

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

Test Model: SLFT6/9CCT5S/DUALDIM

Report Type:	Electrical and Photometric tests including: Luminous Flux, Chromaticity, Luminous Intensity Distribution
Project Engineer:	Bay Wang
Report Number:	RKSB221207002-10-2
Test Date:	2022-12-08 to 2022-12-09
Report Date:	2022-12-23
Reviewed By:	Seven Xia / EE Engineer
Prepared By:	Bay Area Compliance Laboratories Corp. (Kunshan). No. 248 Chenghu Road, Kunshan, Jiangsu, People's Republic of China Tel: +86-0512-86175000 Fax: +86-0512-88934268
Accreditation:	The IAS Accreditation Number TL-1044.

1. Product Description#

General Information:

One sample was received on 2022-12-07 and used for testing.

Model Tested:	SLFT6/9CCT5S/DUALDIM
Manufacturer:	GREEN CREATIVE LTD
Brand Name:	GREEN CREATIVE
Product Designation:	LED Recessed Downlight
Burning Time Before Test:	0hour(For New Products)
Color Tunable:	White-Tunable
CCT Range:	2700K, 3000K, 3500K, 4000K, 5000K
Least Efficient Setting:	2700K
Most Consumptive Setting:	2700K
Default Setting:	3500K

Rated Values:

Rated Voltage/Frequency:	120-277VAC 50/60Hz
Rated Power:	17W/13.5W/10W
Nominal CCT:	2700K/3000K/3500K/4000K/5000K
Nominal Lumen Output:	1500lm/1580lm/1650lm/1650lm/1650lm @ 17W

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 Equipment
- IES TM-30-18*: IES Method for Evaluating Light Source Color Rendition

3. Description of Test Equipment

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
2.0m integrating sphere	EVERFINE	R98	G121960CS1361154D	2022-06-21	2023-06-20
spectroradiometer	EVERFINE	HAAS-2000	M12048CS1361148	2022-06-21	2023-06-20
Digital CC&CV DC Power Supply	EVERFINE	WY305	G115986CN1361134	2022-06-21	2023-06-20
Thermal Meter	ANYMETRE	TH-20E	N/A	2022-11-11	2023-11-10
Standard Light Source	Osram	24V/50W	JWWCR020106	2021-09-15	2023-09-14
Digital Power Meter	YOKOGAWA	WT210	91KB35700	2022-11-03	2023-11-02
Intelligence ac power supply	EVERFINE	DPS1005	G119890CS1361121	2022-06-21	2023-06-20
AC Power Supply	INVENTFINE	CHP-5KVA	900511765	2022-06-21	2023-06-20
DC Power Supply	INVENTFINE	WL3010	JWDMP030001	2022-06-21	2023-06-20
Power Meter	INVENTFINE	WT500	GSDSQ200007	2022-11-03	2023-11-02

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
Goniophotometer	INVENTFINE	GPM-1900	YWGCF120001	2022-11-14	2023-11-13
Wireless Weather Station	ZHONGXING	KG218	N/A	2022-06-21	2023-06-20
Standard Light Source	INVENTFINE	N/A	JWBYR040008	2021-12-23	2023-12-22

Statement of Traceability: Bay Area Compliance Laboratories Corp. (Kunshan) attested that all calibration has been performed using suitable standards traceable to National Primary Standards and International System of Units (SI).

4. Test Method

Product was tested with no seasoning. All stabilization and measurements were made in compliance with IES LM-79-08. The product was operated at rated voltage or at voltage required by manufacturer. The ambient temperature of the sample was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ during measurement. And relative humidity is less than 65%.

Integrating Sphere System

The system includes AC power source, digital power meter, DC power supply, Spectroradiometer, and integrating sphere. The integrating sphere system is calibrated by standard spectrum light source before measurement.

4π geometry was used during measurement. The product was operated in its intended orientation in application and was recorded in this report.

The uncertainty of the light output (luminous flux) measurements is $U_{rel}=2.7\%$ ($k=2$), at the 95% confidence level. The uncertainty of the correlated color temperature measurements is $U=27\text{K}$ ($k=2$), at the 95% confidence level. The uncertainty of the CRI is $U=2.7(k=2)$, at the 95% confidence level.

The uncertainty of power meter AC current $U_{rel}=0.27\%$ of rdg, AC Voltage $U_{rel}=0.26\%$ of rdg, Power $U_{rel}=0.41\%$ ($k=2$), 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 flux is $U_{rel}=2.6\%$ ($k=2$), at the 95% confidence level.

Fidelity Index and Gamut Index Calculation

The R_i , R_g was calculated according to IES TM-30-18 by using calculation tools. The calculation was based on the measured SPD from 380nm to 780nm with 1nm intervals. All the colors in this report is for reference only.

5. Test Result

[Integrating Sphere System]

Control Setting: 2700K

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

Test orientation: **Downward**

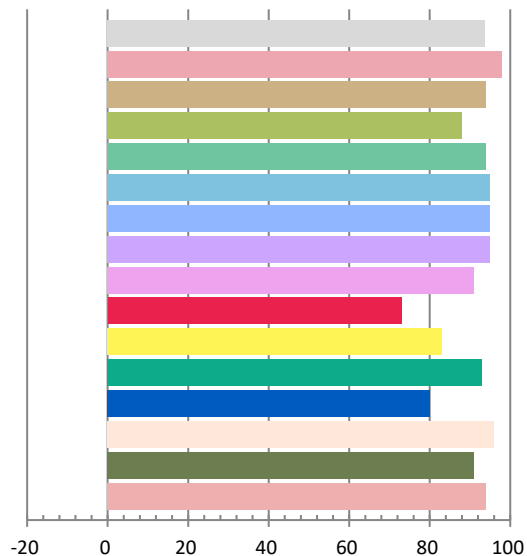
Photometric and Electrical Measurement Result

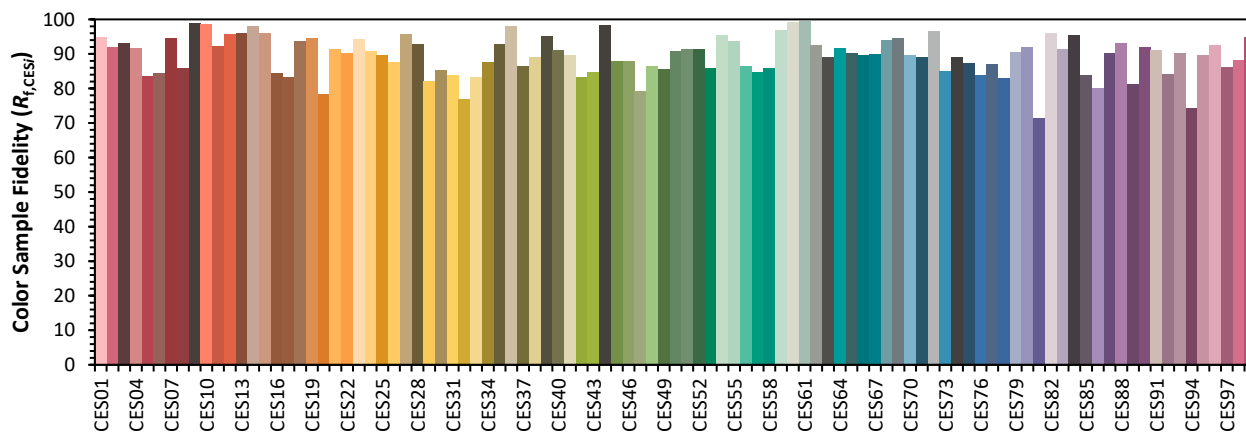
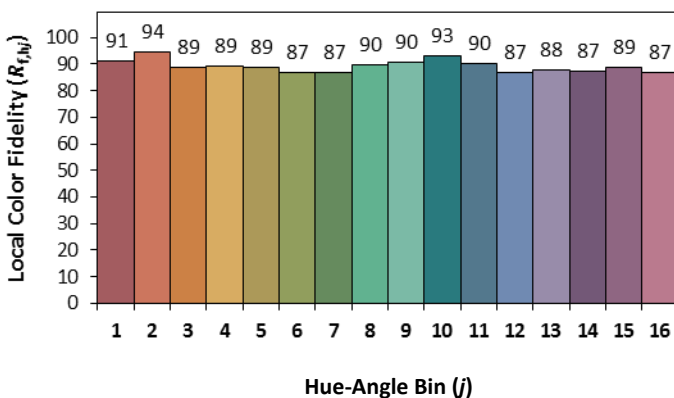
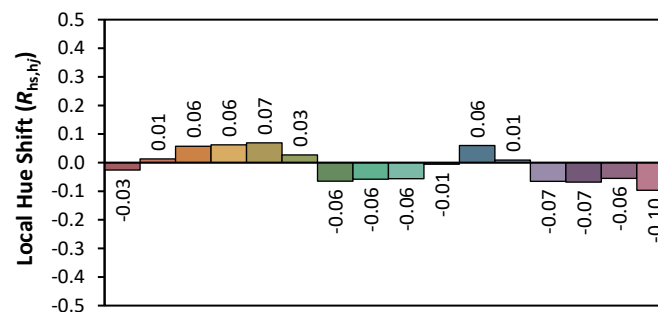
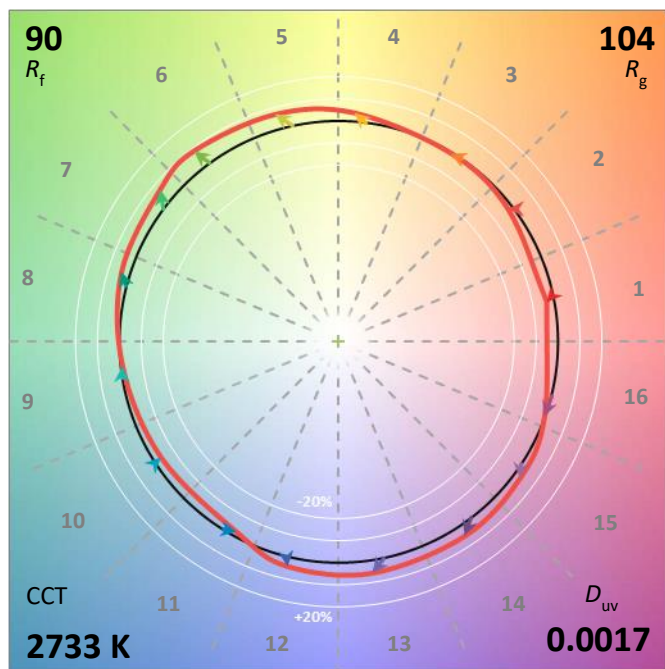
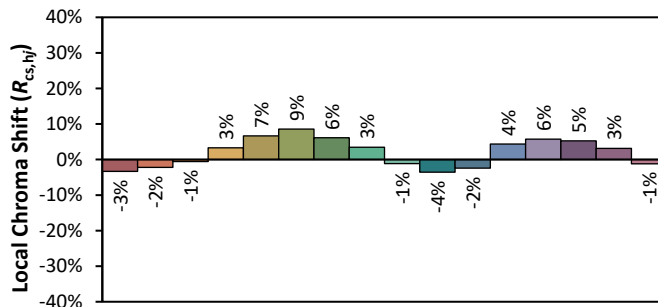
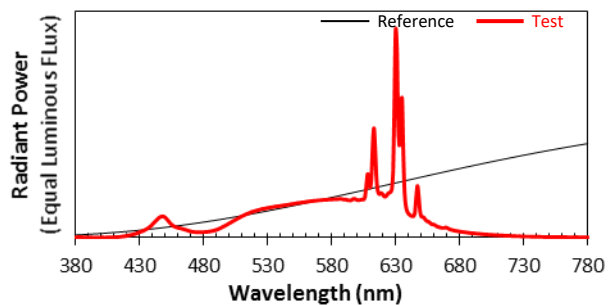
Voltage(V)	Frequency(Hz)	Current(A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy(lm/W)
120	60	0.1357	16.04	0.9845	1829.7	114.10

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
5.362	2734	0.00169	0.4600	0.4152	0.2605	0.5291

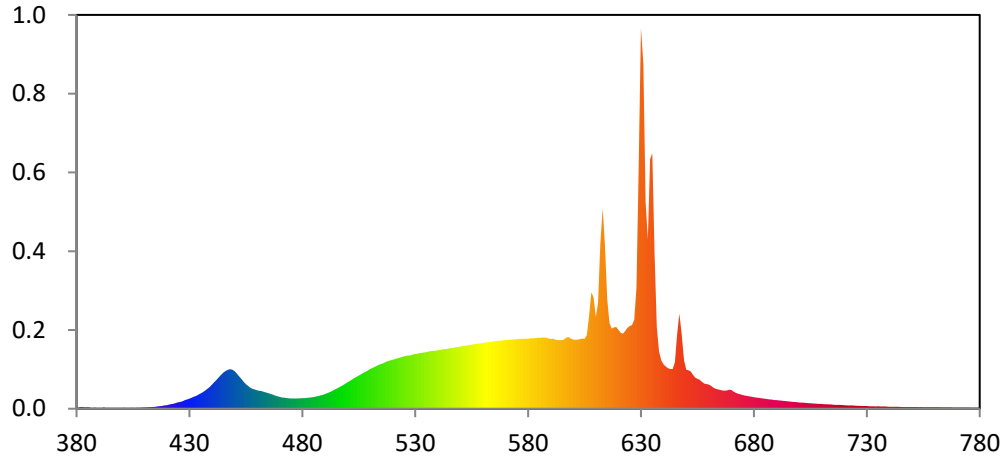
Color Rendering Index

Ra			
93.7			
R1	R2	R3	R4
98	94	88	94
R5	R6	R7	R8
95	95	95	91
R9	R10	R11	R12
73	83	93	80
R13	R14	R15	
96	91	94	





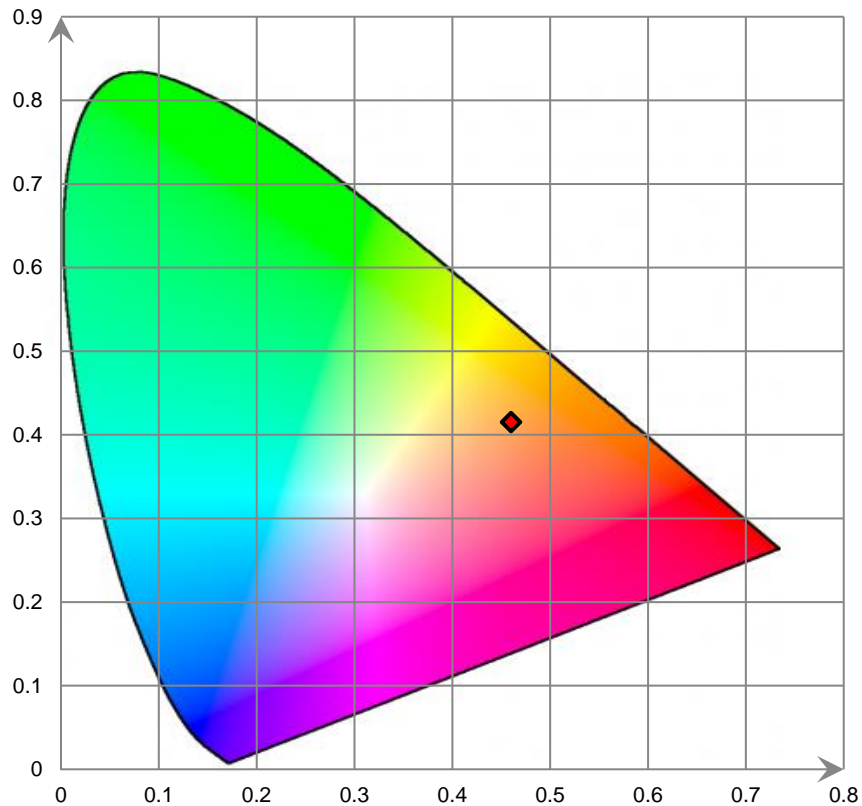
Relative Spectral Power Distribution



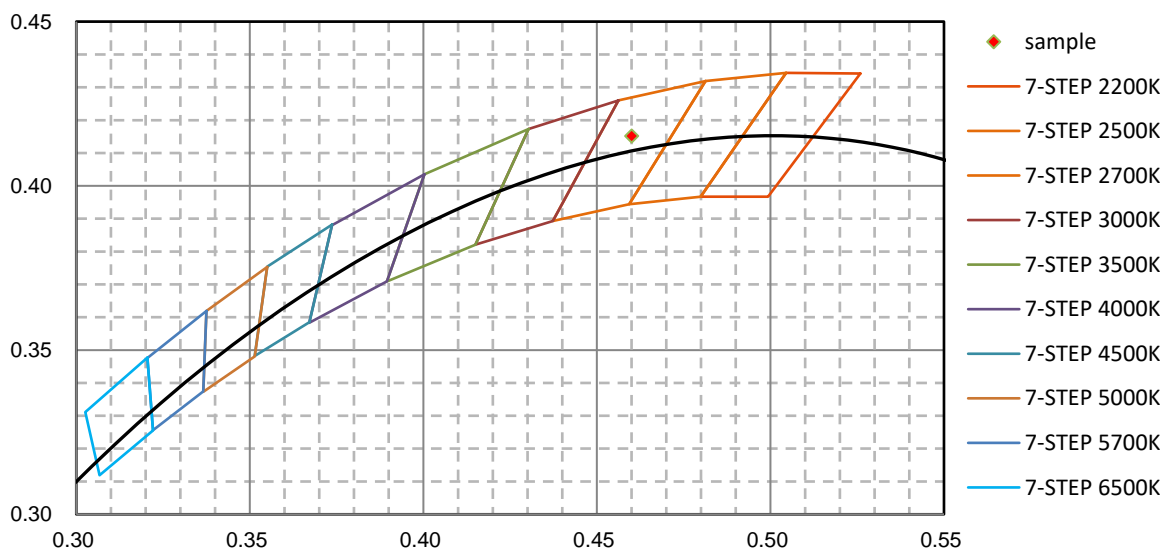
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	3.452E-01	421	1.581E+00	462	6.818E+00	503	1.187E+01	544	2.319E+01
381	4.052E-01	422	1.834E+00	463	6.532E+00	504	1.236E+01	545	2.341E+01
382	6.746E-01	423	1.953E+00	464	6.282E+00	505	1.288E+01	546	2.350E+01
383	5.284E-01	424	2.244E+00	465	6.054E+00	506	1.335E+01	547	2.363E+01
384	5.108E-01	425	2.452E+00	466	5.738E+00	507	1.388E+01	548	2.383E+01
385	5.363E-01	426	2.674E+00	467	5.456E+00	508	1.435E+01	549	2.397E+01
386	4.520E-01	427	2.897E+00	468	5.073E+00	509	1.486E+01	550	2.408E+01
387	1.140E-01	428	3.364E+00	469	4.849E+00	510	1.537E+01	551	2.430E+01
388	4.267E-01	429	3.613E+00	470	4.609E+00	511	1.579E+01	552	2.438E+01
389	2.498E-01	430	3.944E+00	471	4.366E+00	512	1.618E+01	553	2.460E+01
390	2.264E-01	431	4.309E+00	472	4.258E+00	513	1.662E+01	554	2.473E+01
391	1.168E-01	432	4.644E+00	473	4.132E+00	514	1.704E+01	555	2.485E+01
392	5.155E-01	433	4.979E+00	474	4.020E+00	515	1.735E+01	556	2.500E+01
393	2.280E-01	434	5.474E+00	475	3.995E+00	516	1.768E+01	557	2.512E+01
394	3.061E-01	435	5.989E+00	476	3.960E+00	517	1.815E+01	558	2.526E+01
395	2.083E-01	436	6.471E+00	477	3.956E+00	518	1.846E+01	559	2.531E+01
396	2.828E-01	437	7.050E+00	478	3.992E+00	519	1.875E+01	560	2.553E+01
397	1.208E-01	438	7.759E+00	479	4.015E+00	520	1.900E+01	561	2.561E+01
398	2.767E-01	439	8.465E+00	480	4.091E+00	521	1.921E+01	562	2.579E+01
399	2.343E-01	440	9.362E+00	481	4.127E+00	522	1.954E+01	563	2.588E+01
400	2.072E-01	441	1.030E+01	482	4.235E+00	523	1.974E+01	564	2.606E+01
401	3.685E-01	442	1.118E+01	483	4.277E+00	524	2.002E+01	565	2.612E+01
402	2.677E-01	443	1.218E+01	484	4.405E+00	525	2.030E+01	566	2.625E+01
403	1.972E-01	444	1.313E+01	485	4.529E+00	526	2.052E+01	567	2.634E+01
404	3.023E-01	445	1.404E+01	486	4.724E+00	527	2.060E+01	568	2.638E+01
405	3.270E-01	446	1.467E+01	487	4.897E+00	528	2.076E+01	569	2.654E+01
406	2.647E-01	447	1.509E+01	488	5.127E+00	529	2.101E+01	570	2.660E+01
407	3.533E-01	448	1.530E+01	489	5.357E+00	530	2.122E+01	571	2.666E+01
408	3.351E-01	449	1.512E+01	490	5.684E+00	531	2.135E+01	572	2.672E+01
409	4.075E-01	450	1.455E+01	491	5.999E+00	532	2.153E+01	573	2.685E+01
410	4.498E-01	451	1.365E+01	492	6.384E+00	533	2.165E+01	574	2.689E+01
411	4.953E-01	452	1.262E+01	493	6.782E+00	534	2.183E+01	575	2.696E+01
412	5.719E-01	453	1.152E+01	494	7.243E+00	535	2.194E+01	576	2.703E+01
413	5.892E-01	454	1.040E+01	495	7.732E+00	536	2.221E+01	577	2.709E+01
414	7.072E-01	455	9.519E+00	496	8.154E+00	537	2.234E+01	578	2.714E+01
415	7.689E-01	456	8.800E+00	497	8.639E+00	538	2.241E+01	579	2.712E+01
416	9.403E-01	457	8.160E+00	498	9.148E+00	539	2.247E+01	580	2.717E+01
417	1.026E+00	458	7.726E+00	499	9.708E+00	540	2.270E+01	581	2.729E+01
418	1.110E+00	459	7.472E+00	500	1.023E+01	541	2.276E+01	582	2.729E+01
419	1.322E+00	460	7.141E+00	501	1.071E+01	542	2.302E+01	583	2.739E+01
420	1.391E+00	461	6.957E+00	502	1.128E+01	543	2.309E+01	584	2.750E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	2.748E+01	626	3.246E+01	667	7.042E+00	708	1.926E+00	749	6.106E-01
586	2.756E+01	627	3.452E+01	668	7.074E+00	709	1.860E+00	750	5.944E-01
587	2.762E+01	628	4.709E+01	669	7.380E+00	710	1.846E+00	751	6.239E-01
588	2.753E+01	629	9.461E+01	670	7.247E+00	711	1.757E+00	752	6.166E-01
589	2.726E+01	630	1.477E+02	671	6.647E+00	712	1.727E+00	753	5.780E-01
590	2.708E+01	631	1.337E+02	672	6.172E+00	713	1.644E+00	754	5.900E-01
591	2.717E+01	632	8.032E+01	673	5.869E+00	714	1.649E+00	755	5.475E-01
592	2.682E+01	633	6.566E+01	674	5.571E+00	715	1.548E+00	756	5.558E-01
593	2.665E+01	634	9.675E+01	675	5.329E+00	716	1.508E+00	757	5.513E-01
594	2.660E+01	635	9.911E+01	676	5.102E+00	717	1.505E+00	758	5.608E-01
595	2.656E+01	636	6.007E+01	677	4.965E+00	718	1.461E+00	759	5.407E-01
596	2.693E+01	637	3.173E+01	678	4.801E+00	719	1.417E+00	760	5.309E-01
597	2.768E+01	638	2.222E+01	679	4.639E+00	720	1.368E+00	761	5.312E-01
598	2.776E+01	639	1.877E+01	680	4.482E+00	721	1.303E+00	762	5.406E-01
599	2.715E+01	640	1.714E+01	681	4.335E+00	722	1.253E+00	763	5.075E-01
600	2.678E+01	641	1.631E+01	682	4.210E+00	723	1.285E+00	764	4.777E-01
601	2.675E+01	642	1.570E+01	683	4.073E+00	724	1.224E+00	765	5.131E-01
602	2.681E+01	643	1.538E+01	684	3.980E+00	725	1.166E+00	766	4.835E-01
603	2.699E+01	644	1.539E+01	685	3.856E+00	726	1.134E+00	767	4.965E-01
604	2.716E+01	645	1.801E+01	686	3.745E+00	727	1.125E+00	768	4.599E-01
605	2.711E+01	646	2.878E+01	687	3.599E+00	728	1.040E+00	769	4.606E-01
606	2.862E+01	647	3.685E+01	688	3.510E+00	729	1.062E+00	770	4.584E-01
607	3.610E+01	648	2.924E+01	689	3.382E+00	730	1.044E+00	771	4.473E-01
608	4.515E+01	649	1.889E+01	690	3.322E+00	731	9.538E-01	772	4.537E-01
609	4.316E+01	650	1.513E+01	691	3.221E+00	732	9.288E-01	773	4.054E-01
610	3.559E+01	651	1.489E+01	692	3.146E+00	733	9.463E-01	774	4.192E-01
611	4.116E+01	652	1.446E+01	693	3.027E+00	734	9.031E-01	775	4.072E-01
612	6.391E+01	653	1.318E+01	694	2.984E+00	735	9.154E-01	776	3.903E-01
613	7.773E+01	654	1.207E+01	695	2.880E+00	736	8.839E-01	777	3.479E-01
614	6.321E+01	655	1.164E+01	696	2.810E+00	737	8.560E-01	778	3.872E-01
615	4.248E+01	656	1.125E+01	697	2.669E+00	738	8.612E-01	779	3.879E-01
616	3.333E+01	657	1.044E+01	698	2.595E+00	739	8.059E-01	780	3.886E-01
617	3.106E+01	658	9.740E+00	699	2.514E+00	740	7.782E-01		
618	3.154E+01	659	9.570E+00	700	2.427E+00	741	7.586E-01		
619	3.168E+01	660	9.367E+00	701	2.382E+00	742	7.367E-01		
620	3.057E+01	661	8.863E+00	702	2.332E+00	743	7.249E-01		
621	2.946E+01	662	8.199E+00	703	2.222E+00	744	7.147E-01		
622	2.913E+01	663	7.770E+00	704	2.187E+00	745	6.703E-01		
623	3.021E+01	664	7.536E+00	705	2.143E+00	746	6.232E-01		
624	3.139E+01	665	7.320E+00	706	2.039E+00	747	6.260E-01		
625	3.206E+01	666	7.099E+00	707	1.981E+00	748	6.484E-01		

CIE 1931xy Chromaticity Diagram



7-Step Chromaticity Quadrangles



Control Setting: 3000K

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

Test orientation: **Downward**

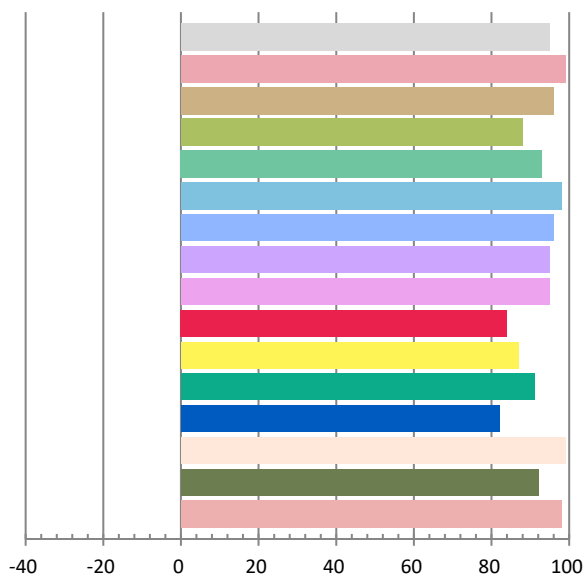
Photometric and Electrical Measurement Result

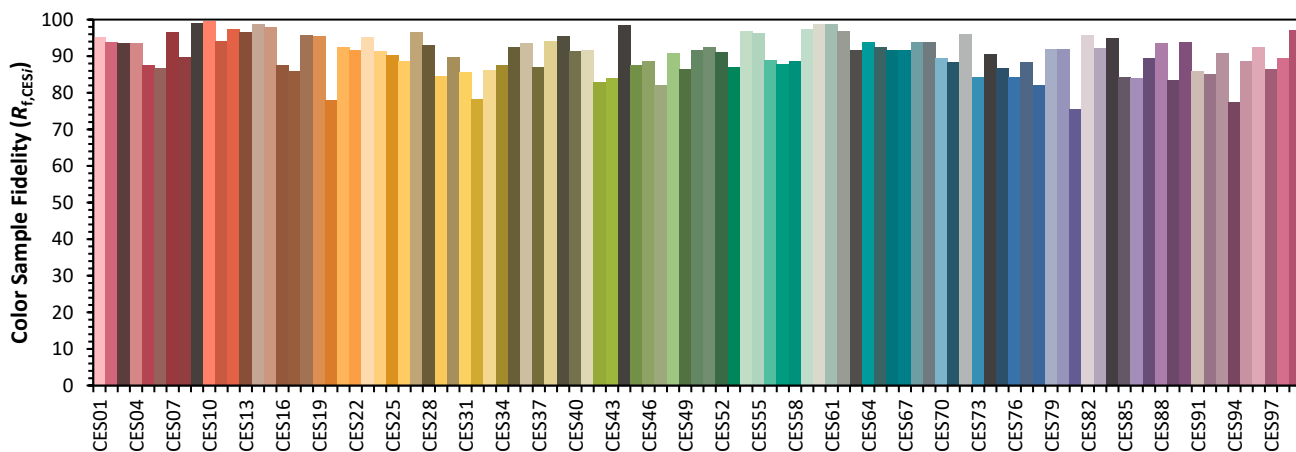
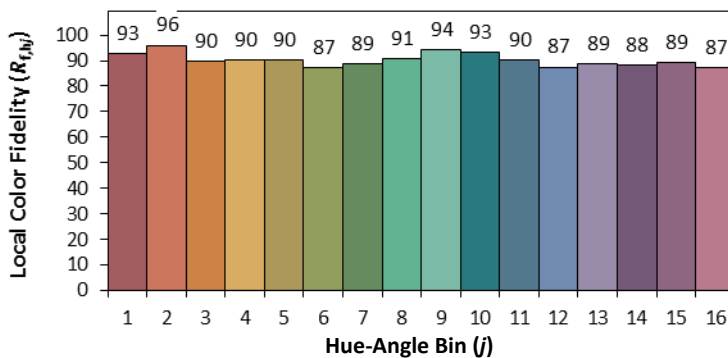
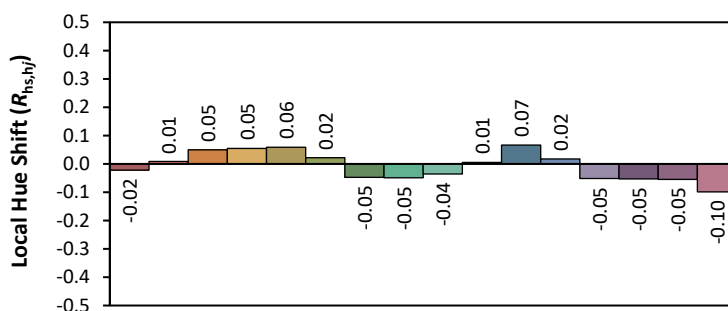
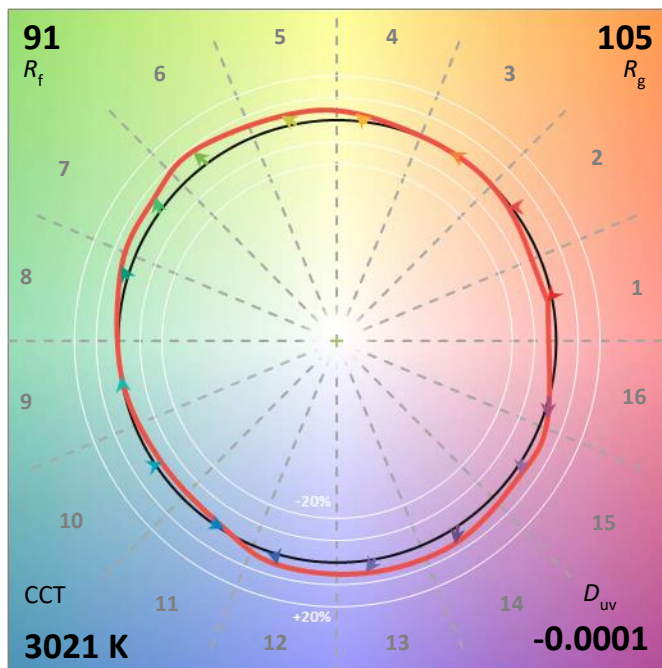
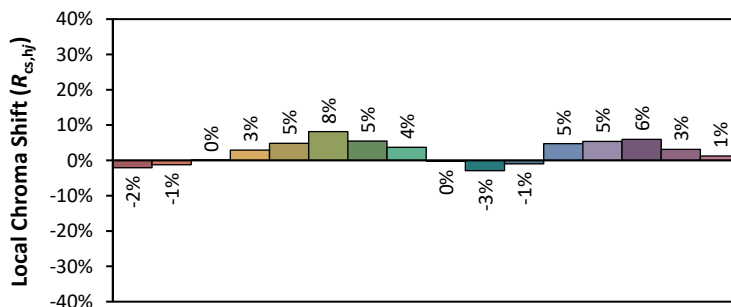
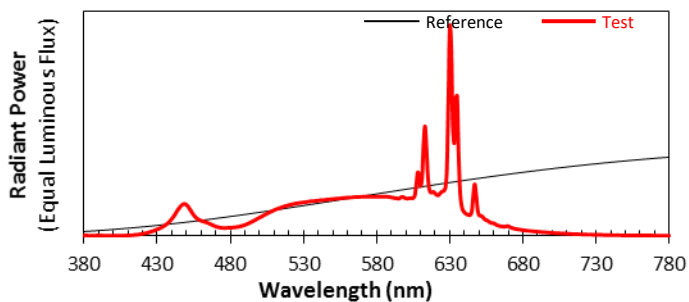
Voltage(V)	Frequency(Hz)	Current(A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy(lm/W)
120.0	60	0.1334	15.75	0.9842	1870.1	118.72

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
5.549	3022	-0.000073	0.4353	0.4033	0.2498	0.5208

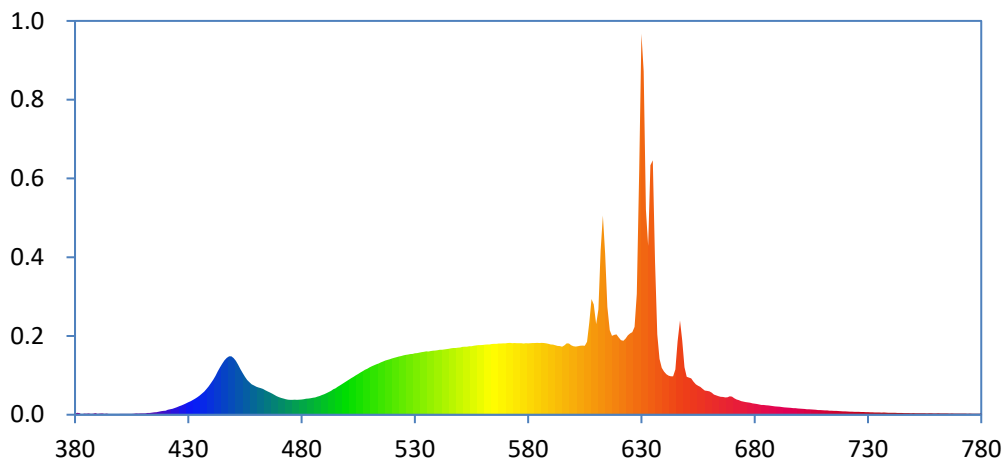
Color Rendering Index

Ra 94.9			
R1 99	R2 96	R3 88	R4 93
R5 98	R6 96	R7 95	R8 95
R9 84	R10 87	R11 91	R12 82
R13 99	R14 92	R15 98	





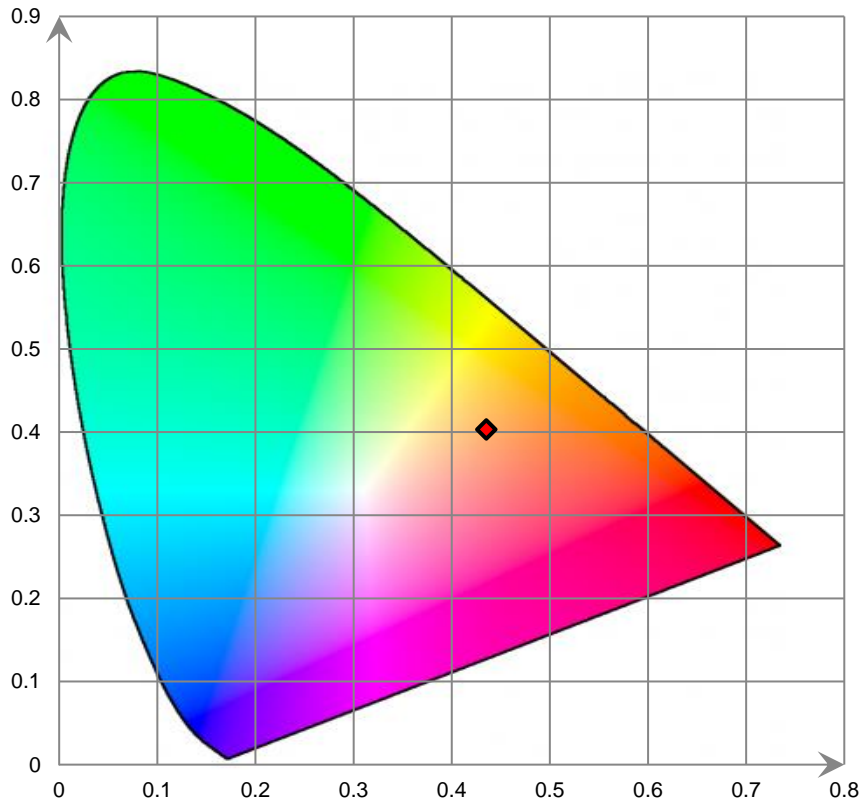
Relative Spectral Power Distribution



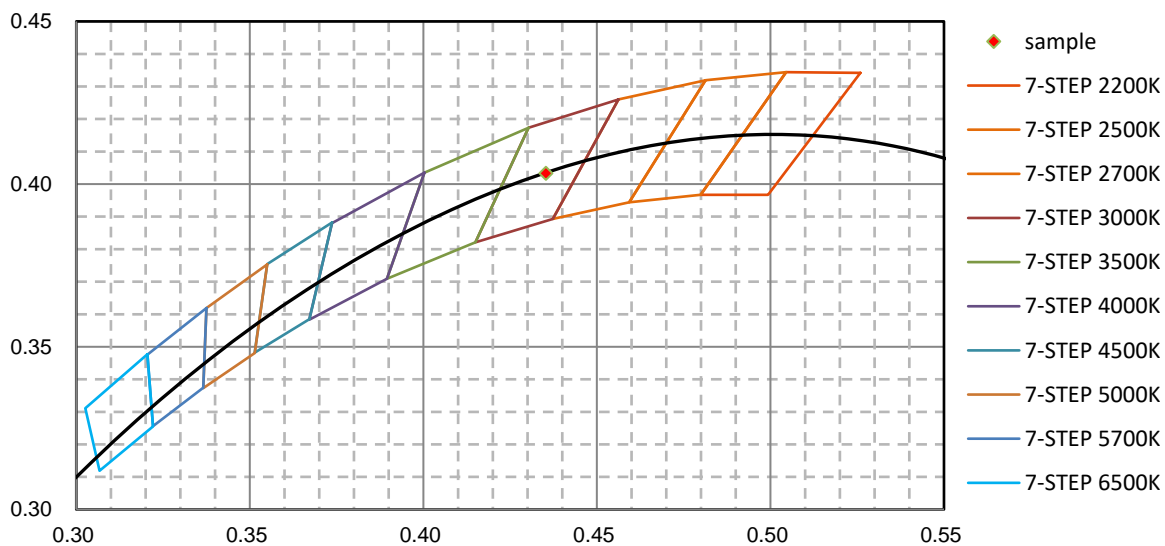
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	4.466E-01	421	1.866E+00	462	9.955E+00	503	1.427E+01	544	2.463E+01
381	6.938E-01	422	2.059E+00	463	9.665E+00	504	1.484E+01	545	2.478E+01
382	6.018E-01	423	2.252E+00	464	9.211E+00	505	1.534E+01	546	2.493E+01
383	5.780E-03	424	2.509E+00	465	8.800E+00	506	1.585E+01	547	2.505E+01
384	4.470E-01	425	2.835E+00	466	8.373E+00	507	1.636E+01	548	2.505E+01
385	3.451E-01	426	3.198E+00	467	7.928E+00	508	1.687E+01	549	2.516E+01
386	4.520E-01	427	3.474E+00	468	7.450E+00	509	1.726E+01	550	2.522E+01
387	3.247E-01	428	3.831E+00	469	6.996E+00	510	1.779E+01	551	2.547E+01
388	3.798E-01	429	4.250E+00	470	6.624E+00	511	1.821E+01	552	2.552E+01
389	5.849E-01	430	4.683E+00	471	6.305E+00	512	1.856E+01	553	2.556E+01
390	3.153E-01	431	5.030E+00	472	6.044E+00	513	1.894E+01	554	2.572E+01
391	4.210E-01	432	5.527E+00	473	5.854E+00	514	1.925E+01	555	2.573E+01
392	5.082E-01	433	5.987E+00	474	5.678E+00	515	1.968E+01	556	2.588E+01
393	3.246E-01	434	6.554E+00	475	5.627E+00	516	2.003E+01	557	2.604E+01
394	4.216E-01	435	7.189E+00	476	5.599E+00	517	2.038E+01	558	2.614E+01
395	2.458E-01	436	7.933E+00	477	5.648E+00	518	2.063E+01	559	2.615E+01
396	2.390E-01	437	8.671E+00	478	5.621E+00	519	2.087E+01	560	2.620E+01
397	2.518E-01	438	9.612E+00	479	5.632E+00	520	2.113E+01	561	2.632E+01
398	2.241E-01	439	1.062E+01	480	5.703E+00	521	2.139E+01	562	2.637E+01
399	2.573E-01	440	1.186E+01	481	5.815E+00	522	2.162E+01	563	2.638E+01
400	2.986E-01	441	1.318E+01	482	6.004E+00	523	2.186E+01	564	2.655E+01
401	3.035E-01	442	1.459E+01	483	6.042E+00	524	2.208E+01	565	2.662E+01
402	3.112E-01	443	1.626E+01	484	6.162E+00	525	2.230E+01	566	2.666E+01
403	3.312E-01	444	1.780E+01	485	6.341E+00	526	2.248E+01	567	2.673E+01
404	3.248E-01	445	1.920E+01	486	6.527E+00	527	2.261E+01	568	2.674E+01
405	2.795E-01	446	2.044E+01	487	6.779E+00	528	2.279E+01	569	2.679E+01
406	3.333E-01	447	2.136E+01	488	7.034E+00	529	2.285E+01	570	2.682E+01
407	4.816E-01	448	2.192E+01	489	7.370E+00	530	2.306E+01	571	2.693E+01
408	4.277E-01	449	2.197E+01	490	7.688E+00	531	2.315E+01	572	2.698E+01
409	4.934E-01	450	2.126E+01	491	8.085E+00	532	2.330E+01	573	2.687E+01
410	4.888E-01	451	2.028E+01	492	8.531E+00	533	2.351E+01	574	2.692E+01
411	4.954E-01	452	1.878E+01	493	8.972E+00	534	2.360E+01	575	2.689E+01
412	6.368E-01	453	1.720E+01	494	9.557E+00	535	2.383E+01	576	2.690E+01
413	6.405E-01	454	1.563E+01	495	9.936E+00	536	2.373E+01	577	2.684E+01
414	7.845E-01	455	1.423E+01	496	1.053E+01	537	2.391E+01	578	2.677E+01
415	9.391E-01	456	1.306E+01	497	1.105E+01	538	2.402E+01	579	2.684E+01
416	9.820E-01	457	1.220E+01	498	1.161E+01	539	2.412E+01	580	2.682E+01
417	1.131E+00	458	1.145E+01	499	1.215E+01	540	2.421E+01	581	2.687E+01
418	1.300E+00	459	1.097E+01	500	1.271E+01	541	2.441E+01	582	2.690E+01
419	1.470E+00	460	1.051E+01	501	1.324E+01	542	2.441E+01	583	2.694E+01
420	1.526E+00	461	1.024E+01	502	1.376E+01	543	2.453E+01	584	2.696E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	2.692E+01	626	3.100E+01	667	6.478E+00	708	1.752E+00	749	5.565E-01
586	2.700E+01	627	3.297E+01	668	6.550E+00	709	1.741E+00	750	5.860E-01
587	2.695E+01	628	4.536E+01	669	6.892E+00	710	1.664E+00	751	5.577E-01
588	2.679E+01	629	9.162E+01	670	6.820E+00	711	1.633E+00	752	5.523E-01
589	2.661E+01	630	1.431E+02	671	6.186E+00	712	1.593E+00	753	5.293E-01
590	2.640E+01	631	1.289E+02	672	5.732E+00	713	1.527E+00	754	5.251E-01
591	2.631E+01	632	7.697E+01	673	5.470E+00	714	1.489E+00	755	5.356E-01
592	2.608E+01	633	6.341E+01	674	5.136E+00	715	1.461E+00	756	4.988E-01
593	2.583E+01	634	9.371E+01	675	4.925E+00	716	1.421E+00	757	5.256E-01
594	2.577E+01	635	9.554E+01	676	4.782E+00	717	1.379E+00	758	5.580E-01
595	2.555E+01	636	5.742E+01	677	4.613E+00	718	1.322E+00	759	4.995E-01
596	2.601E+01	637	3.019E+01	678	4.491E+00	719	1.285E+00	760	4.917E-01
597	2.680E+01	638	2.096E+01	679	4.291E+00	720	1.264E+00	761	5.157E-01
598	2.673E+01	639	1.759E+01	680	4.151E+00	721	1.202E+00	762	4.897E-01
599	2.608E+01	640	1.624E+01	681	4.002E+00	722	1.168E+00	763	4.682E-01
600	2.573E+01	641	1.523E+01	682	3.860E+00	723	1.170E+00	764	4.895E-01
601	2.562E+01	642	1.469E+01	683	3.703E+00	724	1.094E+00	765	4.539E-01
602	2.573E+01	643	1.443E+01	684	3.672E+00	725	1.069E+00	766	4.435E-01
603	2.593E+01	644	1.443E+01	685	3.513E+00	726	1.069E+00	767	4.626E-01
604	2.596E+01	645	1.700E+01	686	3.482E+00	727	1.039E+00	768	4.468E-01
605	2.593E+01	646	2.753E+01	687	3.354E+00	728	1.018E+00	769	4.173E-01
606	2.739E+01	647	3.539E+01	688	3.246E+00	729	9.733E-01	770	4.064E-01
607	3.462E+01	648	2.785E+01	689	3.143E+00	730	9.629E-01	771	4.387E-01
608	4.344E+01	649	1.787E+01	690	3.066E+00	731	9.036E-01	772	4.000E-01
609	4.139E+01	650	1.425E+01	691	3.014E+00	732	8.811E-01	773	3.971E-01
610	3.402E+01	651	1.392E+01	692	2.895E+00	733	8.742E-01	774	3.720E-01
611	3.957E+01	652	1.362E+01	693	2.796E+00	734	8.724E-01	775	4.007E-01
612	6.170E+01	653	1.242E+01	694	2.707E+00	735	8.230E-01	776	3.763E-01
613	7.480E+01	654	1.140E+01	695	2.626E+00	736	7.672E-01	777	3.490E-01
614	6.060E+01	655	1.085E+01	696	2.560E+00	737	8.233E-01	778	3.497E-01
615	4.048E+01	656	1.048E+01	697	2.473E+00	738	7.860E-01	779	3.504E-01
616	3.171E+01	657	9.729E+00	698	2.447E+00	739	7.532E-01	780	3.510E-01
617	2.963E+01	658	9.050E+00	699	2.320E+00	740	7.094E-01		
618	2.996E+01	659	8.975E+00	700	2.265E+00	741	7.227E-01		
619	3.015E+01	660	8.800E+00	701	2.207E+00	742	6.978E-01		
620	2.903E+01	661	8.262E+00	702	2.156E+00	743	6.302E-01		
621	2.803E+01	662	7.608E+00	703	2.051E+00	744	6.588E-01		
622	2.779E+01	663	7.266E+00	704	2.026E+00	745	6.596E-01		
623	2.861E+01	664	6.949E+00	705	1.962E+00	746	6.020E-01		
624	2.982E+01	665	6.748E+00	706	1.918E+00	747	6.082E-01		
625	3.051E+01	666	6.651E+00	707	1.843E+00	748	5.758E-01		

CIE 1931xy Chromaticity Diagram



7-StepChromaticity Quadrangles



Control Setting: 3500K

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

Test orientation: **Downward**

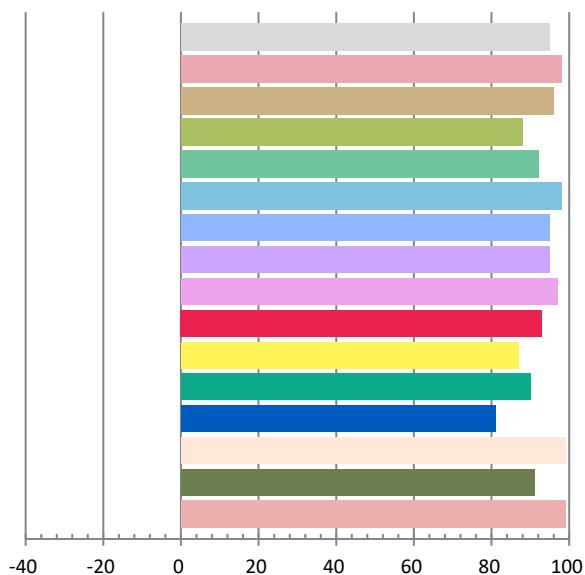
Photometric and Electrical Measurement Result

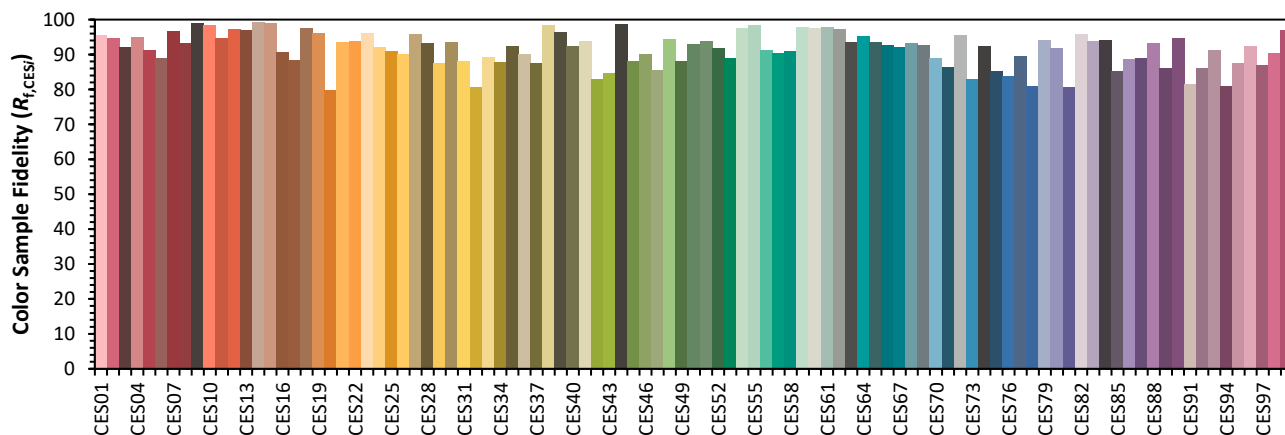
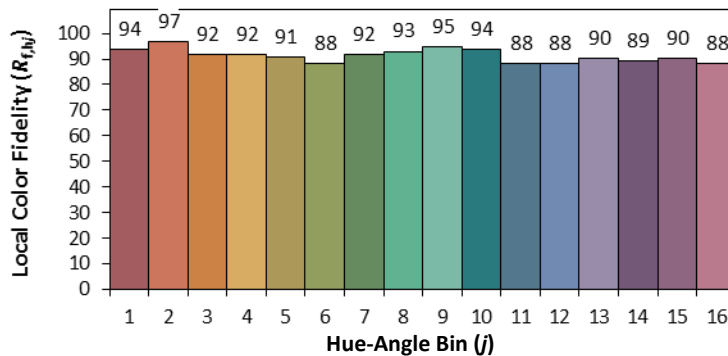
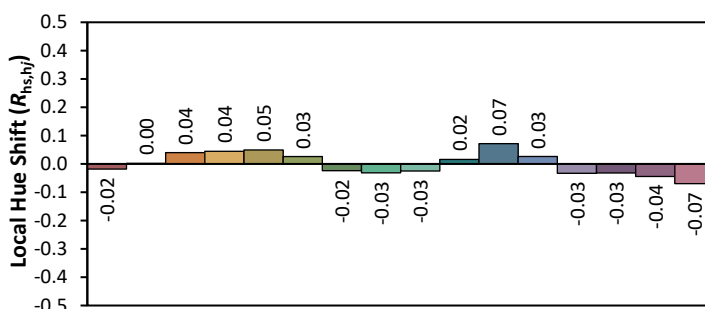
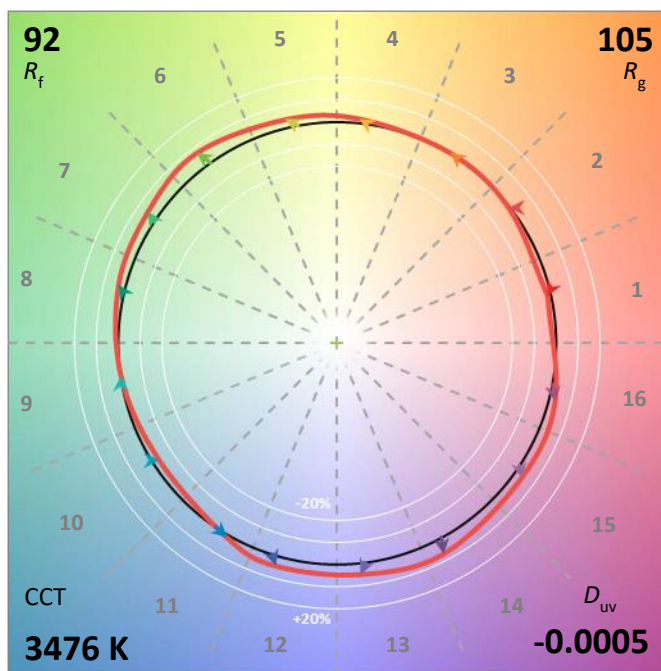
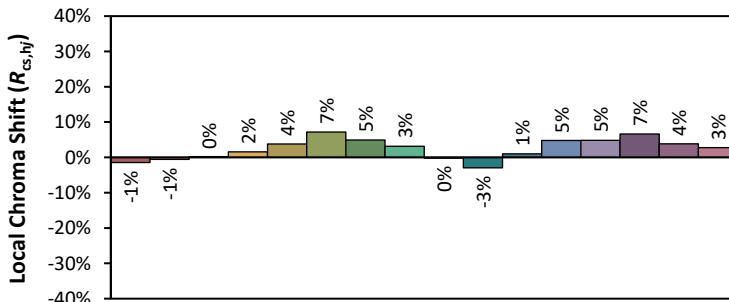
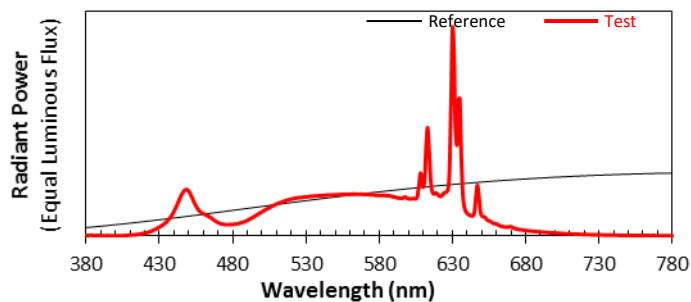
Voltage(V)	Frequency(Hz)	Current(A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy(lm/W)
120.0	60	0.1305	15.41	0.9835	1908.4	123.87

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
5.738	3477	-0.000479	0.4061	0.3900	0.2365	0.5111

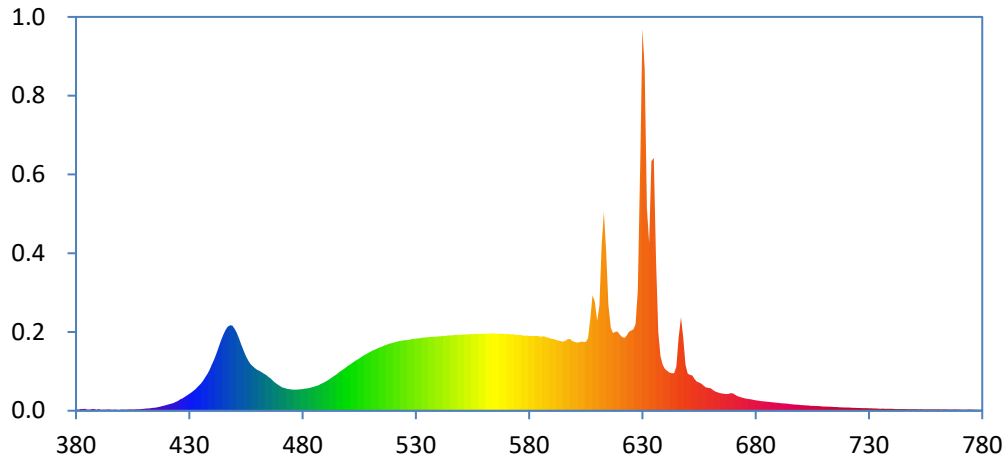
Color Rendering Index

Ra			
94.8			
R1	R2	R3	R4
98	96	88	92
R5	R6	R7	R8
98	95	95	97
R9	R10	R11	R12
93	87	90	81
R13	R14	R15	
99	91	99	





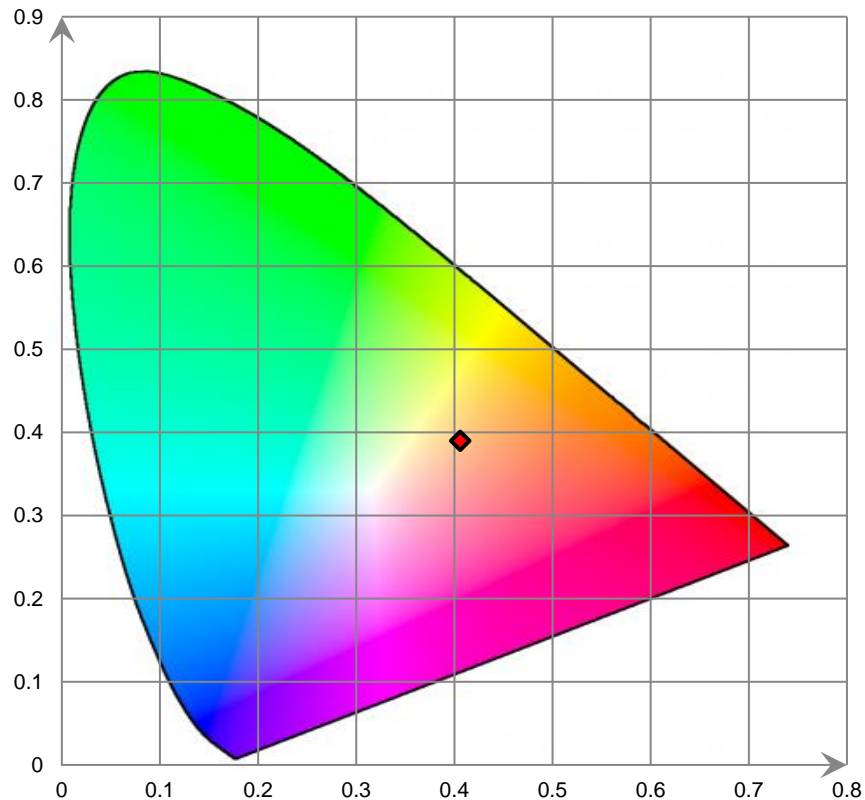
Relative Spectral Power Distribution



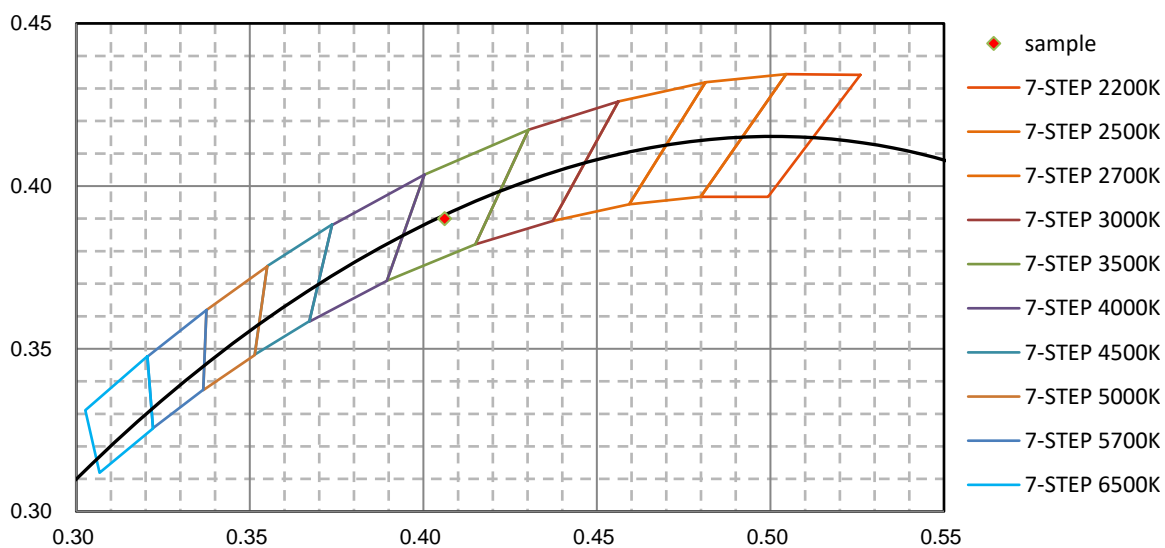
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	6.494E-01	421	2.267E+00	462	1.353E+01	503	1.740E+01	544	2.646E+01
381	2.691E-01	422	2.472E+00	463	1.300E+01	504	1.791E+01	545	2.652E+01
382	6.287E-01	423	2.683E+00	464	1.253E+01	505	1.838E+01	546	2.647E+01
383	6.100E-01	424	3.087E+00	465	1.190E+01	506	1.892E+01	547	2.658E+01
384	6.470E-01	425	3.461E+00	466	1.122E+01	507	1.944E+01	548	2.665E+01
385	3.615E-01	426	3.978E+00	467	1.048E+01	508	1.988E+01	549	2.671E+01
386	3.230E-01	427	4.363E+00	468	9.819E+00	509	2.033E+01	550	2.665E+01
387	5.431E-01	428	4.820E+00	469	9.248E+00	510	2.077E+01	551	2.680E+01
388	6.053E-01	429	5.399E+00	470	8.727E+00	511	2.119E+01	552	2.683E+01
389	3.046E-01	430	5.917E+00	471	8.236E+00	512	2.151E+01	553	2.686E+01
390	5.433E-01	431	6.498E+00	472	7.986E+00	513	2.188E+01	554	2.693E+01
391	2.986E-01	432	7.098E+00	473	7.702E+00	514	2.221E+01	555	2.692E+01
392	3.134E-01	433	7.761E+00	474	7.609E+00	515	2.252E+01	556	2.707E+01
393	3.610E-01	434	8.596E+00	475	7.472E+00	516	2.291E+01	557	2.697E+01
394	3.911E-01	435	9.424E+00	476	7.390E+00	517	2.318E+01	558	2.705E+01
395	3.746E-01	436	1.047E+01	477	7.423E+00	518	2.350E+01	559	2.701E+01
396	2.405E-01	437	1.170E+01	478	7.426E+00	519	2.368E+01	560	2.706E+01
397	4.026E-01	438	1.294E+01	479	7.525E+00	520	2.392E+01	561	2.708E+01
398	2.599E-01	439	1.440E+01	480	7.606E+00	521	2.416E+01	562	2.708E+01
399	1.940E-01	440	1.628E+01	481	7.755E+00	522	2.433E+01	563	2.719E+01
400	3.921E-01	441	1.814E+01	482	7.835E+00	523	2.453E+01	564	2.717E+01
401	3.199E-01	442	2.020E+01	483	8.005E+00	524	2.465E+01	565	2.709E+01
402	3.526E-01	443	2.243E+01	484	8.194E+00	525	2.483E+01	566	2.706E+01
403	3.676E-01	444	2.467E+01	485	8.454E+00	526	2.483E+01	567	2.707E+01
404	4.306E-01	445	2.669E+01	486	8.691E+00	527	2.495E+01	568	2.709E+01
405	3.802E-01	446	2.834E+01	487	8.962E+00	528	2.513E+01	569	2.697E+01
406	4.475E-01	447	2.954E+01	488	9.395E+00	529	2.527E+01	570	2.701E+01
407	5.100E-01	448	3.003E+01	489	9.746E+00	530	2.539E+01	571	2.697E+01
408	4.899E-01	449	2.993E+01	490	1.016E+01	531	2.542E+01	572	2.684E+01
409	6.208E-01	450	2.883E+01	491	1.065E+01	532	2.554E+01	573	2.688E+01
410	6.904E-01	451	2.733E+01	492	1.119E+01	533	2.569E+01	574	2.667E+01
411	7.729E-01	452	2.540E+01	493	1.171E+01	534	2.569E+01	575	2.668E+01
412	7.911E-01	453	2.320E+01	494	1.227E+01	535	2.584E+01	576	2.665E+01
413	8.847E-01	454	2.105E+01	495	1.276E+01	536	2.596E+01	577	2.648E+01
414	1.011E+00	455	1.917E+01	496	1.348E+01	537	2.600E+01	578	2.635E+01
415	1.094E+00	456	1.764E+01	497	1.403E+01	538	2.599E+01	579	2.644E+01
416	1.253E+00	457	1.643E+01	498	1.458E+01	539	2.603E+01	580	2.627E+01
417	1.412E+00	458	1.570E+01	499	1.515E+01	540	2.617E+01	581	2.630E+01
418	1.615E+00	459	1.495E+01	500	1.573E+01	541	2.616E+01	582	2.628E+01
419	1.811E+00	460	1.435E+01	501	1.629E+01	542	2.635E+01	583	2.626E+01
420	2.042E+00	461	1.401E+01	502	1.685E+01	543	2.629E+01	584	2.628E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	2.602E+01	626	2.856E+01	667	5.855E+00	708	1.623E+00	749	4.830E-01
586	2.615E+01	627	3.039E+01	668	5.912E+00	709	1.539E+00	750	5.156E-01
587	2.607E+01	628	4.220E+01	669	6.176E+00	710	1.465E+00	751	4.991E-01
588	2.580E+01	629	8.615E+01	670	6.090E+00	711	1.462E+00	752	4.739E-01
589	2.555E+01	630	1.343E+02	671	5.588E+00	712	1.423E+00	753	5.156E-01
590	2.526E+01	631	1.202E+02	672	5.126E+00	713	1.400E+00	754	4.641E-01
591	2.523E+01	632	7.117E+01	673	4.852E+00	714	1.359E+00	755	4.413E-01
592	2.484E+01	633	5.889E+01	674	4.625E+00	715	1.268E+00	756	4.674E-01
593	2.463E+01	634	8.777E+01	675	4.384E+00	716	1.287E+00	757	4.661E-01
594	2.448E+01	635	8.888E+01	676	4.227E+00	717	1.197E+00	758	4.755E-01
595	2.433E+01	636	5.279E+01	677	4.123E+00	718	1.192E+00	759	4.481E-01
596	2.459E+01	637	2.764E+01	678	3.970E+00	719	1.135E+00	760	4.252E-01
597	2.517E+01	638	1.913E+01	679	3.839E+00	720	1.120E+00	761	4.233E-01
598	2.528E+01	639	1.610E+01	680	3.688E+00	721	1.114E+00	762	4.116E-01
599	2.453E+01	640	1.467E+01	681	3.575E+00	722	1.055E+00	763	4.411E-01
600	2.418E+01	641	1.393E+01	682	3.452E+00	723	1.022E+00	764	4.491E-01
601	2.399E+01	642	1.339E+01	683	3.327E+00	724	1.015E+00	765	4.015E-01
602	2.402E+01	643	1.314E+01	684	3.280E+00	725	9.509E-01	766	3.977E-01
603	2.429E+01	644	1.321E+01	685	3.134E+00	726	9.453E-01	767	4.084E-01
604	2.420E+01	645	1.560E+01	686	3.074E+00	727	9.341E-01	768	4.261E-01
605	2.418E+01	646	2.557E+01	687	2.968E+00	728	8.827E-01	769	3.861E-01
606	2.550E+01	647	3.285E+01	688	2.907E+00	729	8.918E-01	770	3.884E-01
607	3.233E+01	648	2.566E+01	689	2.835E+00	730	8.420E-01	771	3.627E-01
608	4.054E+01	649	1.613E+01	690	2.735E+00	731	8.543E-01	772	3.452E-01
609	3.851E+01	650	1.304E+01	691	2.629E+00	732	7.733E-01	773	3.413E-01
610	3.164E+01	651	1.263E+01	692	2.609E+00	733	7.791E-01	774	3.694E-01
611	3.684E+01	652	1.242E+01	693	2.517E+00	734	7.627E-01	775	4.183E-01
612	5.801E+01	653	1.120E+01	694	2.454E+00	735	7.128E-01	776	3.523E-01
613	6.999E+01	654	1.025E+01	695	2.373E+00	736	7.133E-01	777	3.222E-01
614	5.608E+01	655	9.891E+00	696	2.274E+00	737	6.908E-01	778	2.873E-01
615	3.740E+01	656	9.487E+00	697	2.216E+00	738	6.860E-01	779	2.878E-01
616	2.927E+01	657	8.830E+00	698	2.135E+00	739	6.905E-01	780	2.883E-01
617	2.731E+01	658	8.192E+00	699	2.085E+00	740	6.805E-01		
618	2.773E+01	659	8.069E+00	700	1.980E+00	741	6.343E-01		
619	2.784E+01	660	7.965E+00	701	1.969E+00	742	5.828E-01		
620	2.679E+01	661	7.354E+00	702	1.866E+00	743	5.742E-01		
621	2.594E+01	662	6.825E+00	703	1.860E+00	744	5.389E-01		
622	2.561E+01	663	6.524E+00	704	1.774E+00	745	5.562E-01		
623	2.641E+01	664	6.254E+00	705	1.718E+00	746	5.679E-01		
624	2.768E+01	665	6.073E+00	706	1.690E+00	747	5.191E-01		
625	2.817E+01	666	5.934E+00	707	1.617E+00	748	5.196E-01		

CIE 1931xy Chromaticity Diagram



7-Step Chromaticity Quadrangles



Control Setting: 4000K

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

Test orientation: **Downward**

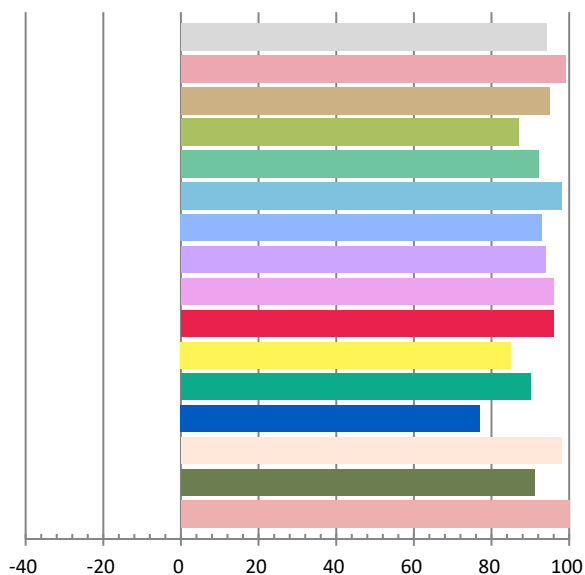
Photometric and Electrical Measurement Result

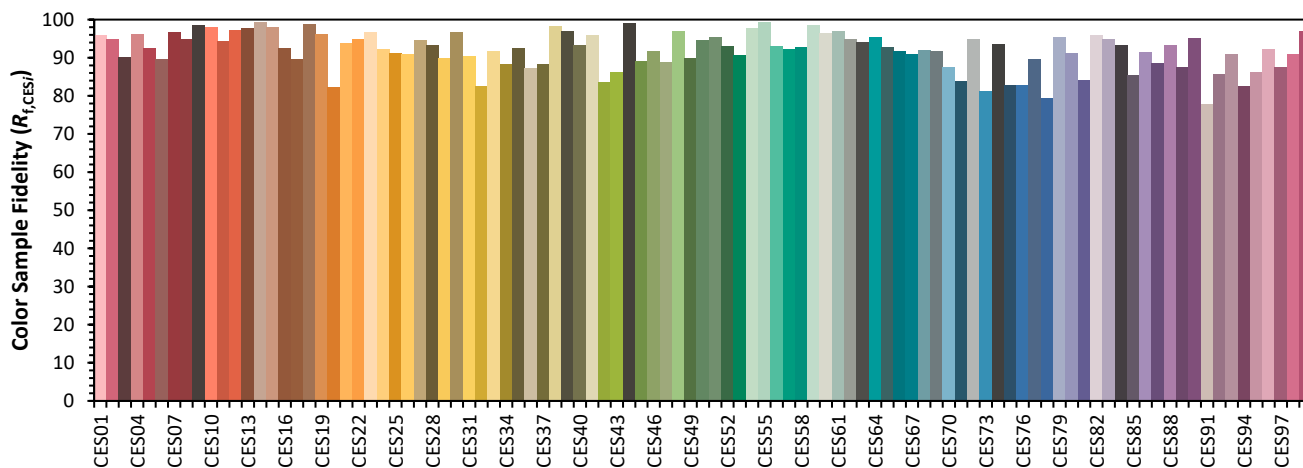
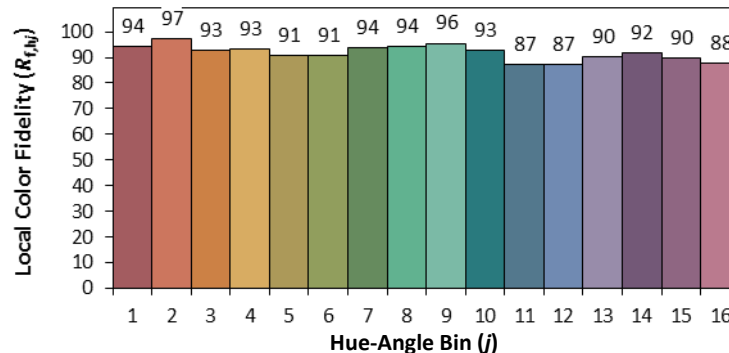
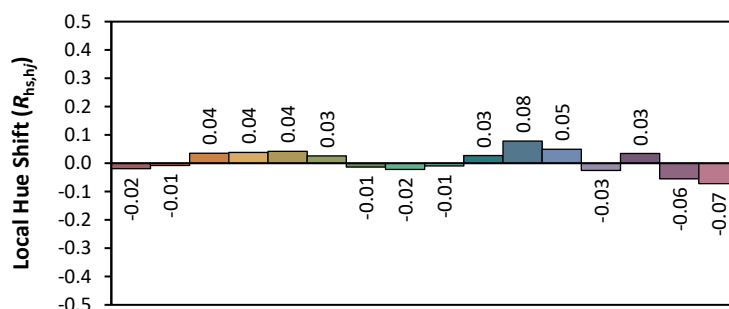
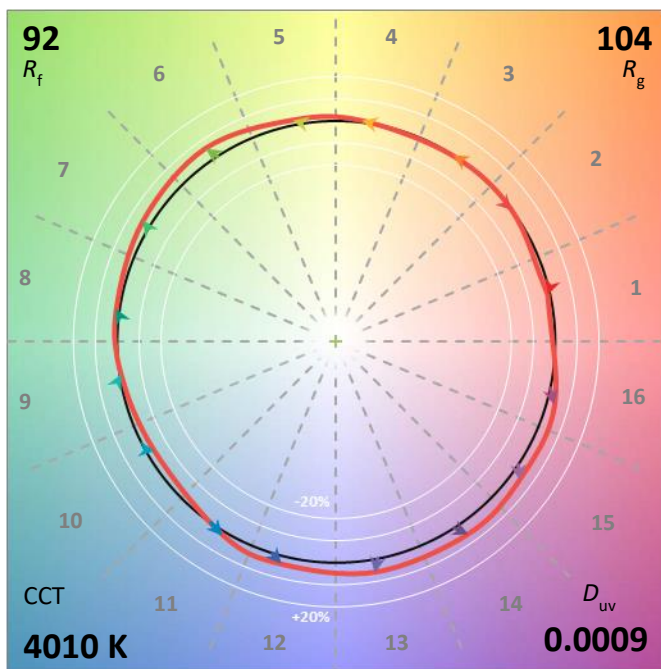
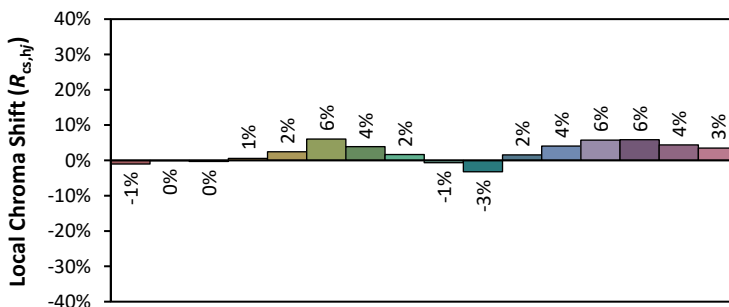
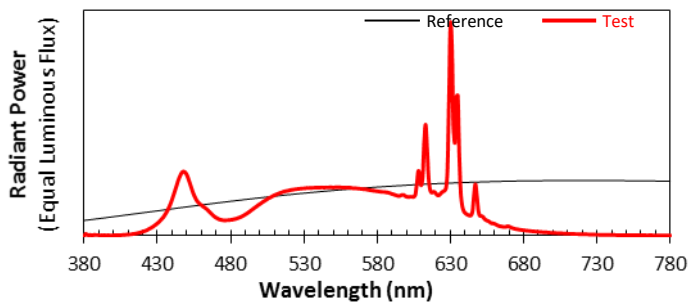
Voltage(V)	Frequency(Hz)	Current(A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy(lm/W)
120.0	60	0.131	15.47	0.9838	1921.5	124.24

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
5.841	4010	0.000904	0.3806	0.3788	0.2244	0.5025

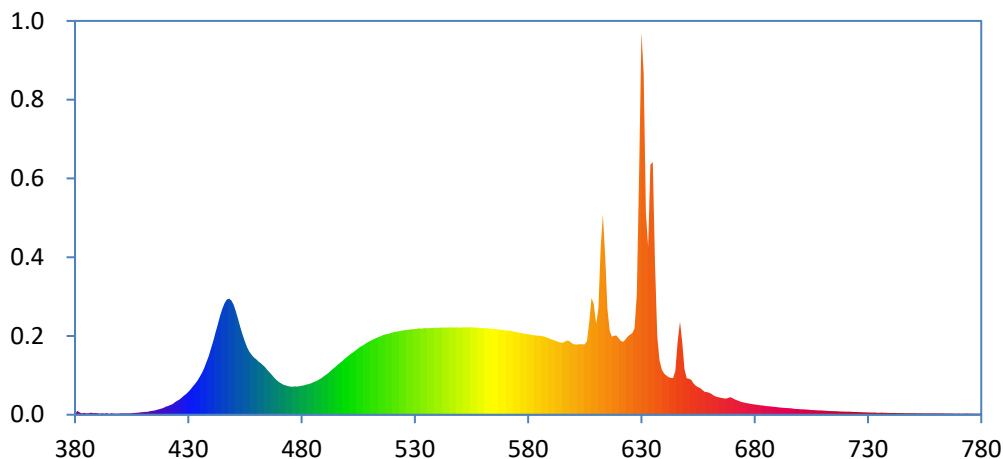
Color Rendering Index

Ra			
94.2			
R1	R2	R3	R4
99	95	87	92
R5	R6	R7	R8
98	93	94	96
R9	R10	R11	R12
96	85	90	77
R13	R14	R15	
98	91	100	





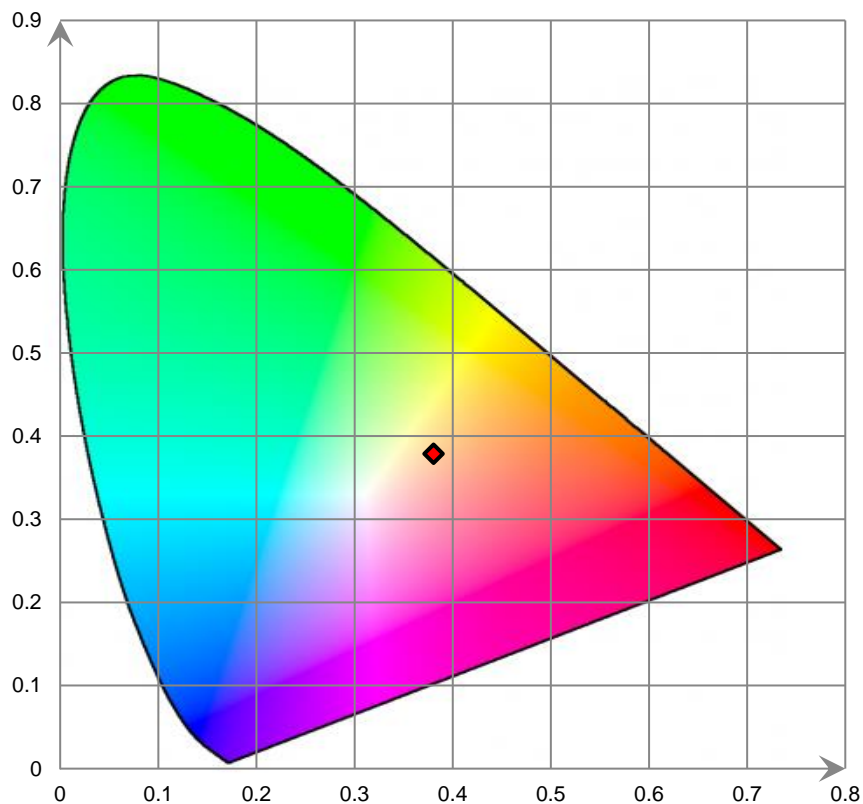
Relative Spectral Power Distribution



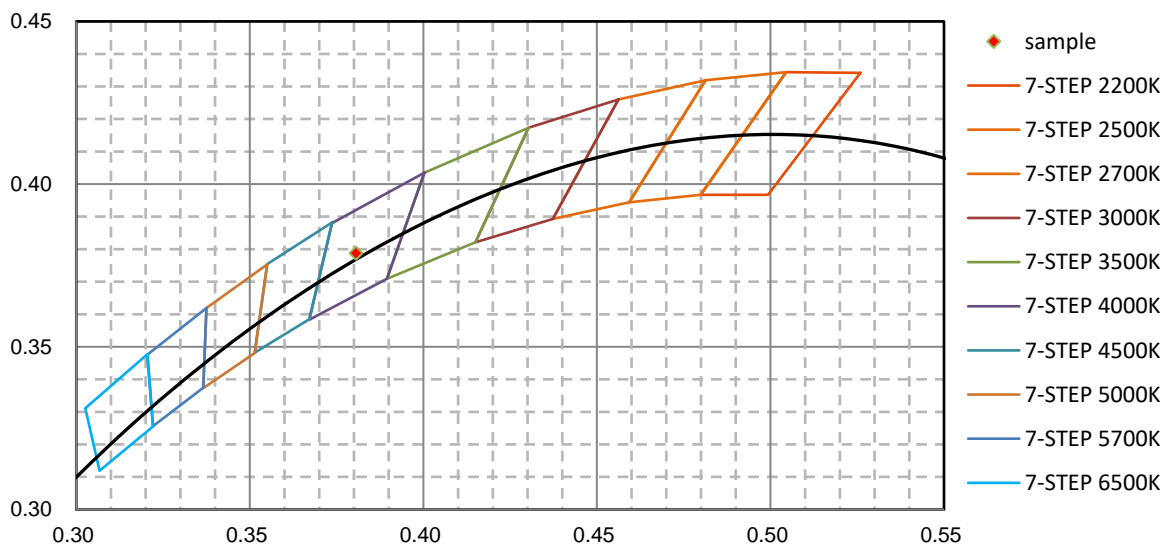
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	1.620E-01	421	2.747E+00	462	1.642E+01	503	1.998E+01	544	2.771E+01
381	1.219E+00	422	3.068E+00	463	1.574E+01	504	2.059E+01	545	2.780E+01
382	7.682E-01	423	3.381E+00	464	1.507E+01	505	2.117E+01	546	2.778E+01
383	3.902E-01	424	3.929E+00	465	1.417E+01	506	2.167E+01	547	2.778E+01
384	6.071E-01	425	4.357E+00	466	1.335E+01	507	2.201E+01	548	2.779E+01
385	4.122E-01	426	4.800E+00	467	1.256E+01	508	2.253E+01	549	2.781E+01
386	4.819E-01	427	5.361E+00	468	1.171E+01	509	2.299E+01	550	2.773E+01
387	6.920E-01	428	6.010E+00	469	1.100E+01	510	2.338E+01	551	2.782E+01
388	5.161E-01	429	6.598E+00	470	1.046E+01	511	2.374E+01	552	2.783E+01
389	5.671E-01	430	7.285E+00	471	1.001E+01	512	2.410E+01	553	2.779E+01
390	4.576E-01	431	8.033E+00	472	9.531E+00	513	2.443E+01	554	2.782E+01
391	3.059E-01	432	8.960E+00	473	9.322E+00	514	2.475E+01	555	2.782E+01
392	4.381E-01	433	9.817E+00	474	9.103E+00	515	2.500E+01	556	2.774E+01
393	3.322E-01	434	1.076E+01	475	8.996E+00	516	2.538E+01	557	2.776E+01
394	4.845E-01	435	1.201E+01	476	8.939E+00	517	2.557E+01	558	2.771E+01
395	2.179E-01	436	1.330E+01	477	8.997E+00	518	2.576E+01	559	2.757E+01
396	4.345E-01	437	1.482E+01	478	8.986E+00	519	2.588E+01	560	2.757E+01
397	3.675E-01	438	1.670E+01	479	9.081E+00	520	2.612E+01	561	2.759E+01
398	3.011E-01	439	1.859E+01	480	9.244E+00	521	2.636E+01	562	2.757E+01
399	3.146E-01	440	2.094E+01	481	9.315E+00	522	2.642E+01	563	2.740E+01
400	4.100E-01	441	2.347E+01	482	9.562E+00	523	2.661E+01	564	2.731E+01
401	4.046E-01	442	2.616E+01	483	9.731E+00	524	2.669E+01	565	2.731E+01
402	4.047E-01	443	2.867E+01	484	9.961E+00	525	2.683E+01	566	2.726E+01
403	4.239E-01	444	3.141E+01	485	1.029E+01	526	2.694E+01	567	2.712E+01
404	4.005E-01	445	3.367E+01	486	1.058E+01	527	2.705E+01	568	2.707E+01
405	4.660E-01	446	3.548E+01	487	1.092E+01	528	2.714E+01	569	2.693E+01
406	5.649E-01	447	3.664E+01	488	1.132E+01	529	2.721E+01	570	2.685E+01
407	5.945E-01	448	3.697E+01	489	1.178E+01	530	2.728E+01	571	2.682E+01
408	6.550E-01	449	3.638E+01	490	1.234E+01	531	2.737E+01	572	2.675E+01
409	7.862E-01	450	3.505E+01	491	1.287E+01	532	2.750E+01	573	2.658E+01
410	8.001E-01	451	3.291E+01	492	1.340E+01	533	2.741E+01	574	2.640E+01
411	9.067E-01	452	3.046E+01	493	1.407E+01	534	2.755E+01	575	2.625E+01
412	9.448E-01	453	2.786E+01	494	1.469E+01	535	2.755E+01	576	2.613E+01
413	1.119E+00	454	2.534E+01	495	1.527E+01	536	2.758E+01	577	2.604E+01
414	1.231E+00	455	2.332E+01	496	1.593E+01	537	2.763E+01	578	2.585E+01
415	1.341E+00	456	2.141E+01	497	1.653E+01	538	2.763E+01	579	2.576E+01
416	1.525E+00	457	2.001E+01	498	1.713E+01	539	2.771E+01	580	2.562E+01
417	1.741E+00	458	1.907E+01	499	1.781E+01	540	2.768E+01	581	2.553E+01
418	1.948E+00	459	1.822E+01	500	1.832E+01	541	2.772E+01	582	2.539E+01
419	2.120E+00	460	1.764E+01	501	1.895E+01	542	2.779E+01	583	2.527E+01
420	2.536E+00	461	1.692E+01	502	1.951E+01	543	2.775E+01	584	2.517E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	2.517E+01	626	2.599E+01	667	5.148E+00	708	1.394E+00	749	4.376E-01
586	2.502E+01	627	2.753E+01	668	5.257E+00	709	1.374E+00	750	4.591E-01
587	2.494E+01	628	3.833E+01	669	5.569E+00	710	1.326E+00	751	4.500E-01
588	2.468E+01	629	7.839E+01	670	5.415E+00	711	1.278E+00	752	4.262E-01
589	2.439E+01	630	1.218E+02	671	4.931E+00	712	1.242E+00	753	4.365E-01
590	2.402E+01	631	1.086E+02	672	4.610E+00	713	1.162E+00	754	4.102E-01
591	2.385E+01	632	6.420E+01	673	4.359E+00	714	1.160E+00	755	4.302E-01
592	2.352E+01	633	5.343E+01	674	4.088E+00	715	1.136E+00	756	4.265E-01
593	2.327E+01	634	7.963E+01	675	3.921E+00	716	1.098E+00	757	4.093E-01
594	2.300E+01	635	8.043E+01	676	3.782E+00	717	1.071E+00	758	4.156E-01
595	2.291E+01	636	4.762E+01	677	3.625E+00	718	1.024E+00	759	3.898E-01
596	2.315E+01	637	2.488E+01	678	3.506E+00	719	1.018E+00	760	4.007E-01
597	2.358E+01	638	1.730E+01	679	3.373E+00	720	9.896E-01	761	4.038E-01
598	2.354E+01	639	1.442E+01	680	3.279E+00	721	9.655E-01	762	3.944E-01
599	2.294E+01	640	1.313E+01	681	3.143E+00	722	9.527E-01	763	4.003E-01
600	2.249E+01	641	1.246E+01	682	3.045E+00	723	9.168E-01	764	3.357E-01
601	2.234E+01	642	1.197E+01	683	2.978E+00	724	8.959E-01	765	3.509E-01
602	2.238E+01	643	1.173E+01	684	2.886E+00	725	8.674E-01	766	3.467E-01
603	2.248E+01	644	1.173E+01	685	2.771E+00	726	8.161E-01	767	3.635E-01
604	2.243E+01	645	1.395E+01	686	2.677E+00	727	8.039E-01	768	3.242E-01
605	2.239E+01	646	2.312E+01	687	2.628E+00	728	7.889E-01	769	3.038E-01
606	2.352E+01	647	2.963E+01	688	2.527E+00	729	7.638E-01	770	3.513E-01
607	2.979E+01	648	2.304E+01	689	2.478E+00	730	7.239E-01	771	3.221E-01
608	3.719E+01	649	1.450E+01	690	2.406E+00	731	7.252E-01	772	3.157E-01
609	3.530E+01	650	1.161E+01	691	2.324E+00	732	6.689E-01	773	3.335E-01
610	2.897E+01	651	1.145E+01	692	2.263E+00	733	7.109E-01	774	3.457E-01
611	3.374E+01	652	1.110E+01	693	2.189E+00	734	6.420E-01	775	3.011E-01
612	5.299E+01	653	1.000E+01	694	2.120E+00	735	6.358E-01	776	3.113E-01
613	6.376E+01	654	9.226E+00	695	2.081E+00	736	6.486E-01	777	2.910E-01
614	5.108E+01	655	8.762E+00	696	2.029E+00	737	6.178E-01	778	3.090E-01
615	3.389E+01	656	8.474E+00	697	1.920E+00	738	6.088E-01	779	3.096E-01
616	2.666E+01	657	7.825E+00	698	1.852E+00	739	5.694E-01	780	3.102E-01
617	2.485E+01	658	7.267E+00	699	1.822E+00	740	5.543E-01		
618	2.517E+01	659	7.199E+00	700	1.752E+00	741	5.663E-01		
619	2.522E+01	660	6.992E+00	701	1.714E+00	742	5.478E-01		
620	2.434E+01	661	6.599E+00	702	1.681E+00	743	5.242E-01		
621	2.344E+01	662	6.079E+00	703	1.622E+00	744	4.868E-01		
622	2.321E+01	663	5.772E+00	704	1.587E+00	745	4.883E-01		
623	2.404E+01	664	5.542E+00	705	1.507E+00	746	4.648E-01		
624	2.490E+01	665	5.383E+00	706	1.480E+00	747	4.791E-01		
625	2.551E+01	666	5.238E+00	707	1.434E+00	748	4.763E-01		

CIE 1931xy Chromaticity Diagram



7-StepChromaticity Quadrangles



Control Setting: 5000K

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

Test orientation: **Downward**

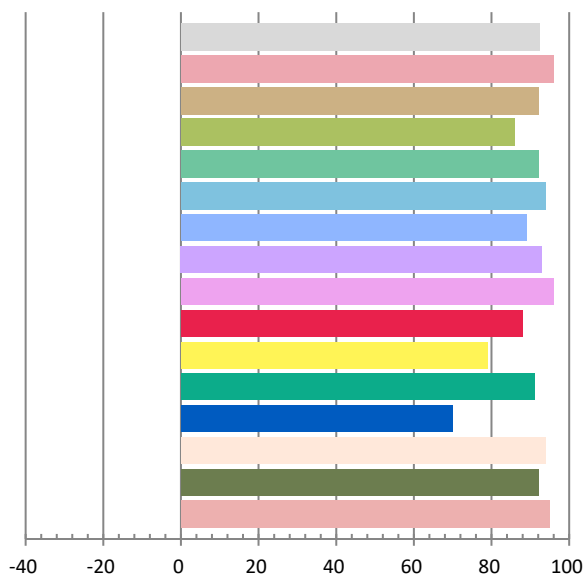
Photometric and Electrical Measurement Result

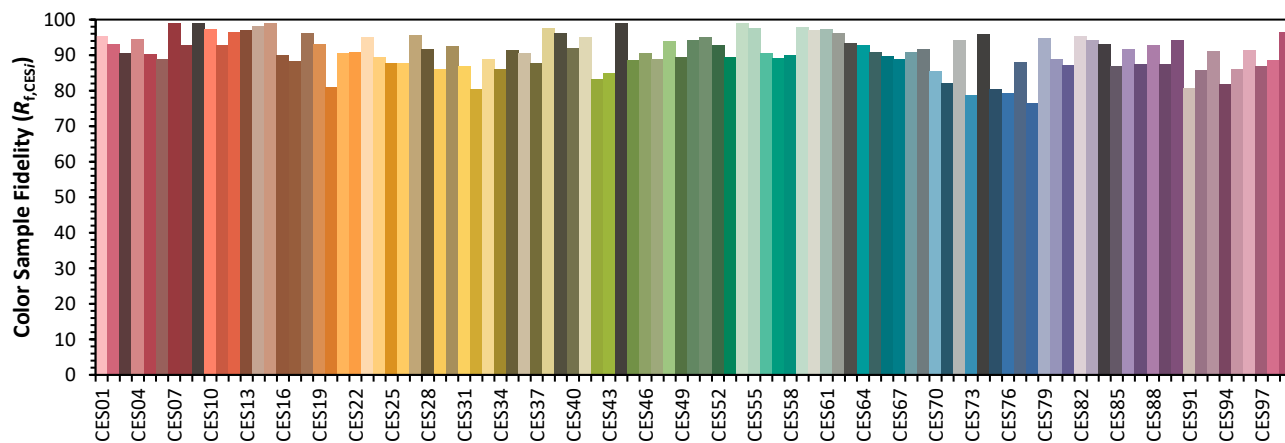
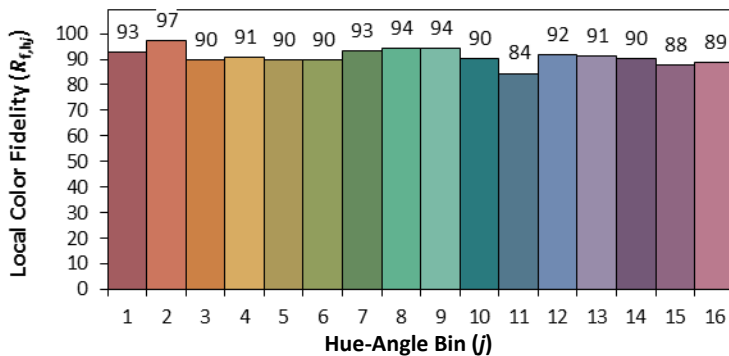
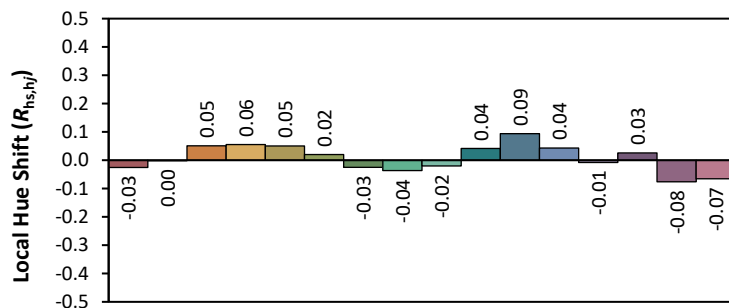
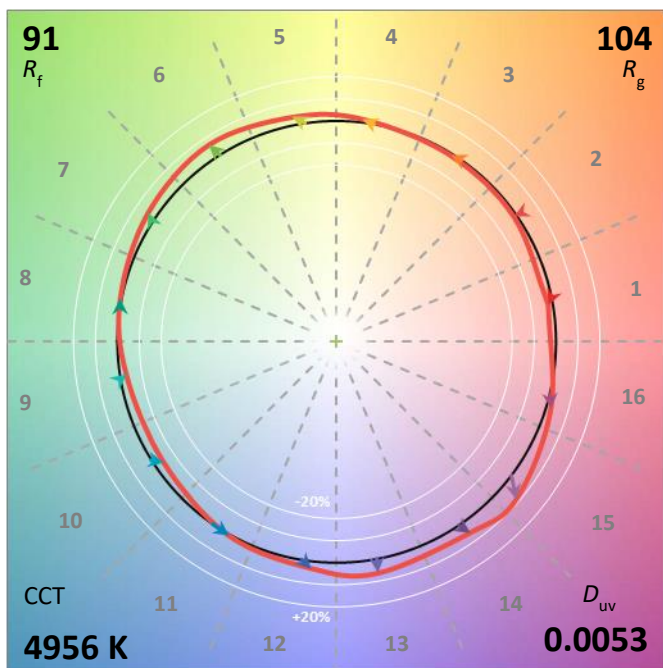
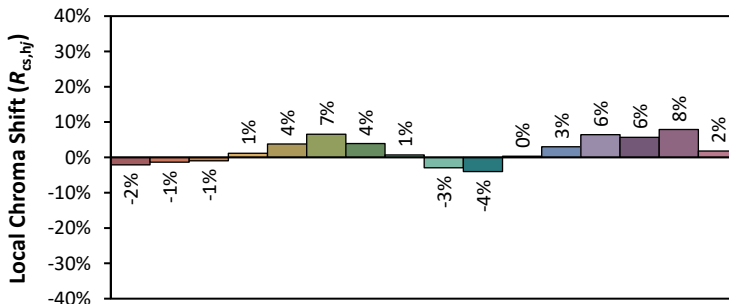
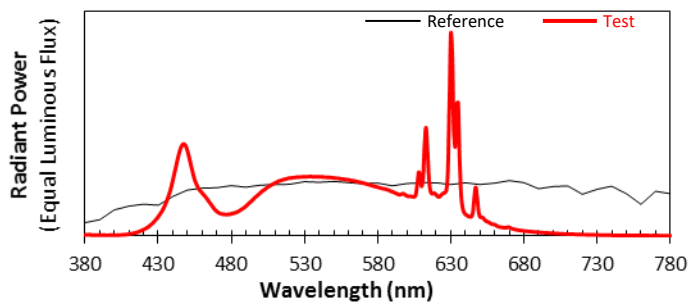
Voltage(V)	Frequency(Hz)	Current(A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy(lm/W)
120.0	60	0.1311	15.48	0.9846	1926.8	124.44

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
5.939	4954	0.00536	0.3476	0.3645	0.2082	0.4912

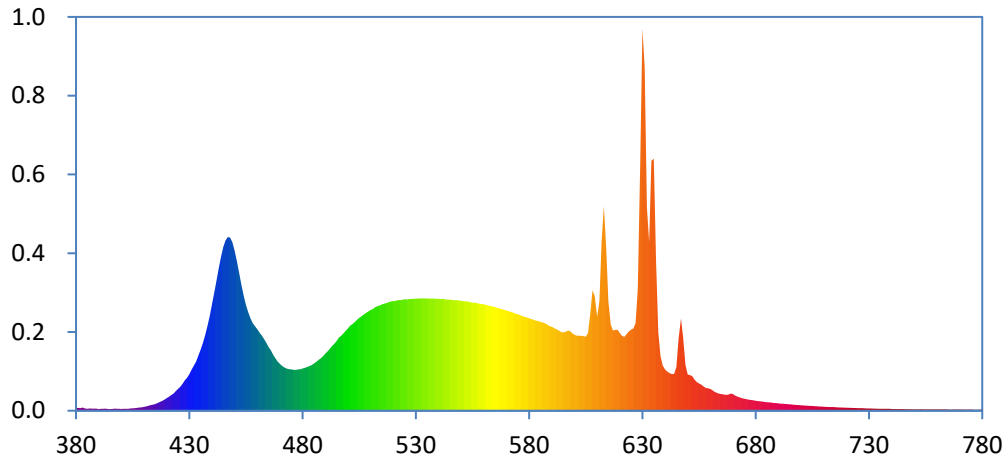
Color Rendering Index

Ra			
92.3			
R1	R2	R3	R4
96	92	86	92
R5	R6	R7	R8
94	89	93	96
R9	R10	R11	R12
88	79	91	70
R13	R14	R15	
94	92	95	





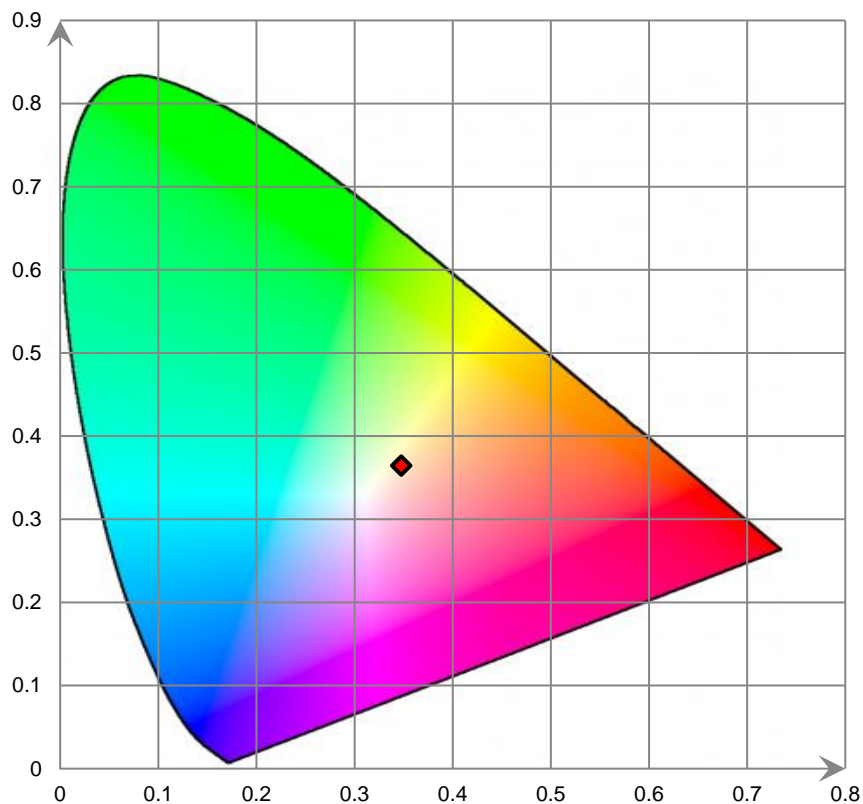
Relative Spectral Power Distribution



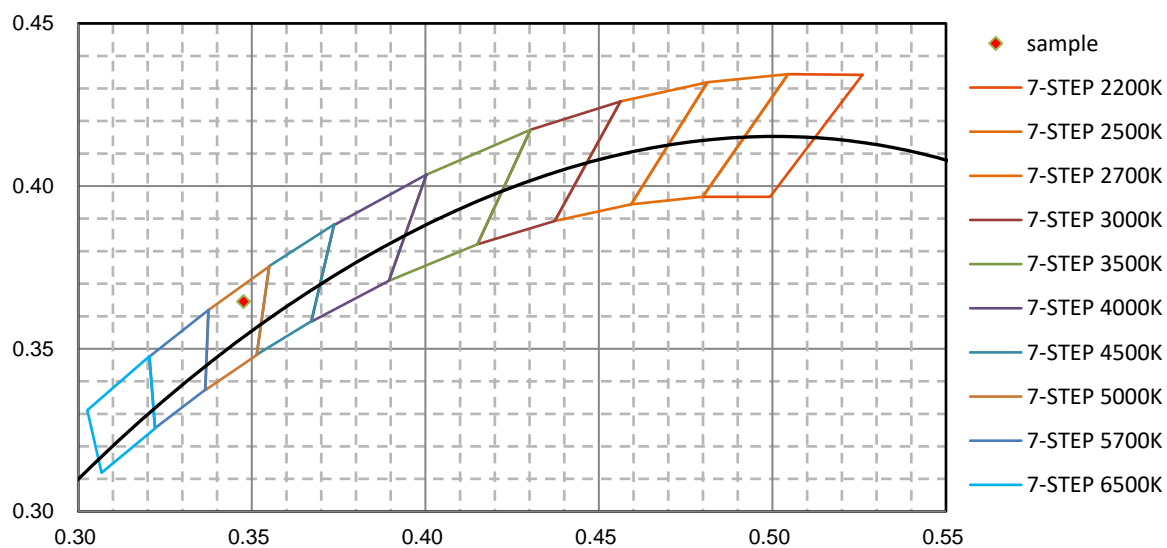
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	6.349E-01	421	3.679E+00	462	1.997E+01	503	2.352E+01	544	2.950E+01
381	7.559E-01	422	4.116E+00	463	1.905E+01	504	2.412E+01	545	2.953E+01
382	6.865E-01	423	4.562E+00	464	1.805E+01	505	2.468E+01	546	2.940E+01
383	8.386E-01	424	5.163E+00	465	1.696E+01	506	2.506E+01	547	2.939E+01
384	6.092E-01	425	5.786E+00	466	1.603E+01	507	2.557E+01	548	2.937E+01
385	4.935E-01	426	6.349E+00	467	1.489E+01	508	2.598E+01	549	2.930E+01
386	5.992E-01	427	7.114E+00	468	1.393E+01	509	2.635E+01	550	2.920E+01
387	5.733E-01	428	8.056E+00	469	1.307E+01	510	2.675E+01	551	2.910E+01
388	5.395E-01	429	8.768E+00	470	1.245E+01	511	2.702E+01	552	2.904E+01
389	5.727E-01	430	9.711E+00	471	1.190E+01	512	2.752E+01	553	2.905E+01
390	4.439E-01	431	1.088E+01	472	1.147E+01	513	2.776E+01	554	2.880E+01
391	5.339E-01	432	1.193E+01	473	1.120E+01	514	2.798E+01	555	2.874E+01
392	5.018E-01	433	1.301E+01	474	1.104E+01	515	2.824E+01	556	2.869E+01
393	5.536E-01	434	1.457E+01	475	1.096E+01	516	2.843E+01	557	2.858E+01
394	4.836E-01	435	1.626E+01	476	1.090E+01	517	2.860E+01	558	2.844E+01
395	4.442E-01	436	1.803E+01	477	1.084E+01	518	2.883E+01	559	2.836E+01
396	4.474E-01	437	2.004E+01	478	1.098E+01	519	2.904E+01	560	2.827E+01
397	5.556E-01	438	2.243E+01	479	1.102E+01	520	2.913E+01	561	2.810E+01
398	4.869E-01	439	2.505E+01	480	1.122E+01	521	2.915E+01	562	2.794E+01
399	5.096E-01	440	2.810E+01	481	1.141E+01	522	2.935E+01	563	2.784E+01
400	4.497E-01	441	3.140E+01	482	1.160E+01	523	2.939E+01	564	2.769E+01
401	5.041E-01	442	3.461E+01	483	1.184E+01	524	2.947E+01	565	2.750E+01
402	5.214E-01	443	3.789E+01	484	1.212E+01	525	2.962E+01	566	2.731E+01
403	5.254E-01	444	4.085E+01	485	1.252E+01	526	2.957E+01	567	2.718E+01
404	6.008E-01	445	4.349E+01	486	1.298E+01	527	2.968E+01	568	2.696E+01
405	6.410E-01	446	4.519E+01	487	1.347E+01	528	2.966E+01	569	2.680E+01
406	6.691E-01	447	4.612E+01	488	1.391E+01	529	2.976E+01	570	2.662E+01
407	7.532E-01	448	4.600E+01	489	1.446E+01	530	2.980E+01	571	2.645E+01
408	8.533E-01	449	4.477E+01	490	1.512E+01	531	2.980E+01	572	2.624E+01
409	9.100E-01	450	4.257E+01	491	1.576E+01	532	2.984E+01	573	2.603E+01
410	1.023E+00	451	3.978E+01	492	1.645E+01	533	2.982E+01	574	2.576E+01
411	1.165E+00	452	3.671E+01	493	1.717E+01	534	2.984E+01	575	2.563E+01
412	1.304E+00	453	3.356E+01	494	1.776E+01	535	2.982E+01	576	2.537E+01
413	1.489E+00	454	3.051E+01	495	1.850E+01	536	2.980E+01	577	2.515E+01
414	1.624E+00	455	2.808E+01	496	1.937E+01	537	2.978E+01	578	2.494E+01
415	1.804E+00	456	2.619E+01	497	1.988E+01	538	2.982E+01	579	2.476E+01
416	2.026E+00	457	2.456E+01	498	2.054E+01	539	2.975E+01	580	2.454E+01
417	2.354E+00	458	2.330E+01	499	2.121E+01	540	2.973E+01	581	2.436E+01
418	2.612E+00	459	2.248E+01	500	2.184E+01	541	2.967E+01	582	2.415E+01
419	2.943E+00	460	2.162E+01	501	2.255E+01	542	2.977E+01	583	2.393E+01
420	3.330E+00	461	2.074E+01	502	2.301E+01	543	2.958E+01	584	2.379E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	2.364E+01	626	2.184E+01	667	4.225E+00	708	1.117E+00	749	3.534E-01
586	2.342E+01	627	2.322E+01	668	4.285E+00	709	1.116E+00	750	3.563E-01
587	2.323E+01	628	3.224E+01	669	4.537E+00	710	1.070E+00	751	3.584E-01
588	2.291E+01	629	6.547E+01	670	4.435E+00	711	1.032E+00	752	3.391E-01
589	2.248E+01	630	1.015E+02	671	3.992E+00	712	9.735E-01	753	3.678E-01
590	2.231E+01	631	9.111E+01	672	3.753E+00	713	9.778E-01	754	3.460E-01
591	2.198E+01	632	5.408E+01	673	3.538E+00	714	9.657E-01	755	3.453E-01
592	2.164E+01	633	4.481E+01	674	3.341E+00	715	9.354E-01	756	3.465E-01
593	2.132E+01	634	6.641E+01	675	3.173E+00	716	8.963E-01	757	3.301E-01
594	2.097E+01	635	6.693E+01	676	3.058E+00	717	8.640E-01	758	3.334E-01
595	2.081E+01	636	3.994E+01	677	2.948E+00	718	8.528E-01	759	3.401E-01
596	2.098E+01	637	2.089E+01	678	2.840E+00	719	8.278E-01	760	3.309E-01
597	2.127E+01	638	1.448E+01	679	2.755E+00	720	8.052E-01	761	3.194E-01
598	2.120E+01	639	1.201E+01	680	2.647E+00	721	7.866E-01	762	3.221E-01
599	2.057E+01	640	1.097E+01	681	2.542E+00	722	7.603E-01	763	3.225E-01
600	2.018E+01	641	1.037E+01	682	2.489E+00	723	7.257E-01	764	3.199E-01
601	1.992E+01	642	9.984E+00	683	2.405E+00	724	7.311E-01	765	3.190E-01
602	1.994E+01	643	9.749E+00	684	2.358E+00	725	7.053E-01	766	2.664E-01
603	1.990E+01	644	9.774E+00	685	2.269E+00	726	6.920E-01	767	2.875E-01
604	1.979E+01	645	1.161E+01	686	2.205E+00	727	6.714E-01	768	2.917E-01
605	1.967E+01	646	1.916E+01	687	2.157E+00	728	6.491E-01	769	3.014E-01
606	2.065E+01	647	2.453E+01	688	2.062E+00	729	6.198E-01	770	2.816E-01
607	2.583E+01	648	1.917E+01	689	2.031E+00	730	5.991E-01	771	2.901E-01
608	3.206E+01	649	1.212E+01	690	1.965E+00	731	5.995E-01	772	2.789E-01
609	3.040E+01	650	9.622E+00	691	1.892E+00	732	5.614E-01	773	2.468E-01
610	2.498E+01	651	9.483E+00	692	1.849E+00	733	5.581E-01	774	2.822E-01
611	2.906E+01	652	9.186E+00	693	1.770E+00	734	5.333E-01	775	2.921E-01
612	4.499E+01	653	8.287E+00	694	1.742E+00	735	5.233E-01	776	2.707E-01
613	5.434E+01	654	7.598E+00	695	1.680E+00	736	4.940E-01	777	2.221E-01
614	4.361E+01	655	7.242E+00	696	1.647E+00	737	5.038E-01	778	2.409E-01
615	2.914E+01	656	6.939E+00	697	1.578E+00	738	4.961E-01	779	2.413E-01
616	2.285E+01	657	6.473E+00	698	1.522E+00	739	4.914E-01	780	2.418E-01
617	2.129E+01	658	6.032E+00	699	1.501E+00	740	4.643E-01		
618	2.147E+01	659	5.951E+00	700	1.444E+00	741	4.270E-01		
619	2.150E+01	660	5.782E+00	701	1.415E+00	742	4.179E-01		
620	2.071E+01	661	5.393E+00	702	1.355E+00	743	4.103E-01		
621	1.990E+01	662	4.959E+00	703	1.326E+00	744	4.130E-01		
622	1.965E+01	663	4.723E+00	704	1.270E+00	745	4.068E-01		
623	2.035E+01	664	4.521E+00	705	1.265E+00	746	3.970E-01		
624	2.106E+01	665	4.433E+00	706	1.214E+00	747	3.903E-01		
625	2.157E+01	666	4.305E+00	707	1.172E+00	748	3.765E-01		

CIE 1931xy Chromaticity Diagram



7-Step Chromaticity Quadrangles



[Goniophotometer System]

Control Setting: 2700K

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

Test orientation: **Downward**

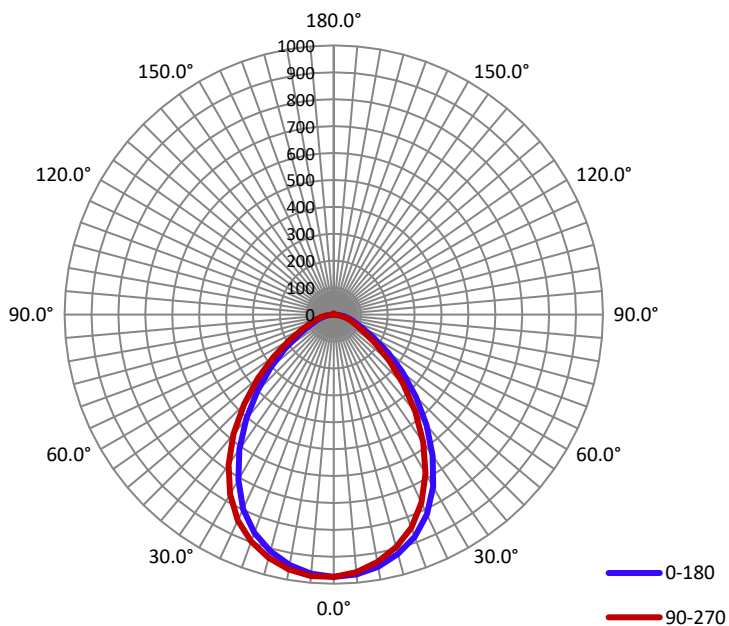
Electrical Measurement

Input Voltage(V)	Frequency(Hz)	Input Current(A)	Power (W)	Power Factor
120.0	60	0.1350	15.92	0.9860

Photometric Measurement

Luminous Flux(lm)	Efficacy(lm/W)	I _{max} (cd)	S/MH(C0/180)	S/MH(C90/270)
1832.3	115.14	977.6	1.12	1.13

Luminous Intensity Distribution



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle(50%I _{max}):	83.1	83.3	83.4	83.3	83.3
Field Angle(10%I _{max}):	133.1	133.0	132.9	133.1	133.0

Luminous Intensity (cd) Distribution Data

C y	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0.0°	975	975	975	975	975	975	975	975
5.0°	969	966	965	961	961	961	961	963
10.0°	951	945	941	936	933	933	935	938
15.0°	921	913	905	899	894	895	897	902
20.0°	879	867	858	848	843	842	847	853
25.0°	819	804	789	777	771	770	775	785
30.0°	738	721	703	689	682	682	686	698
35.0°	641	621	605	588	579	577	585	597
40.0°	536	515	495	479	471	471	478	491
45.0°	431	410	390	374	365	366	374	389
50.0°	332	314	294	279	271	272	279	294
55.0°	246	229	211	197	191	192	199	211
60.0°	169	158	145	135	131	132	136	144
65.0°	116	108	101	95	92	92	95	100
70.0°	82	77	73	71	69	69	70	72
75.0°	61	57	53	49	48	48	49	52
80.0°	40	36	32	29	27	27	27	28
85.0°	17	14	10	7	5	5	5	6
90.0°	0	0	0	0	0	0	0	0
95.0°	0	0	0	0	0	0	0	0
100.0°	0	0	0	0	0	0	0	0
105.0°	0	0	0	0	0	0	0	0
110.0°	0	0	0	0	0	0	0	0
115.0°	0	0	0	0	0	0	0	0
120.0°	0	0	0	0	0	0	0	0
125.0°	0	0	0	0	0	0	0	0
130.0°	0	0	0	0	0	0	0	0
135.0°	0	0	0	0	0	0	0	0
140.0°	0	0	0	0	1	0	0	0
145.0°	0	1	1	1	1	0	0	0
150.0°	1	1	2	1	1	2	1	1
155.0°	2	1	2	2	3	2	2	2
160.0°	2	2	3	2	3	2	3	2
165.0°	3	3	3	3	3	3	3	2
170.0°	3	3	3	3	3	3	2	3
175.0°	3	3	4	3	3	3	3	3
180.0°	0	0	0	0	0	0	0	0

Luminous Intensity (cd) Distribution Data (cont.)

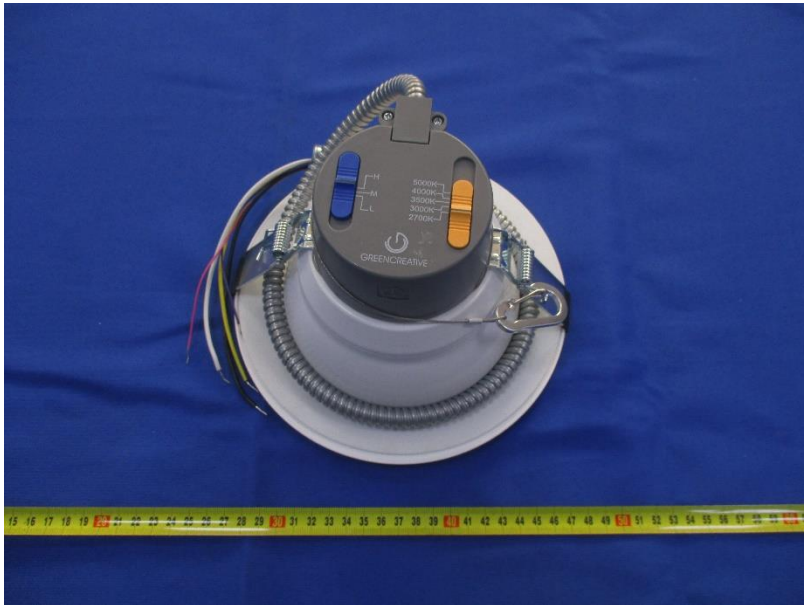
C y	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
0.0°	975	975	975	975	975	975	975	975
5.0°	966	968	972	975	975	976	975	973
10.0°	945	950	956	960	962	963	961	957
15.0°	910	919	927	932	936	936	935	928
20.0°	863	874	885	892	897	899	895	888
25.0°	797	811	825	837	844	845	840	830
30.0°	709	730	747	762	770	772	764	751
35.0°	612	631	654	671	681	680	673	658
40.0°	506	527	550	569	580	579	571	554
45.0°	401	424	446	461	471	472	462	446
50.0°	308	328	344	359	367	368	360	347
55.0°	222	238	253	264	272	271	266	256
60.0°	150	163	175	184	189	190	186	177
65.0°	103	111	119	125	129	129	127	121
70.0°	74	78	82	86	89	90	88	84
75.0°	53	57	61	64	67	66	65	63
80.0°	31	35	40	43	45	45	44	42
85.0°	9	14	18	21	23	23	22	19
90.0°	0	0	0	0	1	2	0	0
95.0°	0	0	0	0	0	0	0	0
100.0°	0	0	0	0	0	0	0	0
105.0°	0	0	0	0	0	0	0	0
110.0°	0	0	0	0	0	0	0	0
115.0°	0	0	0	0	0	0	0	0
120.0°	0	0	0	0	0	0	0	0
125.0°	0	0	0	0	0	0	0	0
130.0°	0	0	0	0	0	0	0	0
135.0°	0	0	0	0	0	0	0	0
140.0°	0	0	0	0	0	0	0	0
145.0°	0	0	0	0	0	1	1	0
150.0°	0	1	0	1	1	1	1	1
155.0°	0	1	1	2	1	2	2	1
160.0°	2	2	2	2	2	2	2	2
165.0°	2	3	3	3	3	3	3	3
170.0°	3	2	3	3	3	3	3	3
175.0°	3	3	4	4	3	4	4	3
180.0°	0	0	0	0	0	0	0	0

Zonal Lumen Density Measurement

Deg	Flux (lm)	%
0-5	23.2	1.26
5-10	68.6	3.73
10-15	110.4	6.03
15-20	147.1	8.04
20-25	176.0	9.61
25-30	194.0	10.58
30-35	199.2	10.86
35-40	191.8	10.48
40-45	173.8	9.48
45-50	148.4	8.10
50-55	119.5	6.51
55-60	89.9	4.91
60-65	64.8	3.53
65-70	46.9	2.56
70-75	35.5	1.93
75-80	24.8	1.36
80-85	13.3	0.73
85-90	2.8	0.15
90-95	0.0	0.00
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	0.00
130-135	0.0	0.00
135-140	0.0	0.00
140-145	0.0	0.00
145-150	0.2	0.00
150-155	0.5	0.00
155-160	0.5	0.00
160-165	0.5	0.00
165-170	0.5	0.00
170-175	0.1	0.00
175-180	0.0	0.00

Deg	Flux (lm)	%
0-5	23.2	1.27
0-10	91.7	5.01
0-15	202.3	11.04
0-20	349.5	19.07
0-25	525.6	28.68
0-30	719.5	39.27
0-35	918.8	50.14
0-40	1110.6	60.61
0-45	1284.3	70.10
0-50	1432.8	78.20
0-55	1552.3	84.72
0-60	1642.1	89.62
0-65	1706.9	93.16
0-70	1753.9	95.72
0-75	1789.3	97.65
0-80	1814.1	99.01
0-85	1827.4	99.73
0-90	1830.3	99.89
0-95	1830.3	99.89
0-100	1830.3	99.89
0-105	1830.3	99.89
0-110	1830.3	99.89
0-115	1830.3	99.89
0-120	1830.3	99.89
0-125	1830.3	99.89
0-130	1830.3	99.89
0-135	1830.3	99.89
0-140	1830.3	99.89
0-145	1830.3	99.89
0-150	1830.5	99.90
0-155	1830.9	99.92
0-160	1831.3	99.94
0-165	1831.7	99.97
0-170	1832.0	99.98
0-175	1832.2	100.00
0-180	1832.3	100.00

6. Product Photo



Directions

1. The information marked "superscript #" is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report.
2. This report may contain data that are not covered by the accreditation scope and shall be marked with an asterisk "★".
3. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.
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*****END OF REPORT*****