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: 11PAR30DIM/930FL40/SL

Report Type:	Electrical and Photometric tests including: Luminous Flux, Chromaticity, Luminous Intensity Distribution, THD
Reviewed By:	Hill Liu
Report Number:	KS2230727-43616E-EE-1
Test Date:	2023-07-28 to 2023-08-23
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.

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:	11PAR30DIM/930FL40/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 AC 60Hz
Rated Power:	11W
Nominal CCT:	3000K
Nominal Lumen Output:	990lm

Family Declaration

The Model	Multiple Models	Variations	Details
11PAR30DIM/930FL40/SL	11PAR30DIM/930FL40/B/SL	Finishing Color	The finishing color of model 11PAR30DIM/930FL40/SL is White; The finishing color of model 11PAR30DIM/930FL40/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
1.5m temperature integrating sphere	SENSING	SPR-600	S09008	2022-11-10	2023-11-09
High-precision rapid spectral analysis system	EVERFINE	HAAS-2000	M112048CA1361125	2022-11-10	2023-11-09
Digital power meter	YOKOGAWA	WT310	13398	2022-11-10	2023-11-09
Programmable Precision DC Power Supply	EVERFINE	WY5015	11060010	2022-11-10	2023-11-09
thermometer	SENSING	NA	NA	2022-11-10	2023-11-09
Standard Light Source	EVERFINE	D204	N/A	2023-05-12	2025-05-11
Precision frequency power supply	ALL Power	APW-105N	970613	2022-11-10	2023-11-09
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
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°C±1.2°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.

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=0.39 % of rdg, AC Voltage U=0.25% of rdg, Power U=0.42%) (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.

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 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°C±1.2°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: 11PAR30DIM/930FL40/SL

[Integrating Sphere System]

The Stabilization time: **30 minutes**

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

Test orientation: **Base Up**

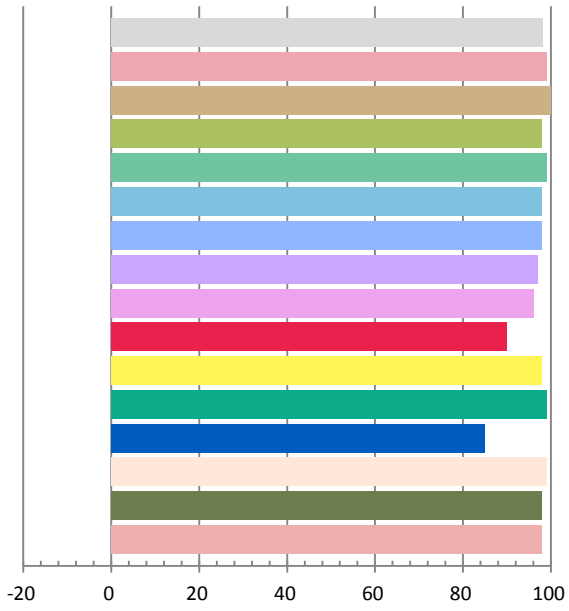
Photometric and Electrical Measurement Result

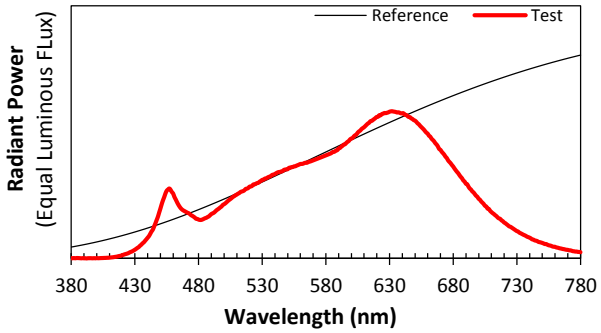
Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.0	60	0.09141	10.46	0.9534	993.93	95.01

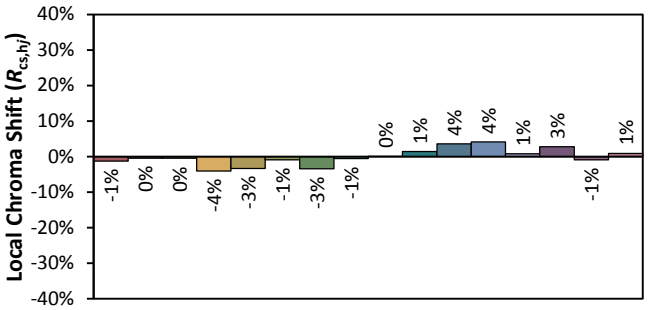
Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
3.7116	2990	-0.000156	0.4374	0.4039	0.2510	0.5214

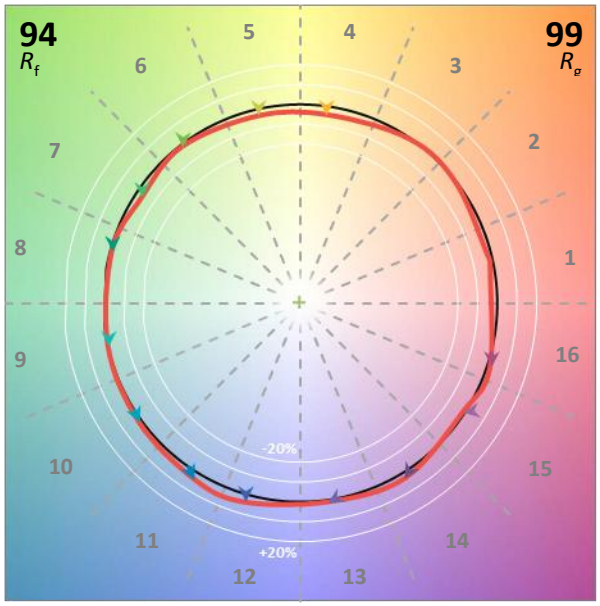
Color Rendering Index

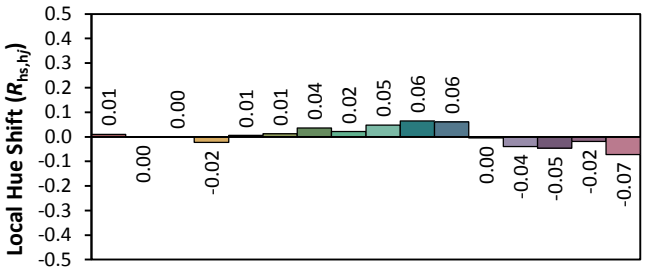
Ra			
98.1			
R1	R2	R3	R4
99	100	98	99
R5	R6	R7	R8
98	98	97	96
R9	R10	R11	R12
90	98	99	85
R13	R14	R15	
99	98	98	

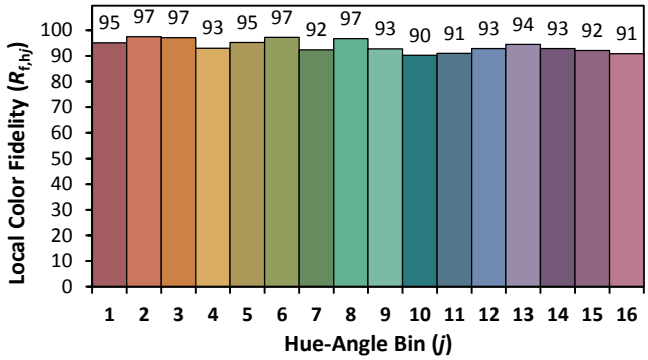


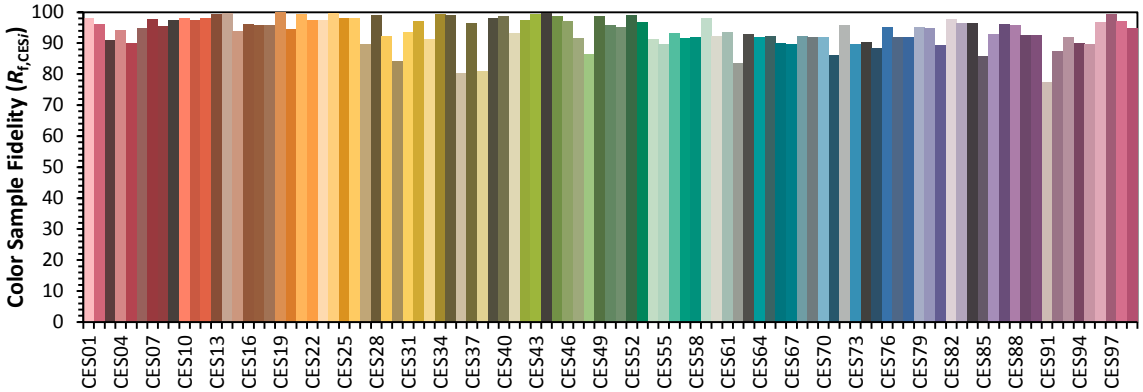

Reference
Test
Radiant Power
(Equal Luminous FLux)
380 430 480 530 580 630 680 730 780
Wavelength (nm)


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

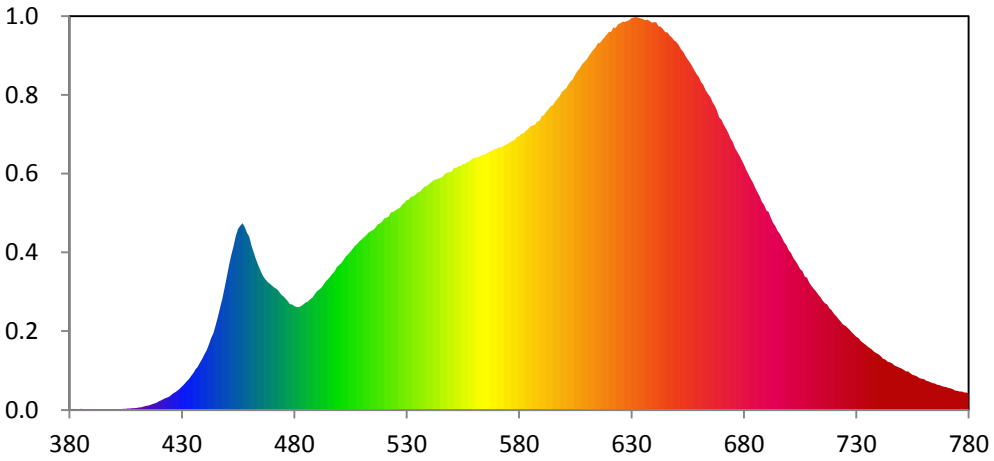

94
R_f
99
R_g
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
-20%
+20%


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 -0.02 0.01 0.01 0.04 0.02 0.05 0.06 0.06 0.00 -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 93 95 97 92 97 93 90 91 93 94 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

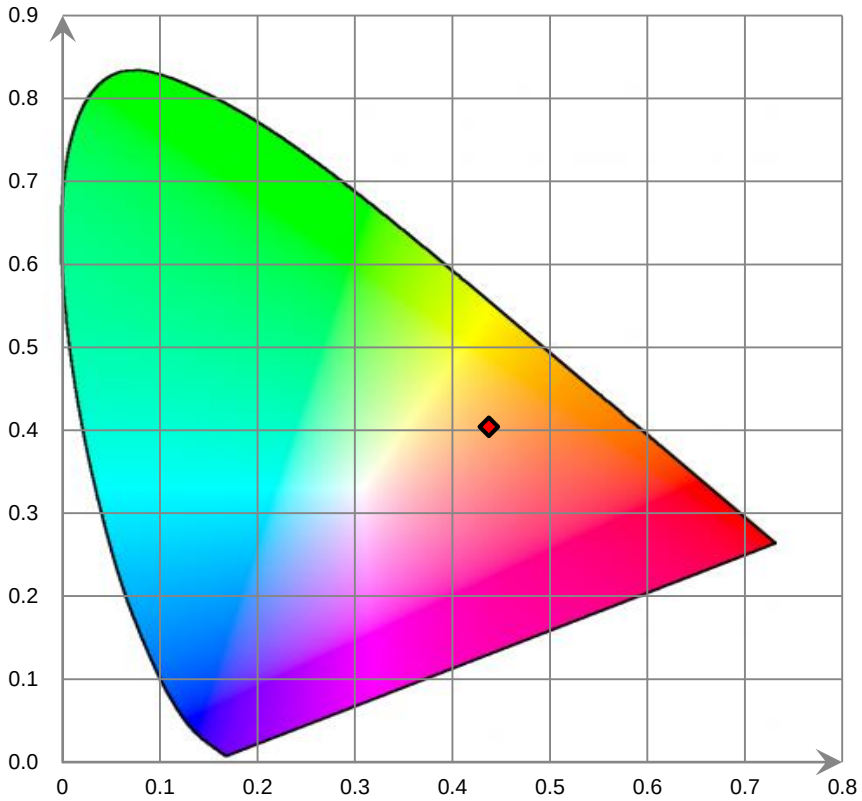
Relative Spectral Power Distribution



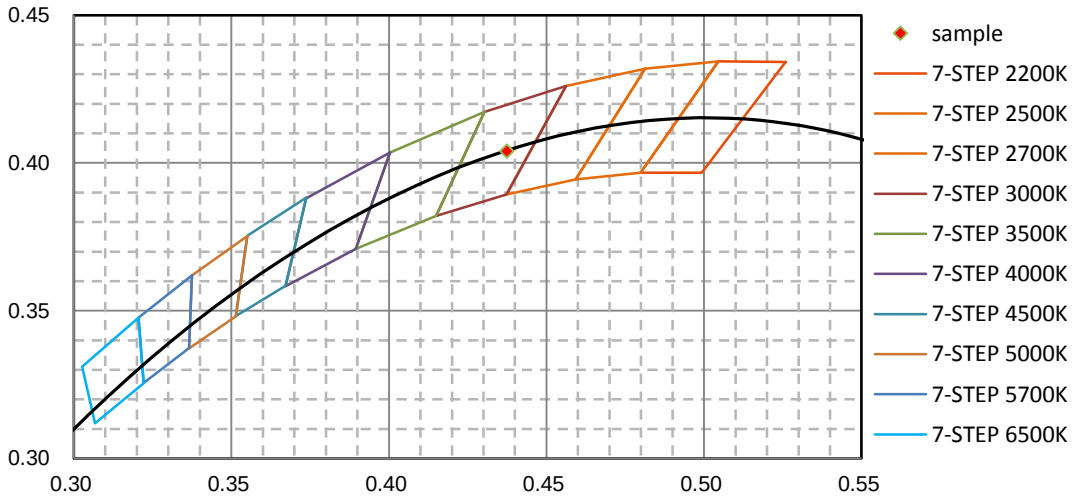
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	4.475E-02	421	5.305E-01	462	8.508E+00	503	8.278E+00	544	1.247E+01
381	2.344E-02	422	5.976E-01	463	8.127E+00	504	8.428E+00	545	1.254E+01
382	5.667E-02	423	6.489E-01	464	7.783E+00	505	8.560E+00	546	1.259E+01
383	2.135E-02	424	7.048E-01	465	7.483E+00	506	8.707E+00	547	1.275E+01
384	5.147E-02	425	7.811E-01	466	7.231E+00	507	8.868E+00	548	1.281E+01
385	5.677E-02	426	8.877E-01	467	7.049E+00	508	8.971E+00	549	1.284E+01
386	4.527E-02	427	9.603E-01	468	6.916E+00	509	9.105E+00	550	1.286E+01
387	3.315E-02	428	1.042E+00	469	6.812E+00	510	9.208E+00	551	1.306E+01
388	1.722E-02	429	1.150E+00	470	6.712E+00	511	9.335E+00	552	1.307E+01
389	4.265E-02	430	1.263E+00	471	6.606E+00	512	9.430E+00	553	1.316E+01
390	1.831E-02	431	1.392E+00	472	6.532E+00	513	9.583E+00	554	1.317E+01
391	2.641E-02	432	1.526E+00	473	6.421E+00	514	9.649E+00	555	1.327E+01
392	0.000E+00	433	1.644E+00	474	6.245E+00	515	9.709E+00	556	1.328E+01
393	3.168E-02	434	1.831E+00	475	6.146E+00	516	9.821E+00	557	1.338E+01
394	3.079E-02	435	1.984E+00	476	6.024E+00	517	1.002E+01	558	1.345E+01
395	3.938E-02	436	2.179E+00	477	5.890E+00	518	1.006E+01	559	1.353E+01
396	2.446E-02	437	2.329E+00	478	5.715E+00	519	1.015E+01	560	1.361E+01
397	2.248E-02	438	2.550E+00	479	5.695E+00	520	1.034E+01	561	1.362E+01
398	3.877E-02	439	2.763E+00	480	5.595E+00	521	1.037E+01	562	1.365E+01
399	1.968E-02	440	2.993E+00	481	5.551E+00	522	1.045E+01	563	1.373E+01
400	4.770E-02	441	3.214E+00	482	5.547E+00	523	1.066E+01	564	1.379E+01
401	3.047E-02	442	3.536E+00	483	5.611E+00	524	1.068E+01	565	1.378E+01
402	3.815E-02	443	3.877E+00	484	5.694E+00	525	1.077E+01	566	1.387E+01
403	4.753E-02	444	4.140E+00	485	5.790E+00	526	1.086E+01	567	1.394E+01
404	5.545E-02	445	4.572E+00	486	5.851E+00	527	1.091E+01	568	1.399E+01
405	6.020E-02	446	5.019E+00	487	5.961E+00	528	1.107E+01	569	1.409E+01
406	7.293E-02	447	5.510E+00	488	6.057E+00	529	1.118E+01	570	1.410E+01
407	7.546E-02	448	5.996E+00	489	6.225E+00	530	1.132E+01	571	1.417E+01
408	9.286E-02	449	6.593E+00	490	6.391E+00	531	1.135E+01	572	1.417E+01
409	9.620E-02	450	7.187E+00	491	6.492E+00	532	1.150E+01	573	1.425E+01
410	1.160E-01	451	7.814E+00	492	6.592E+00	533	1.154E+01	574	1.432E+01
411	1.379E-01	452	8.369E+00	493	6.749E+00	534	1.164E+01	575	1.437E+01
412	1.552E-01	453	8.841E+00	494	6.930E+00	535	1.174E+01	576	1.445E+01
413	1.768E-01	454	9.381E+00	495	7.064E+00	536	1.180E+01	577	1.452E+01
414	2.089E-01	455	9.769E+00	496	7.193E+00	537	1.192E+01	578	1.458E+01
415	2.360E-01	456	9.933E+00	497	7.350E+00	538	1.205E+01	579	1.473E+01
416	2.702E-01	457	1.008E+01	498	7.482E+00	539	1.209E+01	580	1.478E+01
417	3.228E-01	458	9.878E+00	499	7.705E+00	540	1.218E+01	581	1.489E+01
418	3.569E-01	459	9.565E+00	500	7.813E+00	541	1.229E+01	582	1.494E+01
419	4.007E-01	460	9.352E+00	501	7.940E+00	542	1.239E+01	583	1.505E+01
420	4.689E-01	461	8.866E+00	502	8.105E+00	543	1.245E+01	584	1.515E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	1.532E+01	626	2.096E+01	667	1.641E+01	708	7.139E+00	749	2.295E+00
586	1.534E+01	627	2.094E+01	668	1.614E+01	709	6.873E+00	750	2.233E+00
587	1.541E+01	628	2.099E+01	669	1.578E+01	710	6.694E+00	751	2.163E+00
588	1.556E+01	629	2.105E+01	670	1.565E+01	711	6.532E+00	752	2.076E+00
589	1.560E+01	630	2.114E+01	671	1.538E+01	712	6.403E+00	753	2.076E+00
590	1.585E+01	631	2.119E+01	672	1.517E+01	713	6.232E+00	754	1.982E+00
591	1.591E+01	632	2.121E+01	673	1.495E+01	714	6.096E+00	755	1.901E+00
592	1.609E+01	633	2.117E+01	674	1.466E+01	715	5.896E+00	756	1.864E+00
593	1.622E+01	634	2.114E+01	675	1.447E+01	716	5.769E+00	757	1.814E+00
594	1.640E+01	635	2.110E+01	676	1.414E+01	717	5.692E+00	758	1.726E+00
595	1.645E+01	636	2.103E+01	677	1.392E+01	718	5.483E+00	759	1.686E+00
596	1.664E+01	637	2.106E+01	678	1.372E+01	719	5.375E+00	760	1.673E+00
597	1.680E+01	638	2.099E+01	679	1.347E+01	720	5.182E+00	761	1.587E+00
598	1.693E+01	639	2.091E+01	680	1.325E+01	721	5.076E+00	762	1.554E+00
599	1.716E+01	640	2.092E+01	681	1.297E+01	722	4.921E+00	763	1.497E+00
600	1.728E+01	641	2.092E+01	682	1.272E+01	723	4.785E+00	764	1.450E+00
601	1.736E+01	642	2.070E+01	683	1.248E+01	724	4.625E+00	765	1.417E+00
602	1.759E+01	643	2.069E+01	684	1.227E+01	725	4.560E+00	766	1.365E+00
603	1.775E+01	644	2.054E+01	685	1.199E+01	726	4.440E+00	767	1.335E+00
604	1.787E+01	645	2.039E+01	686	1.175E+01	727	4.320E+00	768	1.291E+00
605	1.812E+01	646	2.037E+01	687	1.154E+01	728	4.193E+00	769	1.249E+00
606	1.830E+01	647	2.019E+01	688	1.123E+01	729	4.066E+00	770	1.231E+00
607	1.843E+01	648	2.010E+01	689	1.107E+01	730	3.942E+00	771	1.180E+00
608	1.864E+01	649	1.994E+01	690	1.077E+01	731	3.875E+00	772	1.162E+00
609	1.878E+01	650	1.986E+01	691	1.069E+01	732	3.720E+00	773	1.115E+00
610	1.891E+01	651	1.970E+01	692	1.036E+01	733	3.626E+00	774	1.047E+00
611	1.909E+01	652	1.948E+01	693	1.009E+01	734	3.531E+00	775	1.030E+00
612	1.927E+01	653	1.934E+01	694	9.926E+00	735	3.430E+00	776	9.862E-01
613	1.944E+01	654	1.912E+01	695	9.664E+00	736	3.346E+00	777	9.912E-01
614	1.956E+01	655	1.893E+01	696	9.511E+00	737	3.260E+00	778	9.425E-01
615	1.978E+01	656	1.875E+01	697	9.275E+00	738	3.141E+00	779	9.334E-01
616	1.982E+01	657	1.856E+01	698	9.039E+00	739	3.073E+00	780	8.962E-01
617	1.996E+01	658	1.833E+01	699	8.879E+00	740	2.993E+00		
618	2.010E+01	659	1.812E+01	700	8.605E+00	741	2.894E+00		
619	2.024E+01	660	1.798E+01	701	8.465E+00	742	2.755E+00		
620	2.040E+01	661	1.769E+01	702	8.217E+00	743	2.716E+00		
621	2.041E+01	662	1.755E+01	703	8.032E+00	744	2.606E+00		
622	2.065E+01	663	1.726E+01	704	7.844E+00	745	2.557E+00		
623	2.062E+01	664	1.708E+01	705	7.585E+00	746	2.504E+00		
624	2.081E+01	665	1.688E+01	706	7.484E+00	747	2.384E+00		
625	2.086E+01	666	1.660E+01	707	7.185E+00	748	2.342E+00		

CIE 1931 x y Chromaticity Diagram



7-Step Chromaticity Quadrangles



Model: 11PAR30DIM/930FL40/B/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	0.09031	10.4	0.9602	993.62	95.5

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
3.722	3057	-0.00129	0.4312	0.3989	0.2491	0.5184

Color Rendering Index

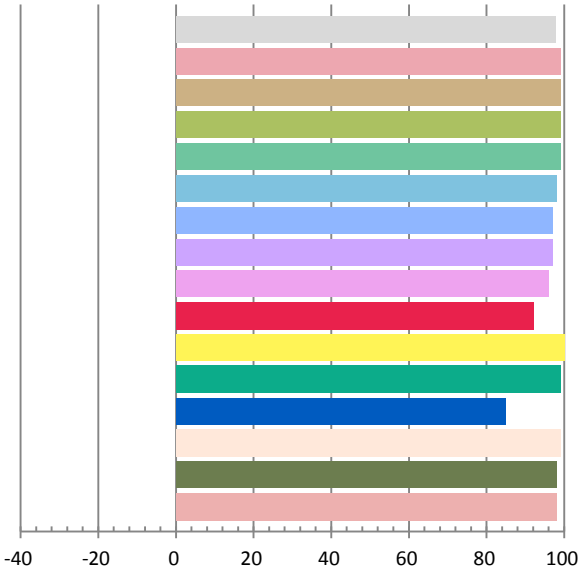
Ra
97.9

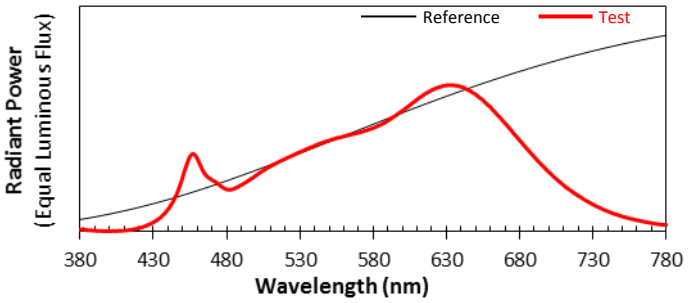
R1	R2	R3	R4
99	99	99	99

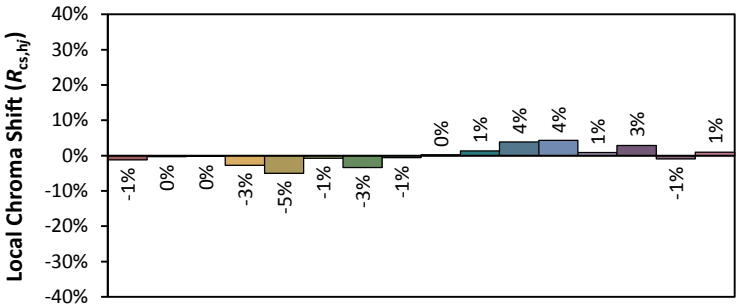
R5	R6	R7	R8
98	97	97	96

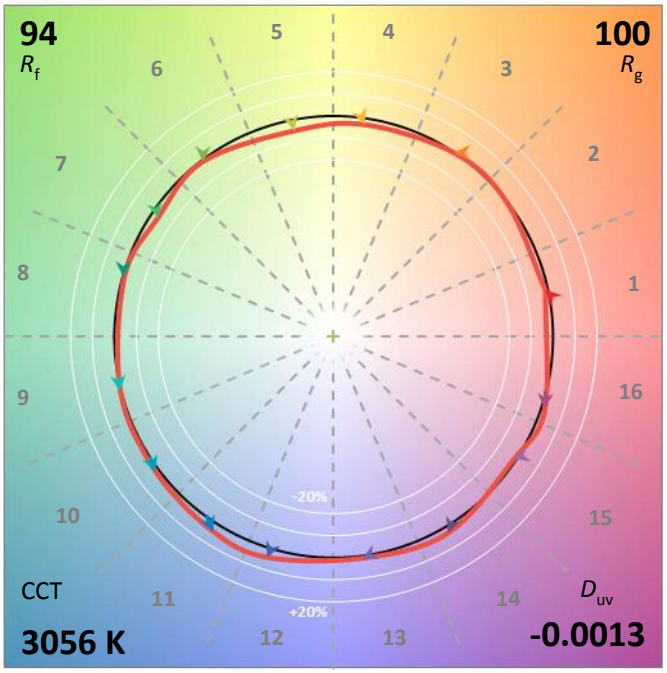
R9	R10	R11	R12
92	100	99	85

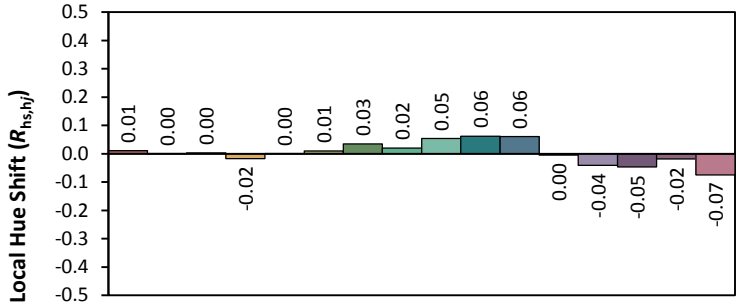
R13	R14	R15
99	98	98

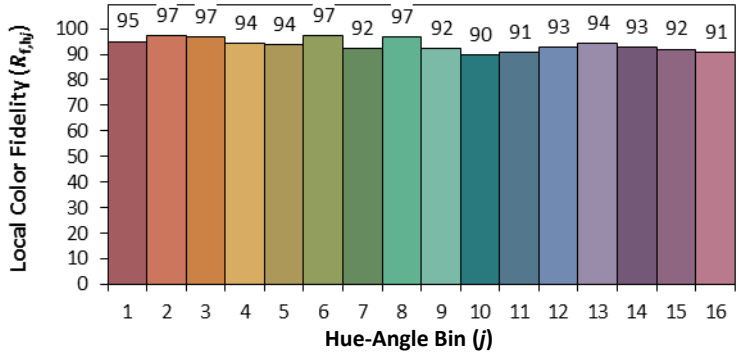


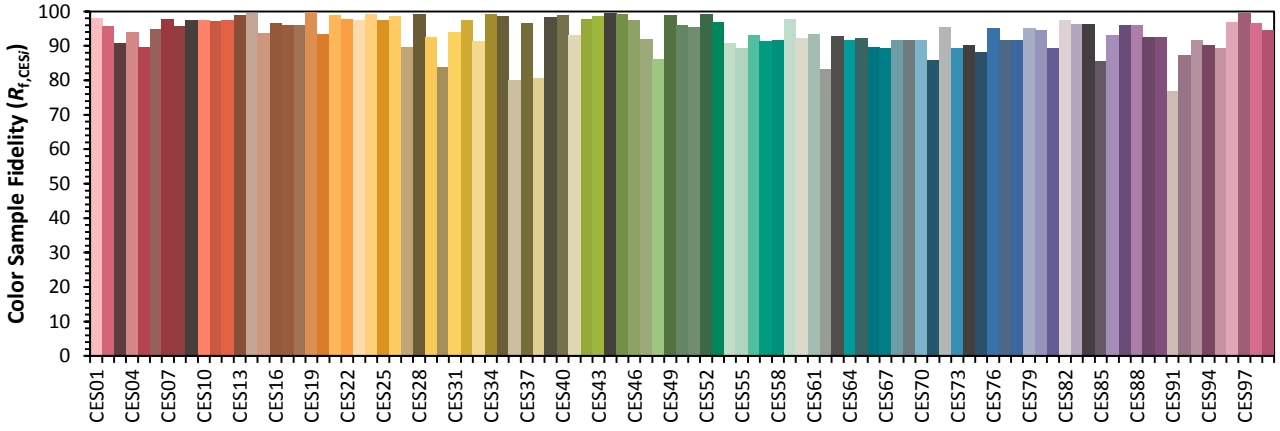

Reference
Test
Radiant Power
(Equal Luminous Flux)
380
430
480
530
580
630
680
730
780
Wavelength (nm)


Local Chroma Shift ($R_{cs,hj}$)
40%
30%
20%
10%
0%
-10%
-20%
-30%
-40%
-1%
0%
0%
-3%
-5%
-1%
-3%
-1%
0%
1%
4%
4%
1%
3%
-1%
1%

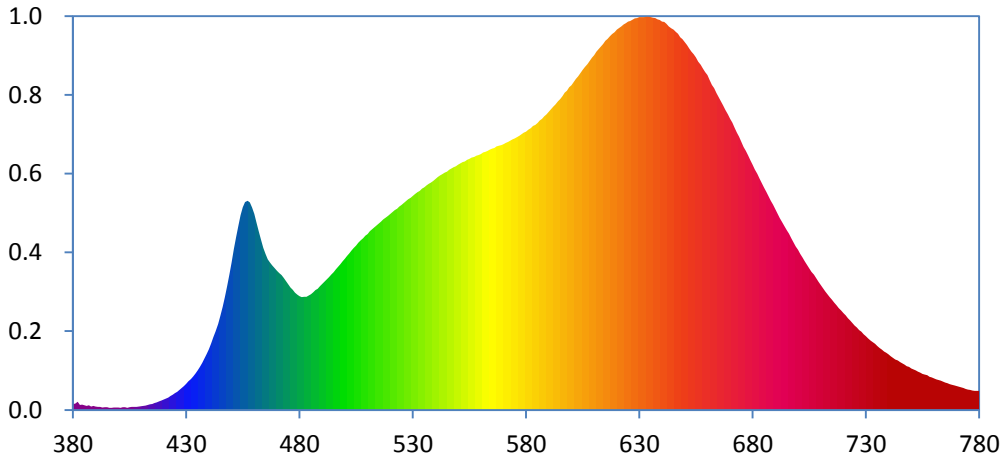

94
R_f
100
R_g
CCT
3056 K
D_{uv}
-0.0013
-20%
+20%


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
-0.02
0.00
0.01
0.03
0.02
0.05
0.06
0.06
0.00
-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
94
94
97
92
97
92
90
91
93
94
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

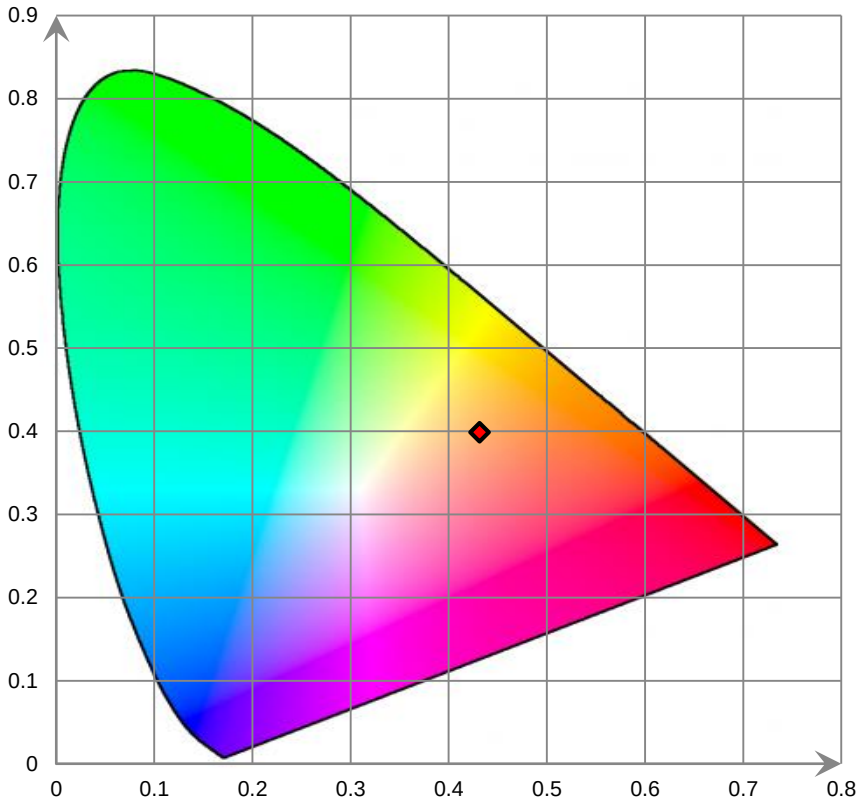
Relative Spectral Power Distribution



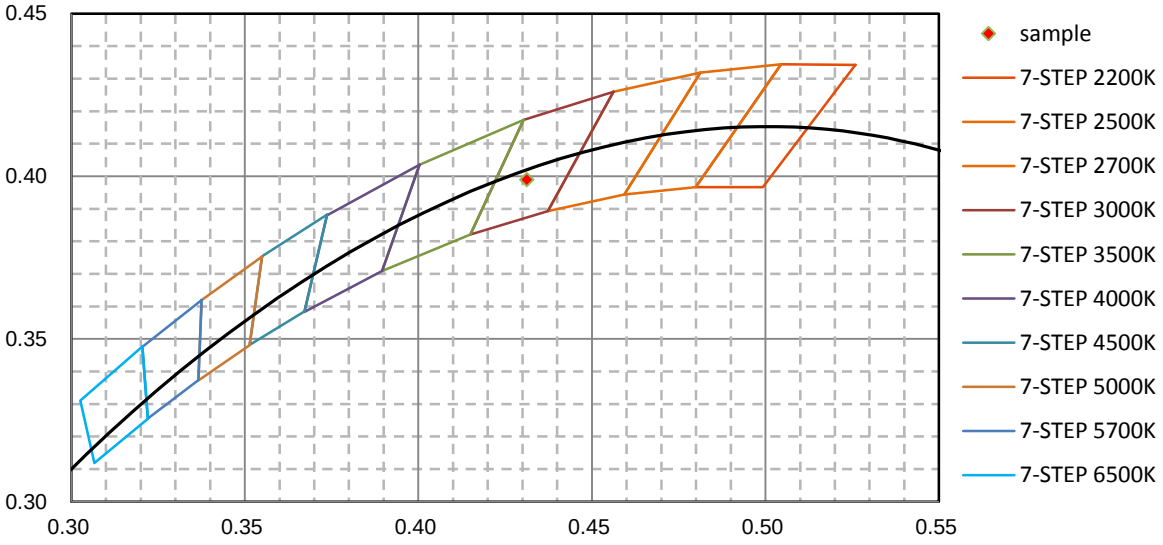
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	3.172E-01	421	5.934E-01	462	9.436E+00	503	8.439E+00	544	1.254E+01
381	3.295E-01	422	6.517E-01	463	8.993E+00	504	8.561E+00	545	1.260E+01
382	4.348E-01	423	7.277E-01	464	8.565E+00	505	8.691E+00	546	1.270E+01
383	2.674E-01	424	8.052E-01	465	8.243E+00	506	8.832E+00	547	1.277E+01
384	2.840E-01	425	8.863E-01	466	7.968E+00	507	8.981E+00	548	1.284E+01
385	2.450E-01	426	9.599E-01	467	7.783E+00	508	9.082E+00	549	1.289E+01
386	2.192E-01	427	1.058E+00	468	7.631E+00	509	9.210E+00	550	1.296E+01
387	2.398E-01	428	1.151E+00	469	7.478E+00	510	9.304E+00	551	1.303E+01
388	1.830E-01	429	1.256E+00	470	7.355E+00	511	9.451E+00	552	1.310E+01
389	2.059E-01	430	1.374E+00	471	7.228E+00	512	9.544E+00	553	1.313E+01
390	1.817E-01	431	1.510E+00	472	7.124E+00	513	9.650E+00	554	1.323E+01
391	1.561E-01	432	1.634E+00	473	6.983E+00	514	9.757E+00	555	1.328E+01
392	1.657E-01	433	1.763E+00	474	6.808E+00	515	9.854E+00	556	1.334E+01
393	1.341E-01	434	1.922E+00	475	6.635E+00	516	9.953E+00	557	1.338E+01
394	1.389E-01	435	2.086E+00	476	6.479E+00	517	1.008E+01	558	1.343E+01
395	1.530E-01	436	2.279E+00	477	6.349E+00	518	1.015E+01	559	1.348E+01
396	1.047E-01	437	2.482E+00	478	6.202E+00	519	1.026E+01	560	1.353E+01
397	1.181E-01	438	2.715E+00	479	6.098E+00	520	1.036E+01	561	1.361E+01
398	1.199E-01	439	2.945E+00	480	6.010E+00	521	1.047E+01	562	1.364E+01
399	1.289E-01	440	3.210E+00	481	5.962E+00	522	1.056E+01	563	1.369E+01
400	1.215E-01	441	3.512E+00	482	5.978E+00	523	1.063E+01	564	1.375E+01
401	1.180E-01	442	3.847E+00	483	5.981E+00	524	1.075E+01	565	1.381E+01
402	1.409E-01	443	4.162E+00	484	6.042E+00	525	1.083E+01	566	1.384E+01
403	1.376E-01	444	4.541E+00	485	6.119E+00	526	1.094E+01	567	1.392E+01
404	1.186E-01	445	4.975E+00	486	6.212E+00	527	1.104E+01	568	1.397E+01
405	1.422E-01	446	5.434E+00	487	6.333E+00	528	1.114E+01	569	1.400E+01
406	1.542E-01	447	5.971E+00	488	6.408E+00	529	1.121E+01	570	1.405E+01
407	1.691E-01	448	6.535E+00	489	6.545E+00	530	1.132E+01	571	1.411E+01
408	1.688E-01	449	7.142E+00	490	6.652E+00	531	1.141E+01	572	1.417E+01
409	1.777E-01	450	7.795E+00	491	6.780E+00	532	1.151E+01	573	1.423E+01
410	1.901E-01	451	8.498E+00	492	6.901E+00	533	1.158E+01	574	1.431E+01
411	2.126E-01	452	9.132E+00	493	7.021E+00	534	1.170E+01	575	1.435E+01
412	2.325E-01	453	9.725E+00	494	7.165E+00	535	1.177E+01	576	1.443E+01
413	2.591E-01	454	1.030E+01	495	7.288E+00	536	1.187E+01	577	1.450E+01
414	2.887E-01	455	1.071E+01	496	7.427E+00	537	1.195E+01	578	1.458E+01
415	3.165E-01	456	1.098E+01	497	7.564E+00	538	1.203E+01	579	1.465E+01
416	3.626E-01	457	1.106E+01	498	7.701E+00	539	1.210E+01	580	1.471E+01
417	4.003E-01	458	1.097E+01	499	7.854E+00	540	1.220E+01	581	1.480E+01
418	4.494E-01	459	1.071E+01	500	7.997E+00	541	1.231E+01	582	1.490E+01
419	4.980E-01	460	1.036E+01	501	8.144E+00	542	1.239E+01	583	1.501E+01
420	5.448E-01	461	9.883E+00	502	8.283E+00	543	1.246E+01	584	1.507E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	1.517E+01	626	2.056E+01	667	1.610E+01	708	6.955E+00	749	2.268E+00
586	1.529E+01	627	2.063E+01	668	1.586E+01	709	6.776E+00	750	2.195E+00
587	1.538E+01	628	2.070E+01	669	1.562E+01	710	6.604E+00	751	2.148E+00
588	1.552E+01	629	2.072E+01	670	1.538E+01	711	6.435E+00	752	2.087E+00
589	1.562E+01	630	2.076E+01	671	1.519E+01	712	6.265E+00	753	2.024E+00
590	1.575E+01	631	2.077E+01	672	1.491E+01	713	6.115E+00	754	1.975E+00
591	1.589E+01	632	2.076E+01	673	1.467E+01	714	5.967E+00	755	1.908E+00
592	1.603E+01	633	2.078E+01	674	1.444E+01	715	5.836E+00	756	1.865E+00
593	1.615E+01	634	2.078E+01	675	1.418E+01	716	5.683E+00	757	1.831E+00
594	1.631E+01	635	2.077E+01	676	1.390E+01	717	5.539E+00	758	1.758E+00
595	1.644E+01	636	2.073E+01	677	1.370E+01	718	5.391E+00	759	1.713E+00
596	1.660E+01	637	2.072E+01	678	1.345E+01	719	5.248E+00	760	1.664E+00
597	1.677E+01	638	2.064E+01	679	1.320E+01	720	5.121E+00	761	1.625E+00
598	1.688E+01	639	2.062E+01	680	1.296E+01	721	4.995E+00	762	1.591E+00
599	1.706E+01	640	2.053E+01	681	1.272E+01	722	4.847E+00	763	1.540E+00
600	1.717E+01	641	2.051E+01	682	1.249E+01	723	4.729E+00	764	1.495E+00
601	1.734E+01	642	2.042E+01	683	1.223E+01	724	4.592E+00	765	1.453E+00
602	1.750E+01	643	2.027E+01	684	1.199E+01	725	4.455E+00	766	1.407E+00
603	1.764E+01	644	2.018E+01	685	1.175E+01	726	4.358E+00	767	1.370E+00
604	1.780E+01	645	2.011E+01	686	1.153E+01	727	4.228E+00	768	1.332E+00
605	1.798E+01	646	1.998E+01	687	1.130E+01	728	4.129E+00	769	1.295E+00
606	1.812E+01	647	1.989E+01	688	1.106E+01	729	4.001E+00	770	1.259E+00
607	1.828E+01	648	1.969E+01	689	1.086E+01	730	3.894E+00	771	1.220E+00
608	1.844E+01	649	1.960E+01	690	1.061E+01	731	3.781E+00	772	1.187E+00
609	1.861E+01	650	1.945E+01	691	1.038E+01	732	3.658E+00	773	1.158E+00
610	1.875E+01	651	1.929E+01	692	1.014E+01	733	3.572E+00	774	1.115E+00
611	1.893E+01	652	1.911E+01	693	9.937E+00	734	3.495E+00	775	1.078E+00
612	1.907E+01	653	1.894E+01	694	9.710E+00	735	3.384E+00	776	1.060E+00
613	1.921E+01	654	1.881E+01	695	9.496E+00	736	3.280E+00	777	1.025E+00
614	1.934E+01	655	1.863E+01	696	9.312E+00	737	3.183E+00	778	1.004E+00
615	1.952E+01	656	1.841E+01	697	9.071E+00	738	3.095E+00	779	1.006E+00
616	1.962E+01	657	1.824E+01	698	8.863E+00	739	3.012E+00	780	1.008E+00
617	1.975E+01	658	1.804E+01	699	8.645E+00	740	2.927E+00		
618	1.986E+01	659	1.785E+01	700	8.472E+00	741	2.837E+00		
619	1.997E+01	660	1.770E+01	701	8.252E+00	742	2.755E+00		
620	2.010E+01	661	1.743E+01	702	8.068E+00	743	2.671E+00		
621	2.018E+01	662	1.719E+01	703	7.853E+00	744	2.616E+00		
622	2.027E+01	663	1.701E+01	704	7.669E+00	745	2.536E+00		
623	2.038E+01	664	1.676E+01	705	7.491E+00	746	2.469E+00		
624	2.045E+01	665	1.653E+01	706	7.294E+00	747	2.396E+00		
625	2.052E+01	666	1.632E+01	707	7.143E+00	748	2.309E+00		

CIE 1931 x y Chromaticity Diagram



7-Step Chromaticity Quadrangles



Model: 11PAR30DIM/930FL40/SL

[Goniophotometer System]

The Stabilization time: **30 minutes**

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

Test orientation: **Base up**

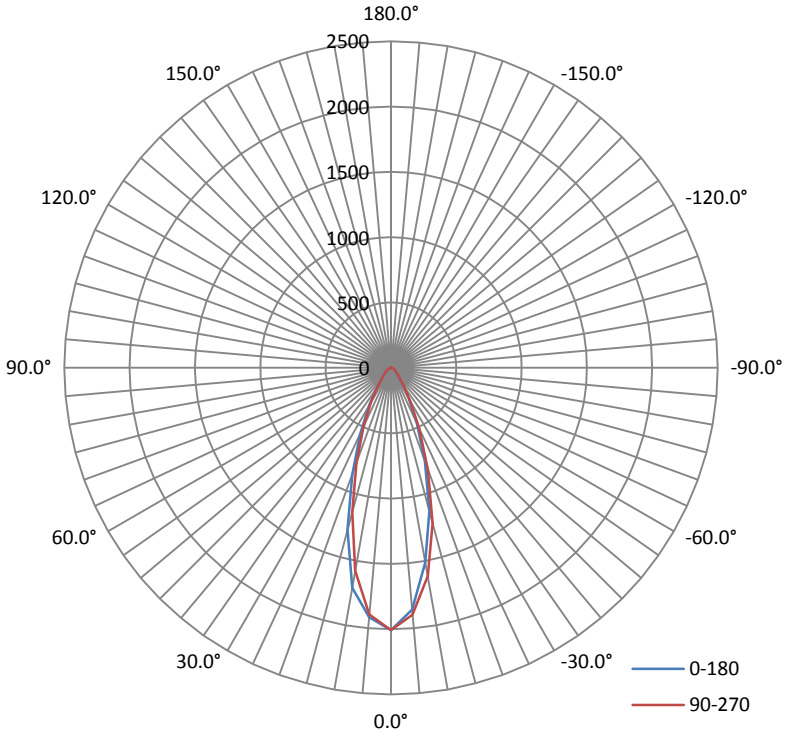
Electrical Measurement

Input Voltage (V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.10	60	0.0918	10.480	0.9506

Photometric Measurement

Luminous Flux (lm)	Efficacy (lm/W)	I_{max} (cd)	S/MH (C0/180)	S/MH (C90/270)
996.202	95.06	2009.0	0.55	0.58

Luminous Intensity Distribution



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle (50% I_{max}):	34.9	34.7	34.4	34.6	34.7
Field Angle (10% I_{max}):	67.3	67.5	67.8	67.8	67.6

Luminous Intensity (cd) Distribution Data

C / γ	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0.0°	2006	2006	2006	2006	2006	2006	2006	2006
5.0°	1917	1917	1918	1912	1894	1872	1859	1852
10.0°	1709	1701	1667	1623	1575	1540	1507	1485
15.0°	1282	1264	1232	1186	1143	1115	1100	1093
20.0°	868	855	840	812	775	757	742	732
25.0°	554	545	538	520	500	487	467	453
30.0°	330	327	324	318	306	296	281	266
35.0°	190	194	193	190	183	177	167	156
40.0°	115	117	118	116	113	109	102	97
45.0°	76	77	77	77	74	72	69	66
50.0°	56	56	56	56	55	54	53	51
55.0°	47	46	46	46	45	44	43	42
60.0°	37	37	37	36	35	34	33	32
65.0°	28	27	27	27	26	25	24	24
70.0°	20	20	20	20	19	18	18	18
75.0°	14	14	14	14	13	13	12	12
80.0°	9	9	9	8	8	8	8	8
85.0°	5	5	4	4	4	4	3	3
90.0°	2	2	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°	1	1	1	1	1	1	1	1
150.0°	2	2	2	2	2	2	2	2
155.0°	2	2	2	2	2	2	2	2
160.0°	2	2	2	2	2	2	2	2
165.0°	2	2	2	2	2	2	2	2
170.0°	2	2	2	2	2	2	2	2
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 / γ	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
0.0°	2006	2006	2006	2006	2006	2006	2006	2006
5.0°	1857	1854	1862	1881	1896	1907	1920	1925
10.0°	1515	1526	1548	1580	1618	1653	1692	1716
15.0°	1133	1143	1163	1194	1230	1268	1294	1310
20.0°	764	763	774	800	826	860	884	897
25.0°	470	467	472	494	511	534	557	569
30.0°	273	271	277	290	301	317	332	339
35.0°	161	160	162	168	175	183	193	197
40.0°	97	97	99	103	108	112	117	118
45.0°	67	68	69	71	72	75	77	77
50.0°	51	52	53	54	55	56	57	57
55.0°	42	42	43	44	45	46	47	47
60.0°	33	33	34	35	36	37	37	38
65.0°	25	25	25	26	27	27	28	28
70.0°	18	18	19	19	20	20	21	21
75.0°	13	13	13	13	14	14	15	15
80.0°	8	8	8	9	9	9	10	10
85.0°	4	4	4	4	5	5	5	5
90.0°	1	1	1	1	2	2	2	2
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	0	0	0	0	0	0	0
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	46.5	4.67
5-10	125.1	12.56
10-15	164.8	16.54
15-20	163.1	16.37
20-25	135.5	13.60
25-30	100.1	10.05
30-35	68.8	6.90
35-40	46.5	4.68
40-45	32.7	3.28
45-50	25.3	2.54
50-55	21.4	2.15
55-60	18.5	1.86
60-65	14.8	1.49
65-70	11.4	1.14
70-75	8.5	0.85
75-80	5.9	0.59
80-85	3.4	0.35
85-90	1.4	0.14
90-95	0.3	0.03
95-100	0.0	0.01
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	0.01
135-140	0.1	0.01
140-145	0.2	0.02
145-150	0.3	0.03
150-155	0.3	0.03
155-160	0.3	0.03
160-165	0.3	0.03
165-170	0.2	0.02
170-175	0.1	0.01
175-180	0.0	0.00

Deg	Flux (lm)	%
0-5	46.5	4.67
0-10	171.6	17.23
0-15	336.4	33.77
0-20	499.5	50.14
0-25	635.0	63.74
0-30	735.1	73.79
0-35	803.9	80.69
0-40	850.4	85.37
0-45	883.1	88.65
0-50	908.5	91.19
0-55	929.8	93.34
0-60	948.3	95.20
0-65	963.2	96.69
0-70	974.6	97.83
0-75	983.1	98.68
0-80	989.0	99.27
0-85	992.4	99.62
0-90	993.8	99.76
0-95	994.2	99.79
0-100	994.2	99.80
0-105	994.2	99.80
0-110	994.2	99.80
0-115	994.2	99.80
0-120	994.2	99.80
0-125	994.2	99.80
0-130	994.3	99.81
0-135	994.4	99.82
0-140	994.5	99.83
0-145	994.7	99.85
0-150	995.0	99.88
0-155	995.3	99.91
0-160	995.6	99.94
0-165	995.9	99.97
0-170	996.1	99.99
0-175	996.2	100.00
0-180	996.2	100.00

[Additional Test]

Model: 11PAR30DIM/930FL40/SL

Test Item	Test Voltage (V)	Frequency (Hz)	Test Result
Total Harmonic Distortion:	120.0	60	16.32%

Model: 11PAR30DIM/930FL40/B/SL

Test Item	Test Voltage (V)	Frequency (Hz)	Test Result
Total Harmonic Distortion:	120.0	60	16.62%

6. Product Photo

Photo for 11PAR30DIM/930FL40/SL

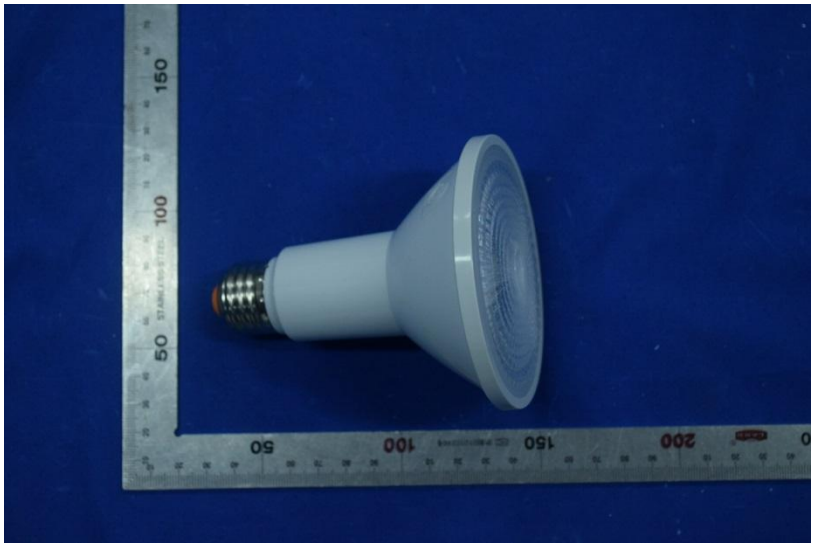


Photo for 11PAR30DIM/930FL40/B/SL

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**********