

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: MFR6HO/9CCT5S/DUALDIM/EXT

Report Type:	Electrical and Photometric tests including: Luminous Flux, Chromaticity, Luminous Intensity Distribution
Project Engineer:	Bay Wang
Report Number:	RKSB220907009-10-2
Test Date:	2022-09-09 to 2022-09-15
Report Date:	2022-09-20
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 2022-09-07 and used for testing.

Model Tested:	MFR6HO/9CCT5S/DUALDIM/EXT
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:	120-277V 50/60Hz
Rated Power:	14W
Nominal CCT:	2700K/3000K/3500K/4000K/5000K
Nominal Lumen Output:	1080lm/1100lm/1120lm/1140lm/1150lm

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
Integrating Sphere	INVENTFINE	Dia 1.5m	JWWCV090112	2021-11-02	2022-11-01
Power Meter	INVENTFINE	WT500	GSJWQ20009	2021-11-15	2022-11-14
Spectral photometer	INVENTFINE	CMS-3S	GSGSE100017	2021-11-02	2022-11-01
AC Power Supply	INVENTFINE	CHP500	JWJSD010071	2021-11-02	2022-11-01
Standard Light Source	Osram	24V/50W	JWWCR020104	2021-09-15	2023-09-14
Thermal Meter	ANYMETRE	TH-20E	N/A	2021-12-01	2022-11-30
DC Power Supply	INVENTFINE	WL3005	JWWCP020069	2021-11-02	2022-11-01
AC Power Supply	INVENTFINE	CHP-5KVA	900511765	2021-11-02	2022-11-01
DC Power Supply	INVENTFINE	WL3010	JWDMP030001	2021-11-02	2022-11-01
Power Meter	INVENTFINE	WT500	GSDSQ200007	2021-11-15	2022-11-14
Goniophotometer	INVENTFINE	GPM-1900	YWGCF120001	2021-11-15	2022-11-14

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
Wireless Weather Station	ZHONGXING	KG218	N/A	2021-11-02	2022-11-01
Standard Light Source	INVENTFINE	N/A	JWBYR040008	2021-12-23	2022-12-22

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 $U_{rel}=2.6\%$ ($k=2$), at the 95% confidence level. The uncertainty of the correlated color temperature measurements is $U=34\text{K}$ ($k=2$), at the 95% confidence level. The uncertainty of the CRI is $U=2.5(k=2)$, at the 95% confidence level.

The uncertainty of power meter AC current $U_{rel}=0.48\%$ of rdg, AC Voltage $U_{rel}=0.25\%$ of rdg, Power $U_{rel}=0.44\%$, ($k=2$), 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 14W

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

Test orientation: **Downward**

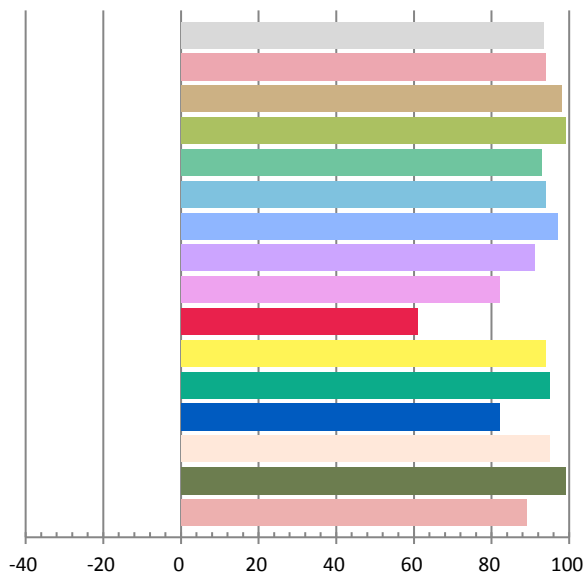
Photometric and Electrical Measurement Result

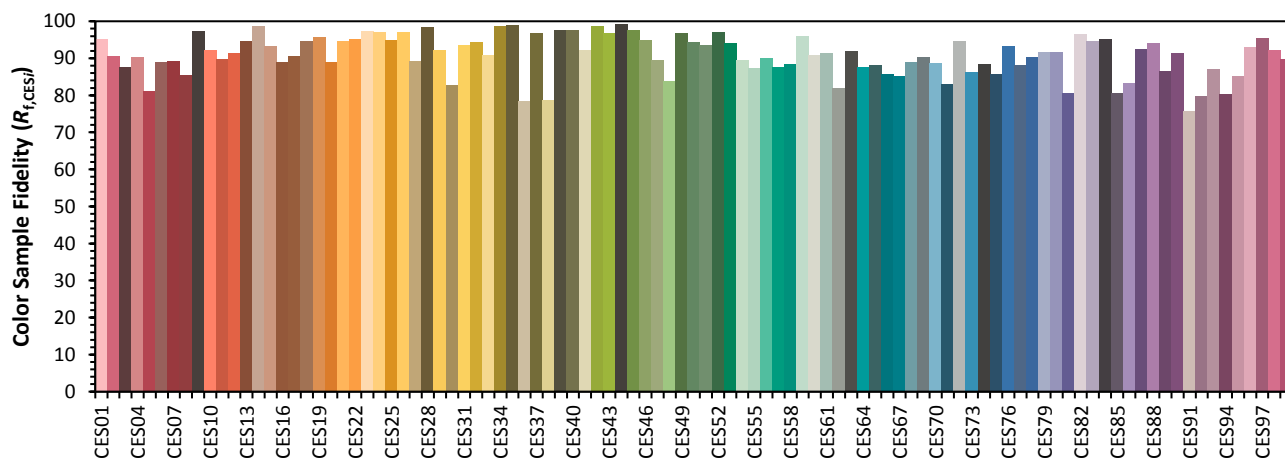
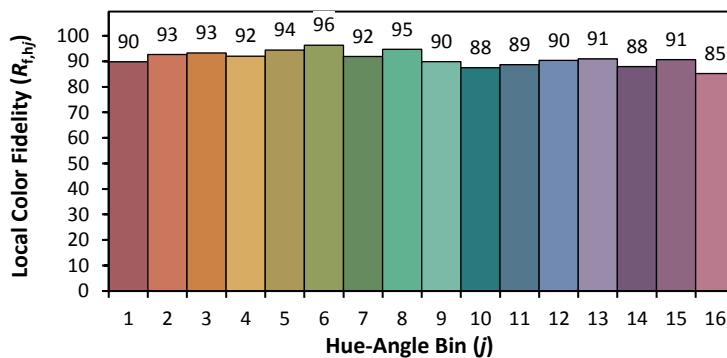
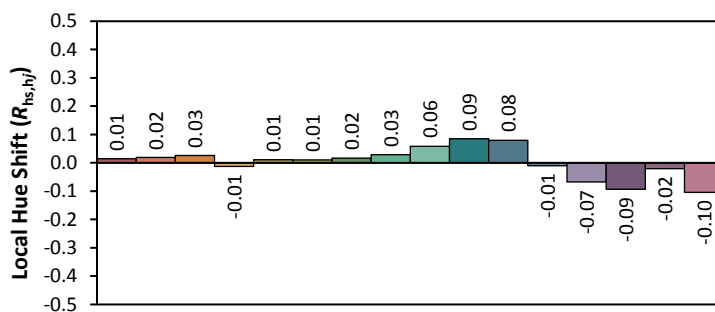
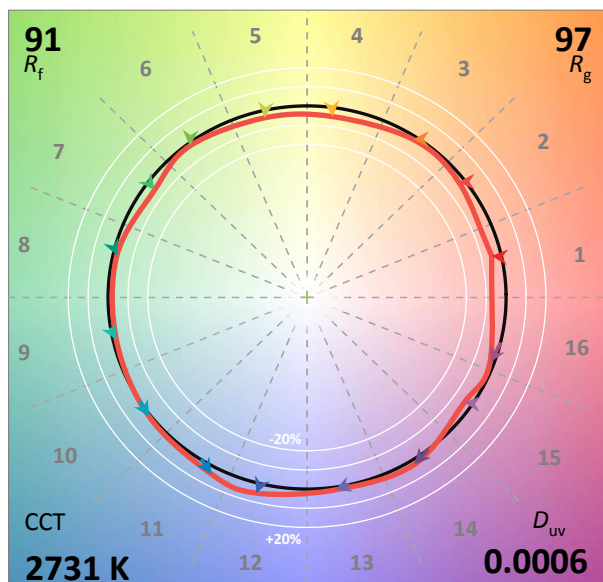
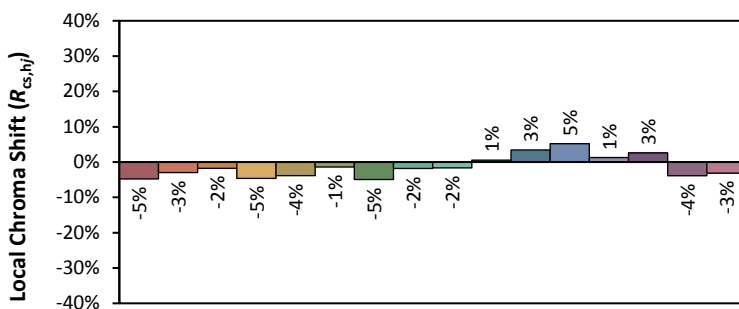
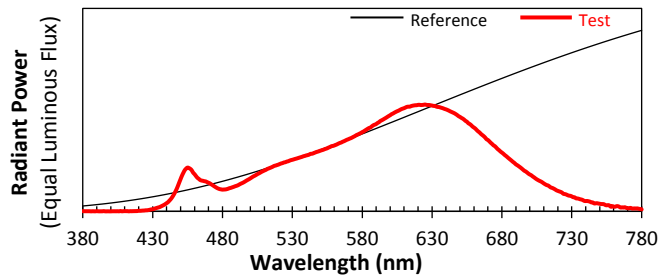
Voltage(V)	Frequency(Hz)	Current(A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy(lm/W)
120.0	60	0.1125	13.34	0.9881	1129.10	84.64

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
3.985	2731	0.00062	0.4584	0.4120	0.2610	0.5277

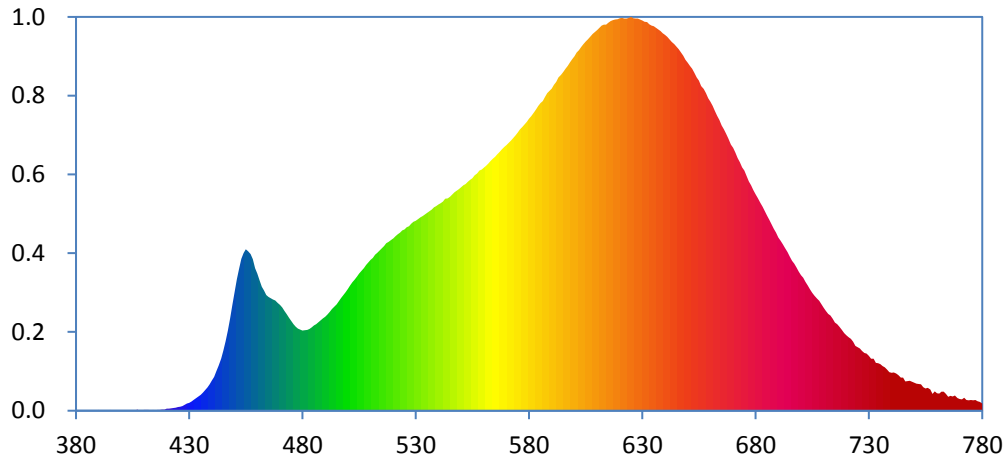
Color Rendering Index

Ra			
93.5			
R1	R2	R3	R4
94	98	99	93
R5	R6	R7	R8
94	97	91	82
R9	R10	R11	R12
61	94	95	82
R13	R14	R15	
95	99	89	





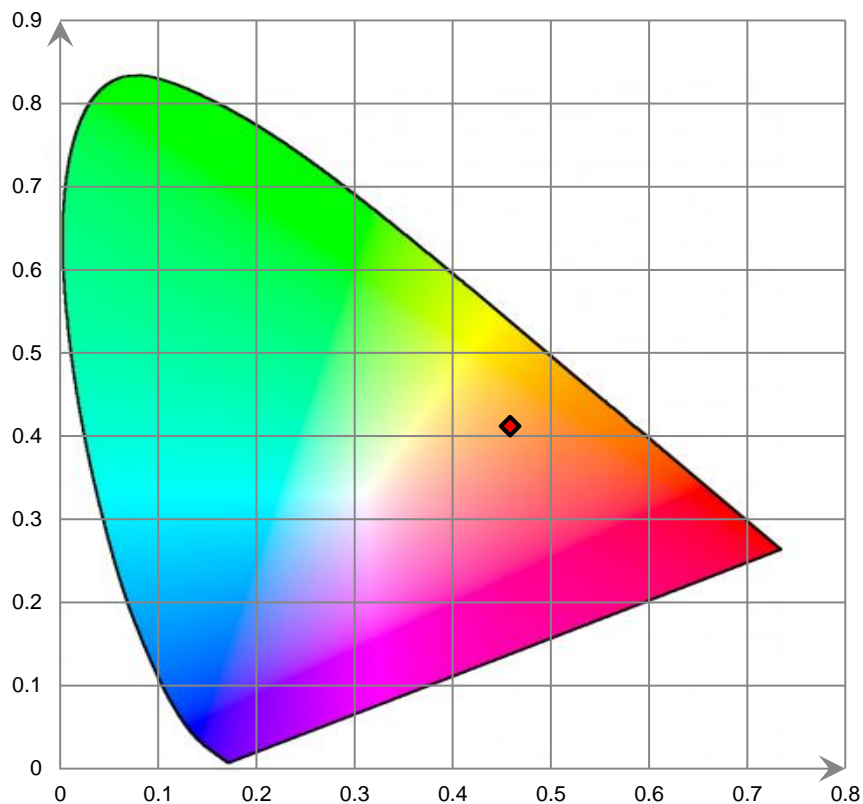
Relative Spectral Power Distribution



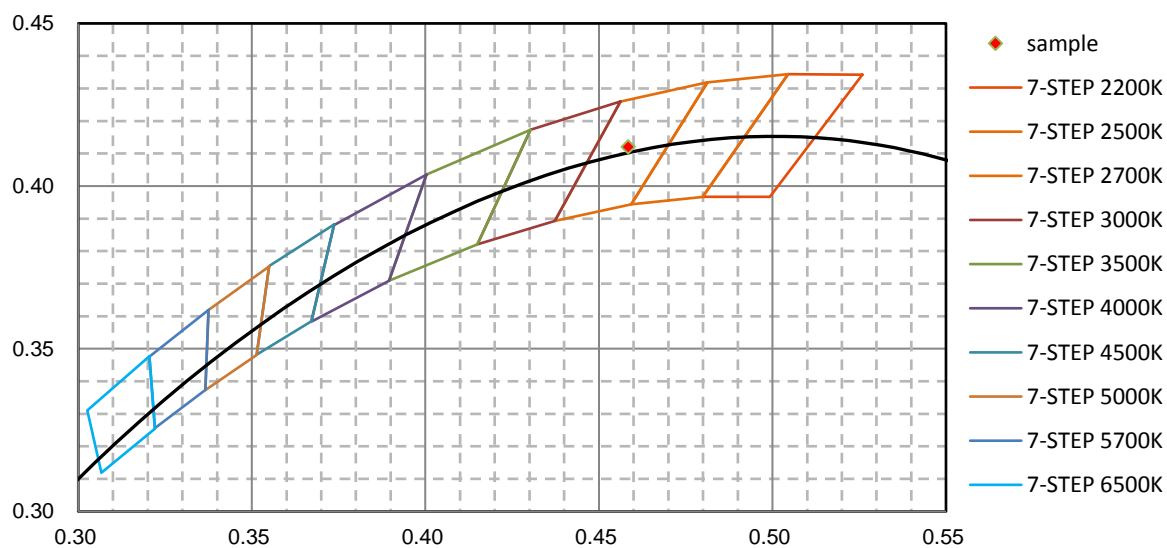
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	5.520E-02	421	1.222E-01	462	7.678E+00	503	8.110E+00	544	1.313E+01
381	3.470E-02	422	1.465E-01	463	7.433E+00	504	8.289E+00	545	1.324E+01
382	3.190E-02	423	1.766E-01	464	7.161E+00	505	8.489E+00	546	1.338E+01
383	2.920E-02	424	1.909E-01	465	7.033E+00	506	8.650E+00	547	1.350E+01
384	3.160E-02	425	2.349E-01	466	6.967E+00	507	8.825E+00	548	1.361E+01
385	2.350E-02	426	2.448E-01	467	6.879E+00	508	9.011E+00	549	1.370E+01
386	2.300E-03	427	2.947E-01	468	6.821E+00	509	9.167E+00	550	1.383E+01
387	2.300E-02	428	3.661E-01	469	6.667E+00	510	9.325E+00	551	1.394E+01
388	1.420E-02	429	4.455E-01	470	6.535E+00	511	9.459E+00	552	1.403E+01
389	4.800E-03	430	4.838E-01	471	6.375E+00	512	9.651E+00	553	1.416E+01
390	4.700E-02	431	5.565E-01	472	6.158E+00	513	9.779E+00	554	1.428E+01
391	1.820E-02	432	6.855E-01	473	5.962E+00	514	9.907E+00	555	1.439E+01
392	3.500E-03	433	7.816E-01	474	5.742E+00	515	1.004E+01	556	1.456E+01
393	1.070E-02	434	8.845E-01	475	5.543E+00	516	1.019E+01	557	1.468E+01
394	1.170E-02	435	9.754E-01	476	5.346E+00	517	1.037E+01	558	1.486E+01
395	5.510E-02	436	1.126E+00	477	5.198E+00	518	1.044E+01	559	1.492E+01
396	5.700E-03	437	1.282E+00	478	5.079E+00	519	1.056E+01	560	1.502E+01
397	1.600E-03	438	1.445E+00	479	5.016E+00	520	1.066E+01	561	1.515E+01
398	9.500E-03	439	1.641E+00	480	4.960E+00	521	1.080E+01	562	1.529E+01
399	1.300E-03	440	1.865E+00	481	4.983E+00	522	1.092E+01	563	1.545E+01
400	0.000E+00	441	2.095E+00	482	5.000E+00	523	1.101E+01	564	1.560E+01
401	1.820E-02	442	2.438E+00	483	5.058E+00	524	1.115E+01	565	1.570E+01
402	2.300E-02	443	2.784E+00	484	5.156E+00	525	1.121E+01	566	1.587E+01
403	2.660E-02	444	3.222E+00	485	5.283E+00	526	1.135E+01	567	1.600E+01
404	2.130E-02	445	3.736E+00	486	5.363E+00	527	1.142E+01	568	1.616E+01
405	3.250E-02	446	4.312E+00	487	5.480E+00	528	1.156E+01	569	1.632E+01
406	6.600E-03	447	4.957E+00	488	5.585E+00	529	1.168E+01	570	1.644E+01
407	7.080E-02	448	5.710E+00	489	5.719E+00	530	1.176E+01	571	1.659E+01
408	1.090E-02	449	6.539E+00	490	5.818E+00	531	1.186E+01	572	1.671E+01
409	3.860E-02	450	7.342E+00	491	5.943E+00	532	1.196E+01	573	1.687E+01
410	5.660E-02	451	8.127E+00	492	6.116E+00	533	1.204E+01	574	1.704E+01
411	4.640E-02	452	8.787E+00	493	6.292E+00	534	1.214E+01	575	1.721E+01
412	4.910E-02	453	9.388E+00	494	6.435E+00	535	1.225E+01	576	1.741E+01
413	6.900E-03	454	9.748E+00	495	6.592E+00	536	1.235E+01	577	1.754E+01
414	4.070E-02	455	9.984E+00	496	6.781E+00	537	1.245E+01	578	1.771E+01
415	3.260E-02	456	9.872E+00	497	6.981E+00	538	1.257E+01	579	1.787E+01
416	4.760E-02	457	9.691E+00	498	7.162E+00	539	1.265E+01	580	1.807E+01
417	5.190E-02	458	9.366E+00	499	7.338E+00	540	1.276E+01	581	1.822E+01
418	6.190E-02	459	8.823E+00	500	7.533E+00	541	1.284E+01	582	1.844E+01
419	7.380E-02	460	8.491E+00	501	7.747E+00	542	1.294E+01	583	1.864E+01
420	1.340E-01	461	8.071E+00	502	7.951E+00	543	1.311E+01	584	1.885E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	1.903E+01	626	2.428E+01	667	1.714E+01	708	6.792E+00	749	1.789E+00
586	1.914E+01	627	2.425E+01	668	1.683E+01	709	6.592E+00	750	1.728E+00
587	1.941E+01	628	2.425E+01	669	1.645E+01	710	6.364E+00	751	1.671E+00
588	1.964E+01	629	2.419E+01	670	1.627E+01	711	6.165E+00	752	1.660E+00
589	1.978E+01	630	2.413E+01	671	1.596E+01	712	5.998E+00	753	1.625E+00
590	1.992E+01	631	2.405E+01	672	1.564E+01	713	5.898E+00	754	1.453E+00
591	2.016E+01	632	2.404E+01	673	1.536E+01	714	5.684E+00	755	1.380E+00
592	2.034E+01	633	2.390E+01	674	1.505E+01	715	5.450E+00	756	1.421E+00
593	2.061E+01	634	2.381E+01	675	1.485E+01	716	5.347E+00	757	1.324E+00
594	2.077E+01	635	2.379E+01	676	1.452E+01	717	5.192E+00	758	1.031E+00
595	2.095E+01	636	2.369E+01	677	1.419E+01	718	5.015E+00	759	1.205E+00
596	2.115E+01	637	2.359E+01	678	1.394E+01	719	4.805E+00	760	1.077E+00
597	2.133E+01	638	2.349E+01	679	1.364E+01	720	4.669E+00	761	1.055E+00
598	2.154E+01	639	2.336E+01	680	1.340E+01	721	4.552E+00	762	1.173E+00
599	2.175E+01	640	2.325E+01	681	1.315E+01	722	4.438E+00	763	1.175E+00
600	2.192E+01	641	2.313E+01	682	1.285E+01	723	4.275E+00	764	1.041E+00
601	2.216E+01	642	2.298E+01	683	1.262E+01	724	4.009E+00	765	8.617E-01
602	2.231E+01	643	2.281E+01	684	1.233E+01	725	3.939E+00	766	9.175E-01
603	2.250E+01	644	2.267E+01	685	1.206E+01	726	3.849E+00	767	8.713E-01
604	2.267E+01	645	2.252E+01	686	1.180E+01	727	3.692E+00	768	9.396E-01
605	2.283E+01	646	2.237E+01	687	1.153E+01	728	3.580E+00	769	7.927E-01
606	2.296E+01	647	2.217E+01	688	1.126E+01	729	3.538E+00	770	7.290E-01
607	2.314E+01	648	2.196E+01	689	1.102E+01	730	3.404E+00	771	6.978E-01
608	2.331E+01	649	2.171E+01	690	1.072E+01	731	3.226E+00	772	8.045E-01
609	2.343E+01	650	2.153E+01	691	1.052E+01	732	3.213E+00	773	6.570E-01
610	2.354E+01	651	2.132E+01	692	1.030E+01	733	2.971E+00	774	6.491E-01
611	2.369E+01	652	2.114E+01	693	1.006E+01	734	2.942E+00	775	6.694E-01
612	2.383E+01	653	2.090E+01	694	9.813E+00	735	2.871E+00	776	6.483E-01
613	2.388E+01	654	2.062E+01	695	9.540E+00	736	2.754E+00	777	6.677E-01
614	2.388E+01	655	2.043E+01	696	9.269E+00	737	2.689E+00	778	5.793E-01
615	2.400E+01	656	2.009E+01	697	9.098E+00	738	2.553E+00	779	5.354E-01
616	2.409E+01	657	1.991E+01	698	8.860E+00	739	2.386E+00	780	4.469E-01
617	2.415E+01	658	1.965E+01	699	8.600E+00	740	2.346E+00		
618	2.420E+01	659	1.934E+01	700	8.391E+00	741	2.364E+00		
619	2.421E+01	660	1.911E+01	701	8.230E+00	742	2.296E+00		
620	2.428E+01	661	1.886E+01	702	7.967E+00	743	2.212E+00		
621	2.430E+01	662	1.853E+01	703	7.759E+00	744	2.040E+00		
622	2.425E+01	663	1.823E+01	704	7.514E+00	745	2.043E+00		
623	2.427E+01	664	1.799E+01	705	7.294E+00	746	1.809E+00		
624	2.431E+01	665	1.765E+01	706	7.109E+00	747	1.826E+00		
625	2.436E+01	666	1.740E+01	707	6.938E+00	748	1.857E+00		

CIE 1931xy Chromaticity Diagram



7-StepChromaticity Quadrangles



Control Setting: 3000K 14W

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

Test orientation: **Downward**

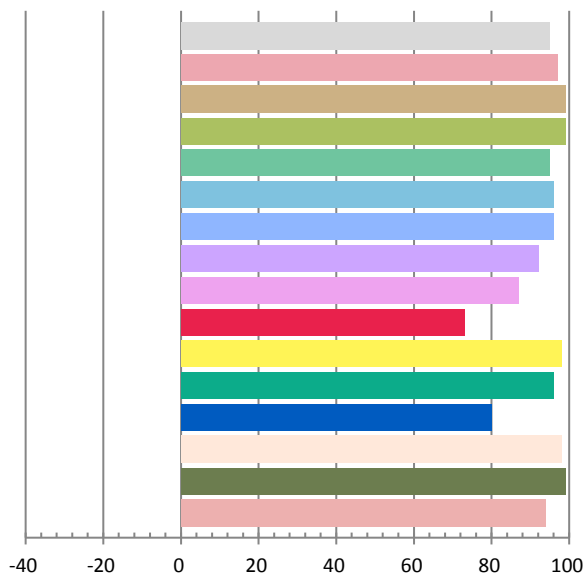
Photometric and Electrical Measurement Result

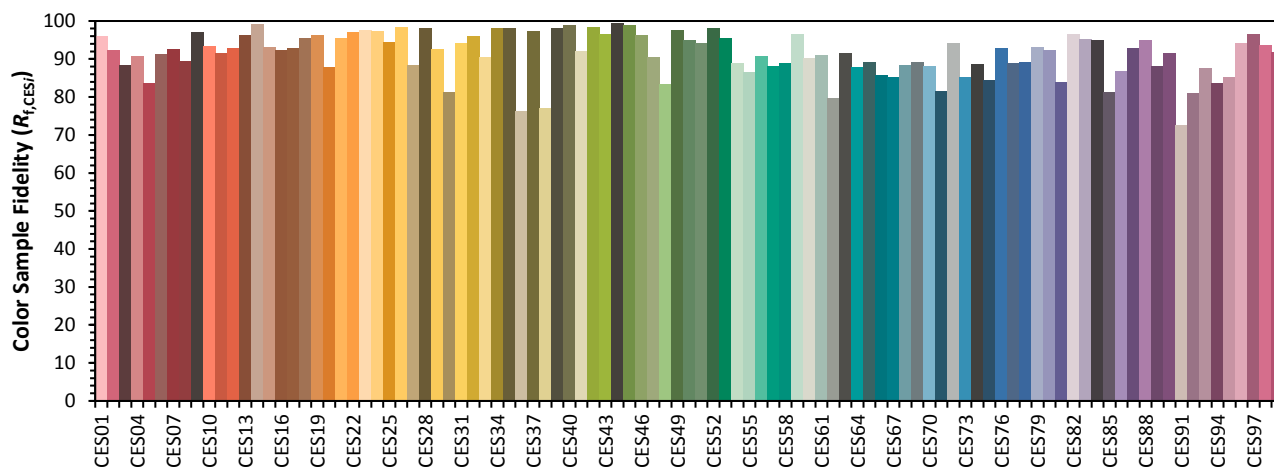
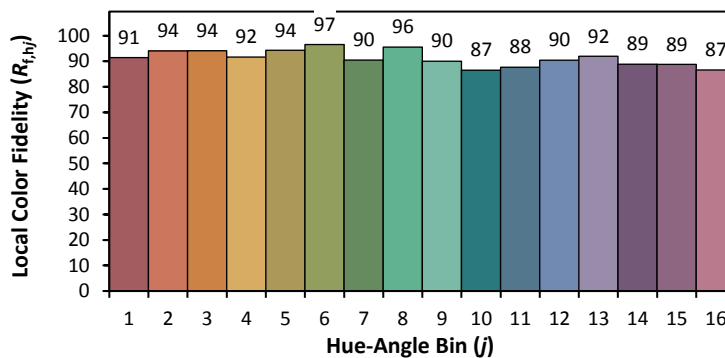
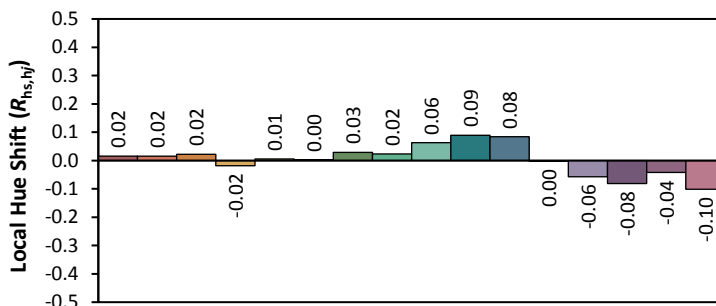
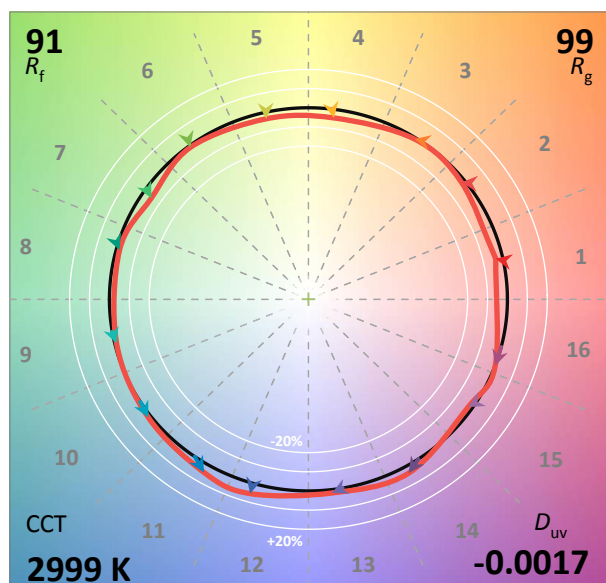
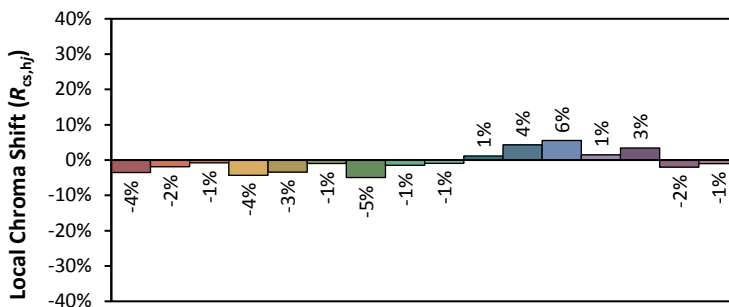
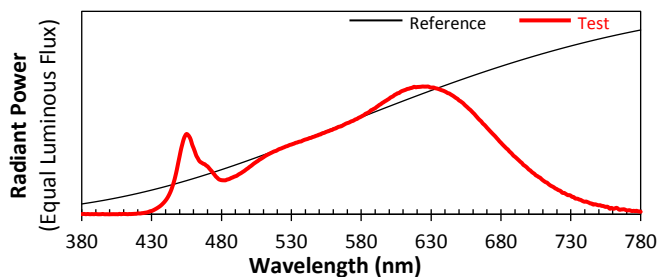
Voltage(V)	Frequency(Hz)	Current(A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy(lm/W)
120.0	60	0.1124	13.33	0.9882	1171.78	87.91

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
4.166	2999	-0.00167	0.4346	0.3991	0.2512	0.5191

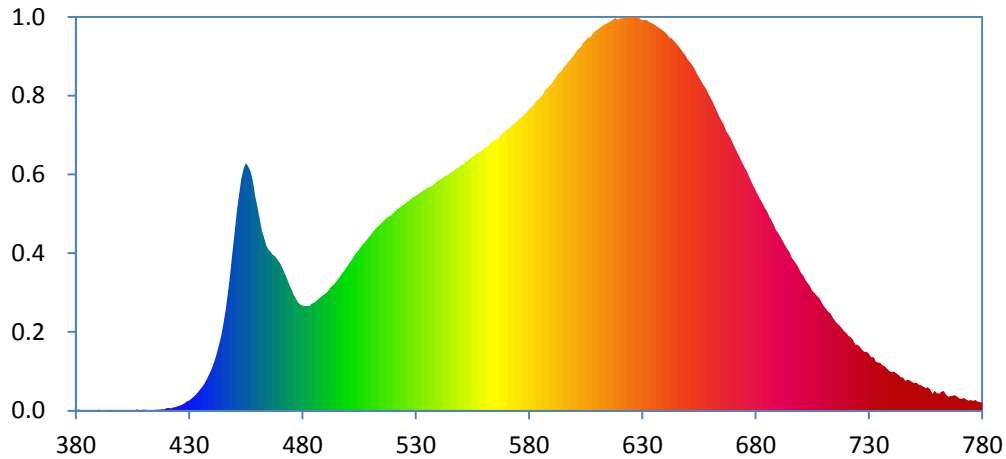
Color Rendering Index

Ra			
95.1			
R1	R2	R3	R4
97	99	99	95
R5	R6	R7	R8
96	96	92	87
R9	R10	R11	R12
73	98	96	80
R13	R14	R15	
98	99	94	





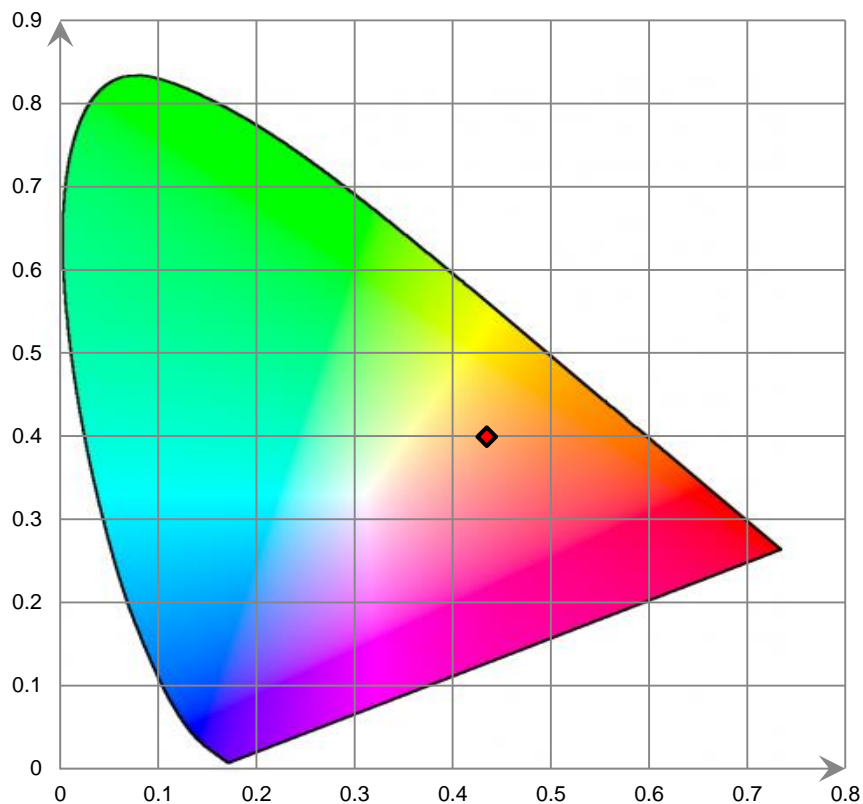
Relative Spectral Power Distribution



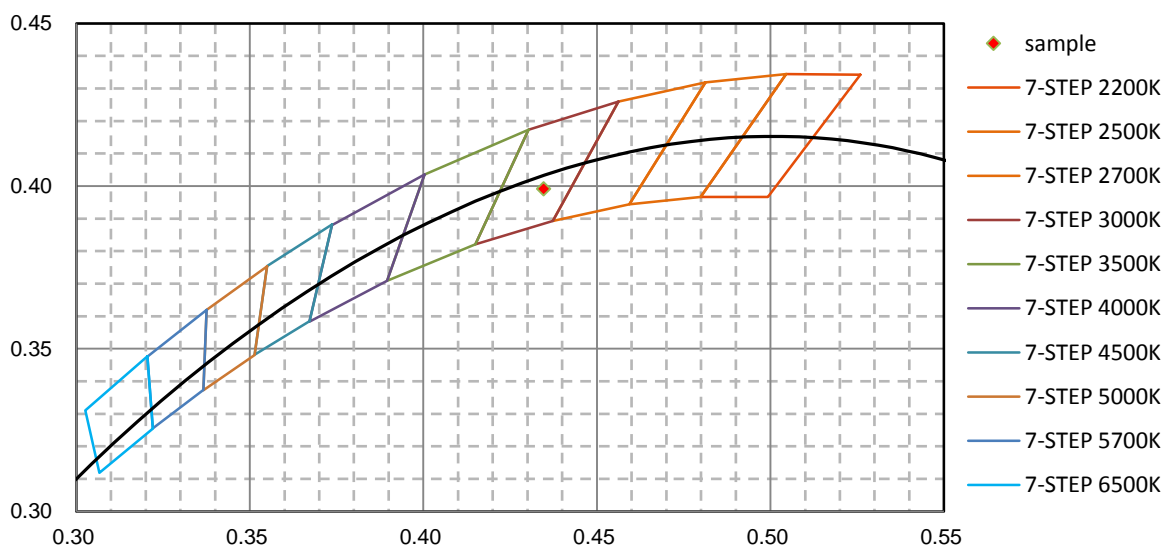
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	2.710E-02	421	1.568E-01	462	1.090E+01	503	9.389E+00	544	1.421E+01
381	6.010E-02	422	1.521E-01	463	1.045E+01	504	9.573E+00	545	1.434E+01
382	5.730E-02	423	2.022E-01	464	9.972E+00	505	9.749E+00	546	1.441E+01
383	1.390E-02	424	2.294E-01	465	9.717E+00	506	9.912E+00	547	1.450E+01
384	5.200E-02	425	2.773E-01	466	9.561E+00	507	1.012E+01	548	1.462E+01
385	3.810E-02	426	3.174E-01	467	9.395E+00	508	1.027E+01	549	1.469E+01
386	9.300E-03	427	3.701E-01	468	9.308E+00	509	1.044E+01	550	1.483E+01
387	3.180E-02	428	4.600E-01	469	9.077E+00	510	1.060E+01	551	1.486E+01
388	2.790E-02	429	5.642E-01	470	8.914E+00	511	1.079E+01	552	1.505E+01
389	1.580E-02	430	6.137E-01	471	8.621E+00	512	1.094E+01	553	1.510E+01
390	6.100E-02	431	7.230E-01	472	8.306E+00	513	1.108E+01	554	1.520E+01
391	1.880E-02	432	8.590E-01	473	8.023E+00	514	1.121E+01	555	1.533E+01
392	6.600E-03	433	9.995E-01	474	7.665E+00	515	1.135E+01	556	1.541E+01
393	1.000E-02	434	1.156E+00	475	7.370E+00	516	1.148E+01	557	1.549E+01
394	1.890E-02	435	1.325E+00	476	7.021E+00	517	1.161E+01	558	1.563E+01
395	6.120E-02	436	1.508E+00	477	6.796E+00	518	1.172E+01	559	1.568E+01
396	1.360E-02	437	1.718E+00	478	6.534E+00	519	1.179E+01	560	1.583E+01
397	2.300E-03	438	1.974E+00	479	6.415E+00	520	1.193E+01	561	1.592E+01
398	1.410E-02	439	2.246E+00	480	6.348E+00	521	1.209E+01	562	1.600E+01
399	7.000E-04	440	2.566E+00	481	6.323E+00	522	1.218E+01	563	1.616E+01
400	0.000E+00	441	2.926E+00	482	6.318E+00	523	1.227E+01	564	1.627E+01
401	1.670E-02	442	3.368E+00	483	6.328E+00	524	1.239E+01	565	1.632E+01
402	2.090E-02	443	3.888E+00	484	6.455E+00	525	1.248E+01	566	1.640E+01
403	2.530E-02	444	4.494E+00	485	6.513E+00	526	1.261E+01	567	1.656E+01
404	1.280E-02	445	5.245E+00	486	6.614E+00	527	1.267E+01	568	1.670E+01
405	2.080E-02	446	6.073E+00	487	6.752E+00	528	1.279E+01	569	1.685E+01
406	4.300E-03	447	7.076E+00	488	6.849E+00	529	1.291E+01	570	1.695E+01
407	8.190E-02	448	8.212E+00	489	6.979E+00	530	1.297E+01	571	1.703E+01
408	1.660E-02	449	9.503E+00	490	7.067E+00	531	1.307E+01	572	1.716E+01
409	4.700E-02	450	1.074E+01	491	7.173E+00	532	1.315E+01	573	1.729E+01
410	6.900E-02	451	1.202E+01	492	7.364E+00	533	1.328E+01	574	1.737E+01
411	4.820E-02	452	1.305E+01	493	7.520E+00	534	1.334E+01	575	1.751E+01
412	3.790E-02	453	1.400E+01	494	7.661E+00	535	1.344E+01	576	1.766E+01
413	1.450E-02	454	1.459E+01	495	7.838E+00	536	1.352E+01	577	1.773E+01
414	5.570E-02	455	1.493E+01	496	8.002E+00	537	1.355E+01	578	1.792E+01
415	4.010E-02	456	1.477E+01	497	8.190E+00	538	1.369E+01	579	1.804E+01
416	6.080E-02	457	1.443E+01	498	8.394E+00	539	1.380E+01	580	1.817E+01
417	7.090E-02	458	1.388E+01	499	8.567E+00	540	1.390E+01	581	1.832E+01
418	9.020E-02	459	1.299E+01	500	8.785E+00	541	1.396E+01	582	1.845E+01
419	9.480E-02	460	1.234E+01	501	8.968E+00	542	1.405E+01	583	1.868E+01
420	1.561E-01	461	1.164E+01	502	9.169E+00	543	1.418E+01	584	1.878E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	1.892E+01	626	2.374E+01	667	1.690E+01	708	6.807E+00	749	1.730E+00
586	1.908E+01	627	2.375E+01	668	1.668E+01	709	6.550E+00	750	1.671E+00
587	1.934E+01	628	2.376E+01	669	1.641E+01	710	6.327E+00	751	1.689E+00
588	1.945E+01	629	2.364E+01	670	1.610E+01	711	6.142E+00	752	1.574E+00
589	1.961E+01	630	2.357E+01	671	1.582E+01	712	5.970E+00	753	1.545E+00
590	1.973E+01	631	2.357E+01	672	1.554E+01	713	5.879E+00	754	1.459E+00
591	1.995E+01	632	2.356E+01	673	1.526E+01	714	5.636E+00	755	1.364E+00
592	2.013E+01	633	2.345E+01	674	1.499E+01	715	5.429E+00	756	1.416E+00
593	2.034E+01	634	2.340E+01	675	1.473E+01	716	5.271E+00	757	1.278E+00
594	2.048E+01	635	2.332E+01	676	1.447E+01	717	5.149E+00	758	1.021E+00
595	2.068E+01	636	2.324E+01	677	1.416E+01	718	4.993E+00	759	1.209E+00
596	2.084E+01	637	2.313E+01	678	1.388E+01	719	4.796E+00	760	1.052E+00
597	2.102E+01	638	2.304E+01	679	1.357E+01	720	4.684E+00	761	1.043E+00
598	2.116E+01	639	2.295E+01	680	1.331E+01	721	4.505E+00	762	1.147E+00
599	2.133E+01	640	2.283E+01	681	1.302E+01	722	4.424E+00	763	1.189E+00
600	2.150E+01	641	2.269E+01	682	1.276E+01	723	4.257E+00	764	9.843E-01
601	2.172E+01	642	2.253E+01	683	1.250E+01	724	3.983E+00	765	8.366E-01
602	2.184E+01	643	2.247E+01	684	1.224E+01	725	3.989E+00	766	8.898E-01
603	2.199E+01	644	2.230E+01	685	1.204E+01	726	3.858E+00	767	9.082E-01
604	2.221E+01	645	2.214E+01	686	1.171E+01	727	3.689E+00	768	9.307E-01
605	2.233E+01	646	2.198E+01	687	1.148E+01	728	3.552E+00	769	8.417E-01
606	2.250E+01	647	2.179E+01	688	1.121E+01	729	3.558E+00	770	7.318E-01
607	2.254E+01	648	2.160E+01	689	1.090E+01	730	3.453E+00	771	7.275E-01
608	2.274E+01	649	2.145E+01	690	1.071E+01	731	3.227E+00	772	7.605E-01
609	2.290E+01	650	2.119E+01	691	1.048E+01	732	3.226E+00	773	6.631E-01
610	2.299E+01	651	2.104E+01	692	1.024E+01	733	2.961E+00	774	6.022E-01
611	2.309E+01	652	2.084E+01	693	9.998E+00	734	2.909E+00	775	6.494E-01
612	2.318E+01	653	2.065E+01	694	9.747E+00	735	2.882E+00	776	5.901E-01
613	2.331E+01	654	2.036E+01	695	9.539E+00	736	2.740E+00	777	6.538E-01
614	2.334E+01	655	2.012E+01	696	9.207E+00	737	2.681E+00	778	5.595E-01
615	2.344E+01	656	1.990E+01	697	9.032E+00	738	2.536E+00	779	5.388E-01
616	2.350E+01	657	1.964E+01	698	8.836E+00	739	2.406E+00	780	4.657E-01
617	2.360E+01	658	1.943E+01	699	8.596E+00	740	2.335E+00		
618	2.371E+01	659	1.917E+01	700	8.317E+00	741	2.369E+00		
619	2.361E+01	660	1.890E+01	701	8.156E+00	742	2.264E+00		
620	2.367E+01	661	1.865E+01	702	7.891E+00	743	2.164E+00		
621	2.368E+01	662	1.833E+01	703	7.693E+00	744	2.018E+00		
622	2.370E+01	663	1.804E+01	704	7.516E+00	745	2.004E+00		
623	2.373E+01	664	1.774E+01	705	7.241E+00	746	1.801E+00		
624	2.376E+01	665	1.749E+01	706	7.118E+00	747	1.858E+00		
625	2.375E+01	666	1.725E+01	707	6.924E+00	748	1.823E+00		

CIE 1931xy Chromaticity Diagram



7-StepChromaticity Quadrangles



Control Setting: 3500K 14W

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

Test orientation: **Downward**

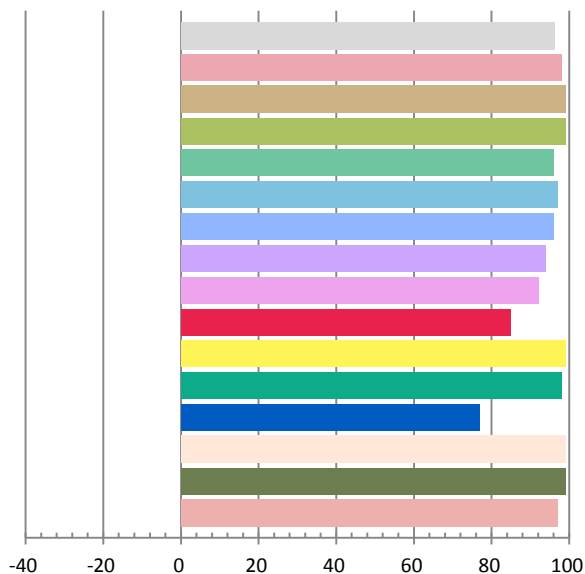
Photometric and Electrical Measurement Result

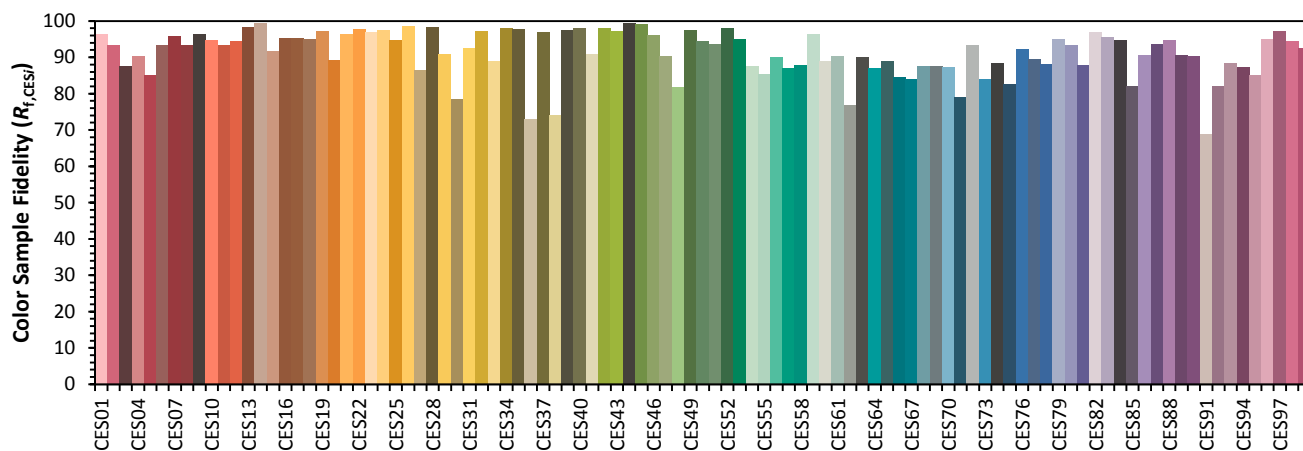
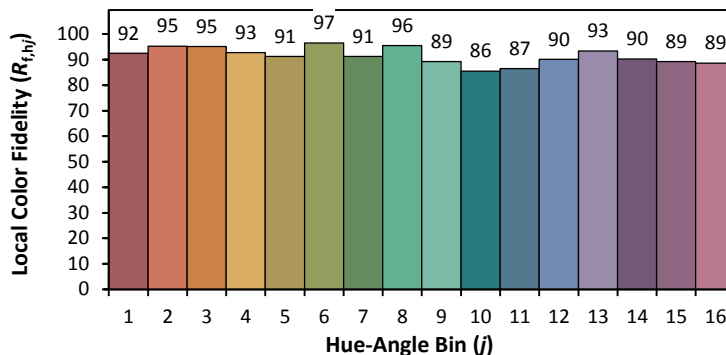
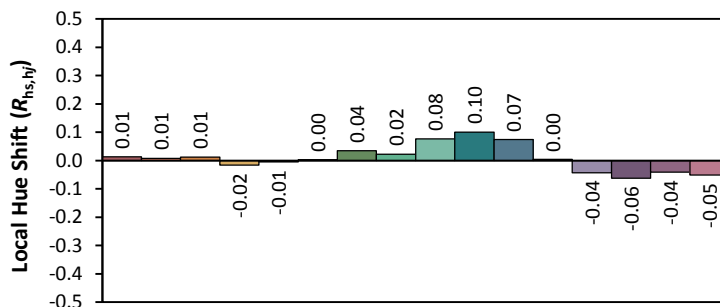
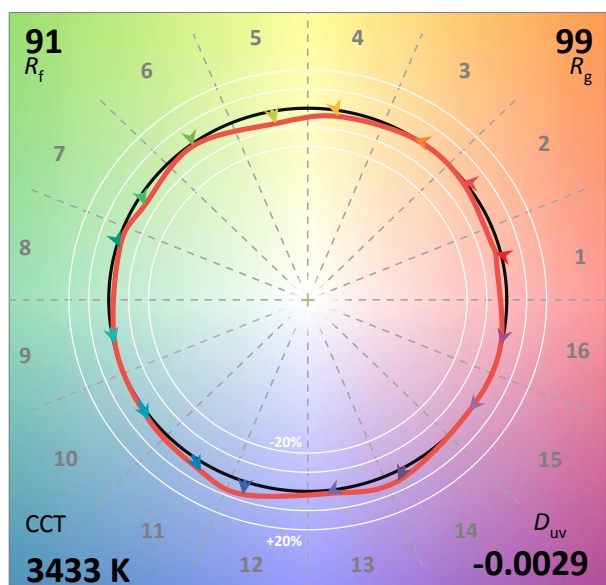
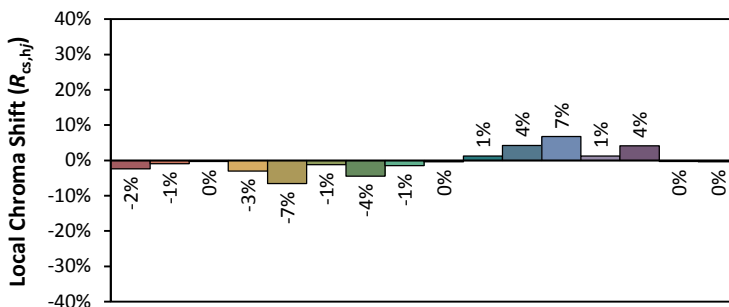
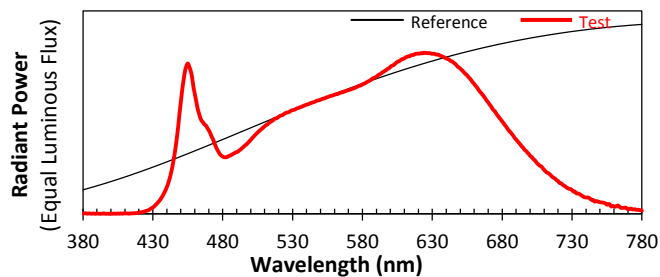
Voltage(V)	Frequency(Hz)	Current(A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy(lm/W)
120.0	60	0.1121	13.29	0.9882	1210.44	91.08

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
4.330	3433	-0.00294	0.4059	0.3844	0.2388	0.5087

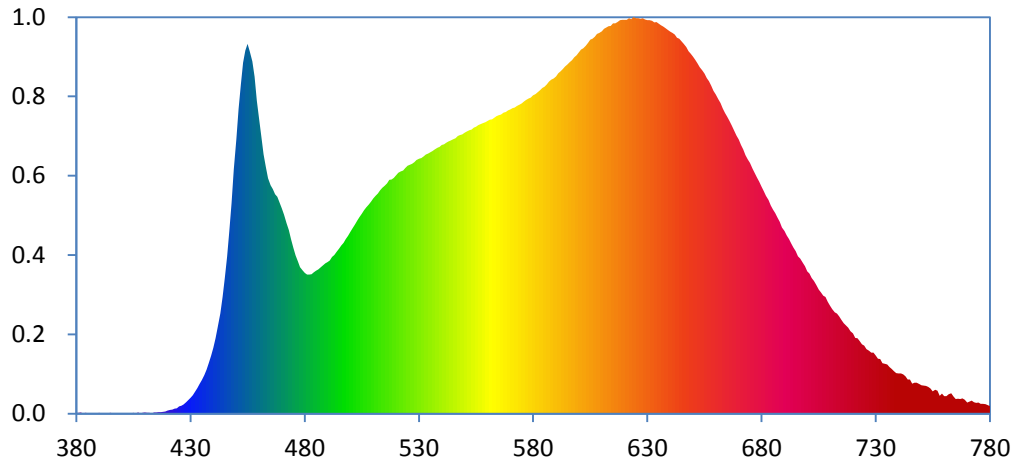
Color Rendering Index

Ra			
96.3			
R1	R2	R3	R4
98	99	99	96
R5	R6	R7	R8
97	96	94	92
R9	R10	R11	R12
85	99	98	77
R13	R14	R15	
99	99	97	





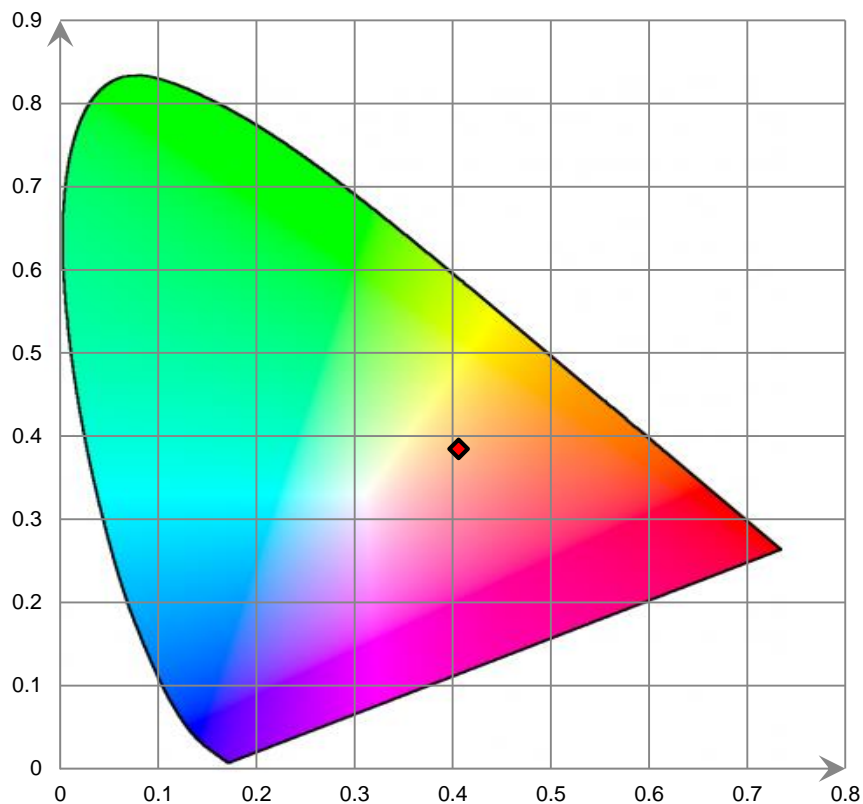
Relative Spectral Power Distribution



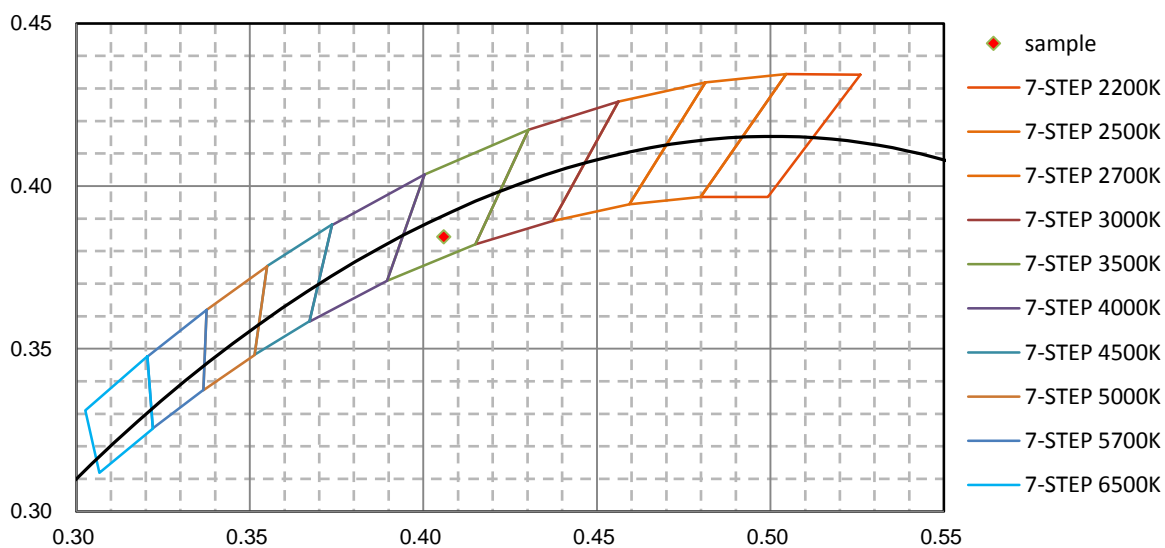
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	3.920E-02	421	2.127E-01	462	1.474E+01	503	1.097E+01	544	1.553E+01
381	5.860E-02	422	2.257E-01	463	1.404E+01	504	1.118E+01	545	1.560E+01
382	7.750E-02	423	2.824E-01	464	1.338E+01	505	1.136E+01	546	1.566E+01
383	1.640E-02	424	3.097E-01	465	1.298E+01	506	1.155E+01	547	1.577E+01
384	5.750E-02	425	4.107E-01	466	1.276E+01	507	1.172E+01	548	1.584E+01
385	4.130E-02	426	4.448E-01	467	1.247E+01	508	1.189E+01	549	1.587E+01
386	6.200E-03	427	5.266E-01	468	1.232E+01	509	1.206E+01	550	1.595E+01
387	3.530E-02	428	6.568E-01	469	1.199E+01	510	1.224E+01	551	1.602E+01
388	2.330E-02	429	7.747E-01	470	1.167E+01	511	1.238E+01	552	1.610E+01
389	9.900E-03	430	8.971E-01	471	1.130E+01	512	1.251E+01	553	1.614E+01
390	4.210E-02	431	1.055E+00	472	1.081E+01	513	1.269E+01	554	1.625E+01
391	1.850E-02	432	1.251E+00	473	1.043E+01	514	1.283E+01	555	1.630E+01
392	6.200E-03	433	1.453E+00	474	9.911E+00	515	1.295E+01	556	1.639E+01
393	1.060E-02	434	1.680E+00	475	9.427E+00	516	1.308E+01	557	1.645E+01
394	2.490E-02	435	1.909E+00	476	8.997E+00	517	1.329E+01	558	1.650E+01
395	5.820E-02	436	2.199E+00	477	8.666E+00	518	1.331E+01	559	1.657E+01
396	8.000E-03	437	2.512E+00	478	8.323E+00	519	1.340E+01	560	1.664E+01
397	1.070E-02	438	2.885E+00	479	8.139E+00	520	1.355E+01	561	1.671E+01
398	1.180E-02	439	3.283E+00	480	7.993E+00	521	1.369E+01	562	1.673E+01
399	6.000E-04	440	3.733E+00	481	7.914E+00	522	1.375E+01	563	1.681E+01
400	0.000E+00	441	4.283E+00	482	7.908E+00	523	1.381E+01	564	1.691E+01
401	1.650E-02	442	4.940E+00	483	7.918E+00	524	1.397E+01	565	1.696E+01
402	2.060E-02	443	5.701E+00	484	8.038E+00	525	1.408E+01	566	1.699E+01
403	2.730E-02	444	6.631E+00	485	8.120E+00	526	1.415E+01	567	1.710E+01
404	1.840E-02	445	7.716E+00	486	8.204E+00	527	1.419E+01	568	1.714E+01
405	4.800E-02	446	8.910E+00	487	8.325E+00	528	1.429E+01	569	1.722E+01
406	8.100E-03	447	1.038E+01	488	8.429E+00	529	1.442E+01	570	1.728E+01
407	6.320E-02	448	1.196E+01	489	8.543E+00	530	1.449E+01	571	1.736E+01
408	1.180E-02	449	1.390E+01	490	8.622E+00	531	1.452E+01	572	1.740E+01
409	4.860E-02	450	1.560E+01	491	8.705E+00	532	1.461E+01	573	1.749E+01
410	7.270E-02	451	1.733E+01	492	8.897E+00	533	1.473E+01	574	1.755E+01
411	5.710E-02	452	1.869E+01	493	9.019E+00	534	1.478E+01	575	1.764E+01
412	4.770E-02	453	1.993E+01	494	9.209E+00	535	1.486E+01	576	1.774E+01
413	2.020E-02	454	2.063E+01	495	9.376E+00	536	1.493E+01	577	1.783E+01
414	6.170E-02	455	2.101E+01	496	9.562E+00	537	1.501E+01	578	1.791E+01
415	6.020E-02	456	2.057E+01	497	9.702E+00	538	1.511E+01	579	1.795E+01
416	8.370E-02	457	2.001E+01	498	9.919E+00	539	1.516E+01	580	1.809E+01
417	7.900E-02	458	1.915E+01	499	1.011E+01	540	1.527E+01	581	1.816E+01
418	1.026E-01	459	1.778E+01	500	1.031E+01	541	1.530E+01	582	1.826E+01
419	1.255E-01	460	1.676E+01	501	1.056E+01	542	1.539E+01	583	1.838E+01
420	1.800E-01	461	1.576E+01	502	1.075E+01	543	1.548E+01	584	1.850E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	1.859E+01	626	2.247E+01	667	1.638E+01	708	6.627E+00	749	1.690E+00
586	1.871E+01	627	2.244E+01	668	1.610E+01	709	6.368E+00	750	1.617E+00
587	1.888E+01	628	2.247E+01	669	1.579E+01	710	6.145E+00	751	1.591E+00
588	1.898E+01	629	2.240E+01	670	1.557E+01	711	5.939E+00	752	1.576E+00
589	1.904E+01	630	2.235E+01	671	1.527E+01	712	5.766E+00	753	1.531E+00
590	1.916E+01	631	2.236E+01	672	1.502E+01	713	5.692E+00	754	1.436E+00
591	1.933E+01	632	2.232E+01	673	1.469E+01	714	5.523E+00	755	1.271E+00
592	1.946E+01	633	2.224E+01	674	1.445E+01	715	5.331E+00	756	1.366E+00
593	1.957E+01	634	2.225E+01	675	1.425E+01	716	5.142E+00	757	1.314E+00
594	1.972E+01	635	2.217E+01	676	1.392E+01	717	5.017E+00	758	1.019E+00
595	1.984E+01	636	2.207E+01	677	1.366E+01	718	4.881E+00	759	1.137E+00
596	1.997E+01	637	2.200E+01	678	1.341E+01	719	4.689E+00	760	1.000E+00
597	2.008E+01	638	2.191E+01	679	1.318E+01	720	4.568E+00	761	9.931E-01
598	2.024E+01	639	2.180E+01	680	1.290E+01	721	4.312E+00	762	1.105E+00
599	2.036E+01	640	2.171E+01	681	1.266E+01	722	4.284E+00	763	1.152E+00
600	2.052E+01	641	2.163E+01	682	1.239E+01	723	4.118E+00	764	9.808E-01
601	2.069E+01	642	2.154E+01	683	1.214E+01	724	3.945E+00	765	8.287E-01
602	2.075E+01	643	2.136E+01	684	1.184E+01	725	3.872E+00	766	8.448E-01
603	2.090E+01	644	2.131E+01	685	1.159E+01	726	3.671E+00	767	8.338E-01
604	2.107E+01	645	2.115E+01	686	1.139E+01	727	3.580E+00	768	8.717E-01
605	2.124E+01	646	2.101E+01	687	1.114E+01	728	3.474E+00	769	7.895E-01
606	2.130E+01	647	2.082E+01	688	1.090E+01	729	3.465E+00	770	6.255E-01
607	2.141E+01	648	2.059E+01	689	1.058E+01	730	3.308E+00	771	6.825E-01
608	2.157E+01	649	2.045E+01	690	1.038E+01	731	3.115E+00	772	7.398E-01
609	2.164E+01	650	2.028E+01	691	1.013E+01	732	3.112E+00	773	6.430E-01
610	2.173E+01	651	2.011E+01	692	9.920E+00	733	2.861E+00	774	6.071E-01
611	2.186E+01	652	1.991E+01	693	9.677E+00	734	2.842E+00	775	6.376E-01
612	2.195E+01	653	1.968E+01	694	9.429E+00	735	2.797E+00	776	5.638E-01
613	2.201E+01	654	1.950E+01	695	9.228E+00	736	2.660E+00	777	5.574E-01
614	2.202E+01	655	1.932E+01	696	8.942E+00	737	2.547E+00	778	5.466E-01
615	2.218E+01	656	1.907E+01	697	8.811E+00	738	2.408E+00	779	4.915E-01
616	2.218E+01	657	1.889E+01	698	8.573E+00	739	2.312E+00	780	4.391E-01
617	2.225E+01	658	1.863E+01	699	8.375E+00	740	2.281E+00		
618	2.235E+01	659	1.835E+01	700	8.095E+00	741	2.297E+00		
619	2.237E+01	660	1.814E+01	701	7.965E+00	742	2.235E+00		
620	2.238E+01	661	1.787E+01	702	7.714E+00	743	2.116E+00		
621	2.238E+01	662	1.765E+01	703	7.536E+00	744	1.942E+00		
622	2.246E+01	663	1.734E+01	704	7.329E+00	745	1.950E+00		
623	2.241E+01	664	1.709E+01	705	7.050E+00	746	1.710E+00		
624	2.253E+01	665	1.686E+01	706	6.891E+00	747	1.765E+00		
625	2.247E+01	666	1.662E+01	707	6.704E+00	748	1.753E+00		

CIE 1931xy Chromaticity Diagram



7-StepChromaticity Quadrangles



Control Setting: 4000K 14W

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

Test orientation: **Downward**

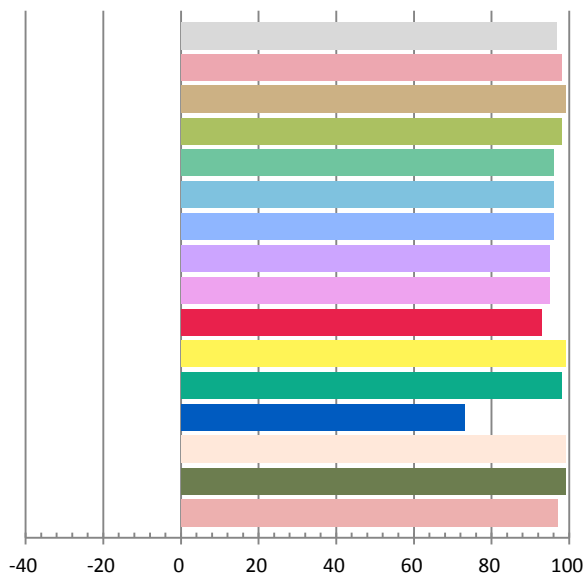
Photometric and Electrical Measurement Result

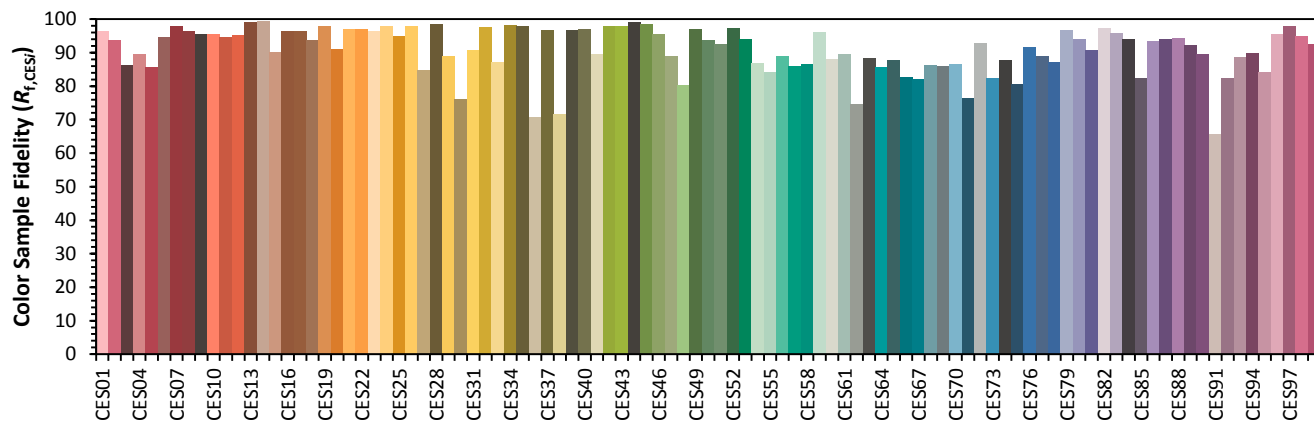
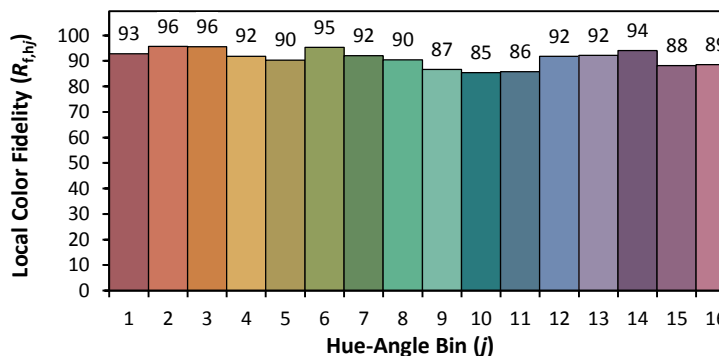
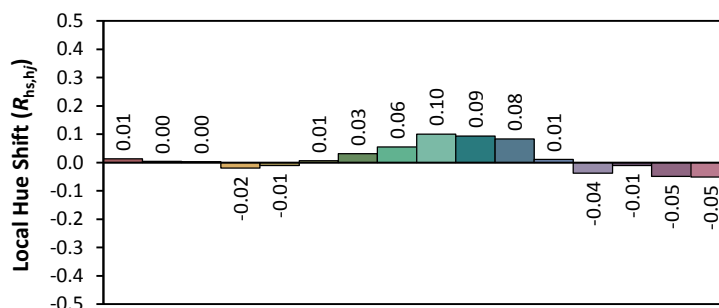
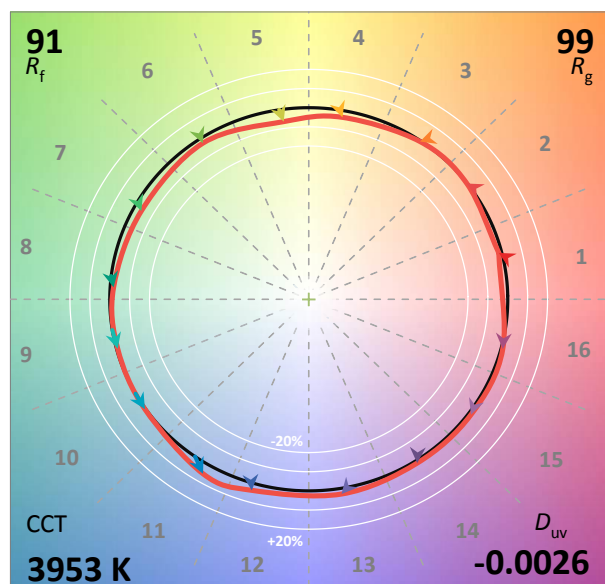
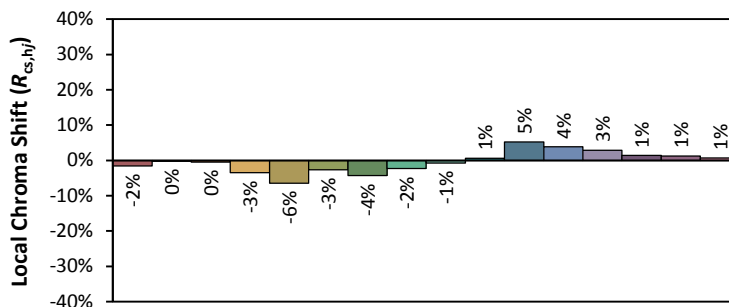
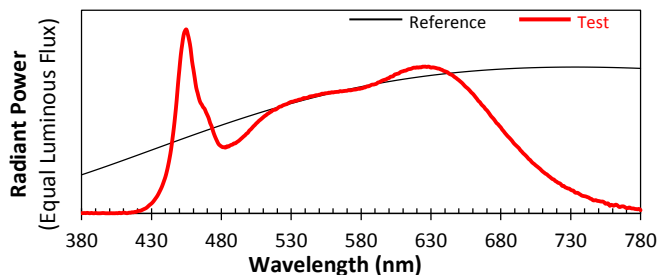
Voltage(V)	Frequency(Hz)	Current(A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy(lm/W)
120.0	60	0.1123	13.32	0.988	1223.52	91.86

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
4.403	3953	-0.00257	0.3807	0.3715	0.2274	0.4993

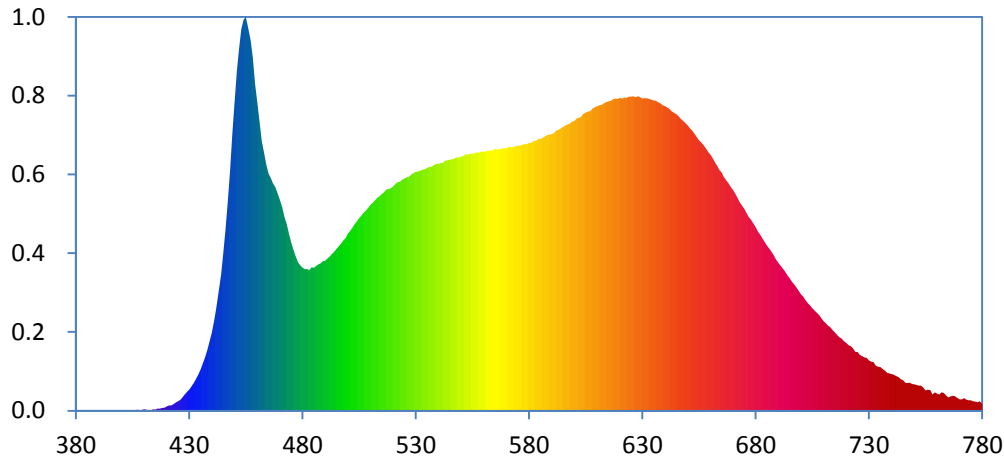
Color Rendering Index

Ra			
96.7			
R1	R2	R3	R4
98	99	98	96
R5	R6	R7	R8
96	96	95	95
R9	R10	R11	R12
93	99	98	73
R13	R14	R15	
99	99	97	





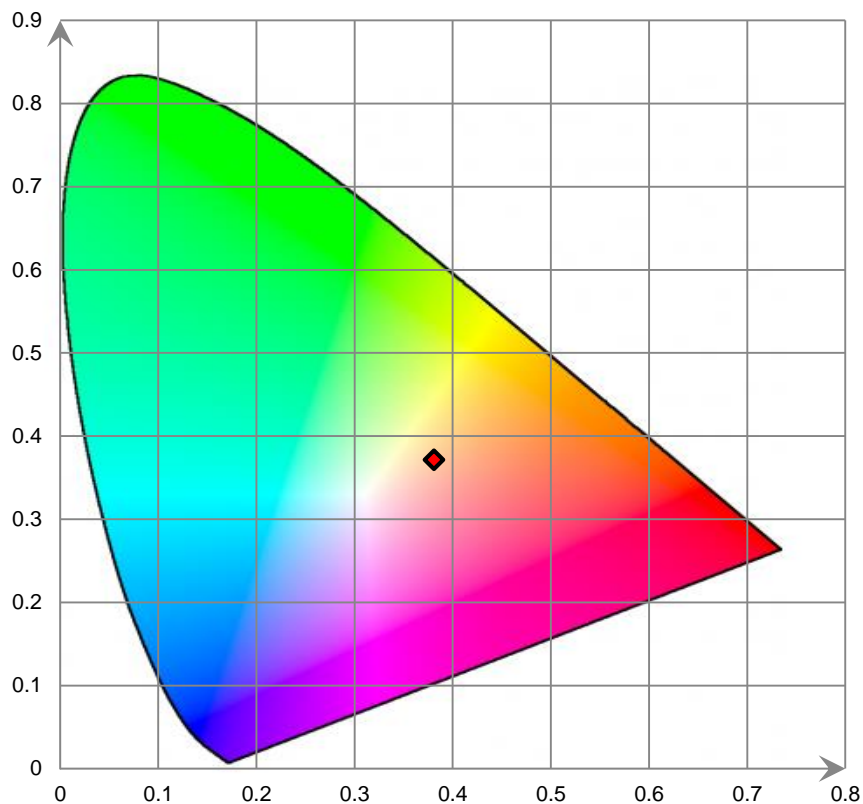
Relative Spectral Power Distribution



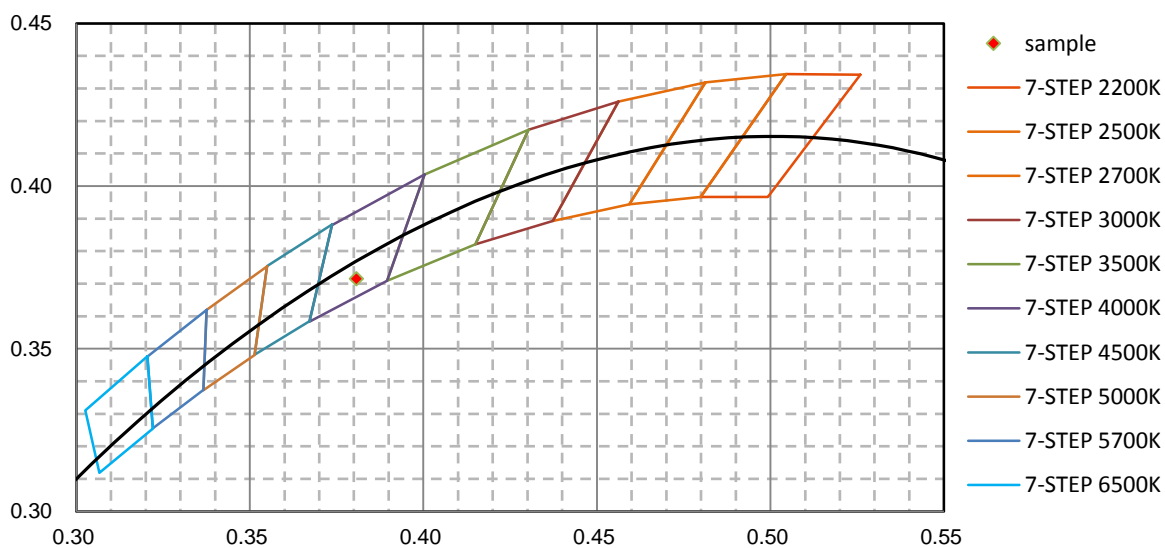
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	2.340E-02	421	3.420E-01	462	1.777E+01	503	1.228E+01	544	1.651E+01
381	2.020E-02	422	3.575E-01	463	1.701E+01	504	1.247E+01	545	1.654E+01
382	4.110E-02	423	4.391E-01	464	1.623E+01	505	1.269E+01	546	1.656E+01
383	1.950E-02	424	5.345E-01	465	1.565E+01	506	1.286E+01	547	1.663E+01
384	5.980E-02	425	6.244E-01	466	1.535E+01	507	1.307E+01	548	1.668E+01
385	2.820E-02	426	7.170E-01	467	1.497E+01	508	1.322E+01	549	1.668E+01
386	6.100E-03	427	8.684E-01	468	1.476E+01	509	1.339E+01	550	1.675E+01
387	5.030E-02	428	1.057E+00	469	1.428E+01	510	1.356E+01	551	1.678E+01
388	1.200E-02	429	1.226E+00	470	1.386E+01	511	1.373E+01	552	1.690E+01
389	4.000E-04	430	1.378E+00	471	1.340E+01	512	1.386E+01	553	1.687E+01
390	4.430E-02	431	1.583E+00	472	1.274E+01	513	1.403E+01	554	1.693E+01
391	9.300E-03	432	1.838E+00	473	1.231E+01	514	1.415E+01	555	1.695E+01
392	3.000E-04	433	2.113E+00	474	1.165E+01	515	1.428E+01	556	1.697E+01
393	0.000E+00	434	2.391E+00	475	1.108E+01	516	1.440E+01	557	1.704E+01
394	1.410E-02	435	2.741E+00	476	1.060E+01	517	1.458E+01	558	1.701E+01
395	3.750E-02	436	3.136E+00	477	1.017E+01	518	1.461E+01	559	1.710E+01
396	3.090E-02	437	3.541E+00	478	9.787E+00	519	1.467E+01	560	1.706E+01
397	4.000E-03	438	4.022E+00	479	9.588E+00	520	1.480E+01	561	1.711E+01
398	2.000E-04	439	4.582E+00	480	9.446E+00	521	1.496E+01	562	1.713E+01
399	0.000E+00	440	5.163E+00	481	9.331E+00	522	1.506E+01	563	1.715E+01
400	0.000E+00	441	5.917E+00	482	9.342E+00	523	1.510E+01	564	1.716E+01
401	1.470E-02	442	6.802E+00	483	9.270E+00	524	1.524E+01	565	1.726E+01
402	6.500E-03	443	7.824E+00	484	9.464E+00	525	1.531E+01	566	1.722E+01
403	5.600E-03	444	8.995E+00	485	9.409E+00	526	1.538E+01	567	1.725E+01
404	5.400E-03	445	1.047E+01	486	9.543E+00	527	1.543E+01	568	1.727E+01
405	2.250E-02	446	1.204E+01	487	9.654E+00	528	1.555E+01	569	1.730E+01
406	4.300E-03	447	1.385E+01	488	9.703E+00	529	1.566E+01	570	1.731E+01
407	7.650E-02	448	1.588E+01	489	9.869E+00	530	1.574E+01	571	1.739E+01
408	1.060E-02	449	1.827E+01	490	9.873E+00	531	1.576E+01	572	1.736E+01
409	4.430E-02	450	2.034E+01	491	1.004E+01	532	1.582E+01	573	1.738E+01
410	9.310E-02	451	2.237E+01	492	1.016E+01	533	1.590E+01	574	1.744E+01
411	6.680E-02	452	2.386E+01	493	1.032E+01	534	1.592E+01	575	1.746E+01
412	2.060E-02	453	2.515E+01	494	1.050E+01	535	1.601E+01	576	1.748E+01
413	1.950E-02	454	2.576E+01	495	1.067E+01	536	1.606E+01	577	1.752E+01
414	8.890E-02	455	2.595E+01	496	1.086E+01	537	1.609E+01	578	1.759E+01
415	7.350E-02	456	2.527E+01	497	1.102E+01	538	1.618E+01	579	1.757E+01
416	1.438E-01	457	2.442E+01	498	1.124E+01	539	1.628E+01	580	1.764E+01
417	1.315E-01	458	2.327E+01	499	1.138E+01	540	1.627E+01	581	1.766E+01
418	1.891E-01	459	2.154E+01	500	1.167E+01	541	1.630E+01	582	1.776E+01
419	2.091E-01	460	2.033E+01	501	1.184E+01	542	1.634E+01	583	1.778E+01
420	2.840E-01	461	1.906E+01	502	1.206E+01	543	1.647E+01	584	1.792E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	1.792E+01	626	2.072E+01	667	1.520E+01	708	6.292E+00	749	1.762E+00
586	1.798E+01	627	2.066E+01	668	1.501E+01	709	6.086E+00	750	1.737E+00
587	1.809E+01	628	2.072E+01	669	1.474E+01	710	5.896E+00	751	1.689E+00
588	1.817E+01	629	2.068E+01	670	1.455E+01	711	5.747E+00	752	1.656E+00
589	1.818E+01	630	2.057E+01	671	1.430E+01	712	5.590E+00	753	1.654E+00
590	1.823E+01	631	2.060E+01	672	1.401E+01	713	5.493E+00	754	1.537E+00
591	1.829E+01	632	2.059E+01	673	1.373E+01	714	5.303E+00	755	1.338E+00
592	1.846E+01	633	2.055E+01	674	1.351E+01	715	5.156E+00	756	1.391E+00
593	1.851E+01	634	2.050E+01	675	1.330E+01	716	4.992E+00	757	1.370E+00
594	1.862E+01	635	2.044E+01	676	1.302E+01	717	4.833E+00	758	1.055E+00
595	1.872E+01	636	2.042E+01	677	1.274E+01	718	4.766E+00	759	1.205E+00
596	1.880E+01	637	2.031E+01	678	1.258E+01	719	4.567E+00	760	1.123E+00
597	1.886E+01	638	2.025E+01	679	1.234E+01	720	4.458E+00	761	1.071E+00
598	1.893E+01	639	2.012E+01	680	1.213E+01	721	4.305E+00	762	1.205E+00
599	1.905E+01	640	2.006E+01	681	1.182E+01	722	4.245E+00	763	1.179E+00
600	1.910E+01	641	1.998E+01	682	1.160E+01	723	4.104E+00	764	1.017E+00
601	1.927E+01	642	1.990E+01	683	1.133E+01	724	3.866E+00	765	8.734E-01
602	1.931E+01	643	1.972E+01	684	1.111E+01	725	3.870E+00	766	9.472E-01
603	1.937E+01	644	1.962E+01	685	1.087E+01	726	3.674E+00	767	9.799E-01
604	1.958E+01	645	1.954E+01	686	1.069E+01	727	3.603E+00	768	9.631E-01
605	1.964E+01	646	1.940E+01	687	1.047E+01	728	3.504E+00	769	8.427E-01
606	1.971E+01	647	1.923E+01	688	1.025E+01	729	3.483E+00	770	7.428E-01
607	1.975E+01	648	1.911E+01	689	9.972E+00	730	3.324E+00	771	7.416E-01
608	1.992E+01	649	1.894E+01	690	9.750E+00	731	3.232E+00	772	8.271E-01
609	2.001E+01	650	1.879E+01	691	9.569E+00	732	3.189E+00	773	7.239E-01
610	2.006E+01	651	1.862E+01	692	9.379E+00	733	2.956E+00	774	6.815E-01
611	2.013E+01	652	1.846E+01	693	9.193E+00	734	2.891E+00	775	6.784E-01
612	2.015E+01	653	1.825E+01	694	8.915E+00	735	2.889E+00	776	6.136E-01
613	2.026E+01	654	1.803E+01	695	8.716E+00	736	2.756E+00	777	5.953E-01
614	2.035E+01	655	1.784E+01	696	8.485E+00	737	2.637E+00	778	5.669E-01
615	2.037E+01	656	1.768E+01	697	8.310E+00	738	2.501E+00	779	6.176E-01
616	2.042E+01	657	1.750E+01	698	8.117E+00	739	2.448E+00	780	4.358E-01
617	2.052E+01	658	1.728E+01	699	7.906E+00	740	2.410E+00		
618	2.057E+01	659	1.705E+01	700	7.667E+00	741	2.366E+00		
619	2.054E+01	660	1.688E+01	701	7.523E+00	742	2.283E+00		
620	2.062E+01	661	1.664E+01	702	7.278E+00	743	2.215E+00		
621	2.057E+01	662	1.638E+01	703	7.088E+00	744	2.073E+00		
622	2.063E+01	663	1.614E+01	704	6.945E+00	745	2.013E+00		
623	2.061E+01	664	1.587E+01	705	6.760E+00	746	1.840E+00		
624	2.071E+01	665	1.570E+01	706	6.614E+00	747	1.826E+00		
625	2.070E+01	666	1.541E+01	707	6.448E+00	748	1.854E+00		

CIE 1931xy Chromaticity Diagram



7-StepChromaticity Quadrangles



Control Setting: 5000K 14W

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

Test orientation: **Downward**

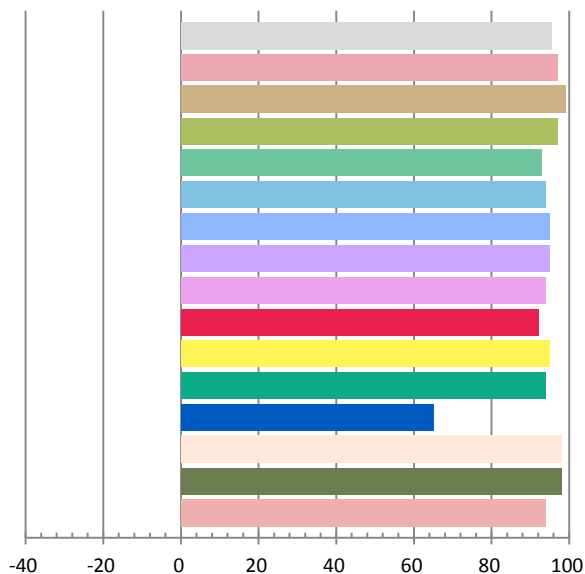
Photometric and Electrical Measurement Result

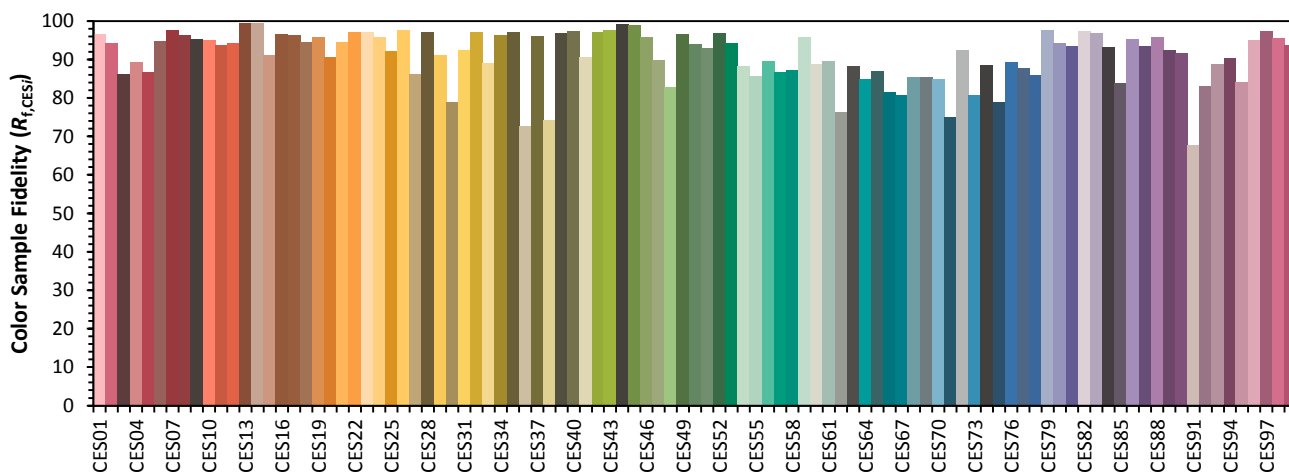
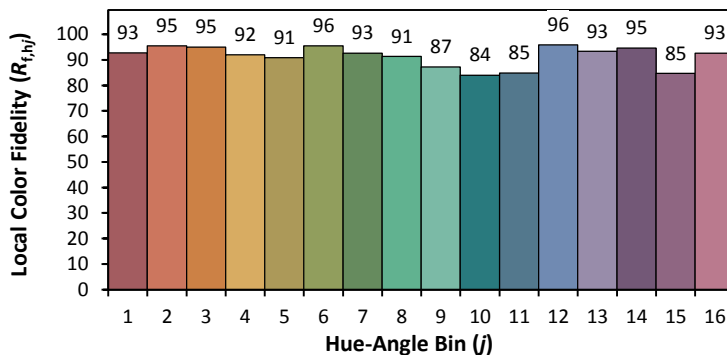
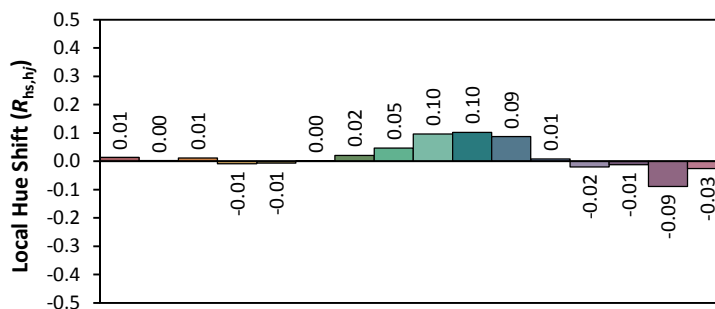
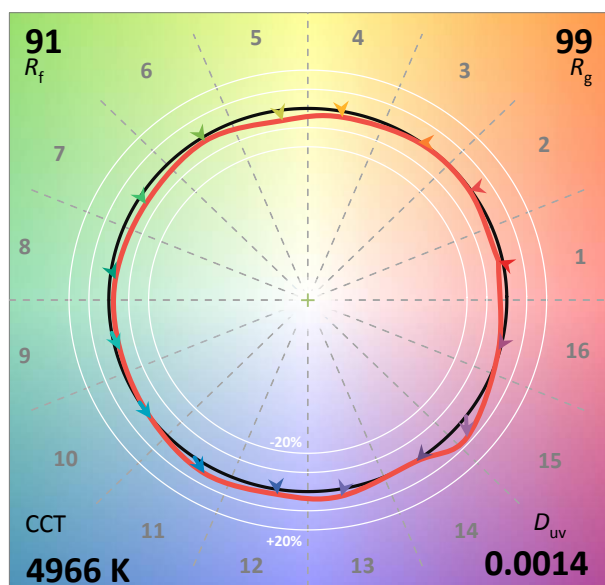
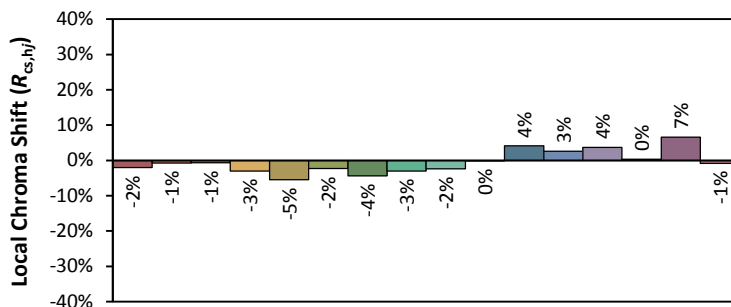
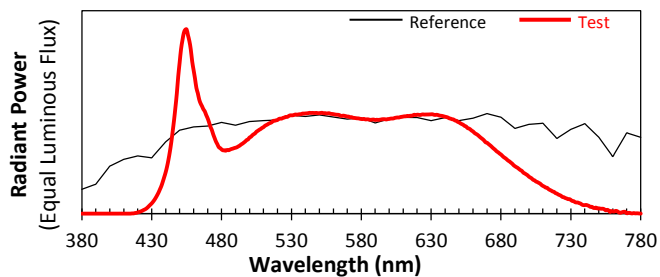
Voltage(V)	Frequency(Hz)	Current(A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy(lm/W)
120.0	60	0.1122	13.3	0.9879	1234.47	92.82

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
4.392	4966	0.00139	0.3464	0.3554	0.2108	0.4867

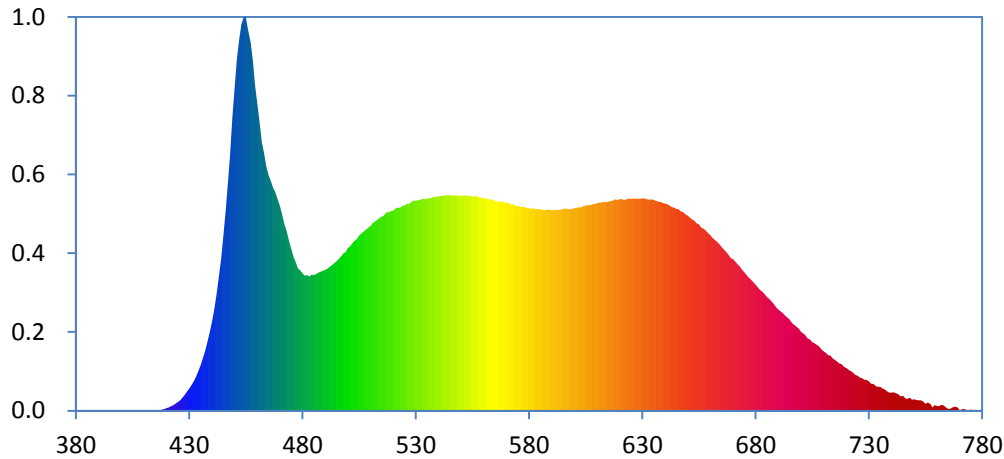
Color Rendering Index

Ra			
95.5			
R1	R2	R3	R4
97	99	97	93
R5	R6	R7	R8
94	95	95	94
R9	R10	R11	R12
92	95	94	65
R13	R14	R15	
98	98	94	





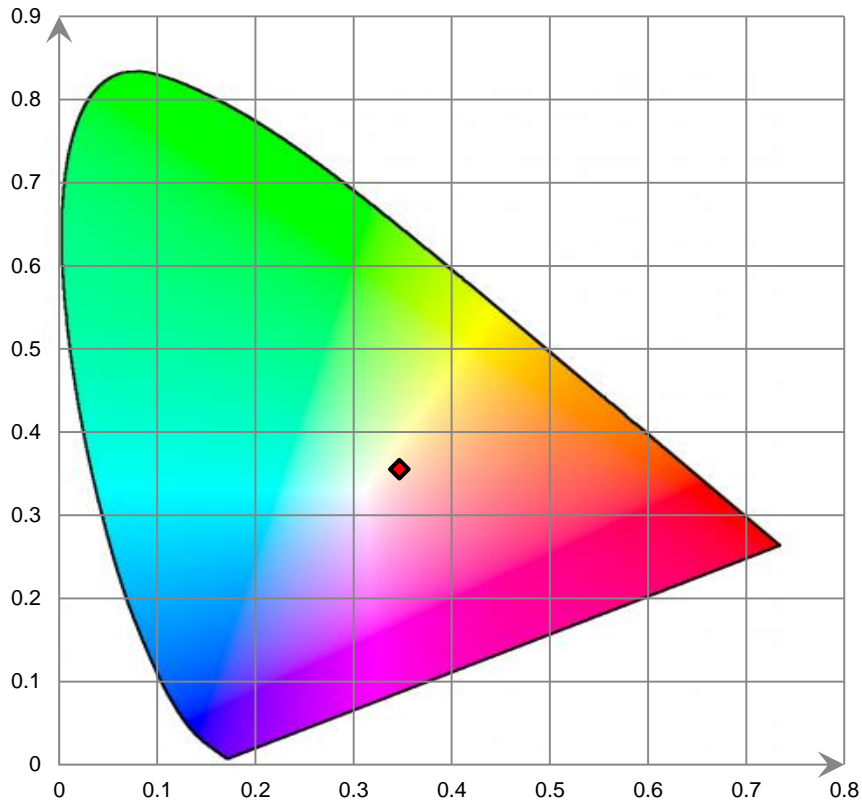
Relative Spectral Power Distribution



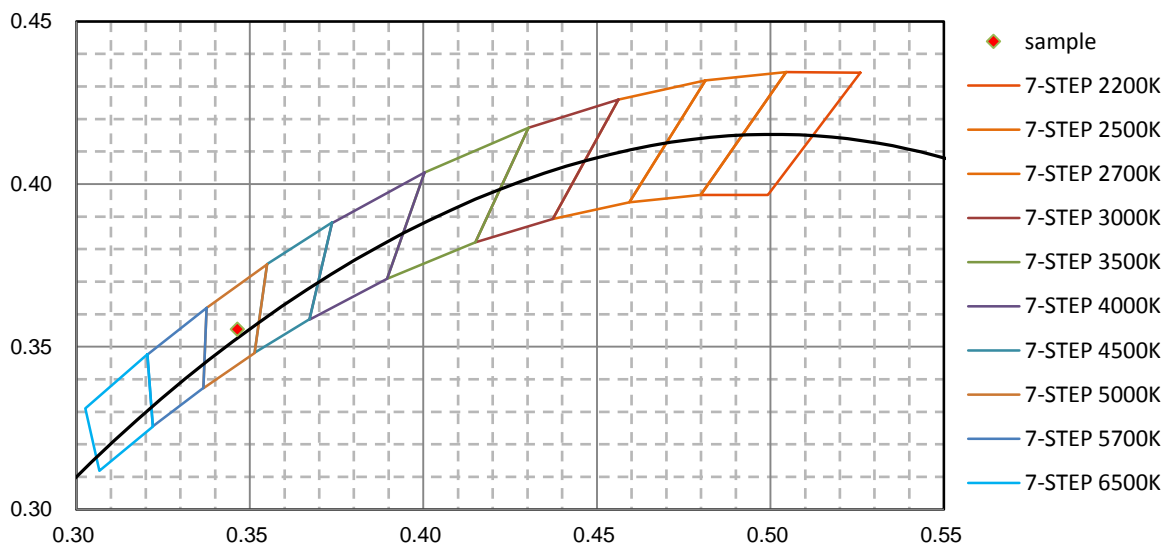
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	0.000E+00	421	2.880E-01	462	2.239E+01	503	1.414E+01	544	1.793E+01
381	0.000E+00	422	3.816E-01	463	2.147E+01	504	1.430E+01	545	1.794E+01
382	0.000E+00	423	4.785E-01	464	2.034E+01	505	1.459E+01	546	1.792E+01
383	0.000E+00	424	6.133E-01	465	1.964E+01	506	1.475E+01	547	1.792E+01
384	0.000E+00	425	7.295E-01	466	1.915E+01	507	1.493E+01	548	1.794E+01
385	0.000E+00	426	8.736E-01	467	1.859E+01	508	1.507E+01	549	1.789E+01
386	0.000E+00	427	1.084E+00	468	1.822E+01	509	1.527E+01	550	1.790E+01
387	0.000E+00	428	1.328E+00	469	1.757E+01	510	1.540E+01	551	1.793E+01
388	0.000E+00	429	1.577E+00	470	1.701E+01	511	1.563E+01	552	1.796E+01
389	0.000E+00	430	1.817E+00	471	1.631E+01	512	1.577E+01	553	1.787E+01
390	0.000E+00	431	2.119E+00	472	1.549E+01	513	1.589E+01	554	1.790E+01
391	0.000E+00	432	2.466E+00	473	1.495E+01	514	1.606E+01	555	1.784E+01
392	0.000E+00	433	2.861E+00	474	1.415E+01	515	1.616E+01	556	1.786E+01
393	0.000E+00	434	3.313E+00	475	1.349E+01	516	1.629E+01	557	1.788E+01
394	0.000E+00	435	3.802E+00	476	1.284E+01	517	1.652E+01	558	1.778E+01
395	0.000E+00	436	4.372E+00	477	1.237E+01	518	1.654E+01	559	1.775E+01
396	0.000E+00	437	4.960E+00	478	1.185E+01	519	1.662E+01	560	1.772E+01
397	0.000E+00	438	5.713E+00	479	1.168E+01	520	1.667E+01	561	1.767E+01
398	0.000E+00	439	6.517E+00	480	1.145E+01	521	1.685E+01	562	1.763E+01
399	0.000E+00	440	7.348E+00	481	1.127E+01	522	1.692E+01	563	1.761E+01
400	0.000E+00	441	8.361E+00	482	1.129E+01	523	1.692E+01	564	1.758E+01
401	0.000E+00	442	9.589E+00	483	1.120E+01	524	1.705E+01	565	1.747E+01
402	0.000E+00	443	1.100E+01	484	1.135E+01	525	1.711E+01	566	1.739E+01
403	0.000E+00	444	1.265E+01	485	1.128E+01	526	1.723E+01	567	1.745E+01
404	0.000E+00	445	1.459E+01	486	1.140E+01	527	1.722E+01	568	1.741E+01
405	0.000E+00	446	1.662E+01	487	1.150E+01	528	1.737E+01	569	1.736E+01
406	0.000E+00	447	1.892E+01	488	1.157E+01	529	1.750E+01	570	1.729E+01
407	2.200E-03	448	2.140E+01	489	1.167E+01	530	1.751E+01	571	1.728E+01
408	1.000E-04	449	2.444E+01	490	1.174E+01	531	1.752E+01	572	1.717E+01
409	0.000E+00	450	2.687E+01	491	1.182E+01	532	1.759E+01	573	1.718E+01
410	5.300E-03	451	2.926E+01	492	1.197E+01	533	1.766E+01	574	1.708E+01
411	5.000E-04	452	3.084E+01	493	1.211E+01	534	1.762E+01	575	1.704E+01
412	0.000E+00	453	3.217E+01	494	1.231E+01	535	1.767E+01	576	1.701E+01
413	0.000E+00	454	3.274E+01	495	1.246E+01	536	1.771E+01	577	1.697E+01
414	1.800E-03	455	3.280E+01	496	1.266E+01	537	1.772E+01	578	1.696E+01
415	2.600E-03	456	3.175E+01	497	1.285E+01	538	1.783E+01	579	1.690E+01
416	3.910E-02	457	3.072E+01	498	1.311E+01	539	1.782E+01	580	1.685E+01
417	3.620E-02	458	2.921E+01	499	1.321E+01	540	1.784E+01	581	1.684E+01
418	9.870E-02	459	2.709E+01	500	1.355E+01	541	1.786E+01	582	1.687E+01
419	1.367E-01	460	2.558E+01	501	1.368E+01	542	1.790E+01	583	1.677E+01
420	2.193E-01	461	2.407E+01	502	1.394E+01	543	1.795E+01	584	1.680E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	1.679E+01	626	1.765E+01	667	1.324E+01	708	5.343E+00	749	9.117E-01
586	1.672E+01	627	1.766E+01	668	1.300E+01	709	5.112E+00	750	9.453E-01
587	1.671E+01	628	1.766E+01	669	1.270E+01	710	4.933E+00	751	8.905E-01
588	1.675E+01	629	1.767E+01	670	1.262E+01	711	4.815E+00	752	8.684E-01
589	1.675E+01	630	1.769E+01	671	1.241E+01	712	4.632E+00	753	8.677E-01
590	1.667E+01	631	1.769E+01	672	1.221E+01	713	4.600E+00	754	7.681E-01
591	1.672E+01	632	1.761E+01	673	1.200E+01	714	4.366E+00	755	5.737E-01
592	1.669E+01	633	1.758E+01	674	1.175E+01	715	4.217E+00	756	6.833E-01
593	1.672E+01	634	1.761E+01	675	1.154E+01	716	4.094E+00	757	5.618E-01
594	1.676E+01	635	1.755E+01	676	1.132E+01	717	3.936E+00	758	2.872E-01
595	1.681E+01	636	1.747E+01	677	1.107E+01	718	3.872E+00	759	4.612E-01
596	1.682E+01	637	1.743E+01	678	1.092E+01	719	3.648E+00	760	3.896E-01
597	1.681E+01	638	1.739E+01	679	1.070E+01	720	3.567E+00	761	3.752E-01
598	1.677E+01	639	1.733E+01	680	1.053E+01	721	3.399E+00	762	4.875E-01
599	1.684E+01	640	1.726E+01	681	1.028E+01	722	3.296E+00	763	4.439E-01
600	1.686E+01	641	1.720E+01	682	1.005E+01	723	3.170E+00	764	2.883E-01
601	1.692E+01	642	1.711E+01	683	9.890E+00	724	2.962E+00	765	1.570E-01
602	1.693E+01	643	1.698E+01	684	9.689E+00	725	2.921E+00	766	1.835E-01
603	1.695E+01	644	1.692E+01	685	9.459E+00	726	2.772E+00	767	2.692E-01
604	1.704E+01	645	1.681E+01	686	9.308E+00	727	2.701E+00	768	3.307E-01
605	1.709E+01	646	1.677E+01	687	9.097E+00	728	2.576E+00	769	2.876E-01
606	1.713E+01	647	1.660E+01	688	8.901E+00	729	2.584E+00	770	5.080E-02
607	1.712E+01	648	1.653E+01	689	8.632E+00	730	2.430E+00	771	1.224E-01
608	1.720E+01	649	1.635E+01	690	8.439E+00	731	2.256E+00	772	1.386E-01
609	1.724E+01	650	1.624E+01	691	8.278E+00	732	2.221E+00	773	6.120E-02
610	1.729E+01	651	1.608E+01	692	8.132E+00	733	2.044E+00	774	3.740E-02
611	1.733E+01	652	1.594E+01	693	7.927E+00	734	1.985E+00	775	1.003E-01
612	1.734E+01	653	1.582E+01	694	7.743E+00	735	1.975E+00	776	4.670E-02
613	1.741E+01	654	1.561E+01	695	7.592E+00	736	1.866E+00	777	5.670E-02
614	1.738E+01	655	1.553E+01	696	7.293E+00	737	1.782E+00	778	5.040E-02
615	1.743E+01	656	1.525E+01	697	7.156E+00	738	1.600E+00	779	2.160E-02
616	1.744E+01	657	1.516E+01	698	6.993E+00	739	1.516E+00	780	6.000E-03
617	1.751E+01	658	1.501E+01	699	6.832E+00	740	1.519E+00		
618	1.762E+01	659	1.478E+01	700	6.581E+00	741	1.543E+00		
619	1.754E+01	660	1.463E+01	701	6.427E+00	742	1.461E+00		
620	1.762E+01	661	1.438E+01	702	6.266E+00	743	1.364E+00		
621	1.760E+01	662	1.421E+01	703	6.022E+00	744	1.188E+00		
622	1.757E+01	663	1.407E+01	704	5.931E+00	745	1.231E+00		
623	1.762E+01	664	1.386E+01	705	5.720E+00	746	1.040E+00		
624	1.767E+01	665	1.363E+01	706	5.623E+00	747	9.945E-01		
625	1.765E+01	666	1.343E+01	707	5.477E+00	748	1.082E+00		

CIE 1931xy Chromaticity Diagram



7-StepChromaticity Quadrangles



[Goniophotometer System]

Control Setting: 2700K 14W

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

Test orientation: **Downward**

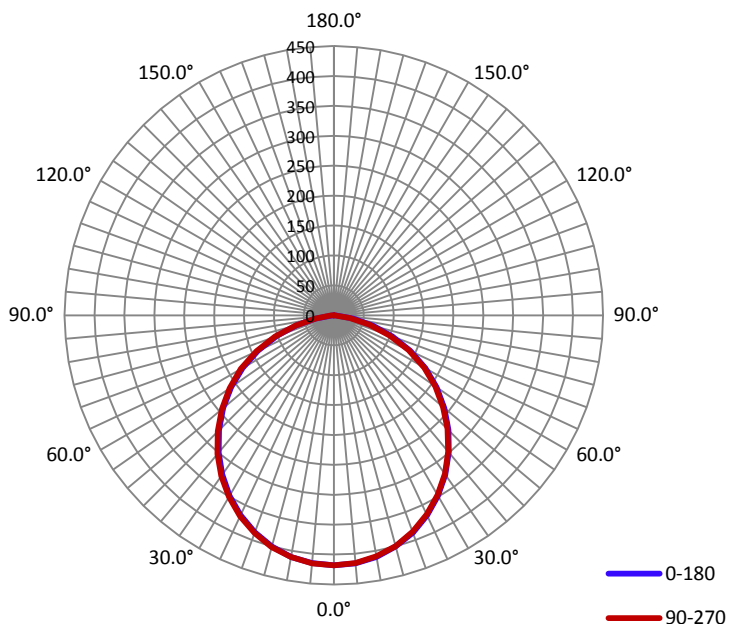
Electrical Measurement

Input Voltage(V)	Frequency(Hz)	Input Current(A)	Power (W)	Power Factor
120.0	60	0.1120	13.37	0.9910

Photometric Measurement

Luminous Flux(lm)	Efficacy(lm/W)	$I_{max}(cd)$	S/MH(C0/180)	S/MH(C90/270)
1139.2	85.26	418.7	1.24	1.24

Luminous Intensity Distribution



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle(50% I_{max}):	110.2	110.4	110.3	110.1	110.3
Field Angle(10% I_{max}):	157.0	156.3	156.2	157.0	156.6

Luminous Intensity (cd) Distribution Data

C y	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0.0°	418	418	418	418	418	418	418	418
5.0°	416	416	416	416	416	415	416	416
10.0°	410	409	409	410	409	410	410	410
15.0°	400	399	400	399	399	399	400	400
20.0°	387	386	385	385	385	385	386	387
25.0°	369	368	367	368	368	368	368	369
30.0°	348	348	347	347	347	347	348	349
35.0°	325	324	323	324	324	324	324	326
40.0°	299	298	297	297	297	298	299	300
45.0°	271	270	269	269	269	269	270	272
50.0°	242	241	240	239	239	239	240	241
55.0°	210	209	208	208	207	208	209	210
60.0°	177	176	175	174	174	175	176	177
65.0°	141	140	138	138	138	139	140	142
70.0°	104	104	100	100	99	102	103	104
75.0°	68	66	63	62	62	65	66	68
80.0°	33	31	28	27	27	31	31	30
85.0°	3	3	2	1	1	2	3	3
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	0	0	0	0
145.0°	0	0	0	0	0	0	0	0
150.0°	0	0	0	0	0	0	0	0
155.0°	0	0	0	0	0	0	0	0
160.0°	0	0	0	0	0	0	0	0
165.0°	0	0	0	0	0	0	0	0
170.0°	0	0	0	0	0	0	0	0
175.0°	0	0	0	0	0	0	0	0
180.0°	0	0	0	0	0	0	0	0

Luminous Intensity (cd) Distribution Data (cont.)

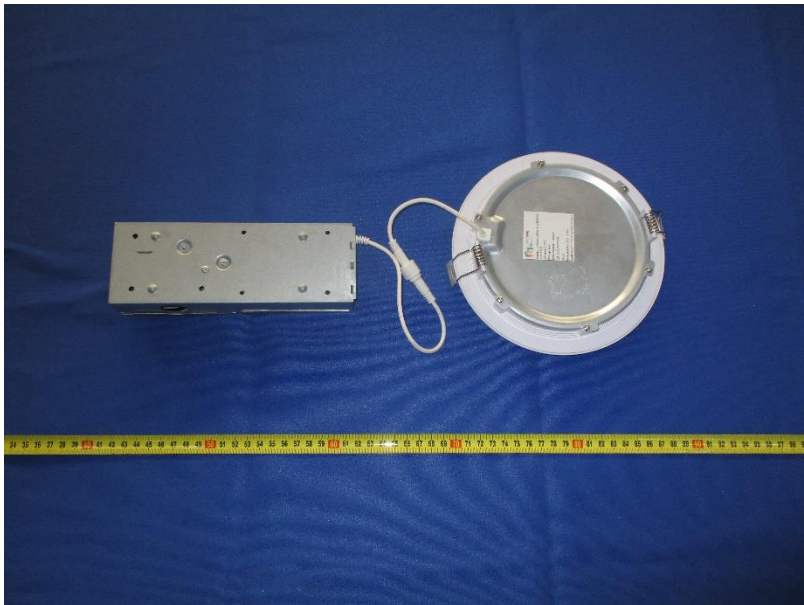
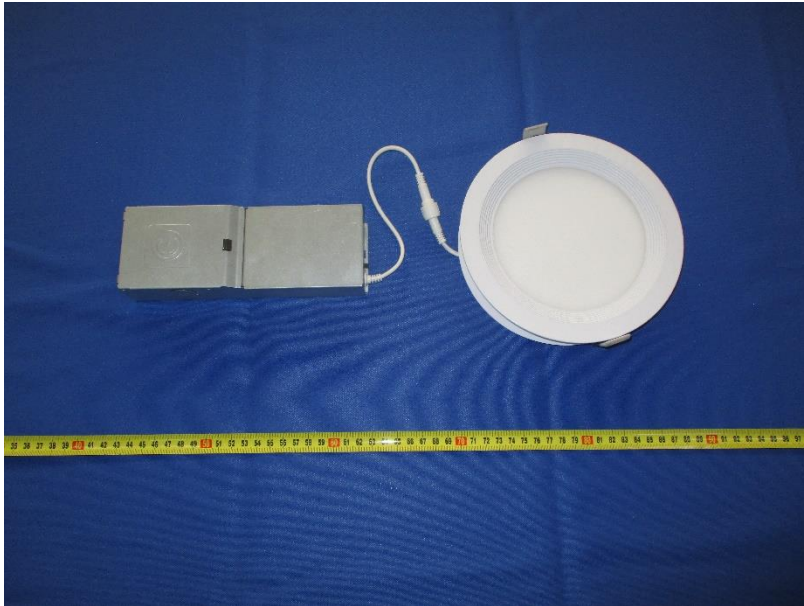
C y	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
0.0°	418	418	418	418	418	418	418	418
5.0°	416	416	416	417	416	416	416	416
10.0°	410	410	411	411	410	411	410	410
15.0°	400	400	401	401	401	401	400	399
20.0°	386	387	387	388	388	387	387	385
25.0°	369	370	370	371	371	370	369	368
30.0°	348	349	351	351	351	350	349	348
35.0°	325	327	327	328	328	327	326	325
40.0°	300	300	302	303	302	302	301	299
45.0°	271	273	274	274	274	274	273	271
50.0°	241	243	244	244	244	244	242	241
55.0°	209	211	212	213	213	212	210	209
60.0°	176	177	179	179	179	178	177	175
65.0°	140	141	142	142	143	142	141	139
70.0°	101	104	103	103	104	105	103	101
75.0°	65	67	66	66	66	68	67	64
80.0°	31	32	31	31	31	34	33	31
85.0°	2	4	4	4	4	5	4	3
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	0	0	0	0
145.0°	0	0	0	0	0	0	0	0
150.0°	0	0	0	0	0	0	0	0
155.0°	0	0	0	0	0	0	0	0
160.0°	0	0	0	0	0	0	0	0
165.0°	0	0	0	0	0	0	0	0
170.0°	0	0	0	0	0	0	0	0
175.0°	0	0	0	0	0	0	0	0
180.0°	0	0	0	0	0	0	0	0

Zonal Lumen Density Measurement

Deg	Flux (lm)	%
0-5	10.0	0.89
5-10	29.5	2.59
10-15	48.0	4.22
15-20	64.8	5.69
20-25	79.3	6.96
25-30	90.8	7.97
30-35	99.3	8.71
35-40	104.3	9.14
40-45	105.7	9.29
45-50	103.6	9.09
50-55	98.2	8.62
55-60	89.4	7.84
60-65	76.9	6.75
65-70	61.4	5.40
70-75	43.8	3.85
75-80	25.6	2.24
80-85	8.7	0.76
85-90	0.2	0.01
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	0.0	0.00
150-155	0.0	0.00
155-160	0.0	0.00
160-165	0.0	0.00
165-170	0.0	0.00
170-175	0.0	0.00
175-180	0.0	0.00

Deg	Flux (lm)	%
0-5	10.0	0.88
0-10	39.5	3.47
0-15	87.6	7.69
0-20	152.4	13.38
0-25	231.6	20.33
0-30	322.4	28.30
0-35	421.6	37.01
0-40	525.8	46.16
0-45	631.5	55.44
0-50	735.1	64.53
0-55	833.3	73.15
0-60	922.7	80.99
0-65	999.6	87.75
0-70	1061.0	93.14
0-75	1104.9	96.99
0-80	1130.4	99.22
0-85	1139.0	99.99
0-90	1139.2	100.00
0-95	1139.2	100.00
0-100	1139.2	100.00
0-105	1139.2	100.00
0-110	1139.2	100.00
0-115	1139.2	100.00
0-120	1139.2	100.00
0-125	1139.2	100.00
0-130	1139.2	100.00
0-135	1139.2	100.00
0-140	1139.2	100.00
0-145	1139.2	100.00
0-150	1139.2	100.00
0-155	1139.2	100.00
0-160	1139.2	100.00
0-165	1139.2	100.00
0-170	1139.2	100.00
0-175	1139.2	100.00
0-180	1139.2	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.
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 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*****