

# ANSI/IES LM-79-19

## MEASUREMENT AND TEST REPORT

For

### GREEN CREATIVE LTD

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

**Test Model: 11PAR30SNDIM/930FL40/SL+SL15D**

<b>Report Type:</b>	Electrical and Photometric tests including: Luminous Flux, Chromaticity, Luminous Intensity Distribution, THD
<b>Reviewed By:</b>	Hill Liu 
<b>Report Number:</b>	KS2230727-43648E-EE
<b>Test Date:</b>	2023-07-28 to 2023-08-11
<b>Report Date:</b>	2023-08-25
<b>Approved by:</b>	Blake Zhang / EE Engineer
<b>Prepared By:</b>	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
<b>Test Facility:</b>	Test facility was located at No.12, Pulong East 1 <sup>st</sup> 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. One was tested in integrating sphere and the other was tested in goniophotometer

Model Tested: 11PAR30SNDIM/930FL40/SL+SL15D  
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 AC 60Hz  
Rated Power: 11W  
Nominal CCT: 3000K  
Nominal Lumen Output: 990lm

### Family Declaration

The Model	Multiple Models	Differences Items	Details
11PAR30SNDIM/930FL40/SL+SL15D	11PAR30SNDIM/930SP15/SL	Model Number & Finishing color	11PAR30SNDIM/930FL40/SL+SL15D & 11PAR30SNDIM/930SP15/SL are the same product except for the model number.
	11PAR30SNDIM/930FL40/B/SL+SL15D		11PAR30SNDIM/930FL40/B/SL+SL15D & 11PAR30SNDIM/930SP15/B/SL are the same product except for the model number.
	11PAR30SNDIM/930SP15/B/SL		The finishing color of model 11PAR30SNDIM/930FL40/SL+SL15D & 11PAR30SNDIM/930SP15/SL is White; The finishing color of model 11PAR30SNDIM/930FL40/B/SL+SL15D & 11PAR30SNDIM/930SP15/B/SL is Black.

## 2. Standards Used

- ANSI/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
- \*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 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% and 65%. The air flow around the SSL product is less than 0.2m/s.

### 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.

$4\pi$  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 ( $\gamma$ ) 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 ANSI/IES LM-79-2019. Additional test including power factor, off-state power and THD, was measured by Digital Power Meter after stabilized at  $25^{\circ}\text{C} \pm 1.2^{\circ}\text{C}$ . 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

Model: 11PAR30SNDIM/930FL40/SL+SL15D

### [Integrating Sphere System]

The Stabilization time: **30 minutes**

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

Test orientation: **Base Up**

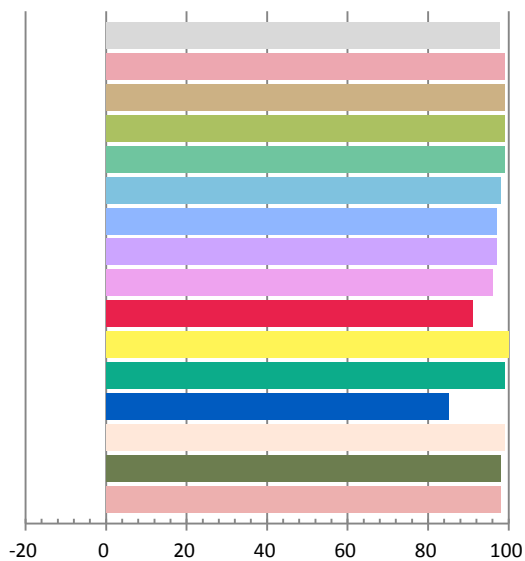
### Photometric and Electrical Measurement Result

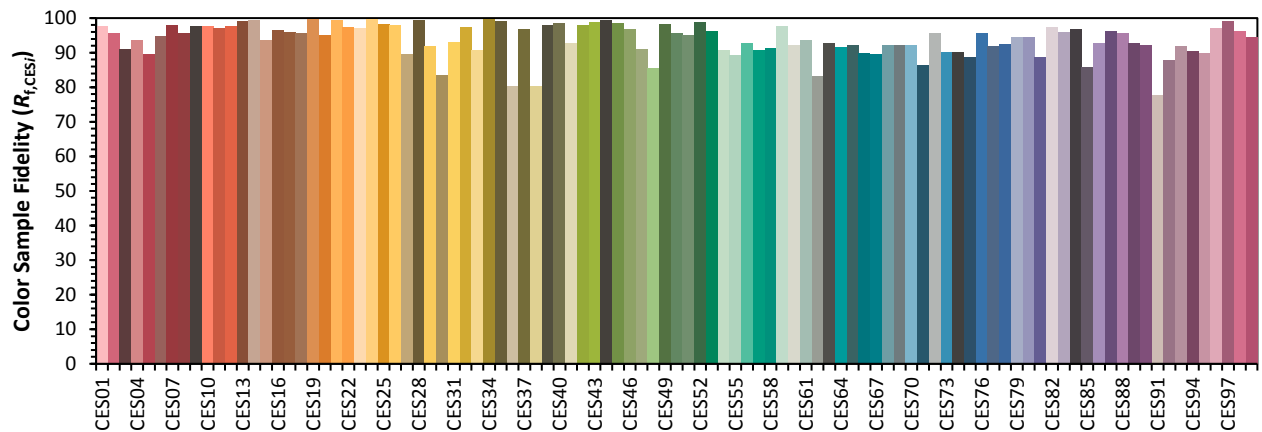
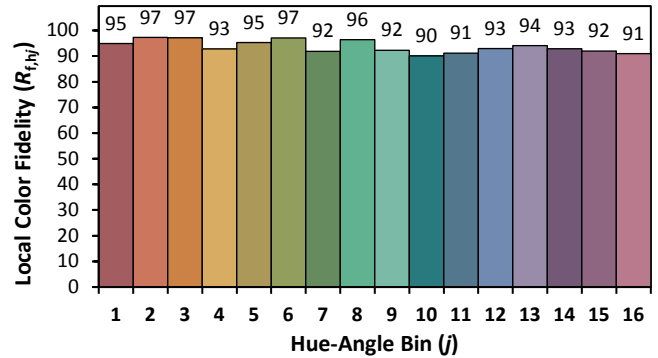
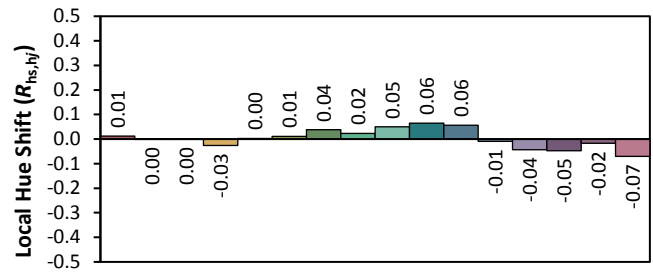
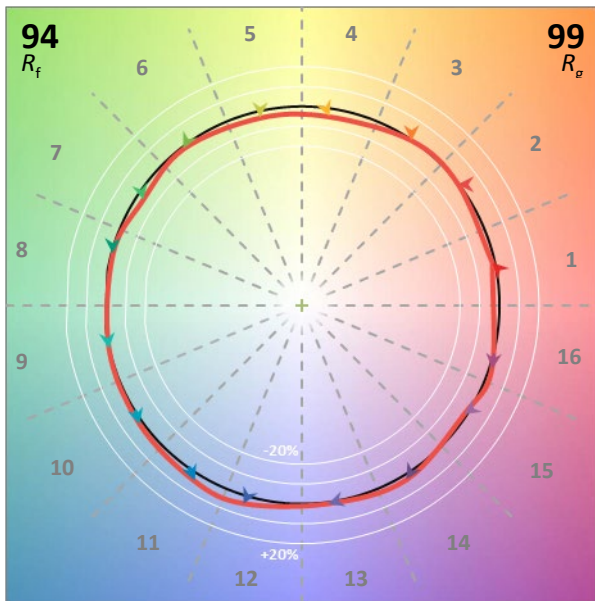
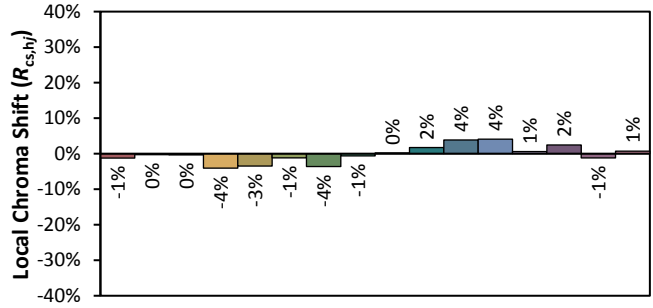
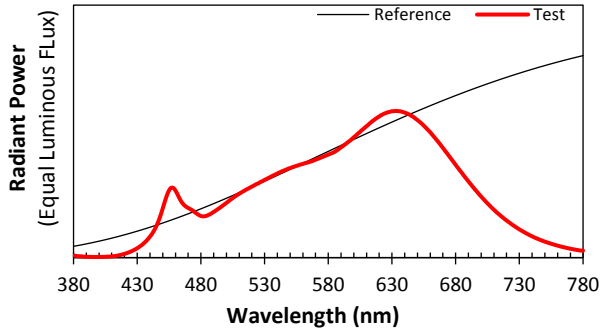
Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.1	60	0.09037	10.35	0.9537	998.50	96.50

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
3.7599	2998	-0.0007850	0.4359	0.4018	0.2509	0.5203

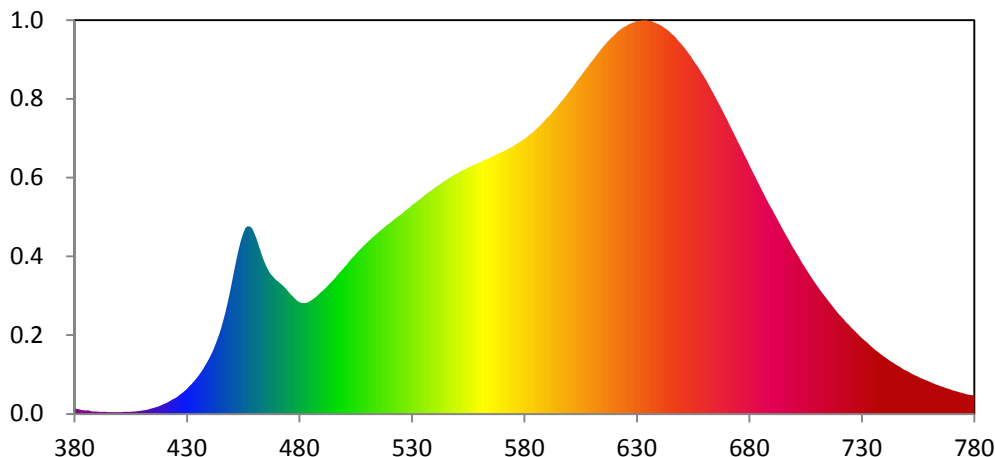
### Color Rendering Index

Ra			
97.9			
R1	R2	R3	R4
99	99	99	99
R5	R6	R7	R8
98	97	97	96
R9	R10	R11	R12
91	100	99	85
R13	R14	R15	
99	98	98	





### Relative Spectral Power Distribution

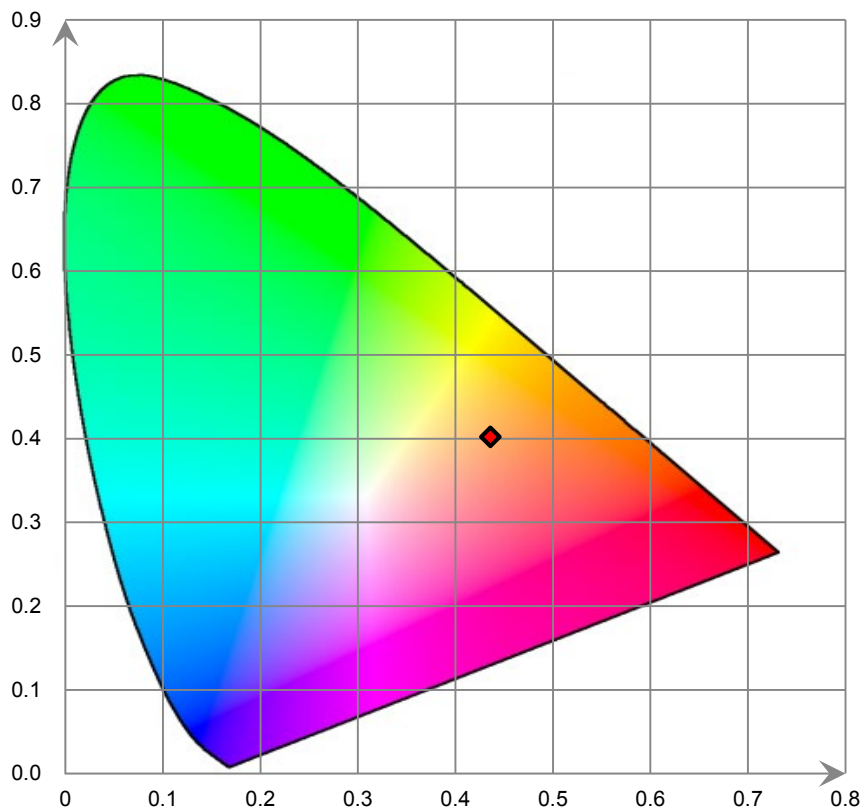


nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	3.129E-01	421	6.014E-01	462	9.013E+00	503	8.356E+00	544	1.252E+01
381	2.745E-01	422	6.642E-01	463	8.647E+00	504	8.488E+00	545	1.259E+01
382	2.522E-01	423	7.323E-01	464	8.303E+00	505	8.621E+00	546	1.267E+01
383	2.210E-01	424	8.016E-01	465	8.008E+00	506	8.762E+00	547	1.274E+01
384	2.007E-01	425	8.788E-01	466	7.771E+00	507	8.882E+00	548	1.283E+01
385	1.854E-01	426	9.625E-01	467	7.573E+00	508	9.004E+00	549	1.290E+01
386	1.923E-01	427	1.057E+00	468	7.425E+00	509	9.122E+00	550	1.296E+01
387	1.628E-01	428	1.151E+00	469	7.294E+00	510	9.235E+00	551	1.303E+01
388	1.282E-01	429	1.251E+00	470	7.184E+00	511	9.344E+00	552	1.310E+01
389	1.283E-01	430	1.359E+00	471	7.085E+00	512	9.463E+00	553	1.316E+01
390	1.256E-01	431	1.486E+00	472	6.982E+00	513	9.571E+00	554	1.321E+01
391	1.098E-01	432	1.615E+00	473	6.874E+00	514	9.664E+00	555	1.329E+01
392	1.100E-01	433	1.744E+00	474	6.759E+00	515	9.784E+00	556	1.333E+01
393	1.056E-01	434	1.883E+00	475	6.598E+00	516	9.890E+00	557	1.340E+01
394	1.035E-01	435	2.047E+00	476	6.465E+00	517	9.976E+00	558	1.346E+01
395	9.053E-02	436	2.219E+00	477	6.339E+00	518	1.008E+01	559	1.351E+01
396	9.294E-02	437	2.391E+00	478	6.214E+00	519	1.019E+01	560	1.356E+01
397	8.704E-02	438	2.592E+00	479	6.107E+00	520	1.028E+01	561	1.363E+01
398	9.588E-02	439	2.809E+00	480	6.032E+00	521	1.037E+01	562	1.369E+01
399	9.554E-02	440	3.034E+00	481	5.978E+00	522	1.048E+01	563	1.373E+01
400	9.795E-02	441	3.275E+00	482	5.975E+00	523	1.058E+01	564	1.378E+01
401	9.455E-02	442	3.549E+00	483	5.987E+00	524	1.068E+01	565	1.384E+01
402	1.037E-01	443	3.851E+00	484	6.032E+00	525	1.074E+01	566	1.389E+01
403	1.064E-01	444	4.181E+00	485	6.098E+00	526	1.086E+01	567	1.395E+01
404	1.078E-01	445	4.553E+00	486	6.184E+00	527	1.097E+01	568	1.402E+01
405	1.176E-01	446	4.977E+00	487	6.269E+00	528	1.105E+01	569	1.407E+01
406	1.273E-01	447	5.434E+00	488	6.370E+00	529	1.114E+01	570	1.413E+01
407	1.383E-01	448	5.952E+00	489	6.494E+00	530	1.125E+01	571	1.419E+01
408	1.506E-01	449	6.504E+00	490	6.604E+00	531	1.134E+01	572	1.424E+01
409	1.633E-01	450	7.099E+00	491	6.730E+00	532	1.143E+01	573	1.431E+01
410	1.824E-01	451	7.716E+00	492	6.849E+00	533	1.153E+01	574	1.437E+01
411	1.999E-01	452	8.304E+00	493	6.978E+00	534	1.162E+01	575	1.444E+01
412	2.217E-01	453	8.861E+00	494	7.109E+00	535	1.172E+01	576	1.453E+01
413	2.462E-01	454	9.348E+00	495	7.228E+00	536	1.182E+01	577	1.458E+01
414	2.799E-01	455	9.727E+00	496	7.364E+00	537	1.191E+01	578	1.465E+01
415	3.161E-01	456	1.001E+01	497	7.509E+00	538	1.199E+01	579	1.475E+01
416	3.537E-01	457	1.012E+01	498	7.647E+00	539	1.209E+01	580	1.483E+01
417	3.874E-01	458	1.010E+01	499	7.775E+00	540	1.217E+01	581	1.492E+01
418	4.413E-01	459	9.975E+00	500	7.925E+00	541	1.228E+01	582	1.502E+01
419	4.868E-01	460	9.711E+00	501	8.056E+00	542	1.235E+01	583	1.512E+01
420	5.388E-01	461	9.392E+00	502	8.209E+00	543	1.244E+01	584	1.521E+01

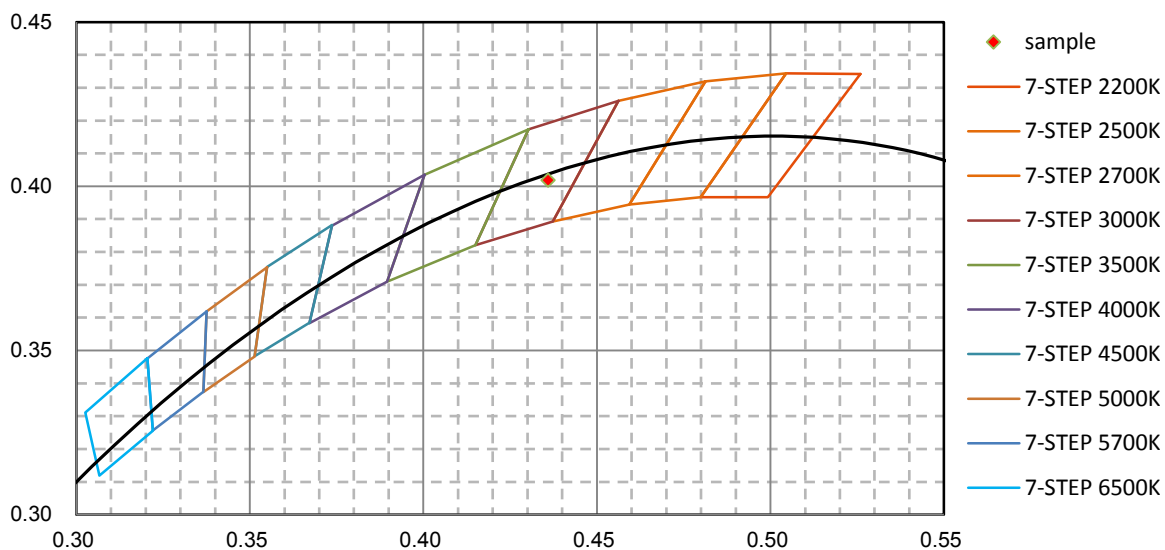
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586	1.543E+01	627	2.104E+01	668	1.635E+01	709	7.103E+00	750	2.315E+00
587	1.555E+01	628	2.110E+01	669	1.611E+01	710	6.929E+00	751	2.249E+00
588	1.568E+01	629	2.114E+01	670	1.588E+01	711	6.759E+00	752	2.189E+00
589	1.582E+01	630	2.119E+01	671	1.563E+01	712	6.576E+00	753	2.122E+00
590	1.596E+01	631	2.119E+01	672	1.538E+01	713	6.423E+00	754	2.064E+00
591	1.608E+01	632	2.121E+01	673	1.515E+01	714	6.272E+00	755	2.007E+00
592	1.622E+01	633	2.122E+01	674	1.490E+01	715	6.109E+00	756	1.946E+00
593	1.636E+01	634	2.123E+01	675	1.465E+01	716	5.954E+00	757	1.893E+00
594	1.650E+01	635	2.120E+01	676	1.441E+01	717	5.803E+00	758	1.837E+00
595	1.665E+01	636	2.119E+01	677	1.416E+01	718	5.649E+00	759	1.787E+00
596	1.679E+01	637	2.115E+01	678	1.392E+01	719	5.499E+00	760	1.733E+00
597	1.693E+01	638	2.110E+01	679	1.367E+01	720	5.367E+00	761	1.684E+00
598	1.708E+01	639	2.105E+01	680	1.342E+01	721	5.229E+00	762	1.637E+00
599	1.725E+01	640	2.099E+01	681	1.317E+01	722	5.095E+00	763	1.585E+00
600	1.742E+01	641	2.092E+01	682	1.294E+01	723	4.951E+00	764	1.542E+00
601	1.757E+01	642	2.084E+01	683	1.269E+01	724	4.822E+00	765	1.493E+00
602	1.772E+01	643	2.076E+01	684	1.246E+01	725	4.692E+00	766	1.453E+00
603	1.791E+01	644	2.067E+01	685	1.222E+01	726	4.572E+00	767	1.408E+00
604	1.806E+01	645	2.055E+01	686	1.197E+01	727	4.440E+00	768	1.367E+00
605	1.822E+01	646	2.044E+01	687	1.173E+01	728	4.323E+00	769	1.328E+00
606	1.840E+01	647	2.034E+01	688	1.150E+01	729	4.205E+00	770	1.288E+00
607	1.855E+01	648	2.018E+01	689	1.127E+01	730	4.085E+00	771	1.252E+00
608	1.870E+01	649	2.005E+01	690	1.104E+01	731	3.980E+00	772	1.215E+00
609	1.887E+01	650	1.991E+01	691	1.080E+01	732	3.866E+00	773	1.183E+00
610	1.902E+01	651	1.976E+01	692	1.059E+01	733	3.766E+00	774	1.147E+00
611	1.917E+01	652	1.961E+01	693	1.035E+01	734	3.652E+00	775	1.114E+00
612	1.934E+01	653	1.944E+01	694	1.013E+01	735	3.551E+00	776	1.084E+00
613	1.950E+01	654	1.928E+01	695	9.901E+00	736	3.452E+00	777	1.051E+00
614	1.965E+01	655	1.909E+01	696	9.698E+00	737	3.356E+00	778	1.023E+00
615	1.980E+01	656	1.891E+01	697	9.476E+00	738	3.258E+00	779	1.012E+00
616	1.993E+01	657	1.872E+01	698	9.259E+00	739	3.169E+00	780	1.014E+00
617	2.008E+01	658	1.853E+01	699	9.043E+00	740	3.080E+00		
618	2.020E+01	659	1.834E+01	700	8.842E+00	741	2.992E+00		
619	2.032E+01	660	1.814E+01	701	8.638E+00	742	2.904E+00		
620	2.043E+01	661	1.793E+01	702	8.440E+00	743	2.825E+00		
621	2.057E+01	662	1.771E+01	703	8.231E+00	744	2.748E+00		
622	2.066E+01	663	1.748E+01	704	8.040E+00	745	2.669E+00		
623	2.075E+01	664	1.726E+01	705	7.846E+00	746	2.591E+00		
624	2.085E+01	665	1.704E+01	706	7.662E+00	747	2.522E+00		
625	2.091E+01	666	1.682E+01	707	7.470E+00	748	2.451E+00		



CIE 1931 x y Chromaticity Diagram



7-Step Chromaticity Quadrangles



Model: 11PAR30SNDIM/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**

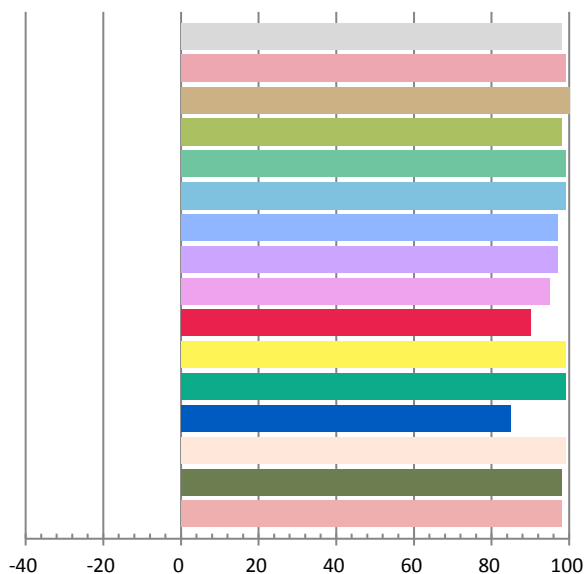
### Photometric and Electrical Measurement Result

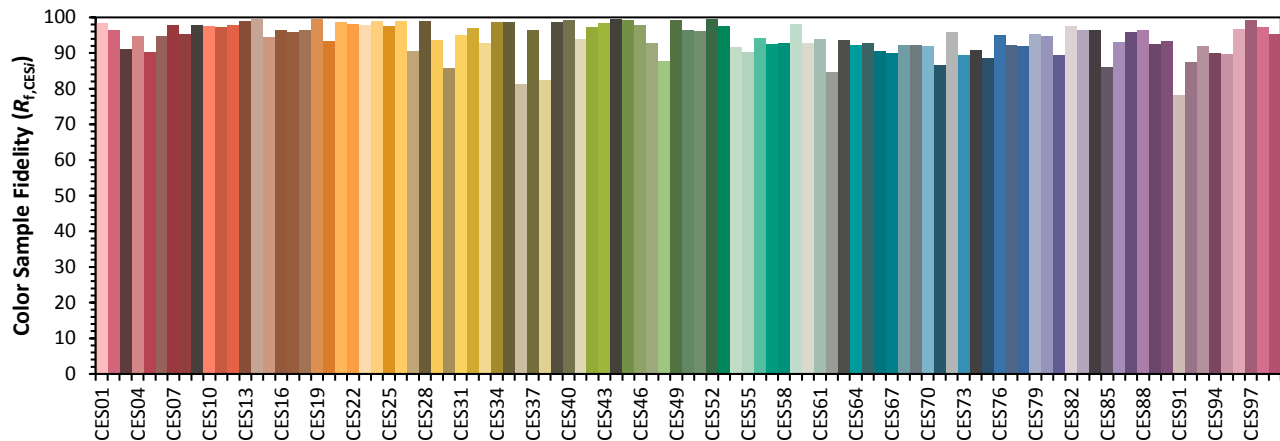
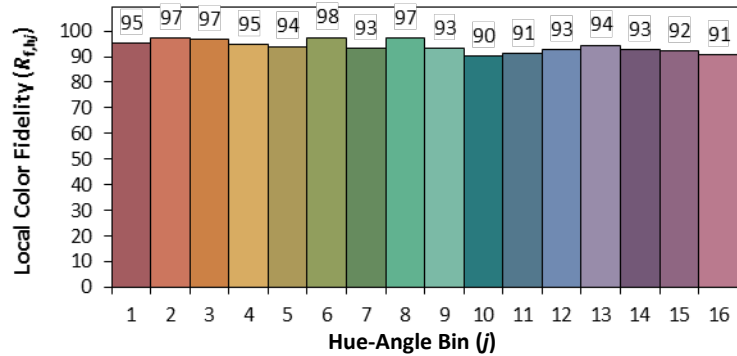
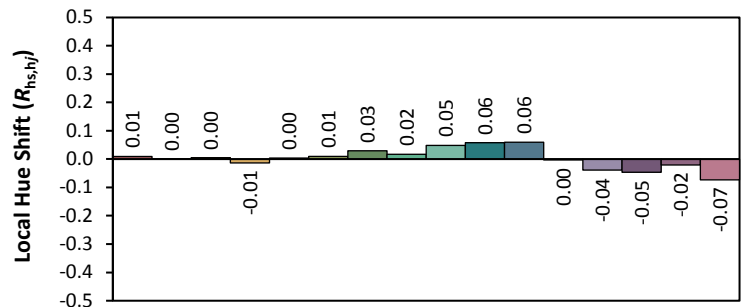
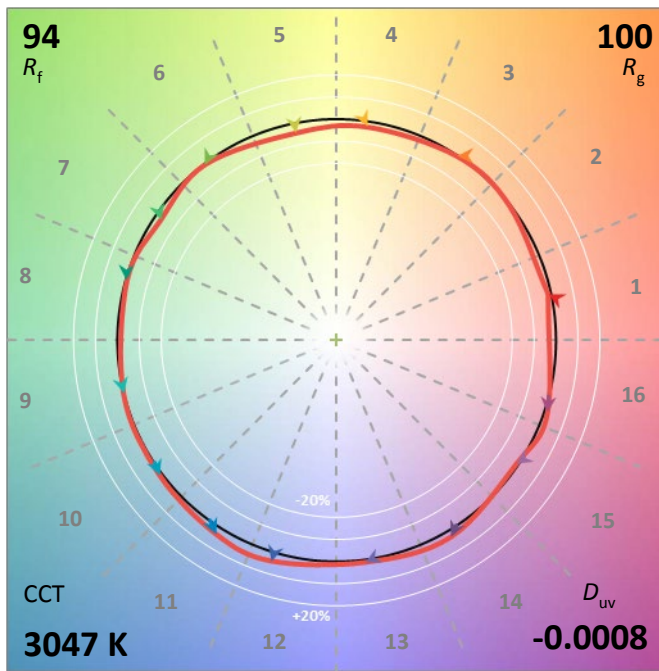
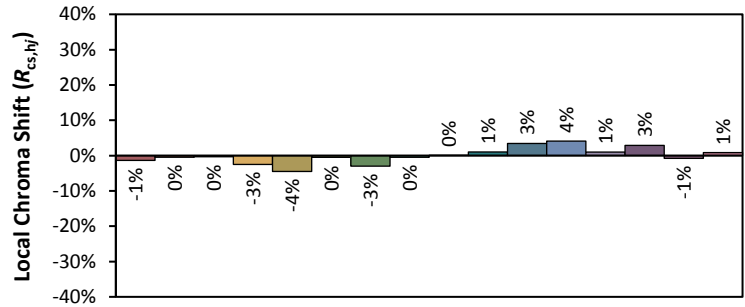
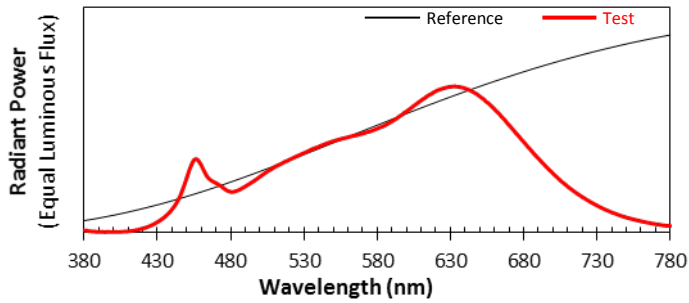
Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.0	60	0.09212	10.63	0.9615	997.47	93.84

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
3.723	3048	-0.000798	0.4324	0.4005	0.2492	0.5193

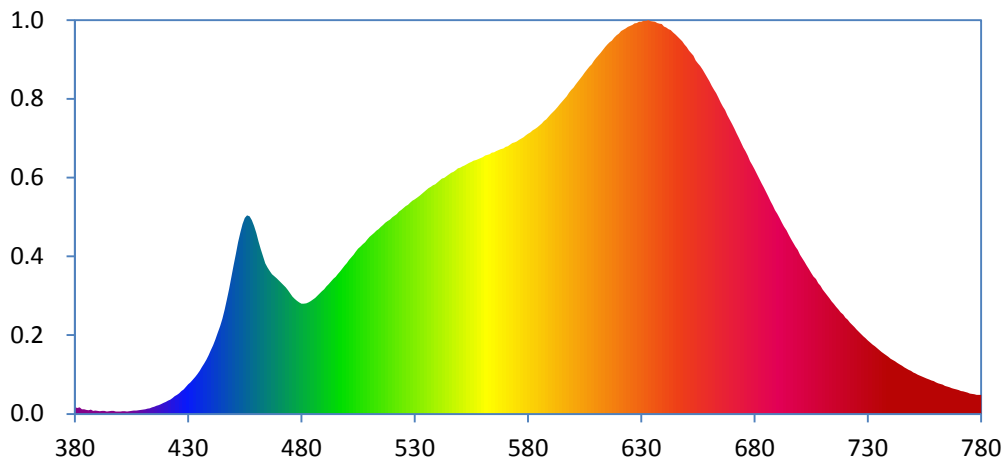
### Color Rendering Index

<b>Ra</b>			
<b>98.0</b>			
<b>R1</b>	<b>R2</b>	<b>R3</b>	<b>R4</b>
99	100	98	99
<b>R5</b>	<b>R6</b>	<b>R7</b>	<b>R8</b>
99	97	97	95
<b>R9</b>	<b>R10</b>	<b>R11</b>	<b>R12</b>
90	99	99	85
<b>R13</b>	<b>R14</b>	<b>R15</b>	
99	98	98	





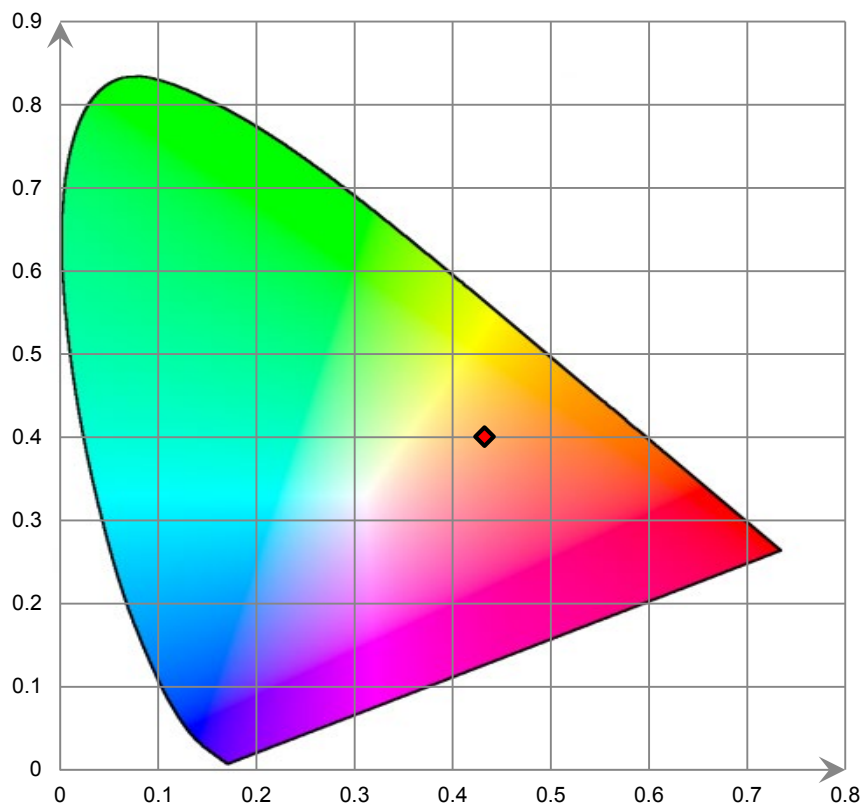
### Relative Spectral Power Distribution



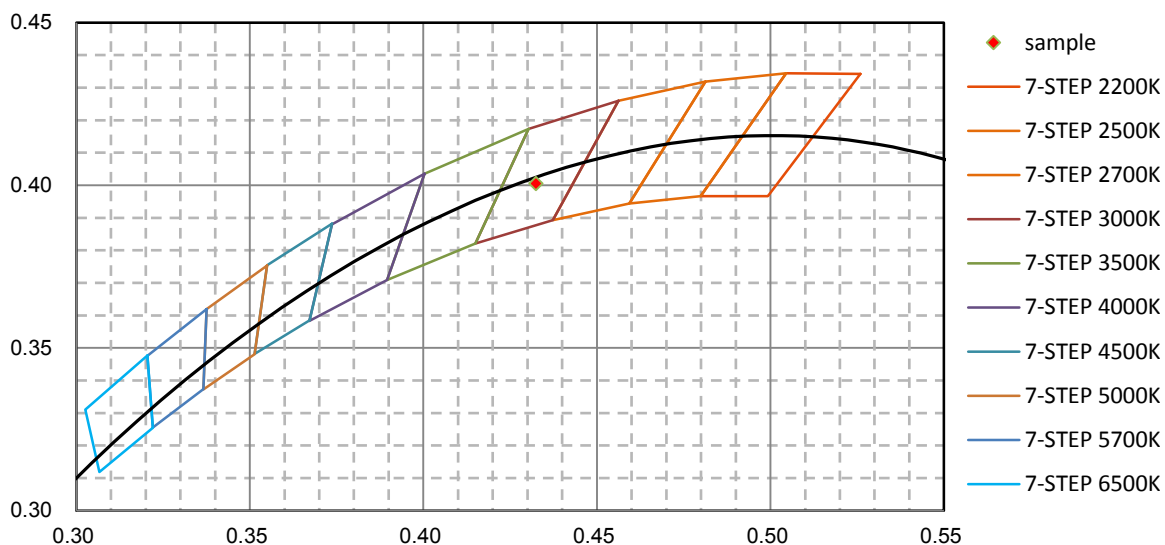
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	3.667E-01	421	6.971E-01	462	8.724E+00	503	8.436E+00	544	1.260E+01
381	3.152E-01	422	7.608E-01	463	8.343E+00	504	8.598E+00	545	1.269E+01
382	3.501E-01	423	8.427E-01	464	7.979E+00	505	8.745E+00	546	1.276E+01
383	2.406E-01	424	9.349E-01	465	7.748E+00	506	8.855E+00	547	1.283E+01
384	2.410E-01	425	1.004E+00	466	7.563E+00	507	8.992E+00	548	1.290E+01
385	2.190E-01	426	1.100E+00	467	7.402E+00	508	9.095E+00	549	1.300E+01
386	1.978E-01	427	1.205E+00	468	7.288E+00	509	9.240E+00	550	1.303E+01
387	2.361E-01	428	1.300E+00	469	7.176E+00	510	9.372E+00	551	1.311E+01
388	1.541E-01	429	1.433E+00	470	7.062E+00	511	9.479E+00	552	1.316E+01
389	1.739E-01	430	1.560E+00	471	6.947E+00	512	9.586E+00	553	1.323E+01
390	1.675E-01	431	1.671E+00	472	6.820E+00	513	9.698E+00	554	1.329E+01
391	1.447E-01	432	1.820E+00	473	6.696E+00	514	9.785E+00	555	1.334E+01
392	1.562E-01	433	1.960E+00	474	6.552E+00	515	9.900E+00	556	1.342E+01
393	1.660E-01	434	2.113E+00	475	6.387E+00	516	1.001E+01	557	1.345E+01
394	1.239E-01	435	2.286E+00	476	6.214E+00	517	1.013E+01	558	1.350E+01
395	1.379E-01	436	2.480E+00	477	6.096E+00	518	1.021E+01	559	1.355E+01
396	1.547E-01	437	2.664E+00	478	5.985E+00	519	1.029E+01	560	1.360E+01
397	1.558E-01	438	2.870E+00	479	5.901E+00	520	1.042E+01	561	1.368E+01
398	1.306E-01	439	3.111E+00	480	5.839E+00	521	1.049E+01	562	1.372E+01
399	1.302E-01	440	3.374E+00	481	5.834E+00	522	1.059E+01	563	1.376E+01
400	1.276E-01	441	3.639E+00	482	5.855E+00	523	1.071E+01	564	1.383E+01
401	1.453E-01	442	3.940E+00	483	5.913E+00	524	1.080E+01	565	1.386E+01
402	1.374E-01	443	4.282E+00	484	5.974E+00	525	1.090E+01	566	1.391E+01
403	1.283E-01	444	4.656E+00	485	6.062E+00	526	1.100E+01	567	1.397E+01
404	1.469E-01	445	5.041E+00	486	6.141E+00	527	1.108E+01	568	1.403E+01
405	1.605E-01	446	5.521E+00	487	6.266E+00	528	1.119E+01	569	1.406E+01
406	1.776E-01	447	6.058E+00	488	6.375E+00	529	1.129E+01	570	1.414E+01
407	1.848E-01	448	6.618E+00	489	6.500E+00	530	1.136E+01	571	1.418E+01
408	2.005E-01	449	7.238E+00	490	6.605E+00	531	1.144E+01	572	1.425E+01
409	2.037E-01	450	7.867E+00	491	6.751E+00	532	1.155E+01	573	1.434E+01
410	2.247E-01	451	8.473E+00	492	6.868E+00	533	1.164E+01	574	1.438E+01
411	2.414E-01	452	9.091E+00	493	7.003E+00	534	1.176E+01	575	1.442E+01
412	2.796E-01	453	9.598E+00	494	7.152E+00	535	1.186E+01	576	1.451E+01
413	2.974E-01	454	1.006E+01	495	7.270E+00	536	1.195E+01	577	1.458E+01
414	3.404E-01	455	1.038E+01	496	7.412E+00	537	1.202E+01	578	1.466E+01
415	3.810E-01	456	1.051E+01	497	7.555E+00	538	1.211E+01	579	1.475E+01
416	4.278E-01	457	1.046E+01	498	7.696E+00	539	1.216E+01	580	1.483E+01
417	4.650E-01	458	1.026E+01	499	7.850E+00	540	1.225E+01	581	1.491E+01
418	5.250E-01	459	9.950E+00	500	7.998E+00	541	1.236E+01	582	1.502E+01
419	5.779E-01	460	9.579E+00	501	8.160E+00	542	1.246E+01	583	1.509E+01
420	6.341E-01	461	9.117E+00	502	8.300E+00	543	1.251E+01	584	1.517E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	1.528E+01	626	2.060E+01	667	1.609E+01	708	6.930E+00	749	2.274E+00
586	1.538E+01	627	2.068E+01	668	1.581E+01	709	6.786E+00	750	2.202E+00
587	1.551E+01	628	2.070E+01	669	1.556E+01	710	6.589E+00	751	2.146E+00
588	1.560E+01	629	2.077E+01	670	1.534E+01	711	6.422E+00	752	2.081E+00
589	1.574E+01	630	2.077E+01	671	1.510E+01	712	6.274E+00	753	2.024E+00
590	1.586E+01	631	2.081E+01	672	1.486E+01	713	6.127E+00	754	1.976E+00
591	1.598E+01	632	2.082E+01	673	1.462E+01	714	5.961E+00	755	1.915E+00
592	1.611E+01	633	2.085E+01	674	1.437E+01	715	5.828E+00	756	1.877E+00
593	1.623E+01	634	2.080E+01	675	1.411E+01	716	5.665E+00	757	1.816E+00
594	1.641E+01	635	2.079E+01	676	1.390E+01	717	5.535E+00	758	1.772E+00
595	1.655E+01	636	2.076E+01	677	1.366E+01	718	5.376E+00	759	1.731E+00
596	1.669E+01	637	2.070E+01	678	1.339E+01	719	5.258E+00	760	1.674E+00
597	1.682E+01	638	2.067E+01	679	1.317E+01	720	5.094E+00	761	1.611E+00
598	1.701E+01	639	2.064E+01	680	1.295E+01	721	4.988E+00	762	1.580E+00
599	1.715E+01	640	2.052E+01	681	1.271E+01	722	4.846E+00	763	1.549E+00
600	1.727E+01	641	2.046E+01	682	1.244E+01	723	4.716E+00	764	1.484E+00
601	1.744E+01	642	2.038E+01	683	1.220E+01	724	4.593E+00	765	1.453E+00
602	1.760E+01	643	2.032E+01	684	1.199E+01	725	4.472E+00	766	1.414E+00
603	1.774E+01	644	2.020E+01	685	1.174E+01	726	4.349E+00	767	1.368E+00
604	1.791E+01	645	2.008E+01	686	1.151E+01	727	4.231E+00	768	1.327E+00
605	1.808E+01	646	1.998E+01	687	1.125E+01	728	4.116E+00	769	1.297E+00
606	1.822E+01	647	1.985E+01	688	1.104E+01	729	4.016E+00	770	1.259E+00
607	1.839E+01	648	1.974E+01	689	1.079E+01	730	3.895E+00	771	1.214E+00
608	1.852E+01	649	1.957E+01	690	1.059E+01	731	3.784E+00	772	1.202E+00
609	1.870E+01	650	1.943E+01	691	1.038E+01	732	3.669E+00	773	1.164E+00
610	1.884E+01	651	1.925E+01	692	1.014E+01	733	3.590E+00	774	1.125E+00
611	1.899E+01	652	1.910E+01	693	9.924E+00	734	3.487E+00	775	1.085E+00
612	1.912E+01	653	1.898E+01	694	9.725E+00	735	3.389E+00	776	1.065E+00
613	1.927E+01	654	1.872E+01	695	9.474E+00	736	3.286E+00	777	1.037E+00
614	1.943E+01	655	1.857E+01	696	9.265E+00	737	3.198E+00	778	1.009E+00
615	1.956E+01	656	1.843E+01	697	9.062E+00	738	3.108E+00	779	1.011E+00
616	1.968E+01	657	1.822E+01	698	8.848E+00	739	3.025E+00	780	1.013E+00
617	1.977E+01	658	1.802E+01	699	8.678E+00	740	2.923E+00		
618	1.992E+01	659	1.783E+01	700	8.436E+00	741	2.848E+00		
619	2.005E+01	660	1.762E+01	701	8.248E+00	742	2.779E+00		
620	2.014E+01	661	1.738E+01	702	8.053E+00	743	2.708E+00		
621	2.027E+01	662	1.717E+01	703	7.850E+00	744	2.622E+00		
622	2.034E+01	663	1.699E+01	704	7.675E+00	745	2.546E+00		
623	2.041E+01	664	1.675E+01	705	7.470E+00	746	2.467E+00		
624	2.049E+01	665	1.650E+01	706	7.286E+00	747	2.395E+00		
625	2.055E+01	666	1.628E+01	707	7.136E+00	748	2.335E+00		

CIE 1931 x y Chromaticity Diagram



7-Step Chromaticity Quadrangles



Model: 11PAR30SNDIM/930FL40/SL+SL15D

### [Goniophotometer System]

The Stabilization time: **30 minutes**

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

Test orientation: **Base up**

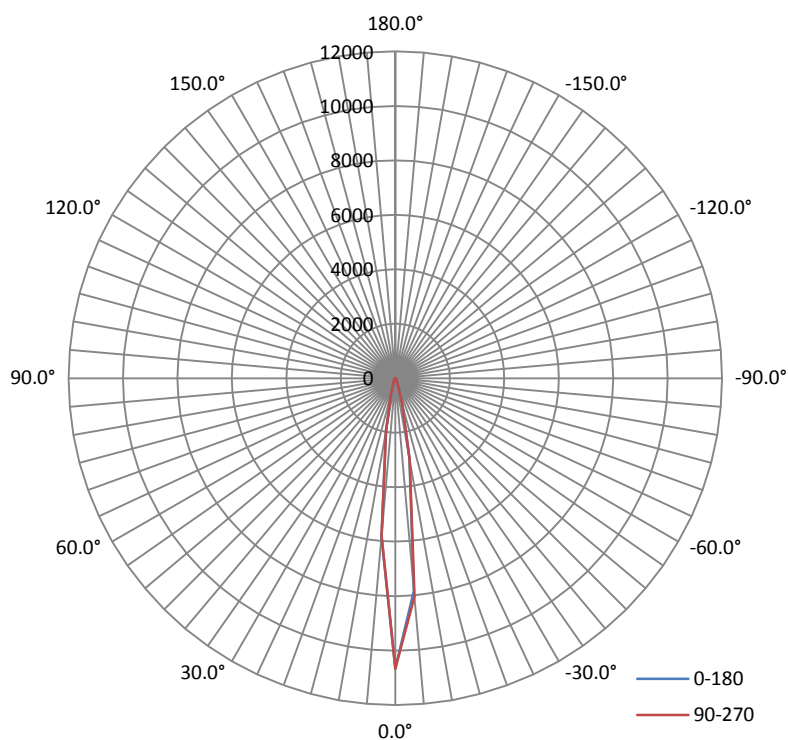
### Electrical Measurement

Input Voltage (V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.08	60	0.0903	10.340	0.9536

### Photometric Measurement

Luminous Flux (lm)	Efficacy (lm/W)	I <sub>max</sub> (cd)	S/MH (C0/180)	S/MH (C90/270)
998.796	96.60	11008.0	0.25	0.26

### Luminous Intensity Distribution



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle (50% I <sub>max</sub> ):	12.6	12.5	12.5	12.7	12.6
Field Angle (10% I <sub>max</sub> ):	27.0	26.8	27.1	27.3	27.1

**Luminous Intensity (cd) Distribution Data**

C y	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0.0°	10660	10660	10660	10660	10660	10660	10660	10660
5.0°	5850	5611	5523	5591	5796	6132	6539	6967
10.0°	1943	1836	1809	1850	1968	2149	2355	2546
15.0°	612	597	588	612	635	705	771	812
20.0°	220	204	202	216	240	274	298	305
25.0°	117	113	113	117	125	135	142	141
30.0°	93	93	93	96	99	103	104	101
35.0°	77	75	75	76	79	80	81	81
40.0°	66	66	66	65	66	69	71	70
45.0°	51	51	51	52	54	55	54	54
50.0°	44	44	44	44	44	45	46	47
55.0°	39	39	37	37	38	38	39	39
60.0°	29	29	29	29	29	30	31	31
65.0°	22	22	22	22	22	23	23	24
70.0°	17	17	16	16	17	17	17	18
75.0°	12	12	11	11	11	12	12	13
80.0°	8	7	7	7	8	8	8	9
85.0°	3	3	3	3	3	3	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°	2	2	2	2	2	2	2	2
150.0°	3	3	3	3	3	3	3	3
155.0°	3	4	4	4	4	3	3	3
160.0°	4	4	4	4	4	4	4	4
165.0°	3	3	4	4	4	4	4	4
170.0°	3	3	3	3	3	3	3	3
175.0°	2	2	2	2	2	2	2	2
180.0°	1	1	1	1	1	1	1	1



**Luminous Intensity (cd) Distribution Data (cont.)**

C Y	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
0.0°	10660	10660	10660	10660	10660	10660	10660	10660
5.0°	7833	8252	8424	8352	8049	7605	7058	6587
10.0°	2969	3118	3197	3175	3040	2817	2515	2291
15.0°	945	982	1005	990	958	892	809	734
20.0°	331	329	323	325	324	313	289	262
25.0°	153	155	153	152	153	151	141	127
30.0°	101	103	104	104	104	102	98	95
35.0°	83	86	88	88	86	82	79	78
40.0°	72	76	77	76	73	71	68	67
45.0°	57	58	60	60	59	57	55	53
50.0°	47	48	48	49	48	47	47	46
55.0°	40	40	40	40	40	40	39	39
60.0°	32	33	34	33	33	33	32	31
65.0°	25	25	25	25	25	25	24	23
70.0°	19	19	19	19	19	19	19	18
75.0°	14	14	14	14	14	13	13	12
80.0°	10	10	10	10	9	9	9	8
85.0°	4	5	5	5	5	4	4	4
90.0°	2	2	2	2	2	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°	0	0	0	0	0	0	0	0
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	1	1	1	1	1

### Zonal Lumen Density Measurement

Deg	Flux (lm)	%
0-5	205.9	20.61
5-10	300.9	30.13
10-15	170.6	17.08
15-20	78.4	7.85
20-25	39.9	4.00
25-30	28.5	2.86
30-35	26.8	2.68
35-40	25.1	2.51
40-45	23.0	2.30
45-50	20.2	2.03
50-55	18.4	1.84
55-60	16.3	1.64
60-65	13.2	1.32
65-70	10.5	1.05
70-75	7.9	0.79
75-80	5.6	0.56
80-85	3.3	0.33
85-90	1.3	0.13
90-95	0.3	0.03
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	0.01
120-125	0.0	0.00
125-130	0.0	0.00
130-135	0.0	0.00
135-140	0.1	0.01
140-145	0.3	0.03
145-150	0.4	0.04
150-155	0.5	0.05
155-160	0.5	0.05
160-165	0.4	0.04
165-170	0.2	0.02
170-175	0.1	0.01
175-180	0.0	0.00

Deg	Flux (lm)	%
0-5	205.9	20.61
0-10	506.8	50.74
0-15	677.4	67.82
0-20	755.8	75.67
0-25	795.7	79.67
0-30	824.3	82.53
0-35	851.0	85.21
0-40	876.1	87.72
0-45	899.1	90.02
0-50	919.4	92.05
0-55	937.8	93.89
0-60	954.1	95.53
0-65	967.3	96.85
0-70	977.8	97.90
0-75	985.7	98.69
0-80	991.3	99.25
0-85	994.6	99.58
0-90	995.9	99.71
0-95	996.2	99.74
0-100	996.2	99.74
0-105	996.2	99.74
0-110	996.2	99.74
0-115	996.2	99.74
0-120	996.3	99.75
0-125	996.3	99.75
0-130	996.3	99.75
0-135	996.3	99.75
0-140	996.4	99.76
0-145	996.7	99.79
0-150	997.1	99.83
0-155	997.6	99.88
0-160	998.1	99.93
0-165	998.5	99.97
0-170	998.7	99.99
0-175	998.8	100.00
0-180	998.8	100.00

Model: 11PAR30SNDIM/930FL40/SL+SL15D

Test Item	Test Voltage (V)	Frequency (Hz)	Test Result
Total Harmonic Distortion:	120.0	60	17.15%

Model: 11PAR30SNDIM/930FL40/B/SL+SL15D

Test Item	Test Voltage (V)	Frequency (Hz)	Test Result
Total Harmonic Distortion:	120.0	60	16.41%

## 6. Product Photo

Photo for 11PAR30SNDIM/930FL40/SL+SL15D



Photo for 11PAR30SNDIM/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.
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\*\*\*\*\*