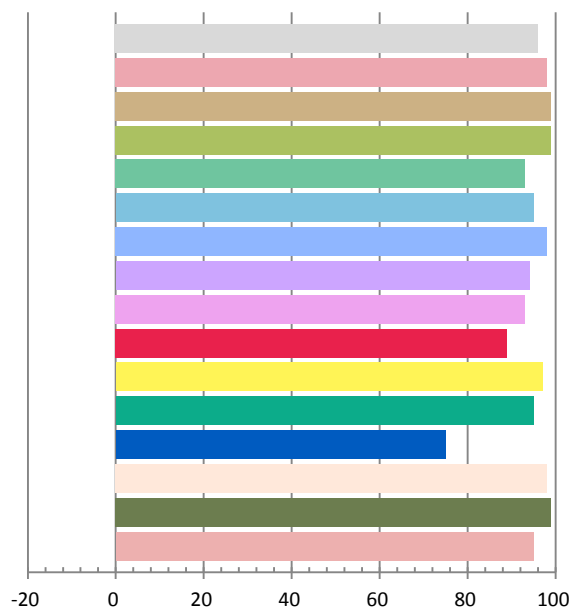
Photometric and Electrical Measurement Result

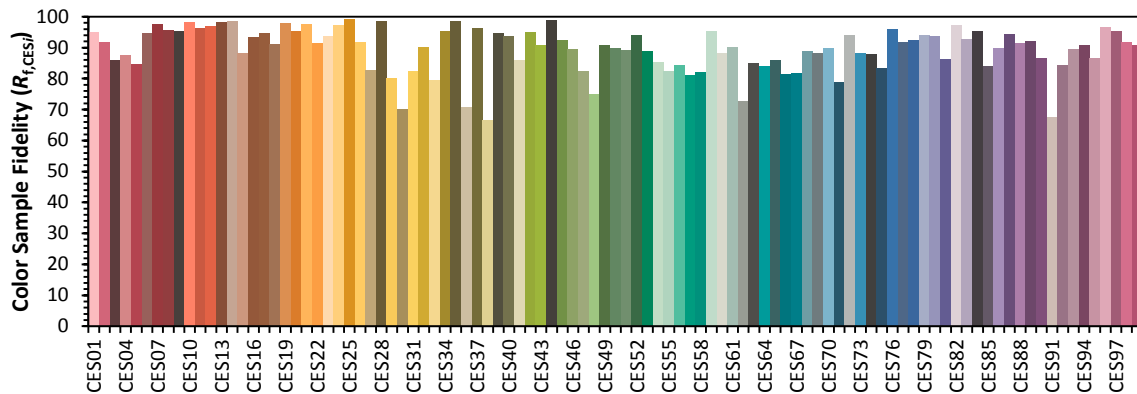
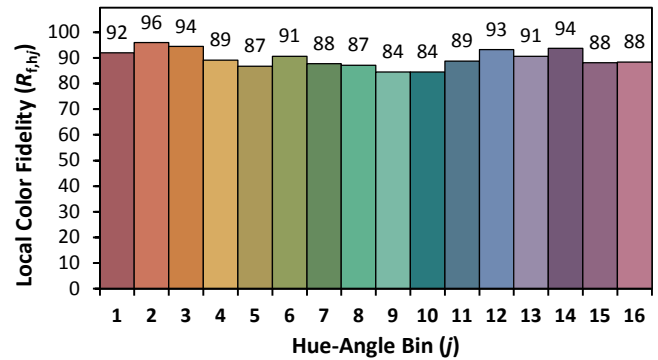
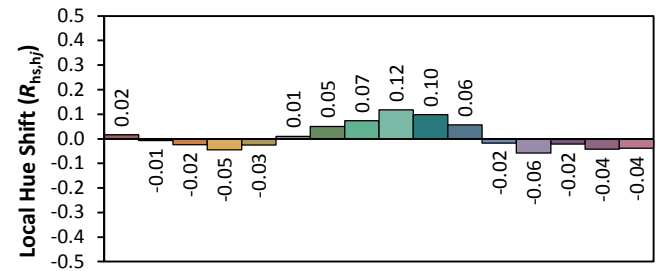
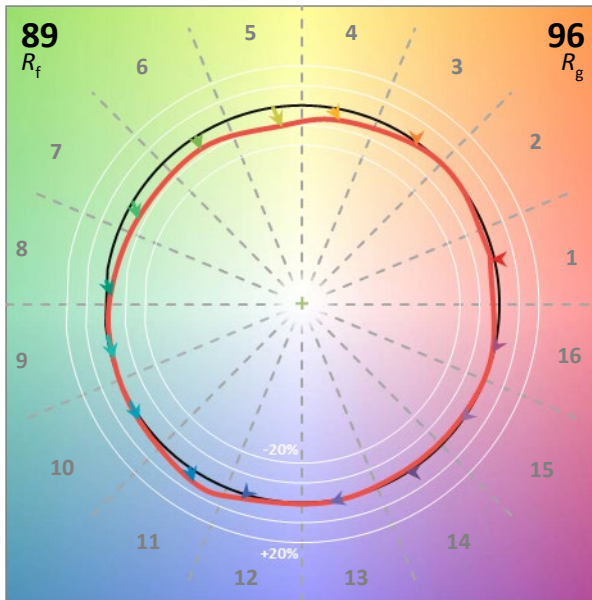
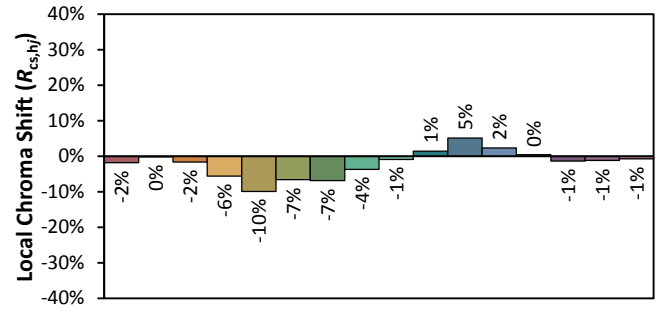
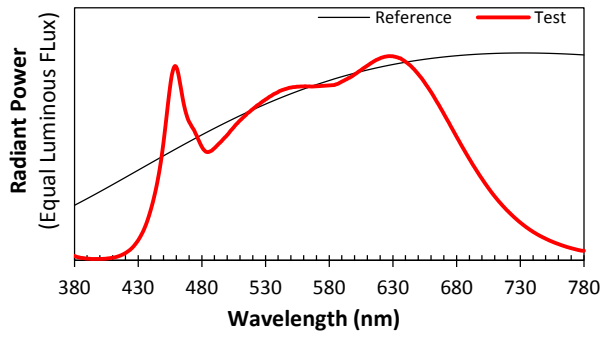
Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.0	60	0.1339	15.48	0.9634	1488.2	96.13

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
5.3253	3959	0.00373	0.3850	0.3877	0.2238	0.5070

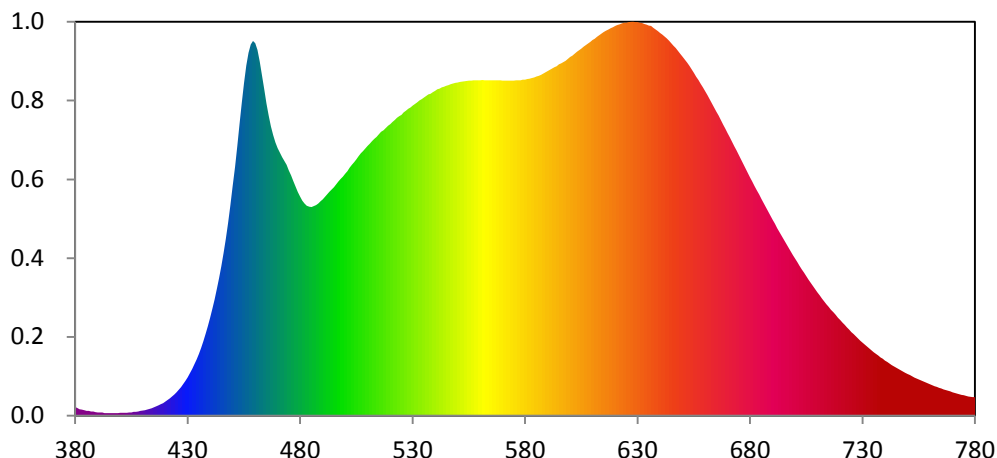
Color Rendering Index

Ra			
96.0			
R1	R2	R3	R4
98	99	99	93
R5	R6	R7	R8
95	98	94	93
R9	R10	R11	R12
89	97	95	75
R13	R14	R15	
98	99	95	





Relative Spectral Power Distribution

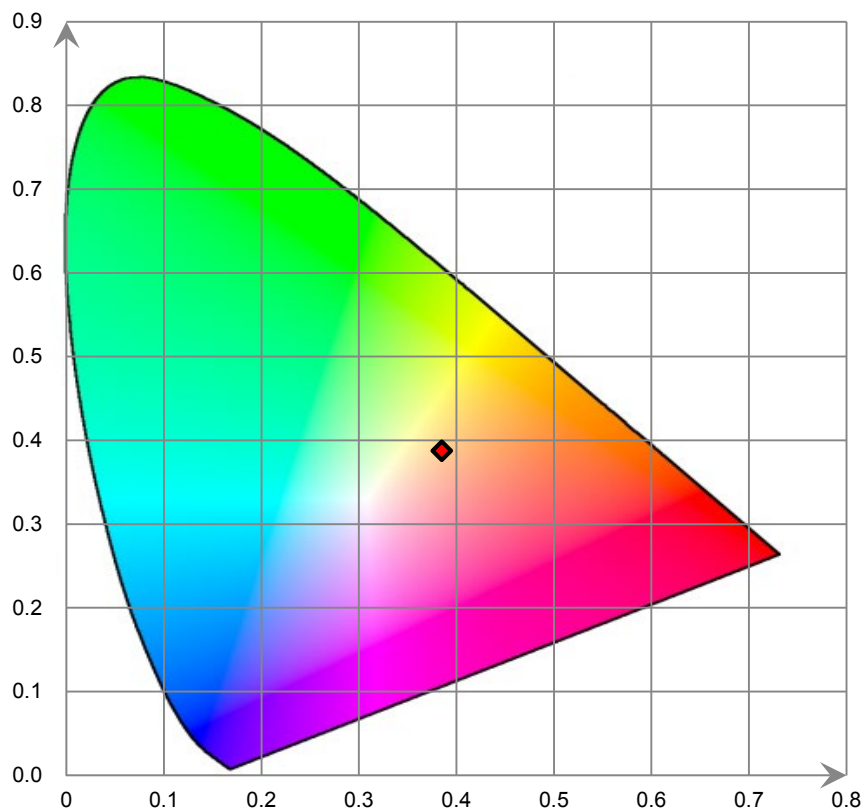


nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	5.348E-01	421	9.765E-01	462	2.219E+01	503	1.572E+01	544	2.061E+01
381	4.732E-01	422	1.080E+00	463	2.133E+01	504	1.588E+01	545	2.067E+01
382	4.103E-01	423	1.191E+00	464	2.047E+01	505	1.606E+01	546	2.071E+01
383	3.796E-01	424	1.313E+00	465	1.957E+01	506	1.625E+01	547	2.076E+01
384	3.465E-01	425	1.462E+00	466	1.880E+01	507	1.643E+01	548	2.081E+01
385	3.006E-01	426	1.617E+00	467	1.813E+01	508	1.657E+01	549	2.086E+01
386	2.908E-01	427	1.791E+00	468	1.759E+01	509	1.675E+01	550	2.087E+01
387	2.682E-01	428	1.990E+00	469	1.711E+01	510	1.690E+01	551	2.091E+01
388	2.495E-01	429	2.190E+00	470	1.675E+01	511	1.704E+01	552	2.093E+01
389	2.207E-01	430	2.409E+00	471	1.649E+01	512	1.719E+01	553	2.094E+01
390	2.068E-01	431	2.664E+00	472	1.620E+01	513	1.734E+01	554	2.096E+01
391	1.993E-01	432	2.926E+00	473	1.595E+01	514	1.747E+01	555	2.099E+01
392	1.938E-01	433	3.222E+00	474	1.571E+01	515	1.762E+01	556	2.098E+01
393	1.688E-01	434	3.520E+00	475	1.536E+01	516	1.779E+01	557	2.100E+01
394	1.681E-01	435	3.876E+00	476	1.506E+01	517	1.789E+01	558	2.101E+01
395	1.616E-01	436	4.251E+00	477	1.469E+01	518	1.801E+01	559	2.101E+01
396	1.682E-01	437	4.667E+00	478	1.436E+01	519	1.816E+01	560	2.101E+01
397	1.676E-01	438	5.122E+00	479	1.402E+01	520	1.827E+01	561	2.104E+01
398	1.686E-01	439	5.610E+00	480	1.373E+01	521	1.840E+01	562	2.102E+01
399	1.658E-01	440	6.136E+00	481	1.347E+01	522	1.852E+01	563	2.100E+01
400	1.739E-01	441	6.689E+00	482	1.330E+01	523	1.866E+01	564	2.102E+01
401	1.731E-01	442	7.286E+00	483	1.315E+01	524	1.877E+01	565	2.101E+01
402	1.773E-01	443	7.938E+00	484	1.309E+01	525	1.885E+01	566	2.100E+01
403	1.870E-01	444	8.615E+00	485	1.308E+01	526	1.899E+01	567	2.100E+01
404	1.953E-01	445	9.367E+00	486	1.313E+01	527	1.910E+01	568	2.101E+01
405	2.070E-01	446	1.019E+01	487	1.320E+01	528	1.922E+01	569	2.100E+01
406	2.348E-01	447	1.106E+01	488	1.328E+01	529	1.931E+01	570	2.100E+01
407	2.465E-01	448	1.205E+01	489	1.343E+01	530	1.943E+01	571	2.099E+01
408	2.671E-01	449	1.314E+01	490	1.356E+01	531	1.952E+01	572	2.099E+01
409	2.959E-01	450	1.431E+01	491	1.371E+01	532	1.963E+01	573	2.098E+01
410	3.177E-01	451	1.560E+01	492	1.387E+01	533	1.975E+01	574	2.099E+01
411	3.410E-01	452	1.691E+01	493	1.403E+01	534	1.983E+01	575	2.098E+01
412	3.734E-01	453	1.828E+01	494	1.418E+01	535	1.992E+01	576	2.101E+01
413	4.161E-01	454	1.961E+01	495	1.432E+01	536	2.003E+01	577	2.101E+01
414	4.634E-01	455	2.084E+01	496	1.449E+01	537	2.012E+01	578	2.101E+01
415	5.164E-01	456	2.194E+01	497	1.466E+01	538	2.018E+01	579	2.105E+01
416	5.739E-01	457	2.273E+01	498	1.483E+01	539	2.026E+01	580	2.105E+01
417	6.375E-01	458	2.325E+01	499	1.497E+01	540	2.034E+01	581	2.108E+01
418	7.097E-01	459	2.348E+01	500	1.515E+01	541	2.045E+01	582	2.112E+01
419	7.887E-01	460	2.334E+01	501	1.532E+01	542	2.050E+01	583	2.115E+01

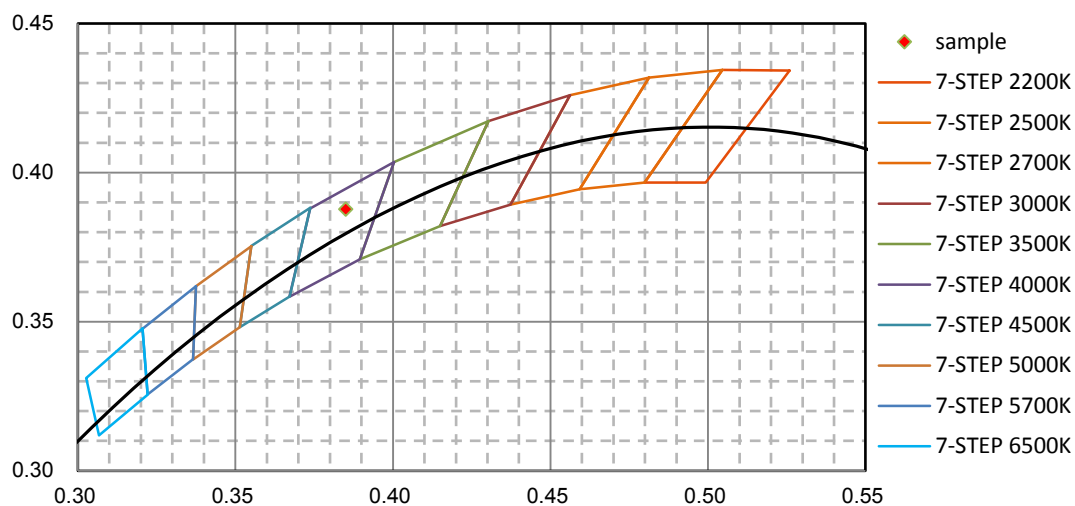
420	8.724E-01	461	2.291E+01	502	1.553E+01	543	2.057E+01	584	2.118E+01
-----	-----------	-----	-----------	-----	-----------	-----	-----------	-----	-----------

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	2.125E+01	626	2.466E+01	667	1.852E+01	708	8.109E+00	749	2.692E+00
586	2.129E+01	627	2.467E+01	668	1.825E+01	709	7.912E+00	750	2.608E+00
587	2.134E+01	628	2.467E+01	669	1.799E+01	710	7.719E+00	751	2.540E+00
588	2.143E+01	629	2.466E+01	670	1.771E+01	711	7.529E+00	752	2.464E+00
589	2.151E+01	630	2.466E+01	671	1.743E+01	712	7.344E+00	753	2.393E+00
590	2.160E+01	631	2.461E+01	672	1.716E+01	713	7.158E+00	754	2.329E+00
591	2.167E+01	632	2.459E+01	673	1.689E+01	714	6.984E+00	755	2.265E+00
592	2.175E+01	633	2.454E+01	674	1.663E+01	715	6.816E+00	756	2.198E+00
593	2.184E+01	634	2.450E+01	675	1.633E+01	716	6.633E+00	757	2.139E+00
594	2.190E+01	635	2.443E+01	676	1.605E+01	717	6.471E+00	758	2.077E+00
595	2.202E+01	636	2.441E+01	677	1.578E+01	718	6.308E+00	759	2.023E+00
596	2.206E+01	637	2.429E+01	678	1.550E+01	719	6.135E+00	760	1.966E+00
597	2.216E+01	638	2.420E+01	679	1.522E+01	720	5.990E+00	761	1.910E+00
598	2.224E+01	639	2.410E+01	680	1.494E+01	721	5.836E+00	762	1.853E+00
599	2.235E+01	640	2.398E+01	681	1.467E+01	722	5.686E+00	763	1.798E+00
600	2.247E+01	641	2.388E+01	682	1.440E+01	723	5.534E+00	764	1.750E+00
601	2.256E+01	642	2.375E+01	683	1.412E+01	724	5.386E+00	765	1.696E+00
602	2.267E+01	643	2.363E+01	684	1.385E+01	725	5.240E+00	766	1.648E+00
603	2.279E+01	644	2.350E+01	685	1.358E+01	726	5.105E+00	767	1.599E+00
604	2.289E+01	645	2.334E+01	686	1.332E+01	727	4.965E+00	768	1.556E+00
605	2.299E+01	646	2.318E+01	687	1.305E+01	728	4.833E+00	769	1.514E+00
606	2.311E+01	647	2.303E+01	688	1.279E+01	729	4.697E+00	770	1.468E+00
607	2.322E+01	648	2.284E+01	689	1.253E+01	730	4.575E+00	771	1.429E+00
608	2.332E+01	649	2.267E+01	690	1.227E+01	731	4.451E+00	772	1.387E+00
609	2.342E+01	650	2.248E+01	691	1.202E+01	732	4.324E+00	773	1.350E+00
610	2.353E+01	651	2.229E+01	692	1.176E+01	733	4.210E+00	774	1.309E+00
611	2.362E+01	652	2.211E+01	693	1.150E+01	734	4.091E+00	775	1.272E+00
612	2.374E+01	653	2.191E+01	694	1.127E+01	735	3.974E+00	776	1.236E+00
613	2.384E+01	654	2.169E+01	695	1.102E+01	736	3.873E+00	777	1.203E+00
614	2.393E+01	655	2.147E+01	696	1.078E+01	737	3.759E+00	778	1.171E+00
615	2.403E+01	656	2.123E+01	697	1.054E+01	738	3.653E+00	779	1.160E+00
616	2.412E+01	657	2.102E+01	698	1.030E+01	739	3.557E+00	780	1.162E+00
617	2.421E+01	658	2.079E+01	699	1.007E+01	740	3.448E+00		
618	2.427E+01	659	2.056E+01	700	9.845E+00	741	3.357E+00		
619	2.434E+01	660	2.033E+01	701	9.614E+00	742	3.268E+00		
620	2.441E+01	661	2.008E+01	702	9.386E+00	743	3.170E+00		
621	2.448E+01	662	1.983E+01	703	9.164E+00	744	3.088E+00		
622	2.452E+01	663	1.956E+01	704	8.952E+00	745	2.997E+00		
623	2.457E+01	664	1.930E+01	705	8.732E+00	746	2.920E+00		
624	2.461E+01	665	1.904E+01	706	8.525E+00	747	2.842E+00		
625	2.463E+01	666	1.880E+01	707	8.313E+00	748	2.758E+00		

CIE 1931 x y Chromaticity Diagram



7-Step Chromaticity Quadrangles



[Goniophotometer System]

The Stabilization time: **30 minutes**

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

Test orientation: **Base Up**

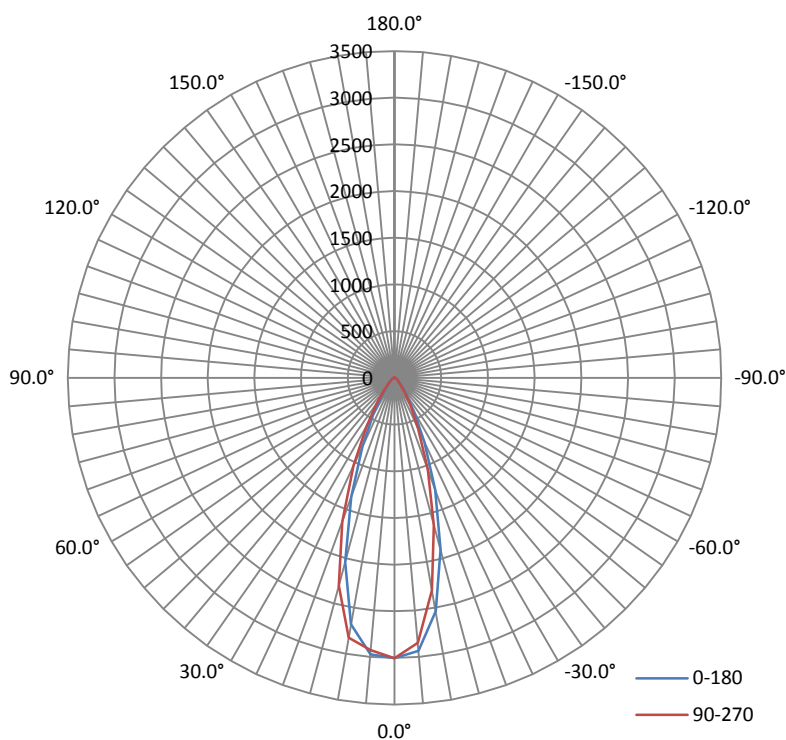
Electrical Measurement

Input Voltage (V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.04	60	0.1339	15.490	0.9637

Photometric Measurement

Luminous Flux (lm)	Efficacy (lm/W)	I _{max} (cd)	S/MH (C0/180)	S/MH (C90/270)
1490.35	96.21	3016.0	0.59	0.53

Luminous Intensity Distribution



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle (50% I _{max}):	36.8	36.9	37.0	36.9	36.9
Field Angle (10% I _{max}):	66.1	66.6	66.8	66.4	66.5

Luminous Intensity (cd) Distribution Data

$\begin{matrix} C \\ \backslash \\ \gamma \end{matrix}$	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0.0°	3003	3003	3003	3003	3003	3003	3003	3003
5.0°	2973	2973	2952	2937	2928	2939	2939	2947
10.0°	2681	2731	2772	2833	2825	2800	2747	2676
15.0°	2045	2113	2175	2322	2303	2254	2168	2072
20.0°	1355	1440	1494	1641	1637	1584	1513	1409
25.0°	809	876	920	1042	1036	1004	944	861
30.0°	458	494	528	604	599	578	537	484
35.0°	250	264	287	327	331	319	290	269
40.0°	138	145	154	178	182	175	163	148
45.0°	81	86	91	103	104	100	92	86
50.0°	54	59	61	67	66	64	60	58
55.0°	41	45	46	48	47	46	44	43
60.0°	33	34	36	37	37	36	35	34
65.0°	25	26	27	29	29	28	27	26
70.0°	19	20	20	22	22	21	21	20
75.0°	13	14	15	16	16	15	15	14
80.0°	8	9	9	10	10	10	9	9
85.0°	3	4	4	5	5	5	5	4
90.0°	1	1	1	2	2	2	1	1
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°	1	1	1	0	0	0	1	1
140.0°	1	1	1	1	1	1	1	1
145.0°	2	2	2	2	2	2	2	2
150.0°	3	3	3	2	2	2	2	3
155.0°	3	3	3	3	3	3	3	3
160.0°	4	4	4	4	4	4	4	4
165.0°	4	4	4	4	4	4	4	4
170.0°	4	4	4	4	4	3	3	3
175.0°	3	3	3	3	3	3	3	3
180.0°	2	2	2	3	2	2	2	2

Luminous Intensity (cd) Distribution Data (cont.)

$\begin{matrix} C \\ \backslash \\ \gamma \end{matrix}$	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
0.0°	3003	3003	3003	3003	3003	3003	3003	3003
5.0°	2935	2930	2923	2836	2848	2881	2909	2941
10.0°	2536	2481	2437	2285	2309	2371	2440	2524
15.0°	1902	1814	1759	1611	1631	1687	1758	1860
20.0°	1268	1197	1152	1026	1041	1074	1134	1216
25.0°	754	702	676	592	600	624	660	707
30.0°	416	395	382	330	341	351	366	396
35.0°	228	219	208	181	189	195	203	221
40.0°	126	120	114	103	107	110	115	123
45.0°	77	73	71	66	66	69	71	73
50.0°	53	52	50	47	47	48	50	50
55.0°	41	40	39	36	36	37	38	39
60.0°	32	31	30	28	28	29	29	30
65.0°	24	24	23	22	22	22	23	24
70.0°	18	18	17	16	16	16	17	18
75.0°	13	12	11	10	10	10	11	12
80.0°	7	7	6	5	5	6	6	7
85.0°	3	3	2	2	2	2	2	3
90.0°	1	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°	1	1	1	1	1	1	1	1
150.0°	1	1	1	1	1	1	1	1
155.0°	1	1	1	1	1	1	1	1
160.0°	1	1	1	1	1	1	1	1
165.0°	1	1	1	1	1	1	1	1
170.0°	1	1	1	1	1	1	1	1
175.0°	2	2	2	2	2	2	2	2
180.0°	2	2	2	3	2	2	2	2

Zonal Lumen Density Measurement

Deg	Flux (lm)	%	Deg	Flux (lm)	%
0-5	70.9	4.75	0-5	70.9	4.75
5-10	197.9	13.29	0-10	268.8	18.04
10-15	269.4	18.07	0-15	538.2	36.11
15-20	268.0	17.98	0-20	806.1	54.09
20-25	218.2	14.64	0-25	1024.3	68.73
25-30	153.8	10.32	0-30	1178.1	79.05
30-35	99.8	6.70	0-35	1277.9	85.75
35-40	62.4	4.18	0-40	1340.3	89.93
40-45	39.3	2.63	0-45	1379.5	92.56
45-50	27.1	1.82	0-50	1406.6	94.38
50-55	20.8	1.40	0-55	1427.4	95.78
55-60	17.0	1.14	0-60	1444.5	96.92
60-65	13.9	0.93	0-65	1458.3	97.85
65-70	11.0	0.74	0-70	1469.4	98.59
70-75	8.2	0.55	0-75	1477.6	99.14
75-80	5.4	0.37	0-80	1483.0	99.51
80-85	3.0	0.20	0-85	1486.0	99.71
85-90	1.1	0.07	0-90	1487.1	99.78
90-95	0.1	0.01	0-95	1487.2	99.79
95-100	0.0	0.00	0-100	1487.2	99.79
100-105	0.0	0.00	0-105	1487.2	99.79
105-110	0.0	0.00	0-110	1487.2	99.79
110-115	0.0	0.00	0-115	1487.3	99.79
115-120	0.0	0.00	0-120	1487.3	99.79
120-125	0.0	0.01	0-125	1487.3	99.80
125-130	0.1	0.00	0-130	1487.4	99.80
130-135	0.1	0.01	0-135	1487.5	99.81
135-140	0.2	0.01	0-140	1487.7	99.82
140-145	0.3	0.02	0-145	1488.0	99.84
145-150	0.4	0.03	0-150	1488.4	99.87
150-155	0.5	0.03	0-155	1488.9	99.90
155-160	0.5	0.04	0-160	1489.4	99.94
160-165	0.4	0.02	0-165	1489.8	99.96
165-170	0.3	0.02	0-170	1490.1	99.98
170-175	0.2	0.02	0-175	1490.3	100.00
175-180	0.1	0.00	0-180	1490.4	100.00

[Additional Test]

Test Item	Test Voltage (V)	Frequency (Hz)	Test Result
Total Harmonic Distortion:	120.0	60	15.86%

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 includes some test methods are not in NVLAP accreditation scope marked *.
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.
5. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor $K=2$ with the 95% confidence interval.
6. This report cannot be reproduced except in full, without prior written approval of the Company.
7. 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.

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