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/930SP15/SL

Report Type:	Electrical and Photometric tests including: Luminous Flux, Chromaticity, Luminous Intensity Distribution, THD
Reviewed By:	Hill Liu
Report Number:	KS2230727-43672E-EE-1
Test Date:	2023-07-28 to 2023-08-12
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 1st Road, Tangxia Town, Dongguan, Guangdong, China.

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/930SP15/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:	120V 60Hz
Rated Power:	15.5W
Nominal CCT:	3000K
Nominal Lumen Output:	1370lm

Family Declaration

The Model	Multiple Models	Variations	Details
15.5PAR38DIM/930SP15/SL	15.5PAR38DIM/930FL40/B/SL+SL 15D 15.5PAR38DIM/930SP15/B/SL	Model Number & Finishing Color	15.5PAR38DIM/930FL40/B/SL+SL 15D & 15.5PAR38DIM/930SP15/B/SL are the same product except for the model number.
			The finishing color of model 15.5PAR38DIM/930SP15/SL is white; The finishing color of model 15.5PAR38DIM/930FL40/B/SL+SL 15D & 15.5PAR38DIM/930SP15/B/SL is black.

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
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°C±1°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=22K (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°C±1°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_f, 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

Model: 15.5PAR38DIM/930SP15/SL

[Integrating Sphere System]

The Stabilization time: **30 minutes**

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

Test orientation: **Base Up**

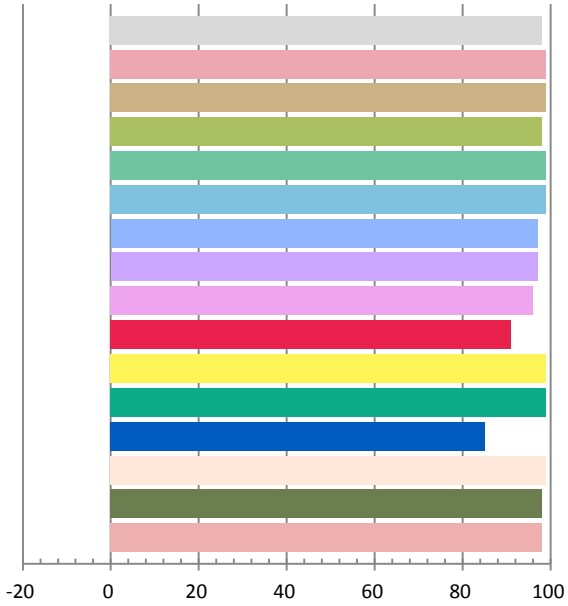
Photometric and Electrical Measurement Result

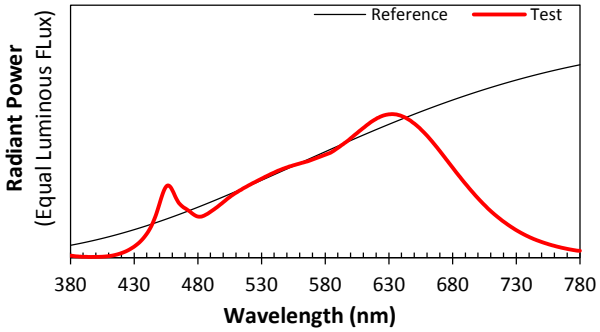
Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.0	60	0.1326	15.35	0.9649	1445.6	94.15

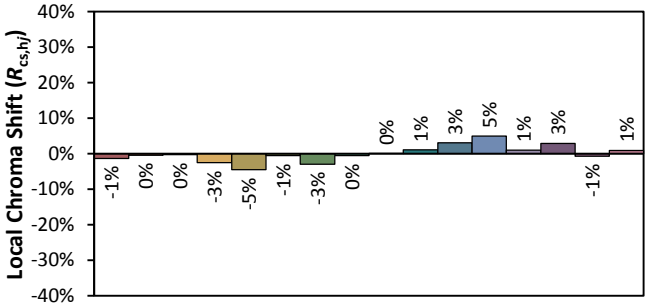
Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
5.4079	3060	-0.0008460	0.4315	0.4001	0.2488	0.5190

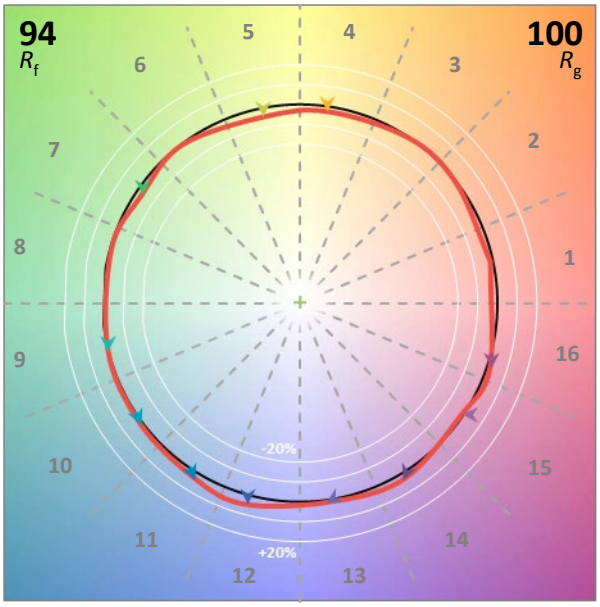
Color Rendering Index

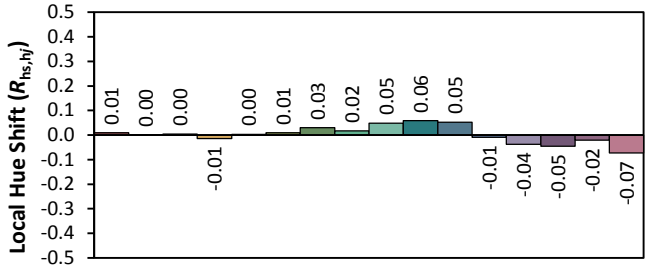
Ra			
98.0			
R1	R2	R3	R4
99	99	98	99
R5	R6	R7	R8
99	97	97	96
R9	R10	R11	R12
91	99	99	85
R13	R14	R15	
99	98	98	

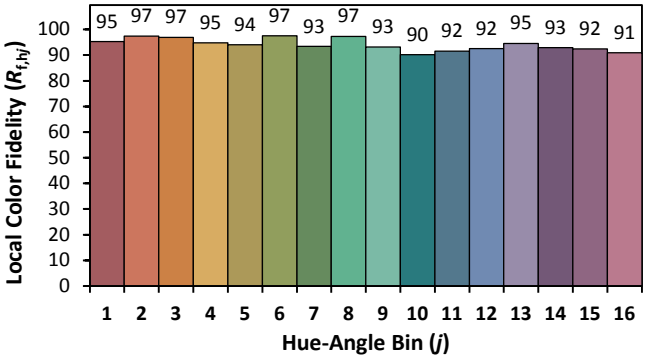


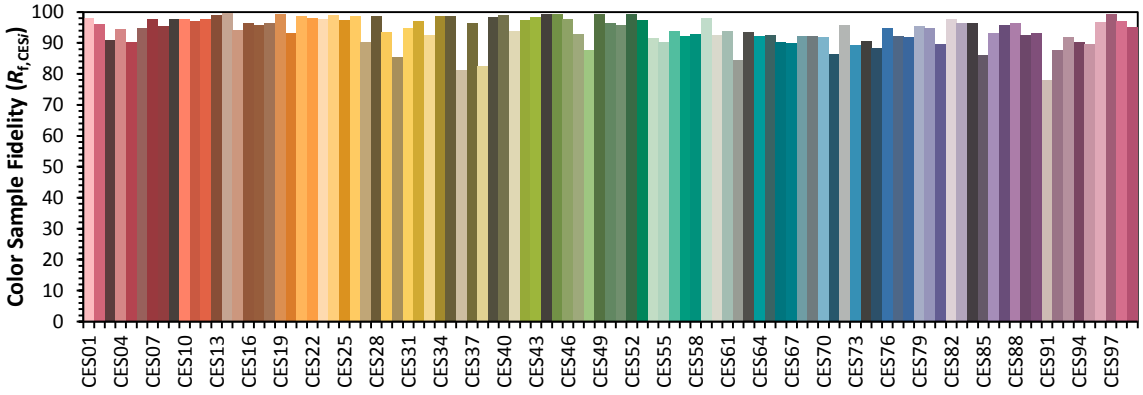

Reference
Test
Radiant Power
(Equal Luminous FLux)
380 430 480 530 580 630 680 730 780
Wavelength (nm)


Local Chroma Shift ($R_{cs,hj}$)
40% 30% 20% 10% 0% -10% -20% -30% -40%
-1% 0% 0% -3% -5% -1% -3% 0% 0% 1% 3% 5% 1% 3% -1% 1%

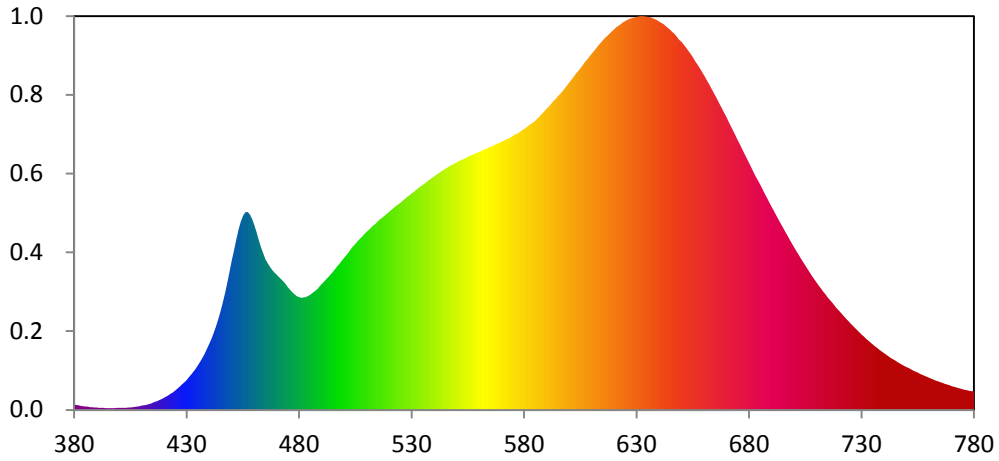

94
R_f
100
R_g
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
-20%
+20%


Local Hue Shift ($R_{hs,hj}$)
0.5 0.4 0.3 0.2 0.1 0.0 -0.1 -0.2 -0.3 -0.4 -0.5
0.01 0.00 0.00 -0.01 0.00 0.01 0.03 0.02 0.05 0.06 0.05 -0.01 -0.04 -0.05 -0.02 -0.07


Local Color Fidelity ($R_{f,hj}$)
100 90 80 70 60 50 40 30 20 10 0
95 97 97 95 94 97 93 97 93 90 92 92 95 93 92 91
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
Hue-Angle Bin (j)


Color Sample Fidelity ($R_{f,CESi}$)
100 90 80 70 60 50 40 30 20 10 0
CES01 CES04 CES07 CES10 CES13 CES16 CES19 CES22 CES25 CES28 CES31 CES34 CES37 CES40 CES43 CES46 CES49 CES52 CES55 CES58 CES61 CES64 CES67 CES70 CES73 CES76 CES79 CES82 CES85 CES88 CES91 CES94 CES97

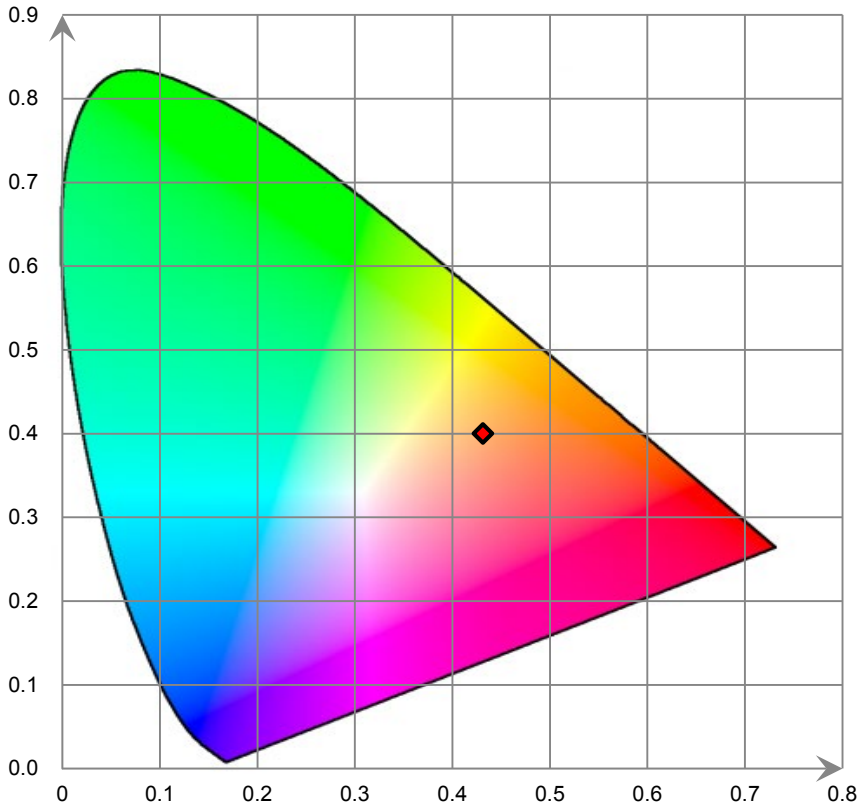
Relative Spectral Power Distribution



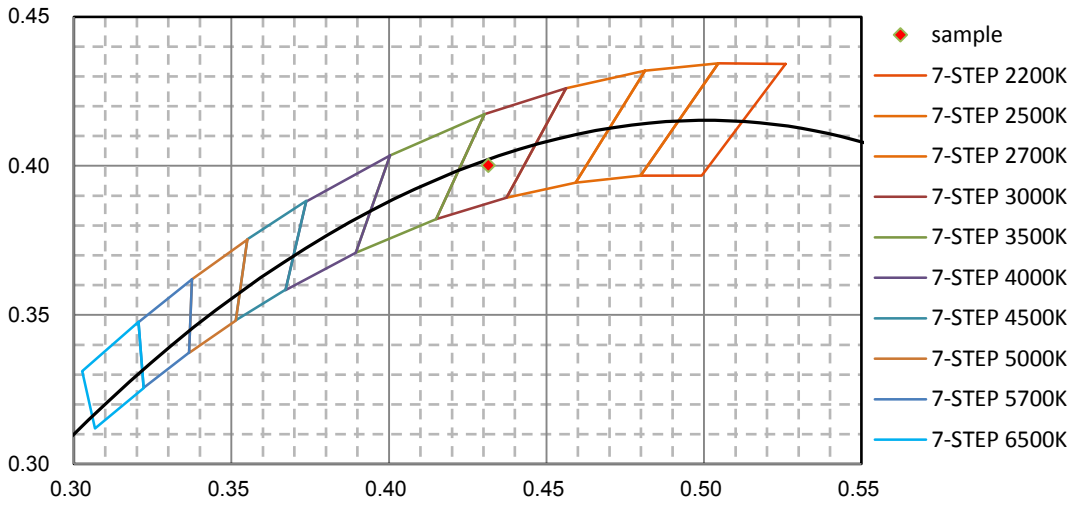
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	4.098E-01	421	1.034E+00	462	1.299E+01	503	1.228E+01	544	1.830E+01
381	3.866E-01	422	1.142E+00	463	1.243E+01	504	1.249E+01	545	1.841E+01
382	3.582E-01	423	1.247E+00	464	1.195E+01	505	1.267E+01	546	1.851E+01
383	3.145E-01	424	1.367E+00	465	1.150E+01	506	1.289E+01	547	1.863E+01
384	2.809E-01	425	1.500E+00	466	1.120E+01	507	1.307E+01	548	1.871E+01
385	2.567E-01	426	1.639E+00	467	1.093E+01	508	1.325E+01	549	1.882E+01
386	2.468E-01	427	1.793E+00	468	1.070E+01	509	1.343E+01	550	1.890E+01
387	2.097E-01	428	1.959E+00	469	1.049E+01	510	1.359E+01	551	1.900E+01
388	2.146E-01	429	2.124E+00	470	1.034E+01	511	1.374E+01	552	1.911E+01
389	1.732E-01	430	2.294E+00	471	1.017E+01	512	1.392E+01	553	1.916E+01
390	1.798E-01	431	2.497E+00	472	9.982E+00	513	1.409E+01	554	1.925E+01
391	1.689E-01	432	2.702E+00	473	9.801E+00	514	1.421E+01	555	1.934E+01
392	1.727E-01	433	2.920E+00	474	9.622E+00	515	1.440E+01	556	1.941E+01
393	1.649E-01	434	3.144E+00	475	9.376E+00	516	1.456E+01	557	1.949E+01
394	1.371E-01	435	3.407E+00	476	9.174E+00	517	1.470E+01	558	1.957E+01
395	1.416E-01	436	3.682E+00	477	8.988E+00	518	1.484E+01	559	1.964E+01
396	1.323E-01	437	3.978E+00	478	8.827E+00	519	1.499E+01	560	1.972E+01
397	1.419E-01	438	4.300E+00	479	8.692E+00	520	1.515E+01	561	1.980E+01
398	1.432E-01	439	4.648E+00	480	8.612E+00	521	1.528E+01	562	1.988E+01
399	1.502E-01	440	5.011E+00	481	8.573E+00	522	1.543E+01	563	1.994E+01
400	1.515E-01	441	5.406E+00	482	8.584E+00	523	1.558E+01	564	2.002E+01
401	1.577E-01	442	5.856E+00	483	8.606E+00	524	1.571E+01	565	2.010E+01
402	1.536E-01	443	6.333E+00	484	8.706E+00	525	1.583E+01	566	2.016E+01
403	1.671E-01	444	6.872E+00	485	8.804E+00	526	1.598E+01	567	2.025E+01
404	1.754E-01	445	7.475E+00	486	8.955E+00	527	1.612E+01	568	2.035E+01
405	1.847E-01	446	8.137E+00	487	9.091E+00	528	1.626E+01	569	2.041E+01
406	2.059E-01	447	8.825E+00	488	9.238E+00	529	1.639E+01	570	2.049E+01
407	2.233E-01	448	9.617E+00	489	9.426E+00	530	1.653E+01	571	2.057E+01
408	2.519E-01	449	1.046E+01	490	9.606E+00	531	1.666E+01	572	2.064E+01
409	2.778E-01	450	1.132E+01	491	9.794E+00	532	1.680E+01	573	2.073E+01
410	3.173E-01	451	1.220E+01	492	9.976E+00	533	1.695E+01	574	2.082E+01
411	3.430E-01	452	1.302E+01	493	1.016E+01	534	1.706E+01	575	2.092E+01
412	3.811E-01	453	1.377E+01	494	1.036E+01	535	1.720E+01	576	2.103E+01
413	4.298E-01	454	1.438E+01	495	1.055E+01	536	1.732E+01	577	2.111E+01
414	4.868E-01	455	1.482E+01	496	1.076E+01	537	1.747E+01	578	2.121E+01
415	5.450E-01	456	1.508E+01	497	1.098E+01	538	1.759E+01	579	2.134E+01
416	6.144E-01	457	1.511E+01	498	1.119E+01	539	1.771E+01	580	2.145E+01
417	6.811E-01	458	1.494E+01	499	1.139E+01	540	1.782E+01	581	2.158E+01
418	7.642E-01	459	1.462E+01	500	1.162E+01	541	1.796E+01	582	2.171E+01
419	8.461E-01	460	1.413E+01	501	1.183E+01	542	1.808E+01	583	2.184E+01
420	9.416E-01	461	1.360E+01	502	1.205E+01	543	1.821E+01	584	2.196E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	2.212E+01	626	2.980E+01	667	2.334E+01	708	1.023E+01	749	3.368E+00
586	2.227E+01	627	2.987E+01	668	2.302E+01	709	9.989E+00	750	3.271E+00
587	2.244E+01	628	2.994E+01	669	2.267E+01	710	9.745E+00	751	3.179E+00
588	2.263E+01	629	2.998E+01	670	2.234E+01	711	9.502E+00	752	3.091E+00
589	2.282E+01	630	3.003E+01	671	2.199E+01	712	9.275E+00	753	3.003E+00
590	2.300E+01	631	3.004E+01	672	2.165E+01	713	9.039E+00	754	2.925E+00
591	2.318E+01	632	3.007E+01	673	2.130E+01	714	8.825E+00	755	2.835E+00
592	2.338E+01	633	3.007E+01	674	2.096E+01	715	8.601E+00	756	2.750E+00
593	2.359E+01	634	3.005E+01	675	2.060E+01	716	8.389E+00	757	2.677E+00
594	2.375E+01	635	3.002E+01	676	2.027E+01	717	8.180E+00	758	2.594E+00
595	2.397E+01	636	3.000E+01	677	1.991E+01	718	7.964E+00	759	2.528E+00
596	2.414E+01	637	2.992E+01	678	1.957E+01	719	7.748E+00	760	2.459E+00
597	2.434E+01	638	2.985E+01	679	1.922E+01	720	7.558E+00	761	2.380E+00
598	2.454E+01	639	2.978E+01	680	1.888E+01	721	7.367E+00	762	2.311E+00
599	2.476E+01	640	2.967E+01	681	1.853E+01	722	7.181E+00	763	2.245E+00
600	2.500E+01	641	2.956E+01	682	1.818E+01	723	6.979E+00	764	2.185E+00
601	2.521E+01	642	2.945E+01	683	1.783E+01	724	6.797E+00	765	2.114E+00
602	2.544E+01	643	2.933E+01	684	1.750E+01	725	6.616E+00	766	2.054E+00
603	2.567E+01	644	2.917E+01	685	1.716E+01	726	6.436E+00	767	1.997E+00
604	2.588E+01	645	2.902E+01	686	1.684E+01	727	6.269E+00	768	1.941E+00
605	2.609E+01	646	2.886E+01	687	1.649E+01	728	6.093E+00	769	1.885E+00
606	2.632E+01	647	2.870E+01	688	1.616E+01	729	5.919E+00	770	1.828E+00
607	2.655E+01	648	2.848E+01	689	1.583E+01	730	5.756E+00	771	1.775E+00
608	2.675E+01	649	2.827E+01	690	1.551E+01	731	5.601E+00	772	1.724E+00
609	2.697E+01	650	2.809E+01	691	1.520E+01	732	5.449E+00	773	1.677E+00
610	2.718E+01	651	2.787E+01	692	1.488E+01	733	5.298E+00	774	1.628E+00
611	2.738E+01	652	2.765E+01	693	1.455E+01	734	5.147E+00	775	1.580E+00
612	2.761E+01	653	2.741E+01	694	1.424E+01	735	5.008E+00	776	1.539E+00
613	2.782E+01	654	2.719E+01	695	1.393E+01	736	4.864E+00	777	1.490E+00
614	2.801E+01	655	2.691E+01	696	1.363E+01	737	4.732E+00	778	1.453E+00
615	2.822E+01	656	2.664E+01	697	1.332E+01	738	4.594E+00	779	1.437E+00
616	2.842E+01	657	2.638E+01	698	1.301E+01	739	4.472E+00	780	1.440E+00
617	2.859E+01	658	2.611E+01	699	1.272E+01	740	4.343E+00		
618	2.876E+01	659	2.583E+01	700	1.243E+01	741	4.214E+00		
619	2.892E+01	660	2.555E+01	701	1.214E+01	742	4.102E+00		
620	2.907E+01	661	2.525E+01	702	1.186E+01	743	3.983E+00		
621	2.925E+01	662	2.494E+01	703	1.158E+01	744	3.866E+00		
622	2.934E+01	663	2.463E+01	704	1.130E+01	745	3.769E+00		
623	2.950E+01	664	2.432E+01	705	1.104E+01	746	3.656E+00		
624	2.960E+01	665	2.399E+01	706	1.078E+01	747	3.563E+00		
625	2.971E+01	666	2.367E+01	707	1.050E+01	748	3.465E+00		

CIE 1931 x y Chromaticity Diagram



7-Step Chromaticity Quadrangles



Model: 15.5PAR38DIM/930FL40/B/SL+SL15D

[Integrating Sphere System]

The Stabilization time: **30 minutes**

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

Test orientation: **Base up**

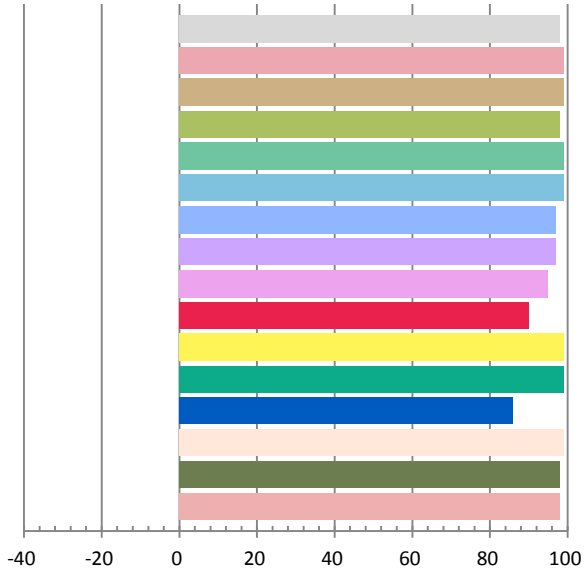
Photometric and Electrical Measurement Result

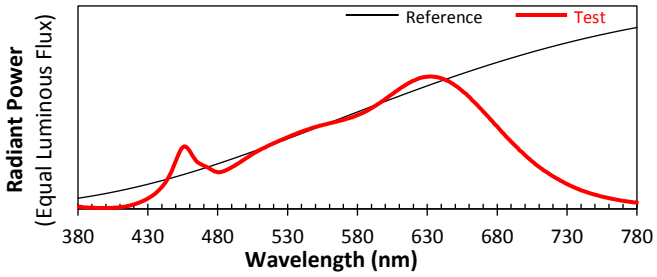
Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.0	60	0.1323	15.37	0.9678	1383.9	90.06

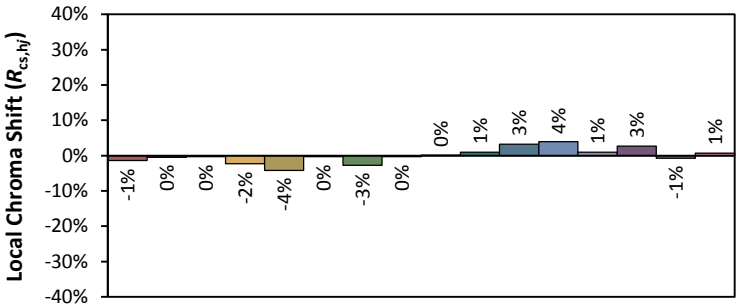
Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
5.171	3021	-0.000714	0.4345	0.4014	0.2501	0.5200

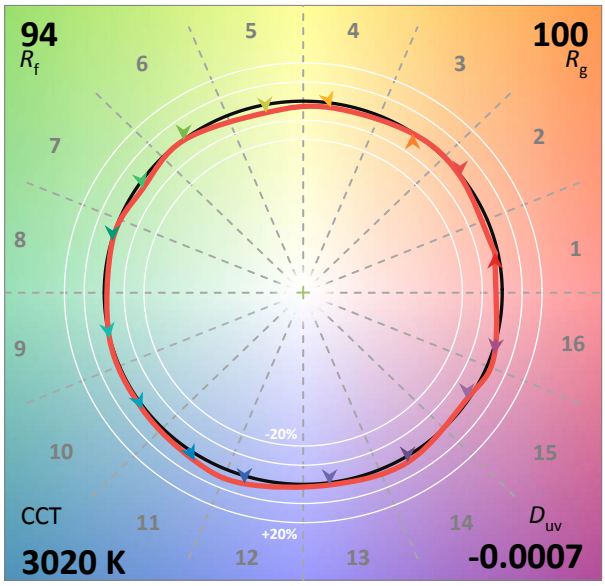
Color Rendering Index

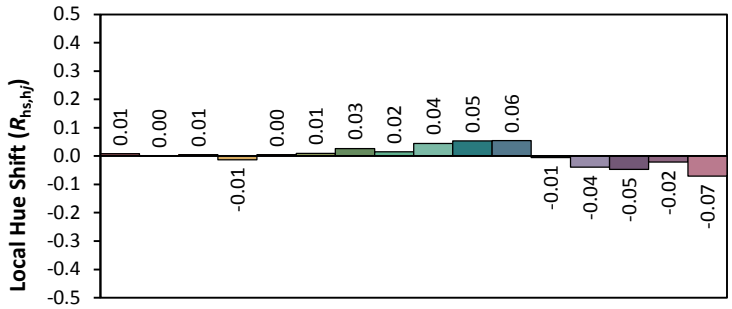
Ra			
98.1			
R1	R2	R3	R4
99	99	98	99
R5	R6	R7	R8
99	97	97	95
R9	R10	R11	R12
90	99	99	86
R13	R14	R15	
99	98	98	

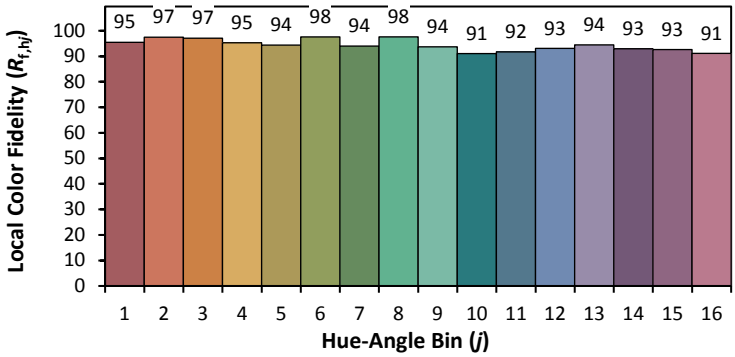


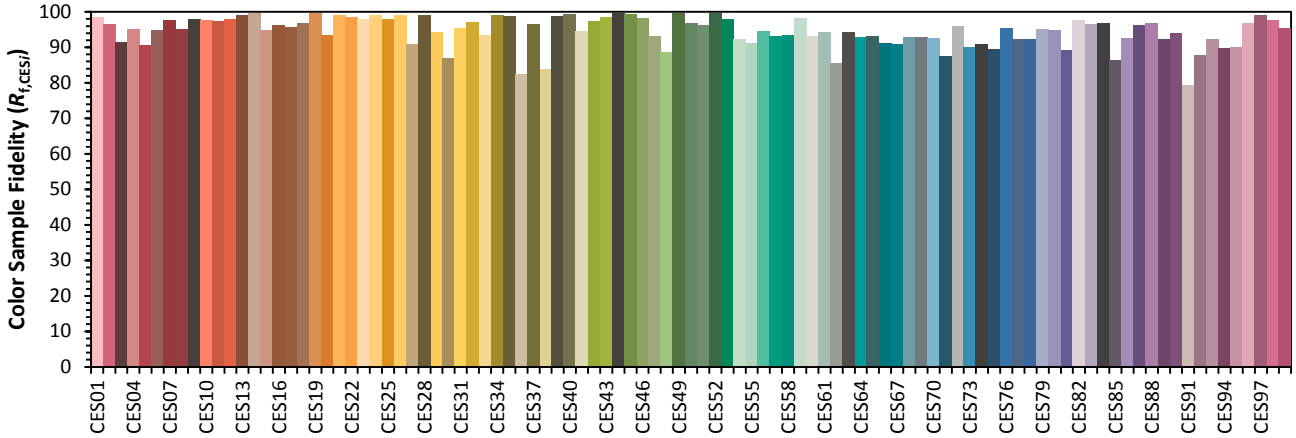

Reference
Test
Radiant Power
(Equal Luminous Flux)
380 430 480 530 580 630 680 730 780
Wavelength (nm)


Local Chroma Shift ($R_{cs,hj}$)
40% 30% 20% 10% 0% -10% -20% -30% -40%
-1% 0% 0% -2% -4% 0% -3% 0% 0% 1% 3% 4% 1% 3% -1% 1%

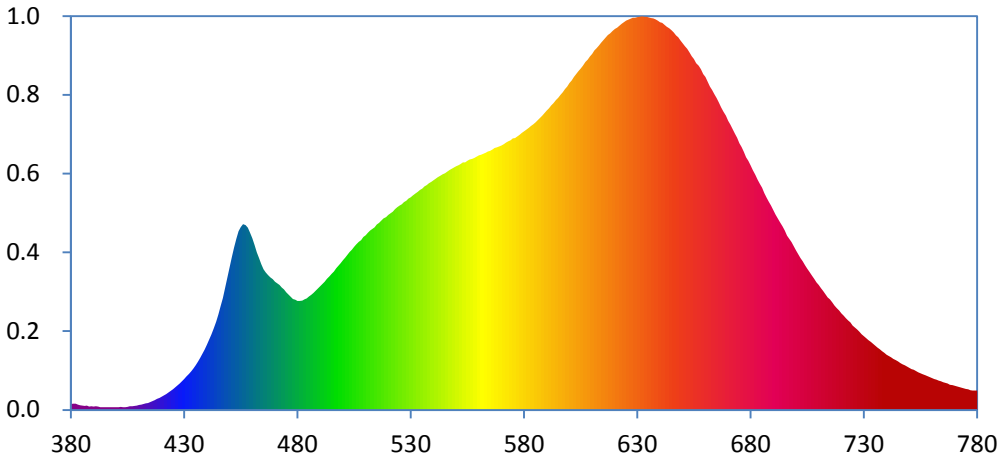

94
R_f
100
R_g
CCT
3020 K
D_{uv}
-0.0007
-20%
+20%
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16


Local Hue Shift ($R_{hs,hj}$)
0.5 0.4 0.3 0.2 0.1 0.0 -0.1 -0.2 -0.3 -0.4 -0.5
0.01 0.00 0.01 -0.01 0.00 0.01 0.03 0.02 0.04 0.05 0.06 -0.01 -0.04 -0.05 -0.02 -0.07


Local Color Fidelity ($R_{f,hj}$)
100 90 80 70 60 50 40 30 20 10 0
95 97 97 95 94 98 94 98 94 91 92 93 94 93 93 91
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
Hue-Angle Bin (j)


Color Sample Fidelity ($R_{f,CESi}$)
100 90 80 70 60 50 40 30 20 10 0
CES01 CES04 CES07 CES10 CES13 CES16 CES19 CES22 CES25 CES28 CES31 CES34 CES37 CES40 CES43 CES46 CES49 CES52 CES55 CES58 CES61 CES64 CES67 CES70 CES73 CES76 CES79 CES82 CES85 CES88 CES91 CES94 CES97

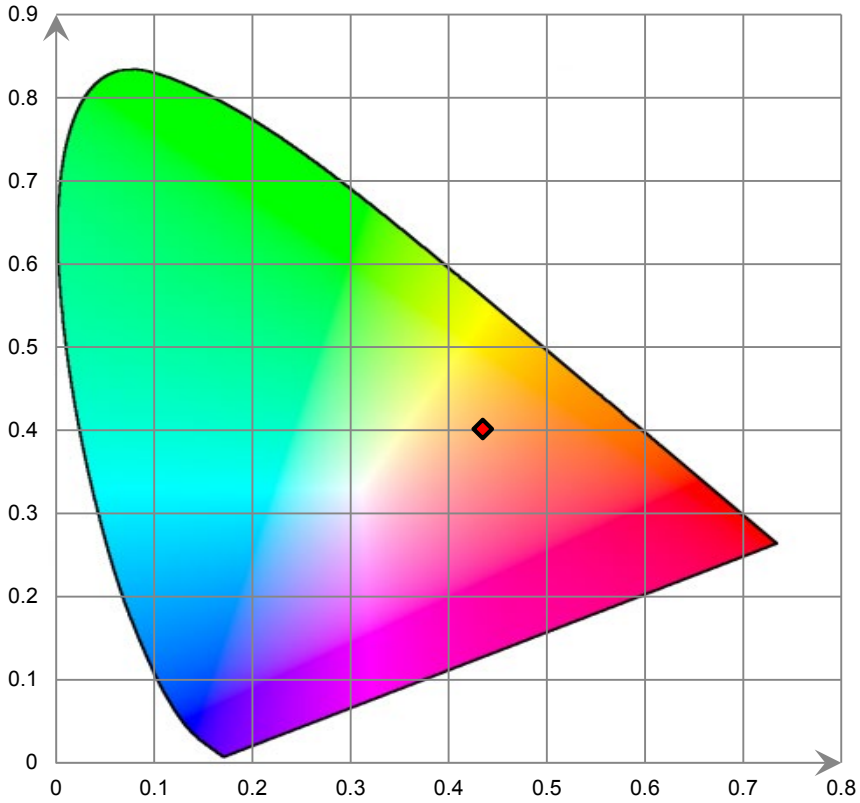
Relative Spectral Power Distribution



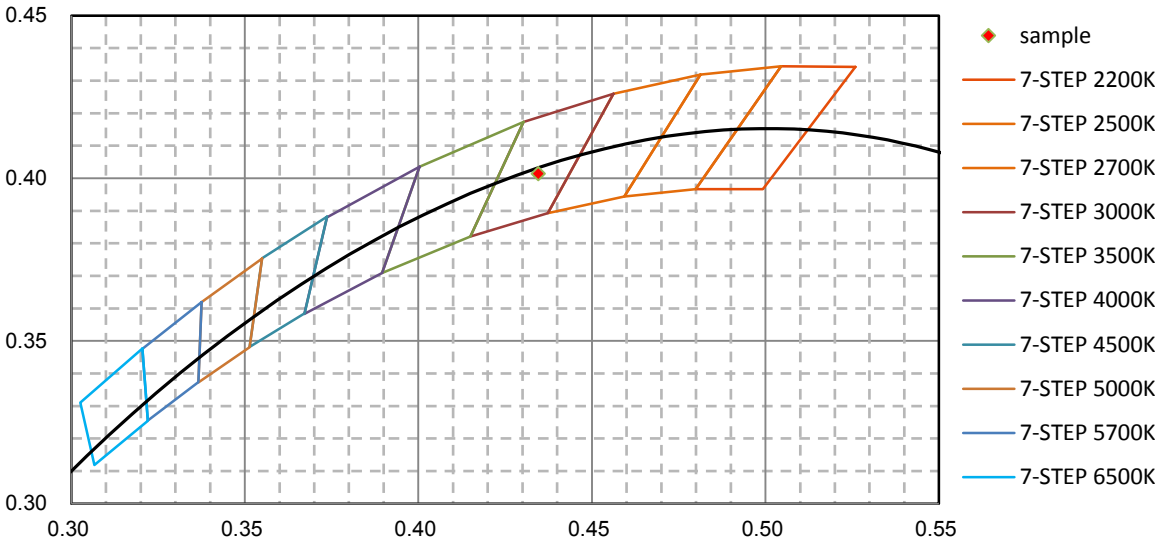
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	4.401E-01	421	1.080E+00	462	1.165E+01	503	1.167E+01	544	1.742E+01
381	4.638E-01	422	1.173E+00	463	1.122E+01	504	1.185E+01	545	1.748E+01
382	4.522E-01	423	1.300E+00	464	1.076E+01	505	1.205E+01	546	1.761E+01
383	3.998E-01	424	1.411E+00	465	1.040E+01	506	1.223E+01	547	1.773E+01
384	3.392E-01	425	1.521E+00	466	1.016E+01	507	1.243E+01	548	1.782E+01
385	3.138E-01	426	1.670E+00	467	9.969E+00	508	1.255E+01	549	1.791E+01
386	2.913E-01	427	1.809E+00	468	9.812E+00	509	1.278E+01	550	1.801E+01
387	3.162E-01	428	1.945E+00	469	9.651E+00	510	1.291E+01	551	1.808E+01
388	2.452E-01	429	2.119E+00	470	9.477E+00	511	1.310E+01	552	1.817E+01
389	2.776E-01	430	2.285E+00	471	9.360E+00	512	1.324E+01	553	1.829E+01
390	2.388E-01	431	2.478E+00	472	9.227E+00	513	1.338E+01	554	1.830E+01
391	2.714E-01	432	2.656E+00	473	9.055E+00	514	1.350E+01	555	1.841E+01
392	2.414E-01	433	2.858E+00	474	8.907E+00	515	1.370E+01	556	1.849E+01
393	1.917E-01	434	3.073E+00	475	8.689E+00	516	1.382E+01	557	1.855E+01
394	2.071E-01	435	3.301E+00	476	8.531E+00	517	1.399E+01	558	1.863E+01
395	2.046E-01	436	3.563E+00	477	8.364E+00	518	1.414E+01	559	1.872E+01
396	1.916E-01	437	3.852E+00	478	8.202E+00	519	1.425E+01	560	1.880E+01
397	1.927E-01	438	4.152E+00	479	8.159E+00	520	1.442E+01	561	1.887E+01
398	2.052E-01	439	4.466E+00	480	8.054E+00	521	1.454E+01	562	1.894E+01
399	1.977E-01	440	4.803E+00	481	8.054E+00	522	1.466E+01	563	1.900E+01
400	1.929E-01	441	5.187E+00	482	8.085E+00	523	1.484E+01	564	1.910E+01
401	1.935E-01	442	5.568E+00	483	8.166E+00	524	1.497E+01	565	1.915E+01
402	2.144E-01	443	6.004E+00	484	8.251E+00	525	1.510E+01	566	1.924E+01
403	2.060E-01	444	6.514E+00	485	8.373E+00	526	1.520E+01	567	1.935E+01
404	2.139E-01	445	7.062E+00	486	8.505E+00	527	1.535E+01	568	1.941E+01
405	2.361E-01	446	7.665E+00	487	8.647E+00	528	1.545E+01	569	1.947E+01
406	2.642E-01	447	8.256E+00	488	8.805E+00	529	1.563E+01	570	1.956E+01
407	2.762E-01	448	9.026E+00	489	8.975E+00	530	1.572E+01	571	1.964E+01
408	2.910E-01	449	9.784E+00	490	9.146E+00	531	1.587E+01	572	1.975E+01
409	3.221E-01	450	1.053E+01	491	9.314E+00	532	1.601E+01	573	1.985E+01
410	3.583E-01	451	1.128E+01	492	9.467E+00	533	1.612E+01	574	1.992E+01
411	3.998E-01	452	1.200E+01	493	9.683E+00	534	1.627E+01	575	2.005E+01
412	4.282E-01	453	1.265E+01	494	9.872E+00	535	1.636E+01	576	2.009E+01
413	4.823E-01	454	1.321E+01	495	1.005E+01	536	1.651E+01	577	2.022E+01
414	5.091E-01	455	1.351E+01	496	1.024E+01	537	1.662E+01	578	2.032E+01
415	5.855E-01	456	1.373E+01	497	1.045E+01	538	1.675E+01	579	2.048E+01
416	6.529E-01	457	1.365E+01	498	1.065E+01	539	1.685E+01	580	2.060E+01
417	7.207E-01	458	1.346E+01	499	1.085E+01	540	1.696E+01	581	2.071E+01
418	8.134E-01	459	1.309E+01	500	1.107E+01	541	1.709E+01	582	2.084E+01
419	8.870E-01	460	1.269E+01	501	1.125E+01	542	1.720E+01	583	2.098E+01
420	9.775E-01	461	1.218E+01	502	1.145E+01	543	1.730E+01	584	2.110E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	2.125E+01	626	2.884E+01	667	2.237E+01	708	9.680E+00	749	3.197E+00
586	2.140E+01	627	2.890E+01	668	2.206E+01	709	9.430E+00	750	3.114E+00
587	2.157E+01	628	2.897E+01	669	2.175E+01	710	9.224E+00	751	3.023E+00
588	2.175E+01	629	2.898E+01	670	2.137E+01	711	8.988E+00	752	2.969E+00
589	2.193E+01	630	2.902E+01	671	2.109E+01	712	8.790E+00	753	2.868E+00
590	2.211E+01	631	2.905E+01	672	2.074E+01	713	8.540E+00	754	2.777E+00
591	2.229E+01	632	2.909E+01	673	2.041E+01	714	8.319E+00	755	2.704E+00
592	2.250E+01	633	2.906E+01	674	2.011E+01	715	8.166E+00	756	2.630E+00
593	2.266E+01	634	2.905E+01	675	1.972E+01	716	7.947E+00	757	2.559E+00
594	2.290E+01	635	2.901E+01	676	1.942E+01	717	7.722E+00	758	2.491E+00
595	2.308E+01	636	2.897E+01	677	1.907E+01	718	7.531E+00	759	2.436E+00
596	2.328E+01	637	2.892E+01	678	1.867E+01	719	7.333E+00	760	2.361E+00
597	2.348E+01	638	2.886E+01	679	1.840E+01	720	7.141E+00	761	2.294E+00
598	2.371E+01	639	2.878E+01	680	1.809E+01	721	6.972E+00	762	2.232E+00
599	2.390E+01	640	2.866E+01	681	1.773E+01	722	6.776E+00	763	2.165E+00
600	2.415E+01	641	2.860E+01	682	1.738E+01	723	6.614E+00	764	2.115E+00
601	2.436E+01	642	2.846E+01	683	1.701E+01	724	6.458E+00	765	2.052E+00
602	2.460E+01	643	2.831E+01	684	1.671E+01	725	6.241E+00	766	1.991E+00
603	2.482E+01	644	2.819E+01	685	1.641E+01	726	6.095E+00	767	1.940E+00
604	2.504E+01	645	2.806E+01	686	1.601E+01	727	5.951E+00	768	1.863E+00
605	2.523E+01	646	2.790E+01	687	1.570E+01	728	5.775E+00	769	1.834E+00
606	2.544E+01	647	2.768E+01	688	1.538E+01	729	5.596E+00	770	1.776E+00
607	2.571E+01	648	2.753E+01	689	1.509E+01	730	5.449E+00	771	1.734E+00
608	2.589E+01	649	2.729E+01	690	1.476E+01	731	5.299E+00	772	1.681E+00
609	2.613E+01	650	2.709E+01	691	1.443E+01	732	5.144E+00	773	1.633E+00
610	2.632E+01	651	2.688E+01	692	1.415E+01	733	5.015E+00	774	1.600E+00
611	2.656E+01	652	2.668E+01	693	1.386E+01	734	4.883E+00	775	1.543E+00
612	2.674E+01	653	2.642E+01	694	1.357E+01	735	4.746E+00	776	1.518E+00
613	2.692E+01	654	2.614E+01	695	1.325E+01	736	4.590E+00	777	1.457E+00
614	2.714E+01	655	2.593E+01	696	1.288E+01	737	4.477E+00	778	1.429E+00
615	2.732E+01	656	2.562E+01	697	1.264E+01	738	4.352E+00	779	1.432E+00
616	2.751E+01	657	2.544E+01	698	1.241E+01	739	4.231E+00	780	1.435E+00
617	2.769E+01	658	2.518E+01	699	1.209E+01	740	4.087E+00		
618	2.783E+01	659	2.483E+01	700	1.179E+01	741	3.983E+00		
619	2.802E+01	660	2.460E+01	701	1.151E+01	742	3.900E+00		
620	2.814E+01	661	2.426E+01	702	1.122E+01	743	3.776E+00		
621	2.826E+01	662	2.389E+01	703	1.098E+01	744	3.687E+00		
622	2.840E+01	663	2.363E+01	704	1.070E+01	745	3.574E+00		
623	2.853E+01	664	2.333E+01	705	1.043E+01	746	3.473E+00		
624	2.865E+01	665	2.304E+01	706	1.022E+01	747	3.376E+00		
625	2.877E+01	666	2.271E+01	707	9.918E+00	748	3.289E+00		

CIE 1931 x y Chromaticity Diagram



7-Step Chromaticity Quadrangles



Model: 15.5PAR38DIM/930SP15/SL
[Goniophotometer System]

The Stabilization time: **30 minutes**

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

Test orientation: **Base Up**

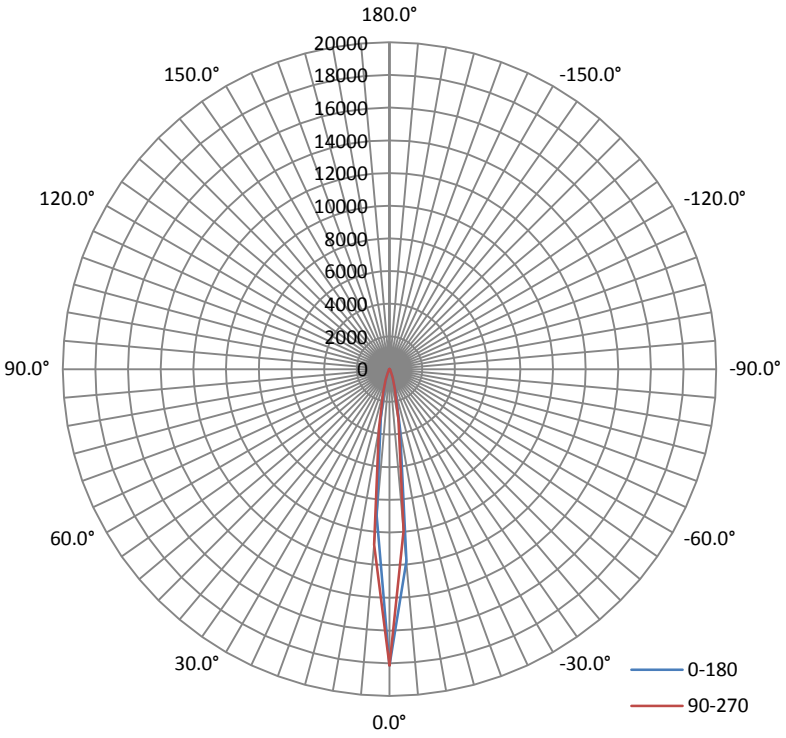
Electrical Measurement

Input Voltage (V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.05	60	0.1333	15.340	0.9586

Photometric Measurement

Luminous Flux (lm)	Efficacy (lm/W)	I_{max} (cd)	S/MH (C0/180)	S/MH (C90/270)
1452.2	94.67	18352.0	0.22	0.19

Luminous Intensity Distribution



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle (50% I_{max}):	11.1	11.2	11.3	11.1	11.2
Field Angle (10% I_{max}):	26.2	26.8	26.7	26.7	26.6

Luminous Intensity (cd) Distribution Data

C / γ	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0.0°	18149	18149	18149	18149	18149	18149	18149	18149
5.0°	9013	9347	9830	10449	10780	10968	11023	10964
10.0°	3034	3214	3422	3618	3710	3692	3597	3469
15.0°	1261	1367	1457	1528	1531	1478	1389	1319
20.0°	576	632	687	716	702	650	606	562
25.0°	230	260	292	308	295	269	239	220
30.0°	109	115	123	130	127	119	113	109
35.0°	79	81	83	84	83	81	80	79
40.0°	65	66	66	67	68	68	67	66
45.0°	54	54	55	56	56	57	56	56
50.0°	43	44	44	45	45	46	45	45
55.0°	33	34	34	35	35	35	34	34
60.0°	27	27	28	28	28	27	27	27
65.0°	21	22	22	23	22	22	22	22
70.0°	17	17	17	18	17	17	17	17
75.0°	12	12	13	13	13	13	13	13
80.0°	7	8	8	8	8	8	8	9
85.0°	3	3	4	4	4	4	4	4
90.0°	1	1	1	1	1	1	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°	1	1	1	1	1	1	1	1
145.0°	3	3	3	2	2	2	2	2
150.0°	4	4	4	4	4	4	4	4
155.0°	5	5	5	5	5	5	5	5
160.0°	6	6	6	6	6	6	6	6
165.0°	6	6	6	5	5	5	5	5
170.0°	4	4	4	4	4	4	4	4
175.0°	3	3	3	3	3	3	3	3
180.0°	1	1	1	1	1	1	1	1

Luminous Intensity (cd) Distribution Data (cont.)

C / γ	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
0.0°	18149	18149	18149	18149	18149	18149	18149	18149
5.0°	11784	11455	10924	10435	9930	9611	9440	9551
10.0°	3708	3567	3409	3268	3124	3029	3020	3104
15.0°	1422	1419	1374	1328	1282	1250	1252	1302
20.0°	579	568	564	553	544	534	538	564
25.0°	231	229	234	236	228	221	218	227
30.0°	115	116	117	116	113	109	107	108
35.0°	81	83	84	84	83	80	78	78
40.0°	69	70	69	69	69	67	65	65
45.0°	58	58	57	56	56	55	54	54
50.0°	46	46	46	46	44	43	43	43
55.0°	36	36	36	36	35	34	33	33
60.0°	28	28	29	28	28	27	27	27
65.0°	23	23	23	23	23	22	21	21
70.0°	18	18	18	18	18	17	17	17
75.0°	14	14	14	14	13	13	12	12
80.0°	9	9	9	9	9	8	8	8
85.0°	5	5	5	5	4	4	4	4
90.0°	1	1	1	1	1	1	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	1	1	1	1	1	1
180.0°	1	1	1	2	1	1	1	1

Zonal Lumen Density Measurement

Deg	Flux (lm)	%
0-5	329.9	22.72
5-10	424.4	29.22
10-15	252.1	17.36
15-20	149.7	10.31
20-25	82.6	5.68
25-30	42.5	2.93
30-35	27.8	1.92
35-40	24.6	1.69
40-45	22.7	1.56
45-50	20.3	1.40
50-55	17.0	1.17
55-60	14.2	0.98
60-65	12.1	0.84
65-70	10.0	0.69
70-75	7.9	0.54
75-80	5.7	0.40
80-85	3.3	0.23
85-90	1.3	0.09
90-95	0.2	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	0.1	0.01
140-145	0.4	0.02
145-150	0.6	0.04
150-155	0.7	0.06
155-160	0.7	0.04
160-165	0.5	0.04
165-170	0.4	0.03
170-175	0.2	0.01
175-180	0.0	0.00

Deg	Flux (lm)	%
0-5	329.9	22.72
0-10	754.3	51.94
0-15	1006.4	69.30
0-20	1156.1	79.61
0-25	1238.6	85.29
0-30	1281.2	88.22
0-35	1309.0	90.14
0-40	1333.6	91.83
0-45	1356.3	93.39
0-50	1376.6	94.79
0-55	1393.6	95.96
0-60	1407.8	96.94
0-65	1419.9	97.78
0-70	1429.9	98.47
0-75	1437.9	99.01
0-80	1443.6	99.41
0-85	1446.9	99.64
0-90	1448.2	99.73
0-95	1448.4	99.74
0-100	1448.4	99.74
0-105	1448.4	99.74
0-110	1448.4	99.74
0-115	1448.4	99.74
0-120	1448.5	99.74
0-125	1448.5	99.74
0-130	1448.5	99.75
0-135	1448.6	99.75
0-140	1448.7	99.76
0-145	1449.1	99.78
0-150	1449.7	99.82
0-155	1450.4	99.88
0-160	1451.1	99.92
0-165	1451.7	99.96
0-170	1452.0	99.99
0-175	1452.2	100.00
0-180	1452.2	100.00

[Additional Test]

Model: 15.5PAR38DIM/930SP15/SL

Test Item	Test Voltage (V)	Frequency (Hz)	Test Result
Total Harmonic Distortion:	120.0	60	15.68%

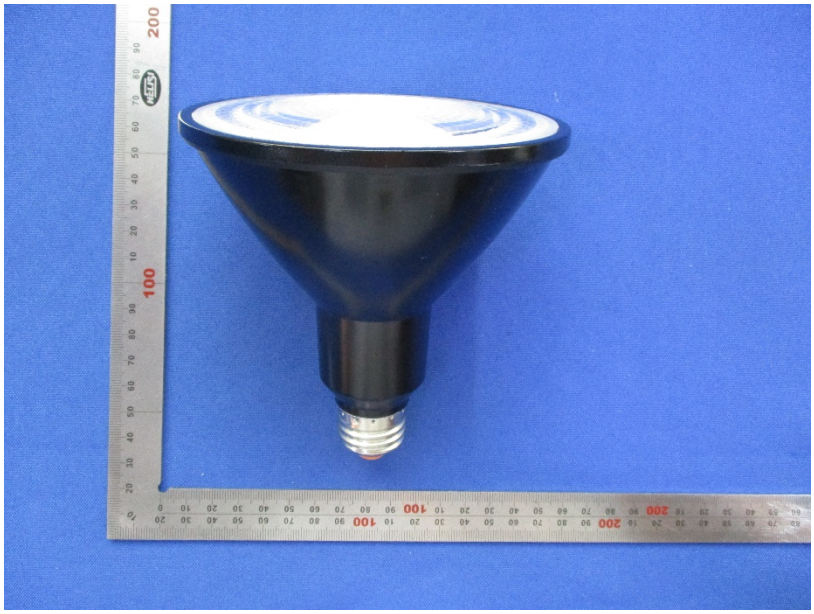
Model: 15.5PAR38DIM/930FL40/B/SL+SL15D

Test Item	Test Voltage (V)	Frequency (Hz)	Test Result
Total Harmonic Distortion:	120.0	60	15.14%

6. Product Photo

Photo for 15.5PAR38DIM/930SP15/SL

Photo for 15.5PAR38DIM/930FL40/B/SL+SL15D



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