

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:
15.5PAR38/940FL40/277V/SL+SL25D

Report Type:	Electrical and Photometric tests including: Luminous Flux, Chromaticity, Luminous Intensity Distribution, THD
Reviewed By:	Hill Liu Hill Liu
Report Number:	KS2230727-43692E-EE-1
Test Date:	2023-08-05 to 2023-08-08
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 date, and used for testing. One was tested in integrating sphere and the other was tested in goniophotometer

Model Tested: 15.5PAR38/940FL40/277V/SL+SL25D
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 120-277V 60Hz
Rated Power: 15.5 W
Nominal CCT: 4000K
Nominal Lumen Output: 1420 lm

Family Declaration

The Model	Multiple Models	Differences Items	Details
15.5PAR38/940FL40/277V/SL+SL25D	15.5PAR38/940NF25/277V/SL	Model Number	15.5PAR38/940FL40/277V/SL+SL25D & 15.5PAR38/940NF25/277V/SL are the same product except for the model number.

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

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
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
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**

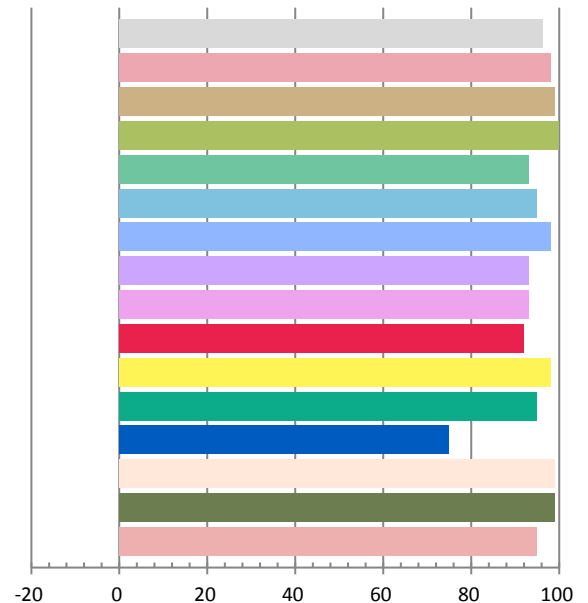
Photometric and Electrical Measurement Result

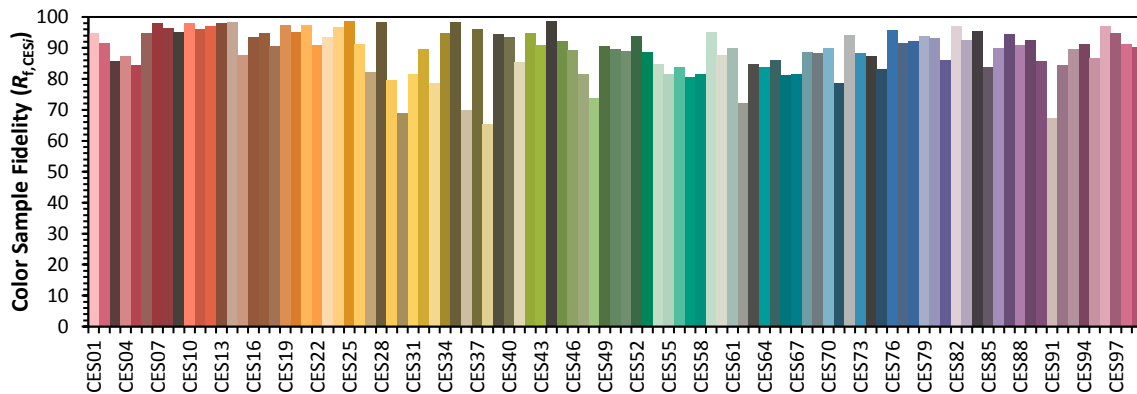
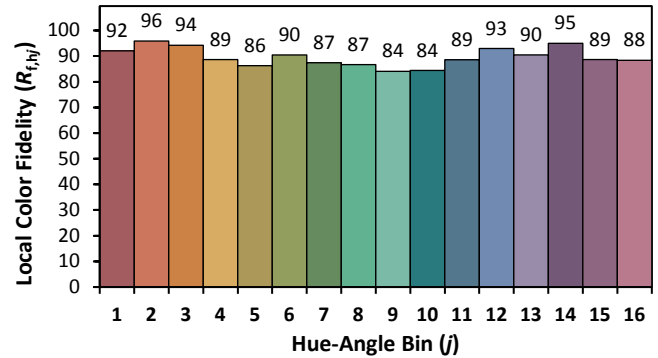
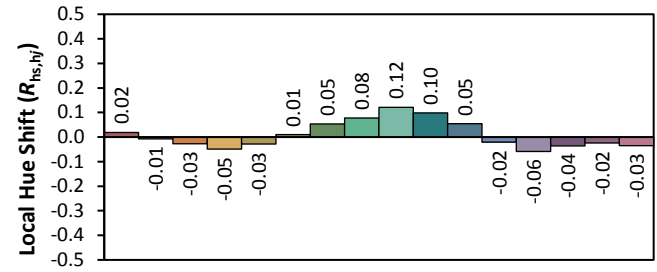
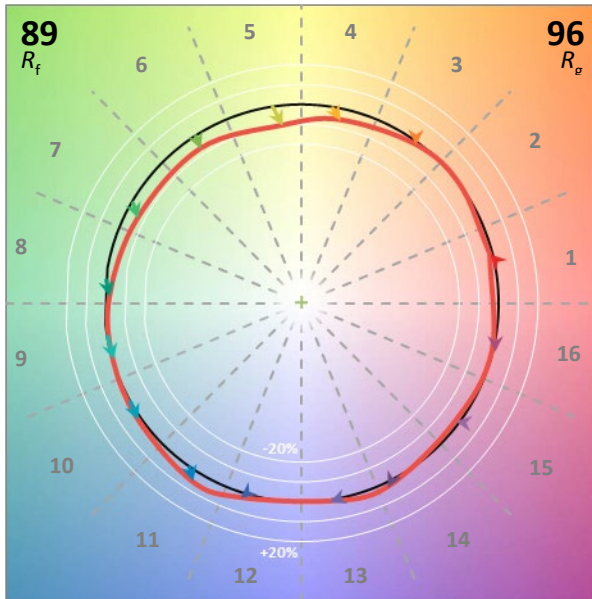
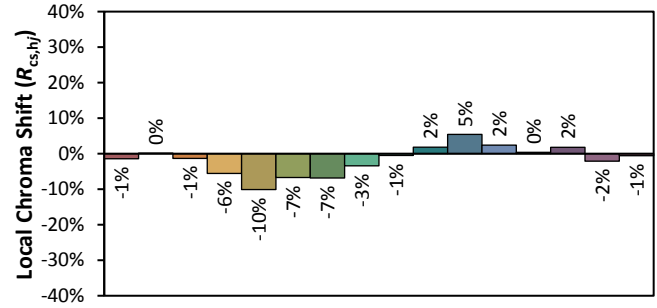
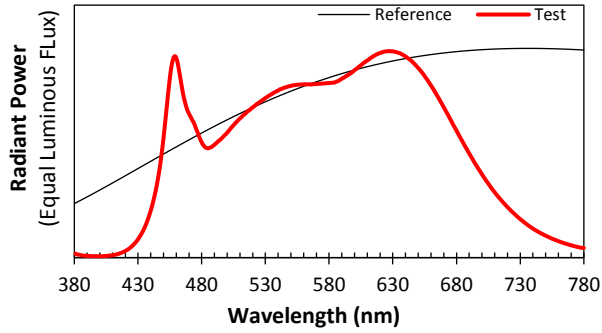
Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.0	60	0.1284	15.3	0.9931	1523.6	99.58

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
5.4966	3936	0.00279	0.3854	0.3859	0.2247	0.5063

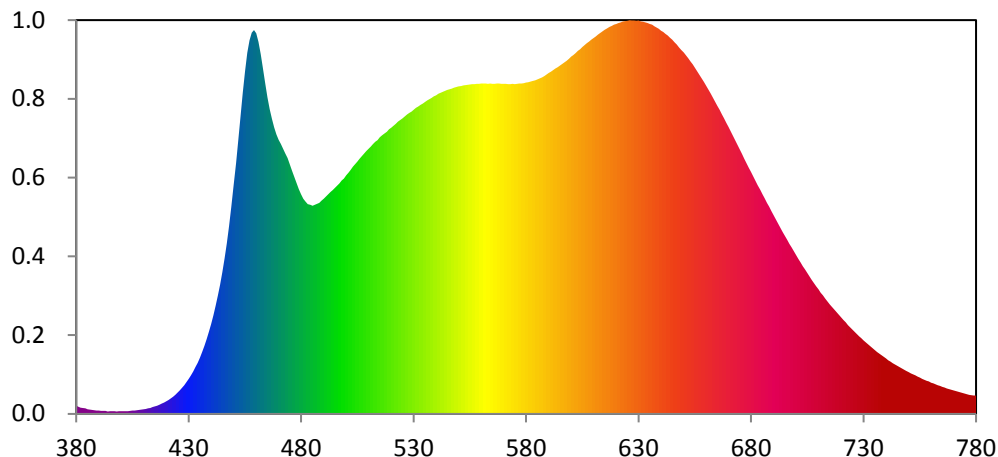
Color Rendering Index

Ra			
96.2			
R1	R2	R3	R4
98	99	100	93
R5	R6	R7	R8
95	98	93	93
R9	R10	R11	R12
92	98	95	75
R13	R14	R15	
99	99	95	





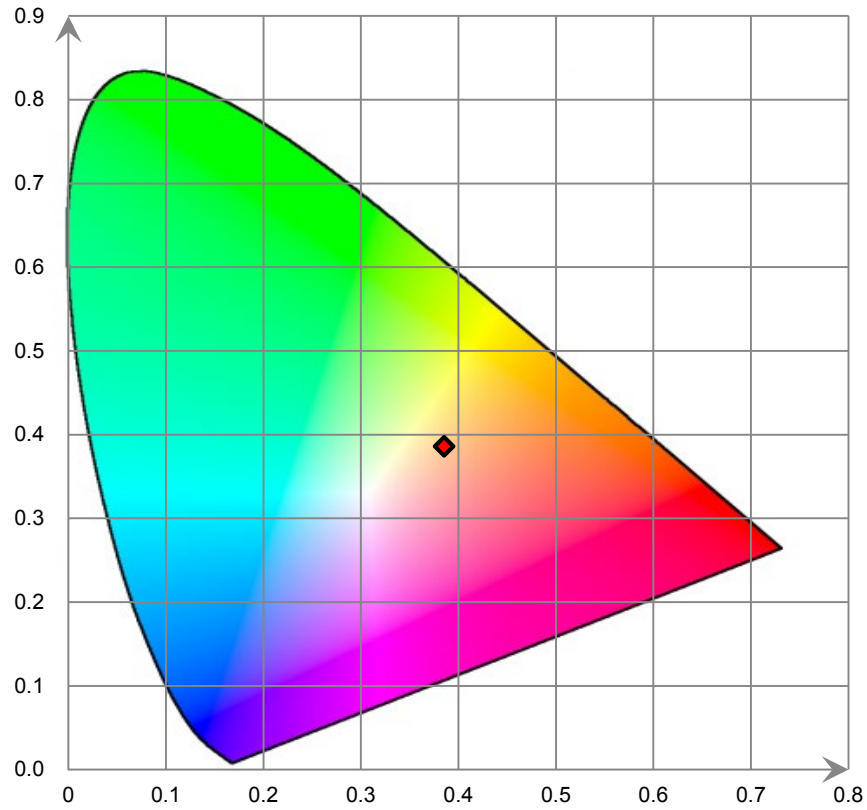
Relative Spectral Power Distribution



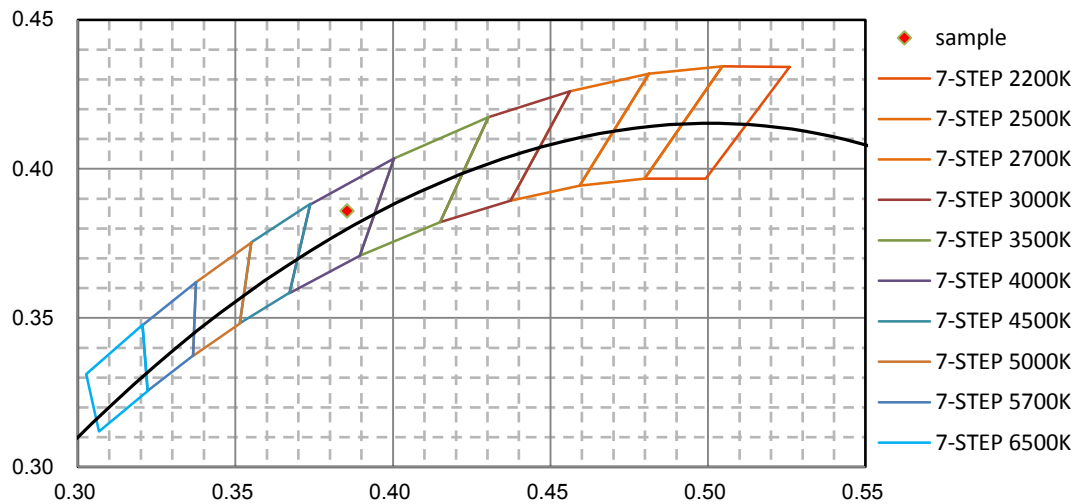
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	5.271E-01	421	9.108E-01	462	2.334E+01	503	1.603E+01	544	2.097E+01
381	4.737E-01	422	1.004E+00	463	2.241E+01	504	1.621E+01	545	2.102E+01
382	4.030E-01	423	1.117E+00	464	2.147E+01	505	1.638E+01	546	2.107E+01
383	3.784E-01	424	1.238E+00	465	2.055E+01	506	1.657E+01	547	2.112E+01
384	3.590E-01	425	1.378E+00	466	1.978E+01	507	1.673E+01	548	2.117E+01
385	3.126E-01	426	1.526E+00	467	1.915E+01	508	1.689E+01	549	2.121E+01
386	2.716E-01	427	1.688E+00	468	1.859E+01	509	1.706E+01	550	2.124E+01
387	2.527E-01	428	1.868E+00	469	1.815E+01	510	1.721E+01	551	2.128E+01
388	2.338E-01	429	2.058E+00	470	1.779E+01	511	1.734E+01	552	2.132E+01
389	2.093E-01	430	2.270E+00	471	1.751E+01	512	1.752E+01	553	2.134E+01
390	2.144E-01	431	2.507E+00	472	1.719E+01	513	1.766E+01	554	2.135E+01
391	2.004E-01	432	2.760E+00	473	1.689E+01	514	1.777E+01	555	2.139E+01
392	1.961E-01	433	3.033E+00	474	1.661E+01	515	1.794E+01	556	2.139E+01
393	1.900E-01	434	3.321E+00	475	1.618E+01	516	1.808E+01	557	2.140E+01
394	1.663E-01	435	3.650E+00	476	1.578E+01	517	1.820E+01	558	2.142E+01
395	1.720E-01	436	4.018E+00	477	1.539E+01	518	1.831E+01	559	2.142E+01
396	1.747E-01	437	4.413E+00	478	1.497E+01	519	1.847E+01	560	2.143E+01
397	1.757E-01	438	4.847E+00	479	1.459E+01	520	1.858E+01	561	2.145E+01
398	1.665E-01	439	5.319E+00	480	1.426E+01	521	1.870E+01	562	2.144E+01
399	1.689E-01	440	5.830E+00	481	1.397E+01	522	1.882E+01	563	2.142E+01
400	1.704E-01	441	6.377E+00	482	1.378E+01	523	1.897E+01	564	2.144E+01
401	1.774E-01	442	7.002E+00	483	1.361E+01	524	1.907E+01	565	2.143E+01
402	1.781E-01	443	7.663E+00	484	1.356E+01	525	1.917E+01	566	2.141E+01
403	1.866E-01	444	8.376E+00	485	1.352E+01	526	1.930E+01	567	2.144E+01
404	1.972E-01	445	9.186E+00	486	1.357E+01	527	1.941E+01	568	2.145E+01
405	2.086E-01	446	1.009E+01	487	1.364E+01	528	1.952E+01	569	2.142E+01
406	2.199E-01	447	1.105E+01	488	1.370E+01	529	1.962E+01	570	2.142E+01
407	2.388E-01	448	1.219E+01	489	1.385E+01	530	1.975E+01	571	2.141E+01
408	2.591E-01	449	1.343E+01	490	1.396E+01	531	1.985E+01	572	2.140E+01
409	2.770E-01	450	1.478E+01	491	1.411E+01	532	1.994E+01	573	2.140E+01
410	3.009E-01	451	1.626E+01	492	1.424E+01	533	2.006E+01	574	2.141E+01
411	3.248E-01	452	1.777E+01	493	1.440E+01	534	2.013E+01	575	2.140E+01
412	3.574E-01	453	1.933E+01	494	1.452E+01	535	2.024E+01	576	2.143E+01
413	3.935E-01	454	2.085E+01	495	1.466E+01	536	2.034E+01	577	2.144E+01
414	4.360E-01	455	2.222E+01	496	1.481E+01	537	2.042E+01	578	2.143E+01
415	4.818E-01	456	2.343E+01	497	1.497E+01	538	2.050E+01	579	2.147E+01
416	5.401E-01	457	2.424E+01	498	1.514E+01	539	2.060E+01	580	2.150E+01
417	5.980E-01	458	2.475E+01	499	1.527E+01	540	2.066E+01	581	2.152E+01
418	6.680E-01	459	2.492E+01	500	1.547E+01	541	2.079E+01	582	2.157E+01
419	7.404E-01	460	2.469E+01	501	1.564E+01	542	2.083E+01	583	2.162E+01
420	8.185E-01	461	2.414E+01	502	1.584E+01	543	2.090E+01	584	2.165E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	2.172E+01	626	2.555E+01	667	1.945E+01	708	8.481E+00	749	2.789E+00
586	2.177E+01	627	2.553E+01	668	1.917E+01	709	8.275E+00	750	2.713E+00
587	2.184E+01	628	2.554E+01	669	1.889E+01	710	8.079E+00	751	2.637E+00
588	2.193E+01	629	2.552E+01	670	1.861E+01	711	7.869E+00	752	2.565E+00
589	2.202E+01	630	2.552E+01	671	1.832E+01	712	7.686E+00	753	2.493E+00
590	2.213E+01	631	2.547E+01	672	1.803E+01	713	7.493E+00	754	2.417E+00
591	2.221E+01	632	2.545E+01	673	1.775E+01	714	7.305E+00	755	2.350E+00
592	2.231E+01	633	2.540E+01	674	1.746E+01	715	7.120E+00	756	2.283E+00
593	2.242E+01	634	2.536E+01	675	1.716E+01	716	6.945E+00	757	2.220E+00
594	2.250E+01	635	2.529E+01	676	1.687E+01	717	6.765E+00	758	2.159E+00
595	2.261E+01	636	2.527E+01	677	1.656E+01	718	6.597E+00	759	2.097E+00
596	2.271E+01	637	2.515E+01	678	1.627E+01	719	6.420E+00	760	2.031E+00
597	2.281E+01	638	2.508E+01	679	1.599E+01	720	6.257E+00	761	1.977E+00
598	2.292E+01	639	2.498E+01	680	1.571E+01	721	6.092E+00	762	1.922E+00
599	2.304E+01	640	2.487E+01	681	1.542E+01	722	5.941E+00	763	1.866E+00
600	2.319E+01	641	2.477E+01	682	1.512E+01	723	5.774E+00	764	1.812E+00
601	2.330E+01	642	2.465E+01	683	1.484E+01	724	5.625E+00	765	1.759E+00
602	2.341E+01	643	2.455E+01	684	1.455E+01	725	5.480E+00	766	1.711E+00
603	2.356E+01	644	2.441E+01	685	1.427E+01	726	5.333E+00	767	1.662E+00
604	2.367E+01	645	2.428E+01	686	1.398E+01	727	5.185E+00	768	1.614E+00
605	2.380E+01	646	2.412E+01	687	1.369E+01	728	5.040E+00	769	1.567E+00
606	2.392E+01	647	2.396E+01	688	1.344E+01	729	4.903E+00	770	1.522E+00
607	2.406E+01	648	2.380E+01	689	1.315E+01	730	4.764E+00	771	1.480E+00
608	2.417E+01	649	2.362E+01	690	1.288E+01	731	4.643E+00	772	1.437E+00
609	2.428E+01	650	2.345E+01	691	1.261E+01	732	4.512E+00	773	1.395E+00
610	2.439E+01	651	2.327E+01	692	1.234E+01	733	4.388E+00	774	1.360E+00
611	2.449E+01	652	2.308E+01	693	1.208E+01	734	4.263E+00	775	1.321E+00
612	2.462E+01	653	2.288E+01	694	1.180E+01	735	4.144E+00	776	1.283E+00
613	2.473E+01	654	2.268E+01	695	1.156E+01	736	4.026E+00	777	1.245E+00
614	2.483E+01	655	2.245E+01	696	1.130E+01	737	3.909E+00	778	1.211E+00
615	2.493E+01	656	2.223E+01	697	1.104E+01	738	3.805E+00	779	1.202E+00
616	2.501E+01	657	2.201E+01	698	1.080E+01	739	3.698E+00	780	1.204E+00
617	2.512E+01	658	2.177E+01	699	1.055E+01	740	3.594E+00		
618	2.517E+01	659	2.154E+01	700	1.030E+01	741	3.489E+00		
619	2.526E+01	660	2.130E+01	701	1.006E+01	742	3.398E+00		
620	2.530E+01	661	2.104E+01	702	9.830E+00	743	3.301E+00		
621	2.537E+01	662	2.080E+01	703	9.591E+00	744	3.205E+00		
622	2.541E+01	663	2.052E+01	704	9.372E+00	745	3.122E+00		
623	2.547E+01	664	2.026E+01	705	9.152E+00	746	3.037E+00		
624	2.549E+01	665	1.999E+01	706	8.929E+00	747	2.952E+00		
625	2.551E+01	666	1.973E+01	707	8.698E+00	748	2.869E+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**

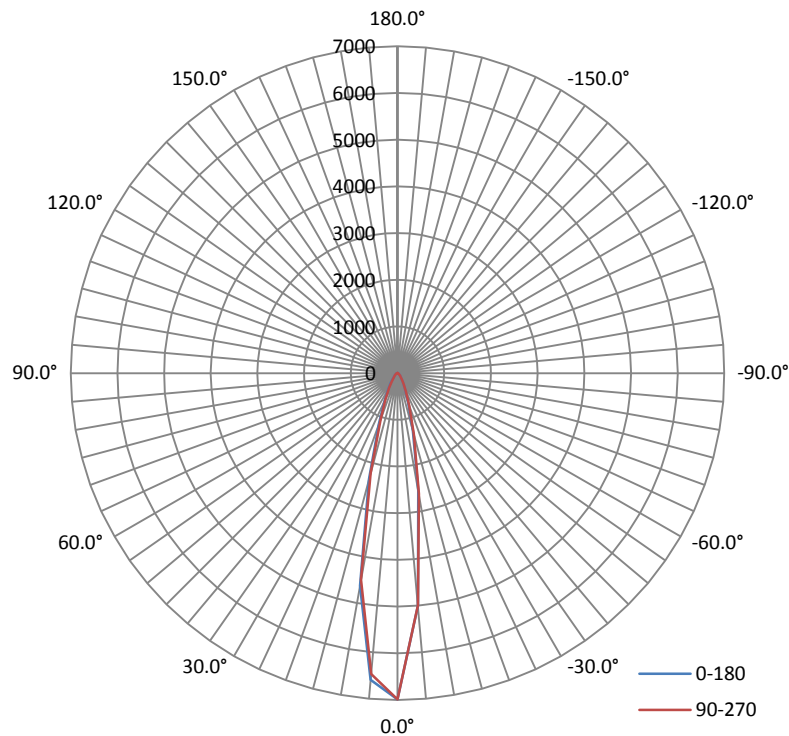
Electrical Measurement

Input Voltage (V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.09	60	0.1282	15.290	0.9931

Photometric Measurement

Luminous Flux (lm)	Efficacy (lm/W)	I _{max} (cd)	S/MH (C0/180)	S/MH (C90/270)
1522.61	99.58	7258.0	0.27	0.27

Luminous Intensity Distribution



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle (50% I _{max}):	19.9	20.1	19.8	19.6	19.9
Field Angle (10% I _{max}):	43.6	43.9	43.6	43.1	43.6

Luminous Intensity (cd) Distribution Data

C y	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0.0°	6990	6990	6990	6990	6990	6990	6990	6990
5.0°	6595	6699	7029	6806	6472	6112	5759	5478
10.0°	4621	4803	5379	5038	4492	3889	3382	3009
15.0°	2353	2454	2858	2589	2222	1872	1602	1441
20.0°	1156	1195	1352	1231	1070	911	801	735
25.0°	649	664	735	681	603	521	456	429
30.0°	400	405	445	413	358	306	274	254
35.0°	250	257	280	256	222	192	171	162
40.0°	166	168	179	162	144	130	119	115
45.0°	108	113	120	109	98	90	84	79
50.0°	72	74	81	75	70	64	61	57
55.0°	51	52	56	53	50	47	44	41
60.0°	39	39	42	39	38	35	34	32
65.0°	29	30	32	30	28	27	25	24
70.0°	22	22	24	23	22	20	19	18
75.0°	16	16	18	17	16	14	13	12
80.0°	10	10	11	11	10	9	8	7
85.0°	5	5	6	6	5	4	3	3
90.0°	1	1	2	2	1	1	1	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	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	3	3	3	3	3
155.0°	4	4	4	4	4	4	4	4
160.0°	5	5	5	5	5	5	5	5
165.0°	5	5	5	5	5	5	4	4
170.0°	4	4	4	4	4	4	4	4
175.0°	3	3	3	3	3	3	3	3
180.0°	2	2	2	2	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°	6990	6990	6990	6990	6990	6990	6990	6990
5.0°	5000	4923	4590	4742	4989	5347	5715	6066
10.0°	2554	2481	2256	2394	2630	2976	3407	3856
15.0°	1268	1237	1137	1225	1347	1508	1674	1896
20.0°	663	661	635	663	717	789	877	980
25.0°	392	397	387	399	425	462	512	560
30.0°	239	246	243	252	264	286	312	344
35.0°	160	162	160	160	169	184	200	215
40.0°	105	106	103	105	110	120	133	146
45.0°	72	72	71	72	75	82	87	93
50.0°	53	52	51	52	54	57	62	65
55.0°	39	39	38	39	40	42	44	47
60.0°	30	30	29	30	31	32	34	36
65.0°	23	22	22	22	23	25	26	27
70.0°	17	16	16	16	17	18	19	21
75.0°	11	11	10	11	11	12	13	14
80.0°	6	6	5	6	6	7	8	9
85.0°	2	2	2	2	2	3	3	4
90.0°	0	0	0	0	0	0	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°	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°	1	1	2	1	1	1	1	1
180.0°	2	2	2	2	2	2	2	2

Zonal Lumen Density Measurement

Deg	Flux (lm)	%
0-5	151.2	9.93
5-10	327.7	21.52
10-15	301.9	19.83
15-20	208.9	13.73
20-25	142.6	9.36
25-30	102.4	6.73
30-35	74.0	4.86
35-40	54.2	3.56
40-45	40.2	2.64
45-50	30.2	1.98
50-55	23.1	1.52
55-60	18.1	1.19
60-65	14.6	0.96
65-70	11.4	0.75
70-75	8.6	0.57
75-80	5.7	0.37
80-85	3.0	0.20
85-90	1.1	0.07
90-95	0.1	0.01
95-100	0.0	0.00
100-105	0.0	0.00
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	0.01
130-135	0.1	0.00
135-140	0.2	0.01
140-145	0.3	0.02
145-150	0.5	0.04
150-155	0.6	0.03
155-160	0.6	0.04
160-165	0.5	0.03
165-170	0.3	0.03
170-175	0.2	0.01
175-180	0.1	0.00

Deg	Flux (lm)	%
0-5	151.2	9.93
0-10	478.9	31.45
0-15	780.8	51.28
0-20	989.8	65.01
0-25	1132.4	74.37
0-30	1234.8	81.10
0-35	1308.8	85.96
0-40	1363.0	89.52
0-45	1403.3	92.16
0-50	1433.5	94.14
0-55	1456.6	95.66
0-60	1474.7	96.85
0-65	1489.3	97.81
0-70	1500.7	98.56
0-75	1509.3	99.13
0-80	1515.0	99.50
0-85	1518.0	99.70
0-90	1519.1	99.77
0-95	1519.2	99.78
0-100	1519.2	99.78
0-105	1519.2	99.78
0-110	1519.2	99.78
0-115	1519.3	99.78
0-120	1519.3	99.78
0-125	1519.3	99.78
0-130	1519.4	99.79
0-135	1519.4	99.79
0-140	1519.6	99.80
0-145	1519.9	99.82
0-150	1520.4	99.86
0-155	1521.0	99.89
0-160	1521.6	99.93
0-165	1522.1	99.96
0-170	1522.4	99.99
0-175	1522.6	100.00
0-180	1522.6	100.00

[Additional Test]

Test Item	Test Voltage (V)	Frequency (Hz)	Test Result
Total Harmonic Distortion:	120.0	60	11.52%

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*****