

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: MFR8/9CCT5S/DUALDIM/EXT

Report Type:	Electrical and Photometric tests including: Luminous Flux, Chromaticity, Luminous Intensity Distribution
Project Engineer:	Bay Wang
Report Number:	RKSB220907010-10-2
Test Date:	2022-09-13 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:	MFR8/9CCT5S/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:	120-277VAC 50/60Hz
Rated Power:	18W
Nominal CCT:	2700K/3000K/3500K/4000K/5000K
Nominal Lumen Output:	1480lm/1500lm/1540lm/1580lm/1610lm

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 $U_{re}=2.6\%$ ($k=2$), 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 $U_{re}=0.48\%$ of rdg, AC Voltage $U_{re}=0.25\%$ of rdg, Power $U_{re}=0.44\%$ ($k=2$), 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 $U_{re}=2.6\%$ ($k=2$), at the 95% confidence level.

Fidelity Index and Gamut Index Calculation

The R_t , 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**

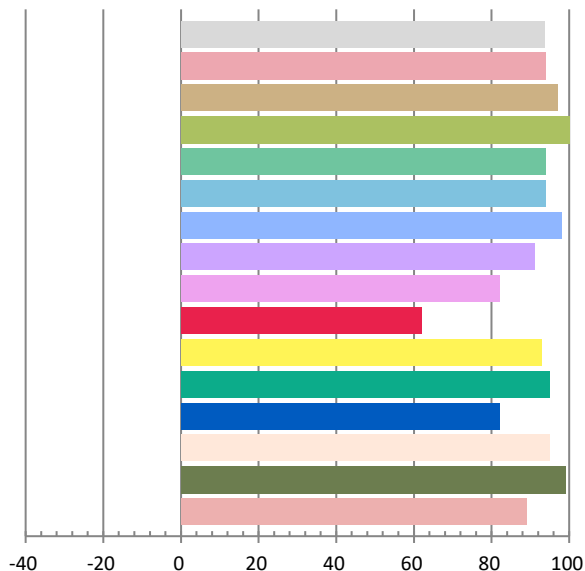
Photometric and Electrical Measurement Result

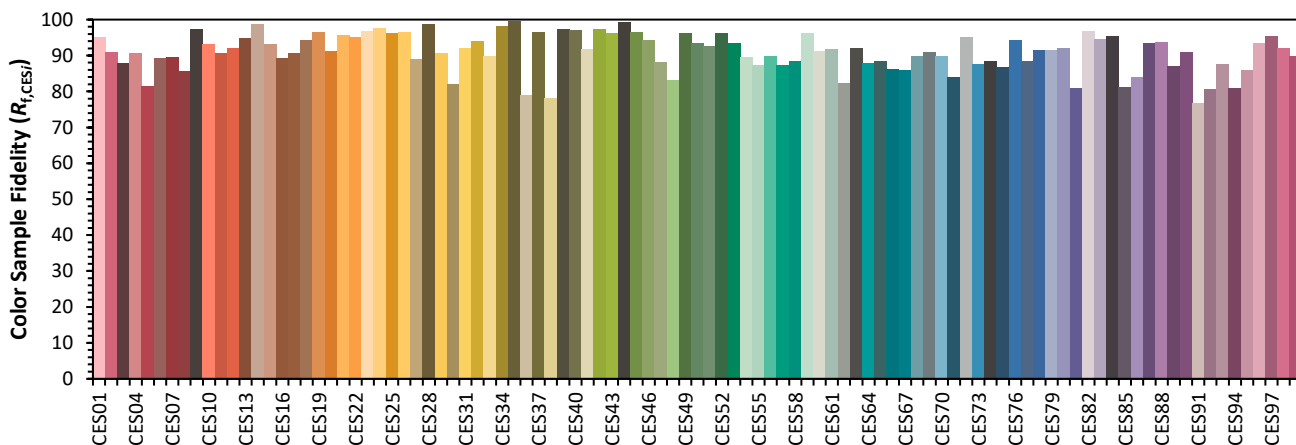
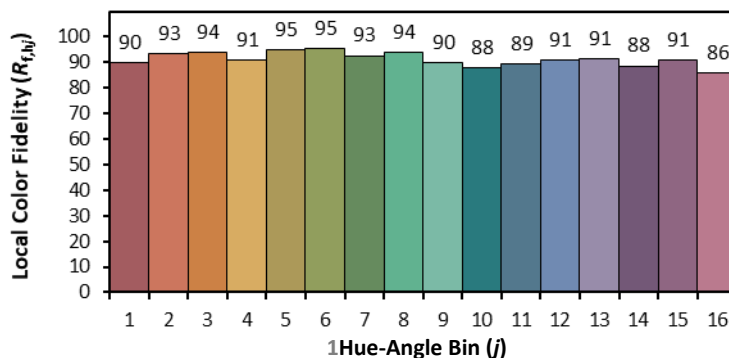
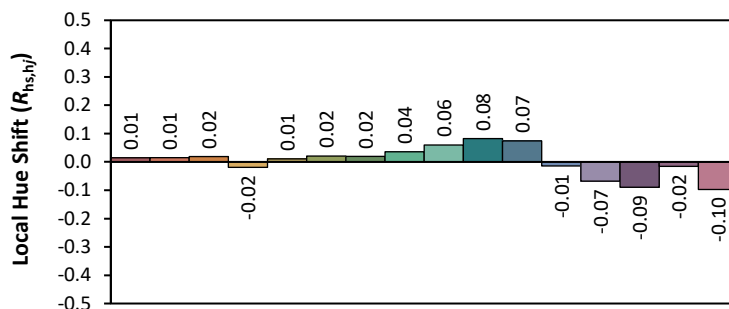
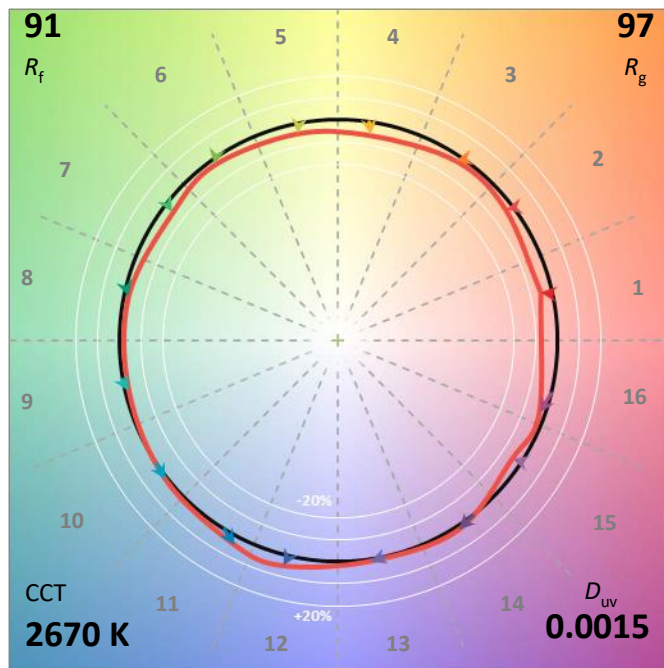
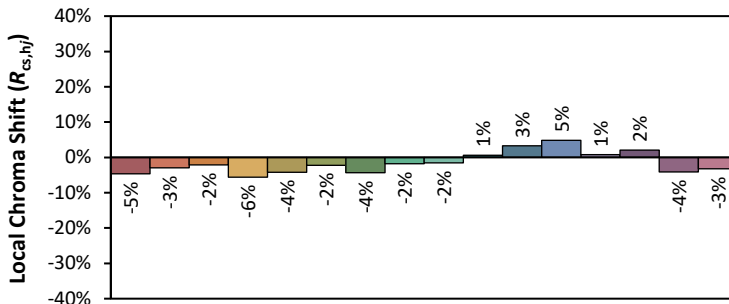
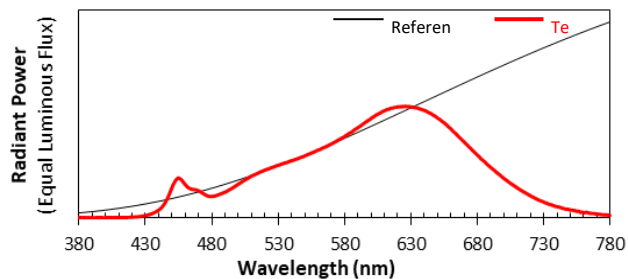
Voltage(V)	Frequency(Hz)	Current(A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy(lm/W)
120.0	60	0.1488	17.72	0.9927	1582.19	89.3

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
5.622	2671	0.00154	0.4650	0.4159	0.2634	0.5301

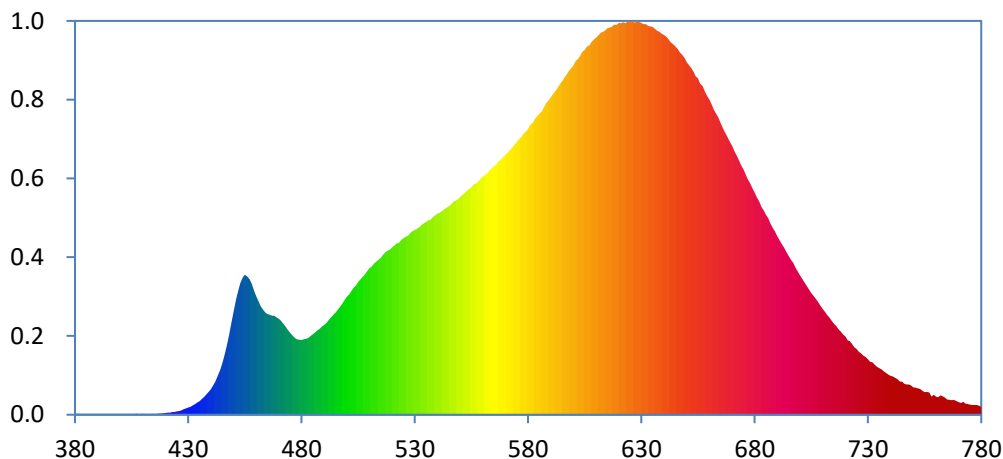
Color Rendering Index

Ra			
93.7			
R1	R2	R3	R4
94	97	100	94
R5	R6	R7	R8
94	98	91	82
R9	R10	R11	R12
62	93	95	82
R13	R14	R15	
95	99	89	





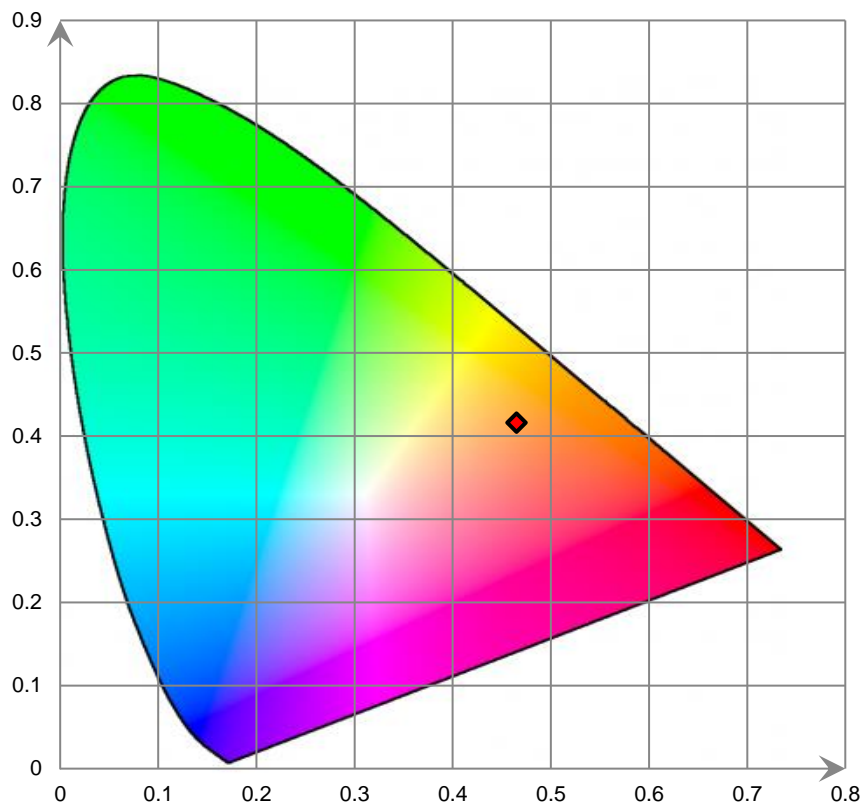
Relative Spectral Power Distribution



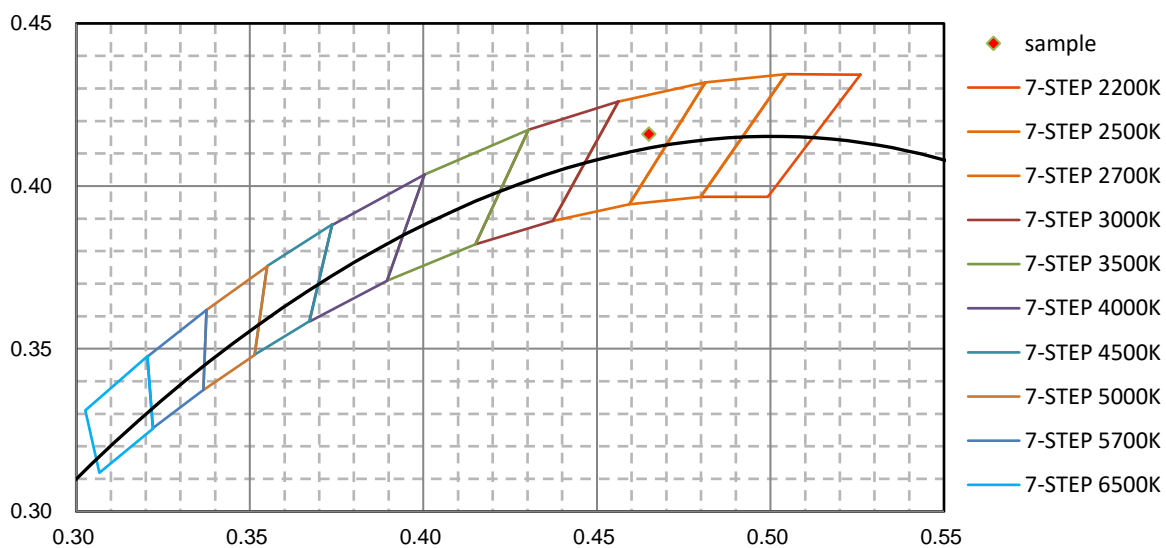
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380	3.560E-02	421	1.823E-01	462	9.566E+00	503	1.120E+01	544	1.831E+01
381	6.950E-02	422	1.825E-01	463	9.291E+00	504	1.141E+01	545	1.841E+01
382	5.810E-02	423	2.357E-01	464	9.045E+00	505	1.172E+01	546	1.858E+01
383	4.100E-03	424	2.425E-01	465	8.897E+00	506	1.195E+01	547	1.880E+01
384	7.000E-02	425	3.035E-01	466	8.843E+00	507	1.219E+01	548	1.894E+01
385	4.710E-02	426	3.121E-01	467	8.757E+00	508	1.243E+01	549	1.901E+01
386	4.700E-03	427	3.869E-01	468	8.738E+00	509	1.270E+01	550	1.923E+01
387	3.920E-02	428	4.838E-01	469	8.578E+00	510	1.297E+01	551	1.941E+01
388	6.300E-03	429	5.650E-01	470	8.458E+00	511	1.309E+01	552	1.961E+01
389	2.000E-04	430	6.266E-01	471	8.263E+00	512	1.335E+01	553	1.979E+01
390	6.540E-02	431	6.947E-01	472	8.006E+00	513	1.353E+01	554	1.996E+01
391	1.990E-02	432	8.385E-01	473	7.748E+00	514	1.371E+01	555	2.009E+01
392	7.100E-03	433	9.372E-01	474	7.479E+00	515	1.387E+01	556	2.034E+01
393	3.500E-03	434	1.100E+00	475	7.220E+00	516	1.411E+01	557	2.043E+01
394	3.270E-02	435	1.202E+00	476	7.002E+00	517	1.434E+01	558	2.063E+01
395	7.140E-02	436	1.390E+00	477	6.807E+00	518	1.448E+01	559	2.085E+01
396	6.900E-03	437	1.566E+00	478	6.667E+00	519	1.459E+01	560	2.106E+01
397	1.090E-02	438	1.794E+00	479	6.633E+00	520	1.480E+01	561	2.120E+01
398	1.440E-02	439	2.025E+00	480	6.607E+00	521	1.496E+01	562	2.132E+01
399	2.600E-03	440	2.261E+00	481	6.659E+00	522	1.513E+01	563	2.161E+01
400	1.000E-04	441	2.584E+00	482	6.709E+00	523	1.520E+01	564	2.177E+01
401	2.000E-02	442	2.941E+00	483	6.807E+00	524	1.544E+01	565	2.196E+01
402	3.720E-02	443	3.398E+00	484	6.975E+00	525	1.558E+01	566	2.211E+01
403	4.070E-02	444	3.946E+00	485	7.096E+00	526	1.573E+01	567	2.236E+01
404	3.540E-02	445	4.565E+00	486	7.268E+00	527	1.582E+01	568	2.252E+01
405	4.150E-02	446	5.290E+00	487	7.440E+00	528	1.605E+01	569	2.277E+01
406	5.900E-03	447	6.108E+00	488	7.585E+00	529	1.622E+01	570	2.296E+01
407	9.430E-02	448	7.051E+00	489	7.777E+00	530	1.633E+01	571	2.317E+01
408	1.650E-02	449	8.096E+00	490	7.939E+00	531	1.642E+01	572	2.340E+01
409	6.520E-02	450	9.079E+00	491	8.108E+00	532	1.659E+01	573	2.361E+01
410	7.480E-02	451	1.011E+01	492	8.353E+00	533	1.677E+01	574	2.385E+01
411	6.900E-02	452	1.090E+01	493	8.581E+00	534	1.691E+01	575	2.409E+01
412	4.870E-02	453	1.162E+01	494	8.829E+00	535	1.703E+01	576	2.436E+01
413	3.200E-02	454	1.209E+01	495	9.025E+00	536	1.718E+01	577	2.452E+01
414	6.160E-02	455	1.238E+01	496	9.299E+00	537	1.722E+01	578	2.483E+01
415	7.070E-02	456	1.222E+01	497	9.552E+00	538	1.746E+01	579	2.500E+01
416	6.210E-02	457	1.198E+01	498	9.831E+00	539	1.764E+01	580	2.524E+01
417	8.750E-02	458	1.155E+01	499	1.013E+01	540	1.776E+01	581	2.559E+01
418	1.019E-01	459	1.094E+01	500	1.041E+01	541	1.783E+01	582	2.580E+01
419	1.344E-01	460	1.045E+01	501	1.063E+01	542	1.801E+01	583	2.613E+01
420	1.682E-01	461	1.001E+01	502	1.092E+01	543	1.814E+01	584	2.638E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	2.660E+01	626	3.479E+01	667	2.493E+01	708	9.945E+00	749	2.576E+00
586	2.679E+01	627	3.466E+01	668	2.456E+01	709	9.628E+00	750	2.413E+00
587	2.719E+01	628	3.471E+01	669	2.411E+01	710	9.351E+00	751	2.386E+00
588	2.754E+01	629	3.469E+01	670	2.375E+01	711	9.098E+00	752	2.329E+00
589	2.776E+01	630	3.462E+01	671	2.329E+01	712	8.796E+00	753	2.269E+00
590	2.802E+01	631	3.451E+01	672	2.291E+01	713	8.572E+00	754	2.144E+00
591	2.831E+01	632	3.452E+01	673	2.249E+01	714	8.311E+00	755	1.994E+00
592	2.857E+01	633	3.433E+01	674	2.203E+01	715	8.028E+00	756	2.012E+00
593	2.886E+01	634	3.430E+01	675	2.171E+01	716	7.859E+00	757	1.957E+00
594	2.921E+01	635	3.425E+01	676	2.124E+01	717	7.563E+00	758	1.595E+00
595	2.947E+01	636	3.409E+01	677	2.080E+01	718	7.379E+00	759	1.762E+00
596	2.978E+01	637	3.392E+01	678	2.047E+01	719	7.082E+00	760	1.604E+00
597	3.006E+01	638	3.384E+01	679	2.002E+01	720	6.900E+00	761	1.539E+00
598	3.037E+01	639	3.366E+01	680	1.964E+01	721	6.581E+00	762	1.703E+00
599	3.059E+01	640	3.353E+01	681	1.922E+01	722	6.484E+00	763	1.627E+00
600	3.086E+01	641	3.340E+01	682	1.883E+01	723	6.227E+00	764	1.506E+00
601	3.126E+01	642	3.318E+01	683	1.833E+01	724	5.938E+00	765	1.331E+00
602	3.144E+01	643	3.290E+01	684	1.803E+01	725	5.825E+00	766	1.316E+00
603	3.170E+01	644	3.272E+01	685	1.766E+01	726	5.553E+00	767	1.293E+00
604	3.208E+01	645	3.253E+01	686	1.735E+01	727	5.406E+00	768	1.323E+00
605	3.221E+01	646	3.230E+01	687	1.687E+01	728	5.220E+00	769	1.200E+00
606	3.252E+01	647	3.199E+01	688	1.649E+01	729	5.100E+00	770	1.116E+00
607	3.264E+01	648	3.178E+01	689	1.617E+01	730	4.916E+00	771	1.045E+00
608	3.294E+01	649	3.153E+01	690	1.577E+01	731	4.679E+00	772	1.141E+00
609	3.315E+01	650	3.114E+01	691	1.542E+01	732	4.614E+00	773	9.809E-01
610	3.332E+01	651	3.087E+01	692	1.508E+01	733	4.384E+00	774	9.568E-01
611	3.351E+01	652	3.063E+01	693	1.478E+01	734	4.224E+00	775	9.062E-01
612	3.374E+01	653	3.033E+01	694	1.434E+01	735	4.112E+00	776	8.605E-01
613	3.382E+01	654	2.991E+01	695	1.402E+01	736	4.011E+00	777	8.515E-01
614	3.393E+01	655	2.972E+01	696	1.368E+01	737	3.841E+00	778	8.652E-01
615	3.415E+01	656	2.925E+01	697	1.340E+01	738	3.685E+00	779	7.916E-01
616	3.420E+01	657	2.902E+01	698	1.301E+01	739	3.534E+00	780	6.955E-01
617	3.427E+01	658	2.854E+01	699	1.266E+01	740	3.440E+00		
618	3.445E+01	659	2.815E+01	700	1.230E+01	741	3.387E+00		
619	3.444E+01	660	2.783E+01	701	1.200E+01	742	3.254E+00		
620	3.461E+01	661	2.740E+01	702	1.168E+01	743	3.166E+00		
621	3.460E+01	662	2.692E+01	703	1.138E+01	744	2.931E+00		
622	3.466E+01	663	2.658E+01	704	1.106E+01	745	2.920E+00		
623	3.459E+01	664	2.625E+01	705	1.075E+01	746	2.727E+00		
624	3.475E+01	665	2.576E+01	706	1.050E+01	747	2.668E+00		
625	3.468E+01	666	2.533E+01	707	1.021E+01	748	2.687E+00		

CIE 1931xy Chromaticity Diagram



7-StepChromaticity Quadrangles



Control Setting: 3000K

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

Test orientation: **Downward**

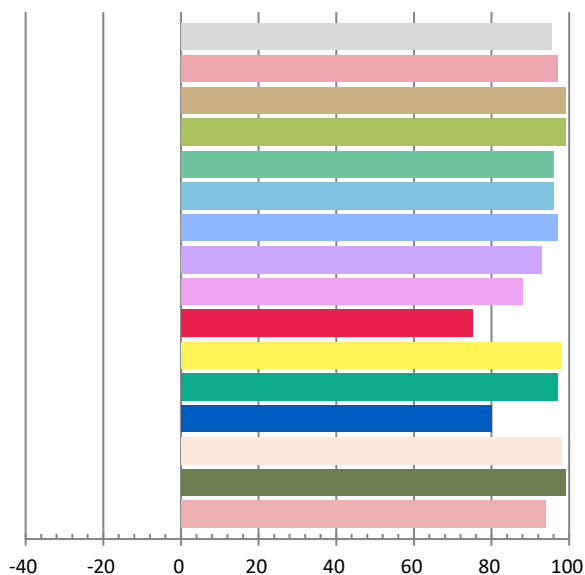
Photometric and Electrical Measurement Result

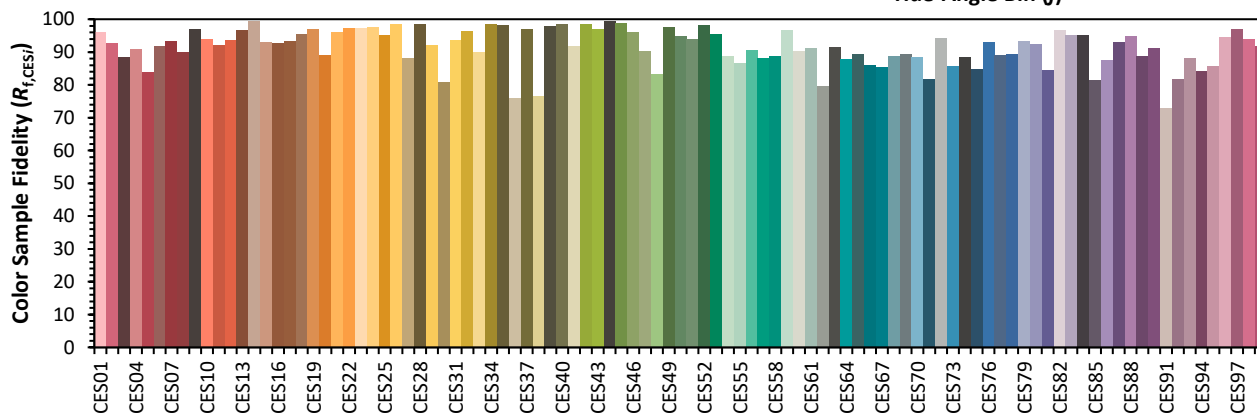
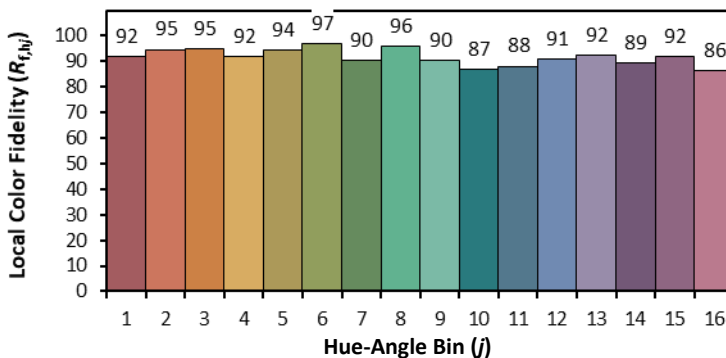
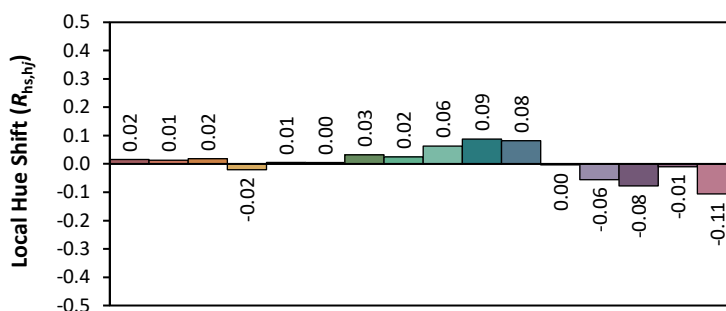
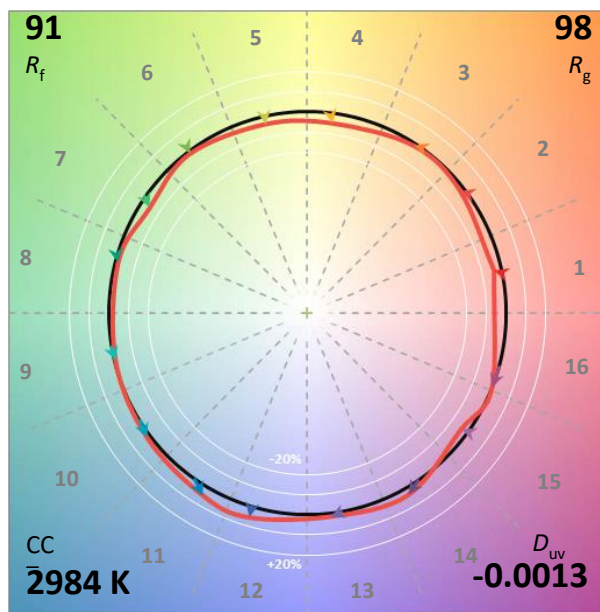
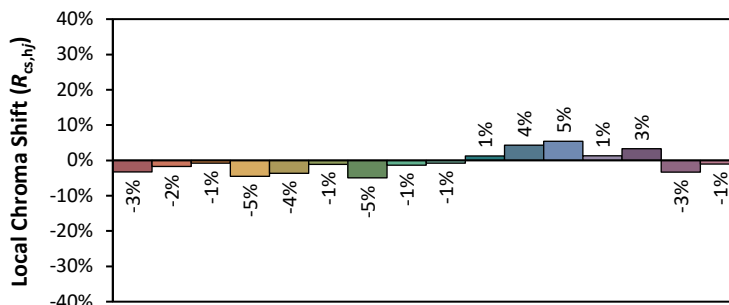
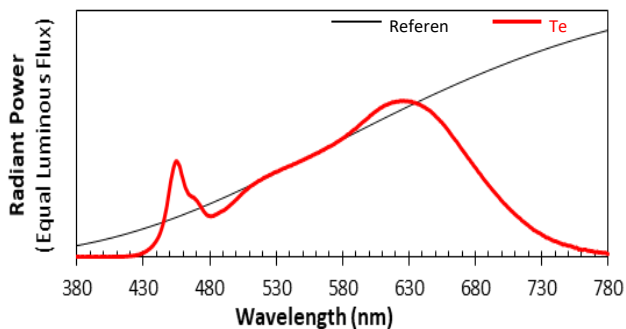
Voltage(V)	Frequency(Hz)	Current(A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy(lm/W)
120.0	60	0.1486	17.71	0.9929	1654.23	93.41

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
5.911	2984	-0.0013	0.4362	0.4006	0.2516	0.5199

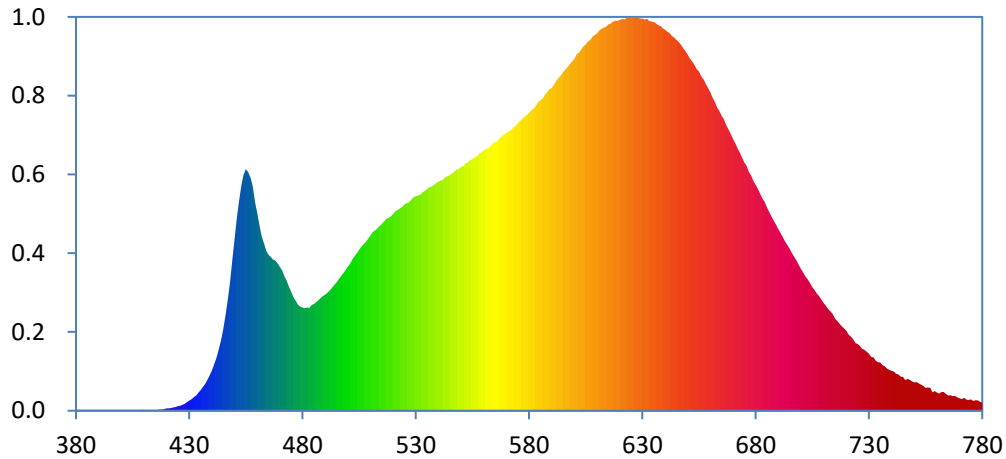
Color Rendering Index

Ra			
95.6			
R1	R2	R3	R4
97	99	99	96
R5	R6	R7	R8
96	97	93	88
R9	R10	R11	R12
75	98	97	80
R13	R14	R15	
98	99	94	





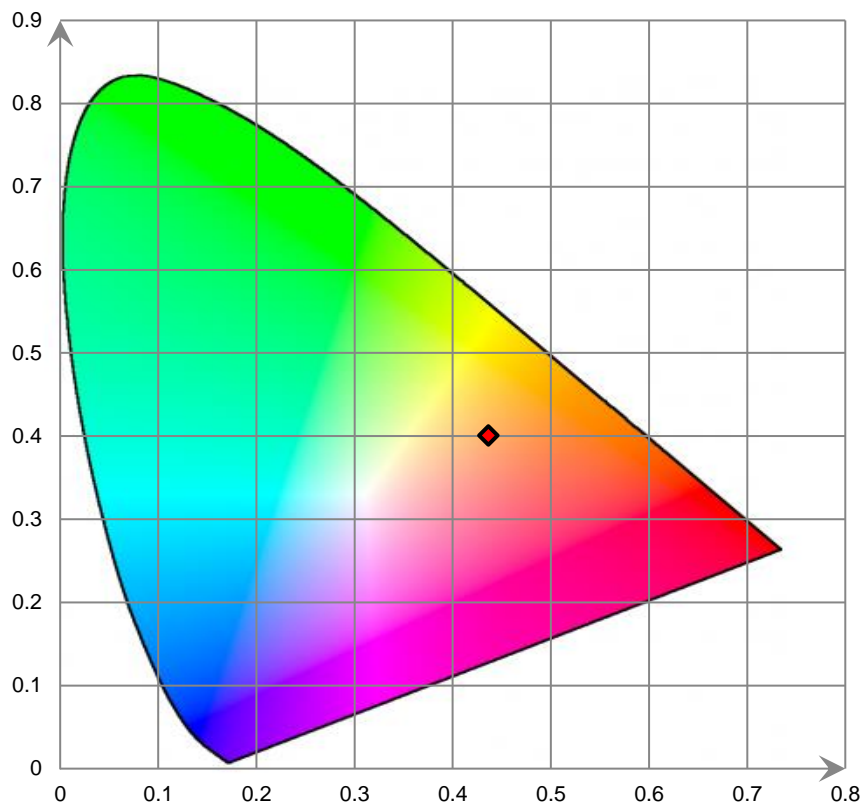
Relative Spectral Power Distribution



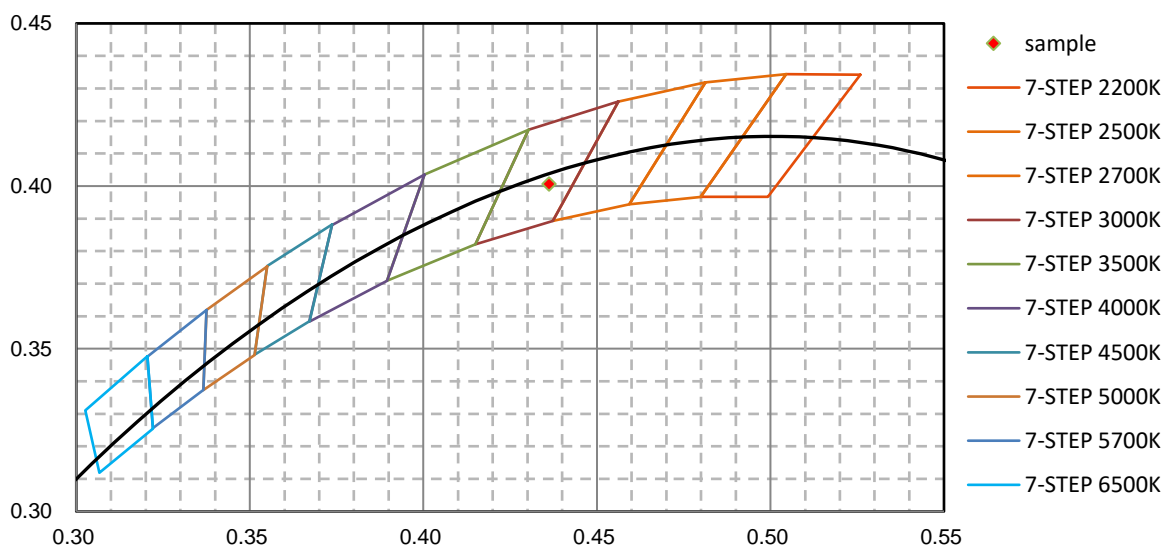
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	5.110E-02	421	2.192E-01	462	1.493E+01	503	1.324E+01	544	2.011E+01
381	4.240E-02	422	2.404E-01	463	1.433E+01	504	1.351E+01	545	2.023E+01
382	1.940E-02	423	2.848E-01	464	1.371E+01	505	1.381E+01	546	2.034E+01
383	1.120E-02	424	3.184E-01	465	1.338E+01	506	1.408E+01	547	2.053E+01
384	5.490E-02	425	4.006E-01	466	1.320E+01	507	1.433E+01	548	2.068E+01
385	5.250E-02	426	4.263E-01	467	1.296E+01	508	1.452E+01	549	2.074E+01
386	4.100E-03	427	4.964E-01	468	1.290E+01	509	1.478E+01	550	2.092E+01
387	1.970E-02	428	6.005E-01	469	1.261E+01	510	1.507E+01	551	2.100E+01
388	1.890E-02	429	7.371E-01	470	1.231E+01	511	1.532E+01	552	2.122E+01
389	1.790E-02	430	8.552E-01	471	1.201E+01	512	1.547E+01	553	2.128E+01
390	5.880E-02	431	9.701E-01	472	1.152E+01	513	1.562E+01	554	2.150E+01
391	1.910E-02	432	1.166E+00	473	1.114E+01	514	1.585E+01	555	2.159E+01
392	9.000E-04	433	1.317E+00	474	1.064E+01	515	1.603E+01	556	2.172E+01
393	3.100E-03	434	1.557E+00	475	1.019E+01	516	1.624E+01	557	2.185E+01
394	1.650E-02	435	1.764E+00	476	9.741E+00	517	1.647E+01	558	2.207E+01
395	7.130E-02	436	2.048E+00	477	9.421E+00	518	1.655E+01	559	2.216E+01
396	2.430E-02	437	2.297E+00	478	9.100E+00	519	1.669E+01	560	2.233E+01
397	1.430E-02	438	2.662E+00	479	8.930E+00	520	1.690E+01	561	2.246E+01
398	3.500E-03	439	3.023E+00	480	8.854E+00	521	1.713E+01	562	2.250E+01
399	4.700E-03	440	3.442E+00	481	8.812E+00	522	1.723E+01	563	2.271E+01
400	1.000E-04	441	3.972E+00	482	8.843E+00	523	1.737E+01	564	2.293E+01
401	2.210E-02	442	4.512E+00	483	8.831E+00	524	1.750E+01	565	2.306E+01
402	2.400E-02	443	5.196E+00	484	9.080E+00	525	1.770E+01	566	2.310E+01
403	1.000E-02	444	6.072E+00	485	9.164E+00	526	1.781E+01	567	2.340E+01
404	2.940E-02	445	7.064E+00	486	9.326E+00	527	1.789E+01	568	2.351E+01
405	2.660E-02	446	8.235E+00	487	9.495E+00	528	1.811E+01	569	2.372E+01
406	4.500E-03	447	9.580E+00	488	9.677E+00	529	1.829E+01	570	2.384E+01
407	6.830E-02	448	1.111E+01	489	9.851E+00	530	1.841E+01	571	2.394E+01
408	1.980E-02	449	1.298E+01	490	9.957E+00	531	1.847E+01	572	2.408E+01
409	6.740E-02	450	1.472E+01	491	1.011E+01	532	1.854E+01	573	2.428E+01
410	8.140E-02	451	1.653E+01	492	1.032E+01	533	1.877E+01	574	2.442E+01
411	5.490E-02	452	1.799E+01	493	1.052E+01	534	1.885E+01	575	2.464E+01
412	4.980E-02	453	1.932E+01	494	1.079E+01	535	1.905E+01	576	2.486E+01
413	1.650E-02	454	2.024E+01	495	1.103E+01	536	1.917E+01	577	2.501E+01
414	6.070E-02	455	2.073E+01	496	1.130E+01	537	1.924E+01	578	2.520E+01
415	5.350E-02	456	2.050E+01	497	1.154E+01	538	1.937E+01	579	2.537E+01
416	7.440E-02	457	1.998E+01	498	1.183E+01	539	1.954E+01	580	2.555E+01
417	1.013E-01	458	1.923E+01	499	1.207E+01	540	1.964E+01	581	2.578E+01
418	9.760E-02	459	1.788E+01	500	1.237E+01	541	1.974E+01	582	2.594E+01
419	1.522E-01	460	1.694E+01	501	1.263E+01	542	1.979E+01	583	2.619E+01
420	1.954E-01	461	1.588E+01	502	1.296E+01	543	2.006E+01	584	2.650E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	2.664E+01	626	3.378E+01	667	2.454E+01	708	9.810E+00	749	2.516E+00
586	2.677E+01	627	3.370E+01	668	2.415E+01	709	9.512E+00	750	2.426E+00
587	2.711E+01	628	3.371E+01	669	2.372E+01	710	9.235E+00	751	2.449E+00
588	2.736E+01	629	3.364E+01	670	2.329E+01	711	8.983E+00	752	2.363E+00
589	2.758E+01	630	3.364E+01	671	2.293E+01	712	8.727E+00	753	2.237E+00
590	2.769E+01	631	3.358E+01	672	2.251E+01	713	8.520E+00	754	2.126E+00
591	2.800E+01	632	3.363E+01	673	2.214E+01	714	8.296E+00	755	1.960E+00
592	2.830E+01	633	3.344E+01	674	2.169E+01	715	7.930E+00	756	2.004E+00
593	2.853E+01	634	3.340E+01	675	2.129E+01	716	7.707E+00	757	1.952E+00
594	2.879E+01	635	3.334E+01	676	2.100E+01	717	7.489E+00	758	1.591E+00
595	2.907E+01	636	3.322E+01	677	2.050E+01	718	7.261E+00	759	1.682E+00
596	2.929E+01	637	3.305E+01	678	2.020E+01	719	7.030E+00	760	1.539E+00
597	2.949E+01	638	3.301E+01	679	1.972E+01	720	6.838E+00	761	1.474E+00
598	2.974E+01	639	3.282E+01	680	1.938E+01	721	6.530E+00	762	1.617E+00
599	2.996E+01	640	3.270E+01	681	1.903E+01	722	6.351E+00	763	1.604E+00
600	3.019E+01	641	3.251E+01	682	1.856E+01	723	6.129E+00	764	1.447E+00
601	3.061E+01	642	3.241E+01	683	1.818E+01	724	5.808E+00	765	1.300E+00
602	3.072E+01	643	3.215E+01	684	1.788E+01	725	5.725E+00	766	1.335E+00
603	3.099E+01	644	3.198E+01	685	1.742E+01	726	5.556E+00	767	1.256E+00
604	3.125E+01	645	3.182E+01	686	1.704E+01	727	5.326E+00	768	1.287E+00
605	3.143E+01	646	3.162E+01	687	1.666E+01	728	5.221E+00	769	1.141E+00
606	3.167E+01	647	3.139E+01	688	1.629E+01	729	5.077E+00	770	1.052E+00
607	3.182E+01	648	3.108E+01	689	1.597E+01	730	4.910E+00	771	1.004E+00
608	3.211E+01	649	3.085E+01	690	1.557E+01	731	4.623E+00	772	1.104E+00
609	3.225E+01	650	3.053E+01	691	1.525E+01	732	4.581E+00	773	9.607E-01
610	3.237E+01	651	3.022E+01	692	1.489E+01	733	4.270E+00	774	9.316E-01
611	3.263E+01	652	2.996E+01	693	1.455E+01	734	4.160E+00	775	9.788E-01
612	3.277E+01	653	2.968E+01	694	1.419E+01	735	4.133E+00	776	8.526E-01
613	3.289E+01	654	2.930E+01	695	1.387E+01	736	3.927E+00	777	9.027E-01
614	3.293E+01	655	2.911E+01	696	1.351E+01	737	3.813E+00	778	8.833E-01
615	3.315E+01	656	2.870E+01	697	1.320E+01	738	3.607E+00	779	7.894E-01
616	3.320E+01	657	2.841E+01	698	1.289E+01	739	3.507E+00	780	6.621E-01
617	3.336E+01	658	2.802E+01	699	1.250E+01	740	3.414E+00		
618	3.345E+01	659	2.764E+01	700	1.214E+01	741	3.375E+00		
619	3.345E+01	660	2.731E+01	701	1.184E+01	742	3.182E+00		
620	3.354E+01	661	2.685E+01	702	1.152E+01	743	3.113E+00		
621	3.360E+01	662	2.647E+01	703	1.127E+01	744	2.931E+00		
622	3.356E+01	663	2.602E+01	704	1.097E+01	745	2.892E+00		
623	3.369E+01	664	2.571E+01	705	1.062E+01	746	2.634E+00		
624	3.377E+01	665	2.529E+01	706	1.037E+01	747	2.729E+00		
625	3.369E+01	666	2.501E+01	707	1.004E+01	748	2.659E+00		

CIE 1931xy Chromaticity Diagram



7-Step Chromaticity Quadrangles



Control Setting: 3500K

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

Test orientation: **Downward**

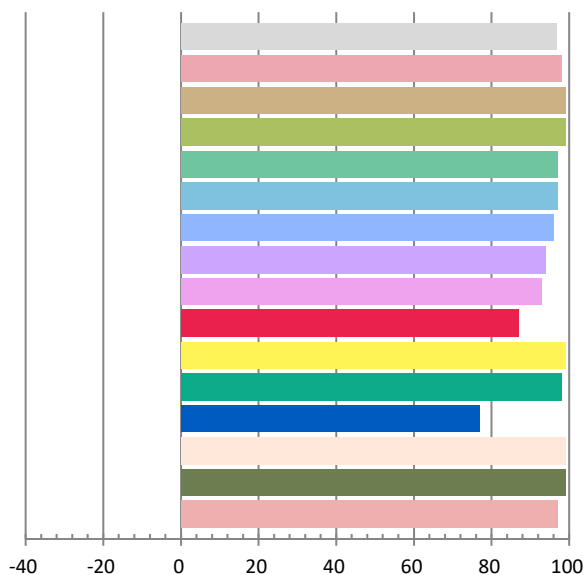
Photometric and Electrical Measurement Result

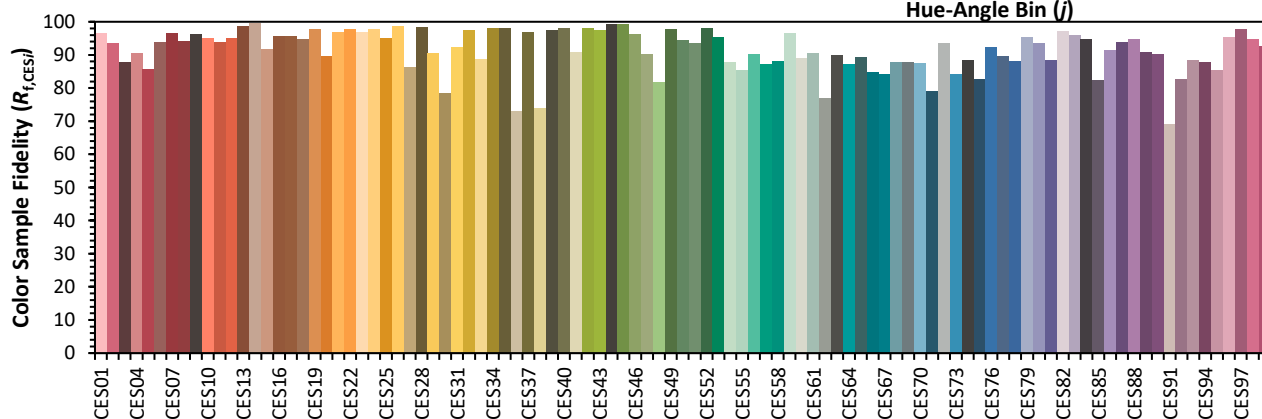
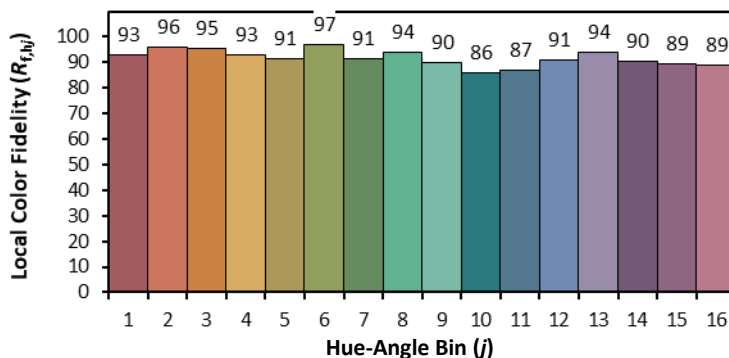
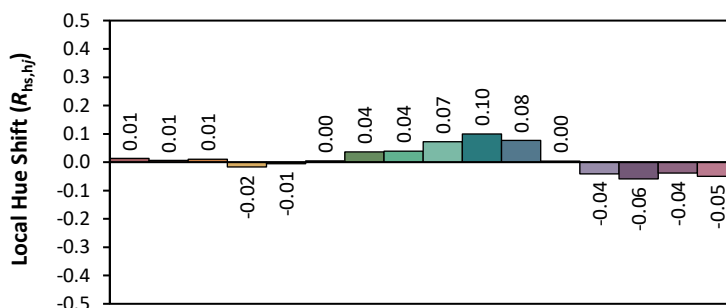
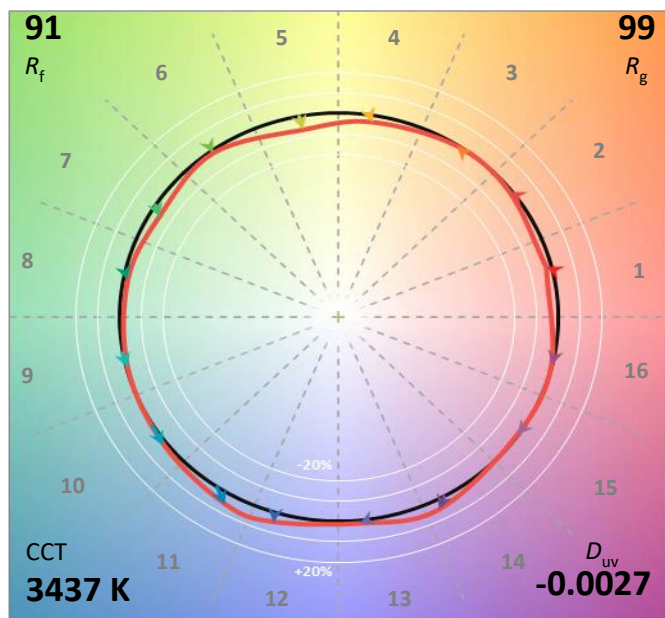
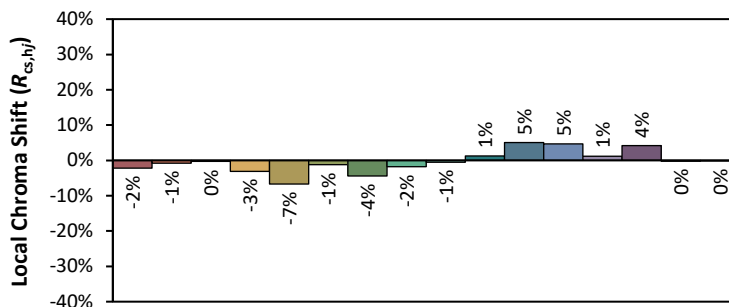
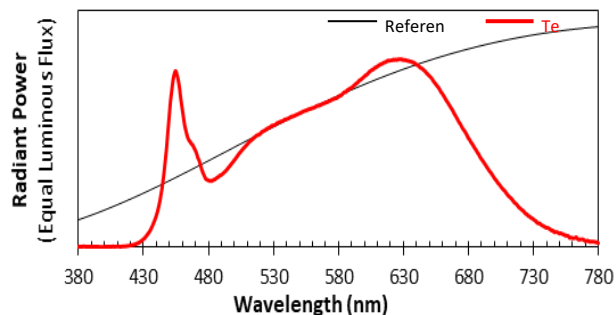
Voltage(V)	Frequency(Hz)	Current(A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy(lm/W)
120.0	60	0.148	17.64	0.9932	1711.57	97.01

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
6.139	3438	-0.00266	0.4060	0.3850	0.2385	0.5090

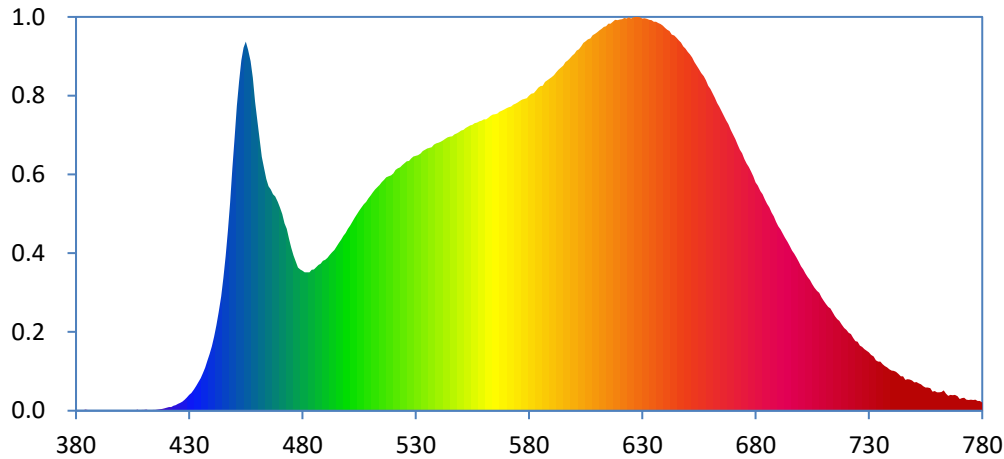
Color Rendering Index

Ra			
96.6			
R1	R2	R3	R4
98	99	99	97
R5	R6	R7	R8
97	96	94	93
R9	R10	R11	R12
87	99	98	77
R13	R14	R15	
99	99	97	





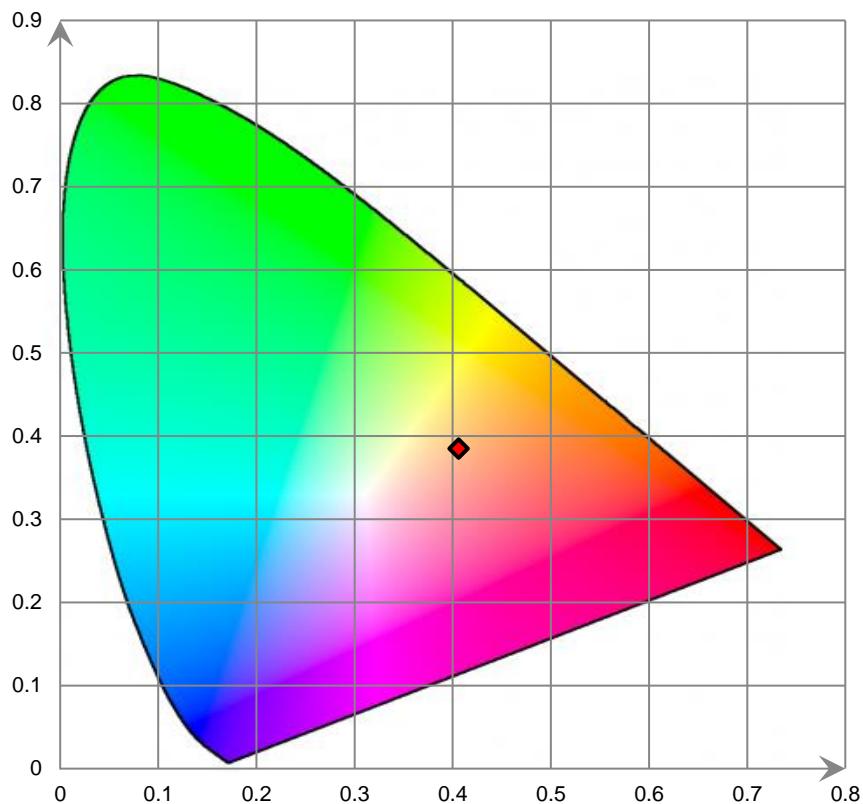
Relative Spectral Power Distribution



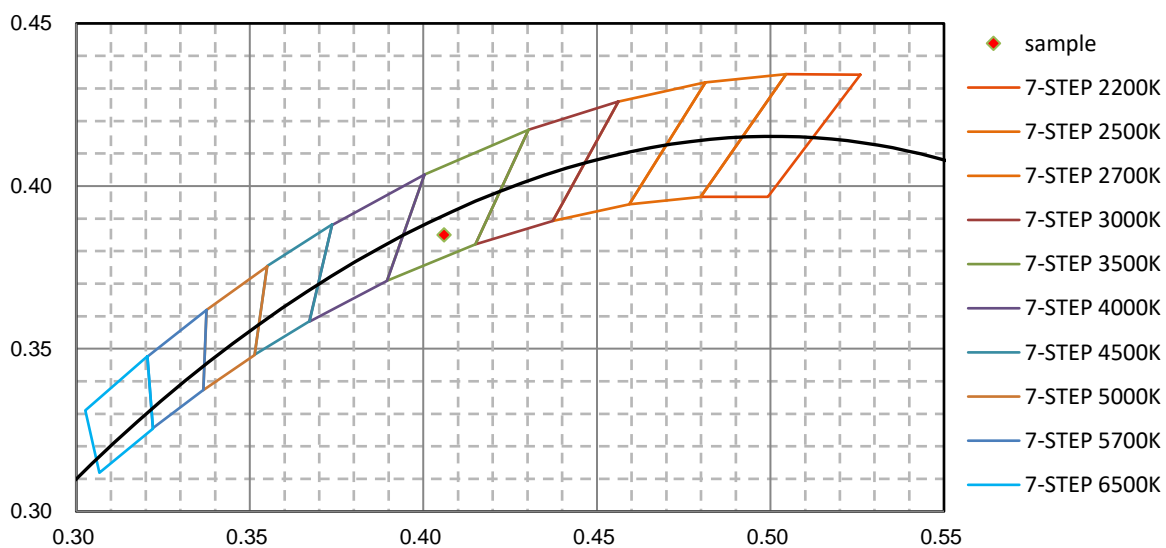
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	3.490E-02	421	2.989E-01	462	2.050E+01	503	1.558E+01	544	2.209E+01
381	3.680E-02	422	3.070E-01	463	1.960E+01	504	1.586E+01	545	2.213E+01
382	4.560E-02	423	3.952E-01	464	1.871E+01	505	1.613E+01	546	2.215E+01
383	2.100E-03	424	4.432E-01	465	1.813E+01	506	1.639E+01	547	2.232E+01
384	9.450E-02	425	5.546E-01	466	1.786E+01	507	1.667E+01	548	2.239E+01
385	6.860E-02	426	6.286E-01	467	1.748E+01	508	1.687E+01	549	2.249E+01
386	1.010E-02	427	7.456E-01	468	1.730E+01	509	1.713E+01	550	2.262E+01
387	2.070E-02	428	8.947E-01	469	1.685E+01	510	1.736E+01	551	2.268E+01
388	1.860E-02	429	1.072E+00	470	1.639E+01	511	1.764E+01	552	2.282E+01
389	3.180E-02	430	1.271E+00	471	1.588E+01	512	1.788E+01	553	2.294E+01
390	4.310E-02	431	1.446E+00	472	1.514E+01	513	1.805E+01	554	2.303E+01
391	2.040E-02	432	1.730E+00	473	1.468E+01	514	1.823E+01	555	2.308E+01
392	9.100E-03	433	1.993E+00	474	1.388E+01	515	1.845E+01	556	2.321E+01
393	8.200E-03	434	2.312E+00	475	1.316E+01	516	1.864E+01	557	2.328E+01
394	2.350E-02	435	2.624E+00	476	1.254E+01	517	1.884E+01	558	2.336E+01
395	3.100E-02	436	3.030E+00	477	1.206E+01	518	1.893E+01	559	2.342E+01
396	1.270E-02	437	3.476E+00	478	1.156E+01	519	1.900E+01	560	2.352E+01
397	7.700E-03	438	4.042E+00	479	1.142E+01	520	1.915E+01	561	2.354E+01
398	1.440E-02	439	4.578E+00	480	1.129E+01	521	1.943E+01	562	2.366E+01
399	7.000E-04	440	5.208E+00	481	1.118E+01	522	1.957E+01	563	2.380E+01
400	0.000E+00	441	5.971E+00	482	1.117E+01	523	1.966E+01	564	2.392E+01
401	1.920E-02	442	6.880E+00	483	1.117E+01	524	1.982E+01	565	2.393E+01
402	2.240E-02	443	7.923E+00	484	1.137E+01	525	1.998E+01	566	2.398E+01
403	2.190E-02	444	9.204E+00	485	1.141E+01	526	2.014E+01	567	2.414E+01
404	2.550E-02	445	1.074E+01	486	1.160E+01	527	2.016E+01	568	2.422E+01
405	3.830E-02	446	1.248E+01	487	1.176E+01	528	2.039E+01	569	2.432E+01
406	1.210E-02	447	1.452E+01	488	1.188E+01	529	2.052E+01	570	2.442E+01
407	1.008E-01	448	1.680E+01	489	1.210E+01	530	2.059E+01	571	2.451E+01
408	2.490E-02	449	1.956E+01	490	1.219E+01	531	2.062E+01	572	2.457E+01
409	5.520E-02	450	2.202E+01	491	1.235E+01	532	2.076E+01	573	2.471E+01
410	6.790E-02	451	2.461E+01	492	1.257E+01	533	2.096E+01	574	2.479E+01
411	8.770E-02	452	2.657E+01	493	1.277E+01	534	2.106E+01	575	2.489E+01
412	4.440E-02	453	2.829E+01	494	1.299E+01	535	2.117E+01	576	2.504E+01
413	2.880E-02	454	2.930E+01	495	1.326E+01	536	2.124E+01	577	2.512E+01
414	7.500E-02	455	2.981E+01	496	1.355E+01	537	2.128E+01	578	2.519E+01
415	6.830E-02	456	2.915E+01	497	1.380E+01	538	2.147E+01	579	2.524E+01
416	1.032E-01	457	2.823E+01	498	1.413E+01	539	2.158E+01	580	2.544E+01
417	1.266E-01	458	2.689E+01	499	1.437E+01	540	2.163E+01	581	2.559E+01
418	1.527E-01	459	2.495E+01	500	1.468E+01	541	2.171E+01	582	2.565E+01
419	2.008E-01	460	2.344E+01	501	1.495E+01	542	2.182E+01	583	2.584E+01
420	2.586E-01	461	2.197E+01	502	1.525E+01	543	2.194E+01	584	2.608E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	2.623E+01	626	3.177E+01	667	2.344E+01	708	9.531E+00	749	2.438E+00
586	2.625E+01	627	3.180E+01	668	2.313E+01	709	9.163E+00	750	2.277E+00
587	2.656E+01	628	3.180E+01	669	2.266E+01	710	8.880E+00	751	2.320E+00
588	2.669E+01	629	3.178E+01	670	2.228E+01	711	8.628E+00	752	2.223E+00
589	2.681E+01	630	3.166E+01	671	2.191E+01	712	8.391E+00	753	2.127E+00
590	2.693E+01	631	3.168E+01	672	2.149E+01	713	8.245E+00	754	1.985E+00
591	2.710E+01	632	3.165E+01	673	2.107E+01	714	7.936E+00	755	1.884E+00
592	2.732E+01	633	3.155E+01	674	2.078E+01	715	7.637E+00	756	1.886E+00
593	2.752E+01	634	3.153E+01	675	2.032E+01	716	7.407E+00	757	1.832E+00
594	2.770E+01	635	3.142E+01	676	1.997E+01	717	7.240E+00	758	1.538E+00
595	2.787E+01	636	3.141E+01	677	1.967E+01	718	6.968E+00	759	1.598E+00
596	2.815E+01	637	3.130E+01	678	1.932E+01	719	6.679E+00	760	1.484E+00
597	2.827E+01	638	3.123E+01	679	1.894E+01	720	6.523E+00	761	1.474E+00
598	2.846E+01	639	3.109E+01	680	1.845E+01	721	6.290E+00	762	1.518E+00
599	2.866E+01	640	3.092E+01	681	1.817E+01	722	6.182E+00	763	1.635E+00
600	2.883E+01	641	3.077E+01	682	1.774E+01	723	5.888E+00	764	1.380E+00
601	2.907E+01	642	3.065E+01	683	1.748E+01	724	5.619E+00	765	1.208E+00
602	2.919E+01	643	3.038E+01	684	1.706E+01	725	5.561E+00	766	1.269E+00
603	2.941E+01	644	3.029E+01	685	1.670E+01	726	5.267E+00	767	1.260E+00
604	2.969E+01	645	3.011E+01	686	1.641E+01	727	5.166E+00	768	1.283E+00
605	2.983E+01	646	2.991E+01	687	1.600E+01	728	4.971E+00	769	1.179E+00
606	2.999E+01	647	2.972E+01	688	1.569E+01	729	4.853E+00	770	9.553E-01
607	3.007E+01	648	2.941E+01	689	1.525E+01	730	4.712E+00	771	1.016E+00
608	3.032E+01	649	2.922E+01	690	1.490E+01	731	4.498E+00	772	1.046E+00
609	3.043E+01	650	2.899E+01	691	1.463E+01	732	4.372E+00	773	8.872E-01
610	3.057E+01	651	2.876E+01	692	1.429E+01	733	4.080E+00	774	8.747E-01
611	3.071E+01	652	2.852E+01	693	1.395E+01	734	3.970E+00	775	8.997E-01
612	3.085E+01	653	2.814E+01	694	1.362E+01	735	3.960E+00	776	8.580E-01
613	3.100E+01	654	2.786E+01	695	1.329E+01	736	3.767E+00	777	8.844E-01
614	3.104E+01	655	2.758E+01	696	1.294E+01	737	3.608E+00	778	7.790E-01
615	3.124E+01	656	2.728E+01	697	1.268E+01	738	3.514E+00	779	7.849E-01
616	3.126E+01	657	2.701E+01	698	1.236E+01	739	3.346E+00	780	6.500E-01
617	3.140E+01	658	2.668E+01	699	1.203E+01	740	3.254E+00		
618	3.155E+01	659	2.624E+01	700	1.166E+01	741	3.213E+00		
619	3.154E+01	660	2.597E+01	701	1.141E+01	742	3.130E+00		
620	3.158E+01	661	2.561E+01	702	1.108E+01	743	2.982E+00		
621	3.162E+01	662	2.525E+01	703	1.078E+01	744	2.785E+00		
622	3.172E+01	663	2.484E+01	704	1.056E+01	745	2.770E+00		
623	3.167E+01	664	2.454E+01	705	1.023E+01	746	2.503E+00		
624	3.177E+01	665	2.417E+01	706	9.938E+00	747	2.535E+00		
625	3.166E+01	666	2.382E+01	707	9.668E+00	748	2.525E+00		

CIE 1931xy Chromaticity Diagram



7-StepChromaticity Quadrangles



Control Setting: 4000K

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

Test orientation: **Downward**

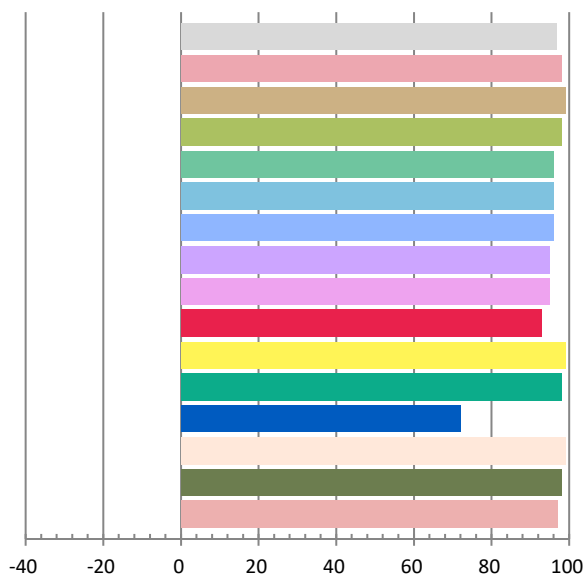
Photometric and Electrical Measurement Result

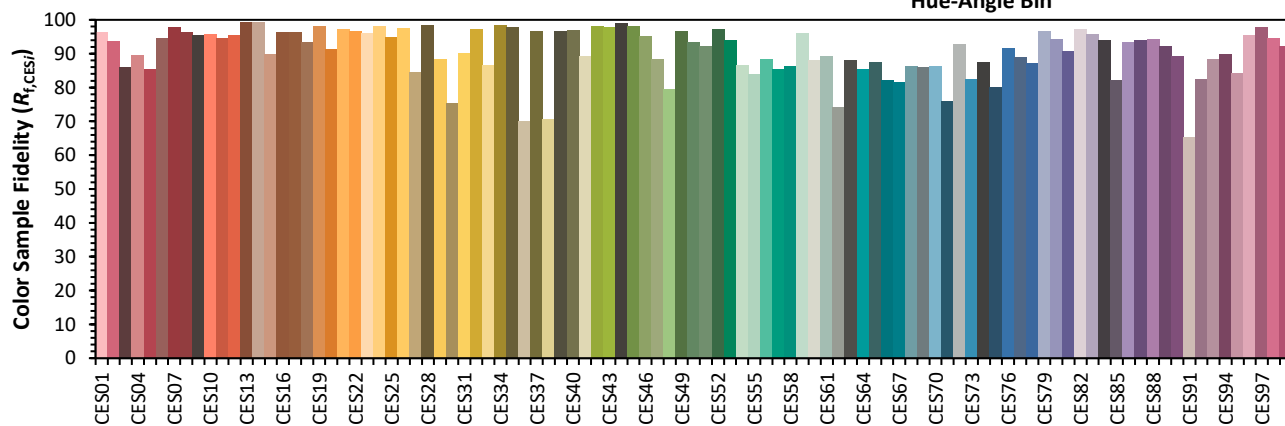
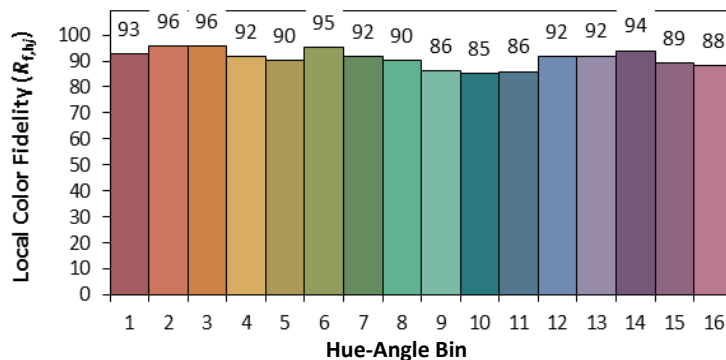
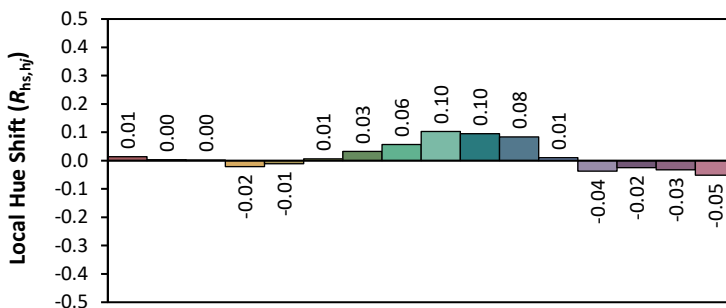
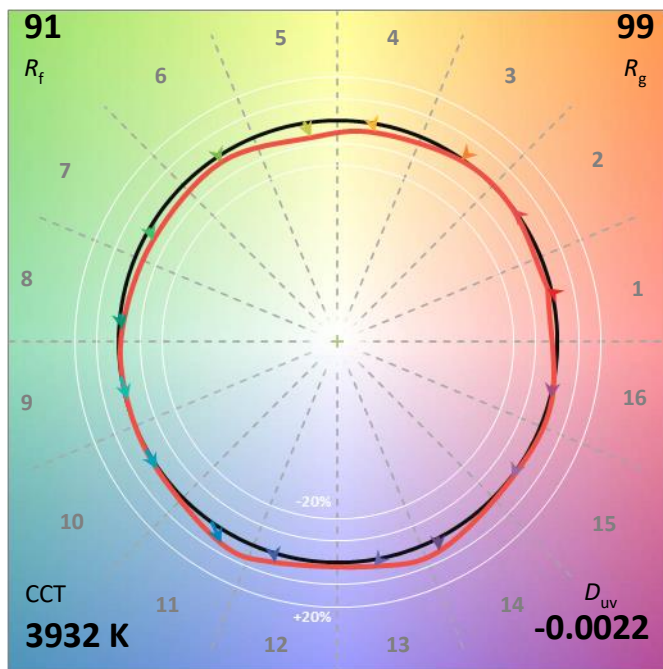
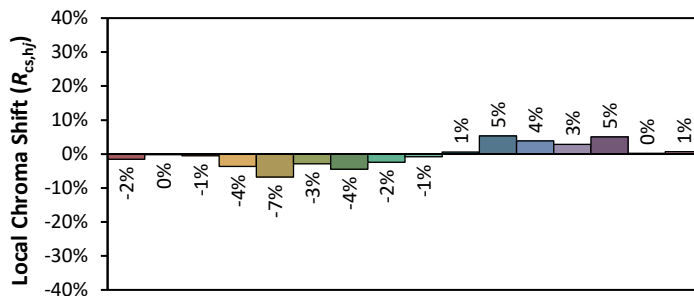
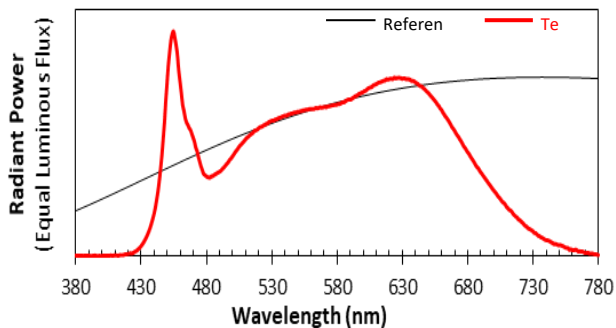
Voltage(V)	Frequency(Hz)	Current(A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy(lm/W)
120.0	60	0.1478	17.62	0.9932	1721.83	97.72

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
6.143	3932	-0.00216	0.3819	0.3731	0.2276	0.5002

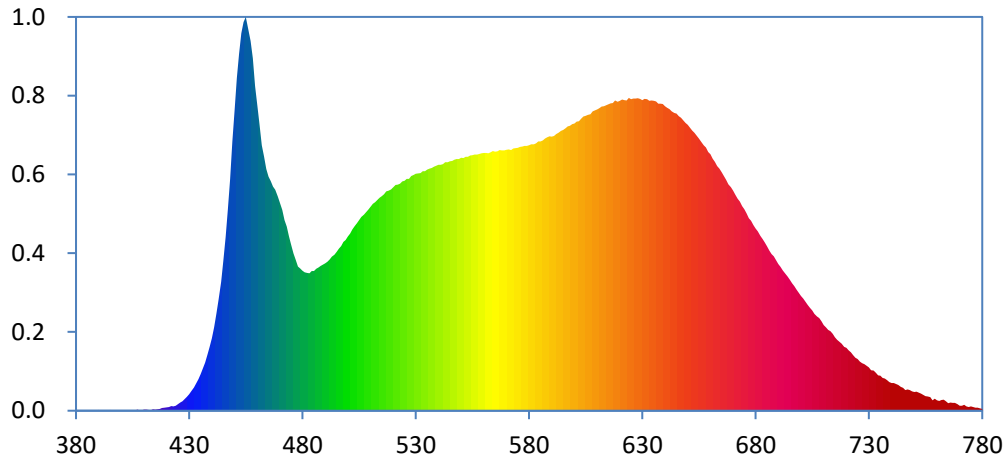
Color Rendering Index

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	72
R13	R14	R15	
99	98	97	





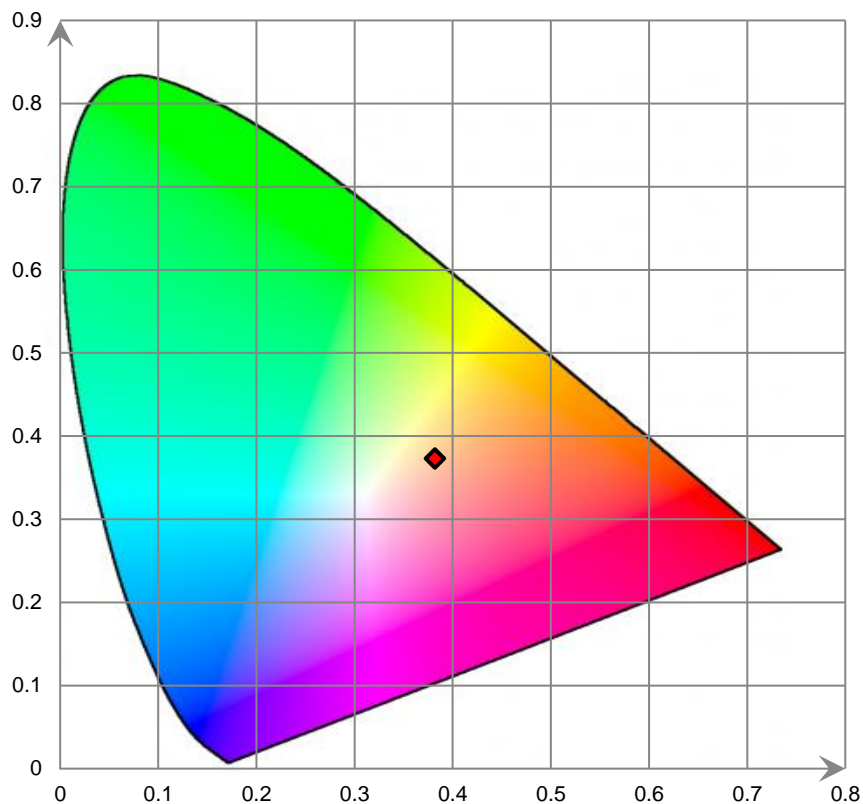
Relative Spectral Power Distribution



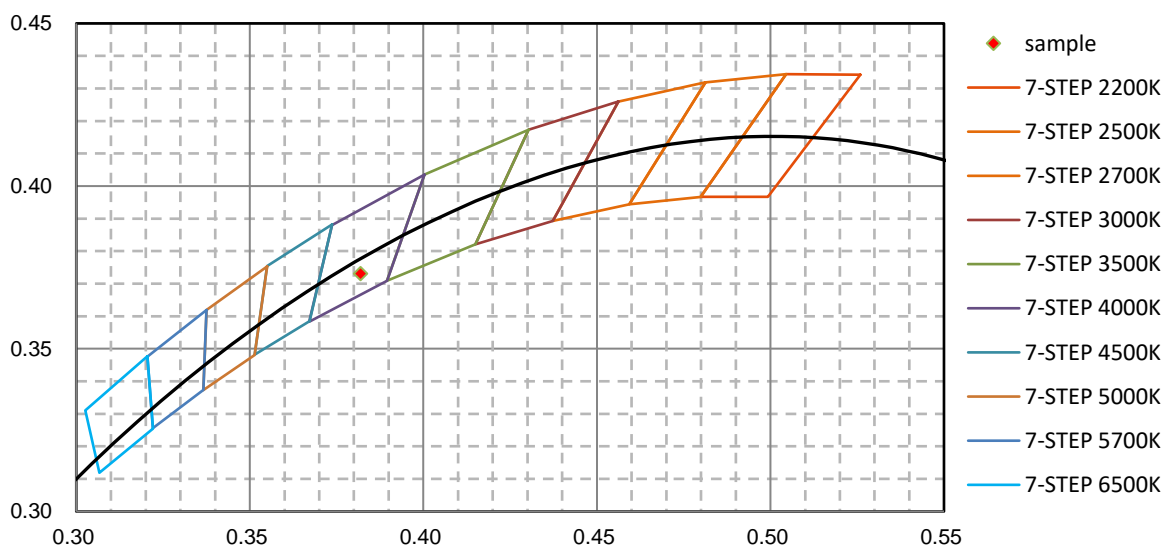
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	6.630E-02	421	3.580E-01	462	2.481E+01	503	1.724E+01	544	2.323E+01
381	4.670E-02	422	4.332E-01	463	2.376E+01	504	1.751E+01	545	2.333E+01
382	3.870E-02	423	4.008E-01	464	2.260E+01	505	1.782E+01	546	2.334E+01
383	3.530E-02	424	4.631E-01	465	2.188E+01	506	1.812E+01	547	2.347E+01
384	4.260E-02	425	6.086E-01	466	2.147E+01	507	1.832E+01	548	2.354E+01
385	4.870E-02	426	7.505E-01	467	2.095E+01	508	1.855E+01	549	2.352E+01
386	3.800E-03	427	8.811E-01	468	2.067E+01	509	1.881E+01	550	2.366E+01
387	5.270E-02	428	1.096E+00	469	2.003E+01	510	1.908E+01	551	2.362E+01
388	5.760E-02	429	1.302E+00	470	1.939E+01	511	1.933E+01	552	2.373E+01
389	2.970E-02	430	1.541E+00	471	1.877E+01	512	1.950E+01	553	2.373E+01
390	6.740E-02	431	1.854E+00	472	1.781E+01	513	1.971E+01	554	2.387E+01
391	1.660E-02	432	2.176E+00	473	1.722E+01	514	1.991E+01	555	2.387E+01
392	9.000E-03	433	2.542E+00	474	1.628E+01	515	2.005E+01	556	2.395E+01
393	2.580E-02	434	2.957E+00	475	1.549E+01	516	2.025E+01	557	2.395E+01
394	1.760E-02	435	3.424E+00	476	1.471E+01	517	2.052E+01	558	2.401E+01
395	7.290E-02	436	3.955E+00	477	1.411E+01	518	2.058E+01	559	2.408E+01
396	2.290E-02	437	4.509E+00	478	1.346E+01	519	2.069E+01	560	2.409E+01
397	1.600E-03	438	5.219E+00	479	1.329E+01	520	2.090E+01	561	2.411E+01
398	1.070E-02	439	5.960E+00	480	1.308E+01	521	2.110E+01	562	2.406E+01
399	2.640E-02	440	6.772E+00	481	1.293E+01	522	2.114E+01	563	2.416E+01
400	1.600E-03	441	7.803E+00	482	1.288E+01	523	2.124E+01	564	2.427E+01
401	2.840E-02	442	9.060E+00	483	1.284E+01	524	2.142E+01	565	2.421E+01
402	3.050E-02	443	1.038E+01	484	1.306E+01	525	2.148E+01	566	2.424E+01
403	2.070E-02	444	1.204E+01	485	1.307E+01	526	2.166E+01	567	2.437E+01
404	3.820E-02	445	1.409E+01	486	1.325E+01	527	2.169E+01	568	2.433E+01
405	4.240E-02	446	1.623E+01	487	1.339E+01	528	2.194E+01	569	2.434E+01
406	2.300E-02	447	1.883E+01	488	1.353E+01	529	2.204E+01	570	2.440E+01
407	9.470E-02	448	2.164E+01	489	1.365E+01	530	2.215E+01	571	2.444E+01
408	4.380E-02	449	2.517E+01	490	1.378E+01	531	2.219E+01	572	2.438E+01
409	4.930E-02	450	2.808E+01	491	1.393E+01	532	2.220E+01	573	2.451E+01
410	1.175E-01	451	3.110E+01	492	1.414E+01	533	2.239E+01	574	2.455E+01
411	1.113E-01	452	3.336E+01	493	1.440E+01	534	2.240E+01	575	2.458E+01
412	7.020E-02	453	3.527E+01	494	1.459E+01	535	2.255E+01	576	2.467E+01
413	3.610E-02	454	3.633E+01	495	1.487E+01	536	2.264E+01	577	2.470E+01
414	1.434E-01	455	3.681E+01	496	1.516E+01	537	2.268E+01	578	2.475E+01
415	1.177E-01	456	3.577E+01	497	1.538E+01	538	2.282E+01	579	2.475E+01
416	1.426E-01	457	3.457E+01	498	1.577E+01	539	2.290E+01	580	2.482E+01
417	1.735E-01	458	3.295E+01	499	1.597E+01	540	2.298E+01	581	2.491E+01
418	2.532E-01	459	3.035E+01	500	1.629E+01	541	2.299E+01	582	2.491E+01
419	2.770E-01	460	2.856E+01	501	1.656E+01	542	2.306E+01	583	2.499E+01
420	3.214E-01	461	2.674E+01	502	1.694E+01	543	2.322E+01	584	2.517E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	2.517E+01	626	2.918E+01	667	2.157E+01	708	8.659E+00	749	1.802E+00
586	2.525E+01	627	2.920E+01	668	2.116E+01	709	8.347E+00	750	1.738E+00
587	2.544E+01	628	2.920E+01	669	2.088E+01	710	7.996E+00	751	1.785E+00
588	2.556E+01	629	2.916E+01	670	2.055E+01	711	7.808E+00	752	1.693E+00
589	2.566E+01	630	2.903E+01	671	2.016E+01	712	7.552E+00	753	1.601E+00
590	2.561E+01	631	2.915E+01	672	1.981E+01	713	7.446E+00	754	1.485E+00
591	2.567E+01	632	2.911E+01	673	1.954E+01	714	7.209E+00	755	1.356E+00
592	2.588E+01	633	2.897E+01	674	1.914E+01	715	6.853E+00	756	1.322E+00
593	2.598E+01	634	2.899E+01	675	1.884E+01	716	6.643E+00	757	1.274E+00
594	2.617E+01	635	2.897E+01	676	1.844E+01	717	6.441E+00	758	9.835E-01
595	2.625E+01	636	2.890E+01	677	1.800E+01	718	6.276E+00	759	1.106E+00
596	2.640E+01	637	2.872E+01	678	1.774E+01	719	5.967E+00	760	9.685E-01
597	2.658E+01	638	2.871E+01	679	1.737E+01	720	5.893E+00	761	9.258E-01
598	2.664E+01	639	2.867E+01	680	1.702E+01	721	5.625E+00	762	9.906E-01
599	2.679E+01	640	2.845E+01	681	1.677E+01	722	5.450E+00	763	1.019E+00
600	2.684E+01	641	2.831E+01	682	1.636E+01	723	5.201E+00	764	8.689E-01
601	2.704E+01	642	2.820E+01	683	1.604E+01	724	4.948E+00	765	7.022E-01
602	2.707E+01	643	2.797E+01	684	1.571E+01	725	4.843E+00	766	7.711E-01
603	2.729E+01	644	2.783E+01	685	1.537E+01	726	4.585E+00	767	7.437E-01
604	2.749E+01	645	2.778E+01	686	1.499E+01	727	4.454E+00	768	7.226E-01
605	2.758E+01	646	2.754E+01	687	1.463E+01	728	4.339E+00	769	6.109E-01
606	2.766E+01	647	2.738E+01	688	1.443E+01	729	4.213E+00	770	4.754E-01
607	2.771E+01	648	2.713E+01	689	1.408E+01	730	4.058E+00	771	4.618E-01
608	2.799E+01	649	2.690E+01	690	1.372E+01	731	3.775E+00	772	5.484E-01
609	2.807E+01	650	2.672E+01	691	1.346E+01	732	3.761E+00	773	4.047E-01
610	2.816E+01	651	2.647E+01	692	1.313E+01	733	3.546E+00	774	3.542E-01
611	2.827E+01	652	2.619E+01	693	1.285E+01	734	3.317E+00	775	4.059E-01
612	2.842E+01	653	2.597E+01	694	1.254E+01	735	3.282E+00	776	3.458E-01
613	2.846E+01	654	2.570E+01	695	1.225E+01	736	3.058E+00	777	2.856E-01
614	2.856E+01	655	2.544E+01	696	1.192E+01	737	3.007E+00	778	2.809E-01
615	2.865E+01	656	2.515E+01	697	1.166E+01	738	2.845E+00	779	2.214E-01
616	2.874E+01	657	2.481E+01	698	1.132E+01	739	2.690E+00	780	1.564E-01
617	2.876E+01	658	2.461E+01	699	1.102E+01	740	2.604E+00		
618	2.899E+01	659	2.419E+01	700	1.073E+01	741	2.584E+00		
619	2.888E+01	660	2.399E+01	701	1.048E+01	742	2.498E+00		
620	2.897E+01	661	2.357E+01	702	1.019E+01	743	2.403E+00		
621	2.908E+01	662	2.325E+01	703	9.886E+00	744	2.224E+00		
622	2.903E+01	663	2.287E+01	704	9.617E+00	745	2.150E+00		
623	2.901E+01	664	2.263E+01	705	9.372E+00	746	1.945E+00		
624	2.926E+01	665	2.231E+01	706	9.039E+00	747	1.985E+00		
625	2.911E+01	666	2.194E+01	707	8.803E+00	748	1.917E+00		

CIE 1931xy Chromaticity Diagram



7-Step Chromaticity Quadrangles



Control Setting: 5000K

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

Test orientation: **Downward**

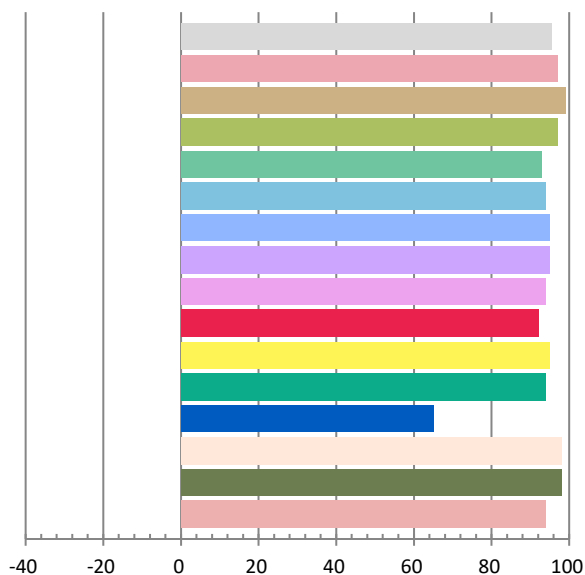
Photometric and Electrical Measurement Result

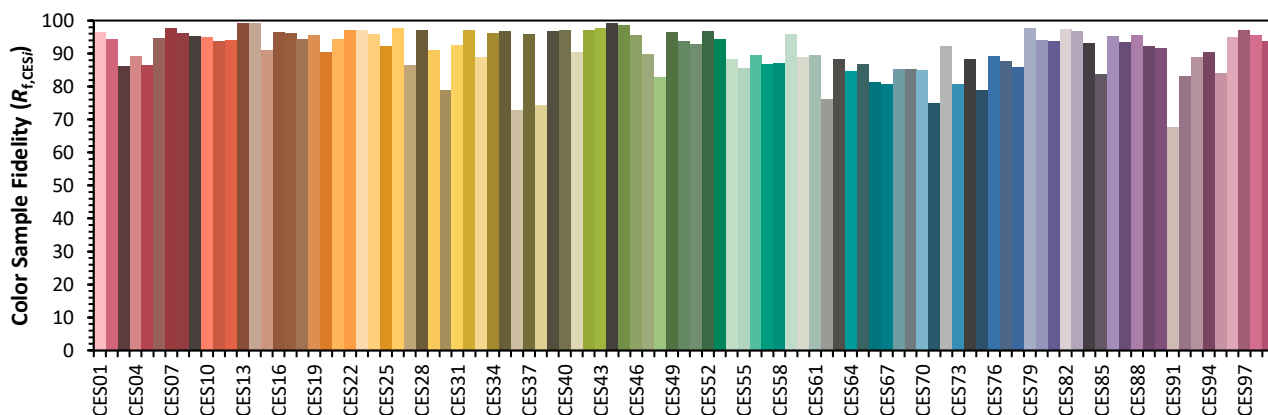
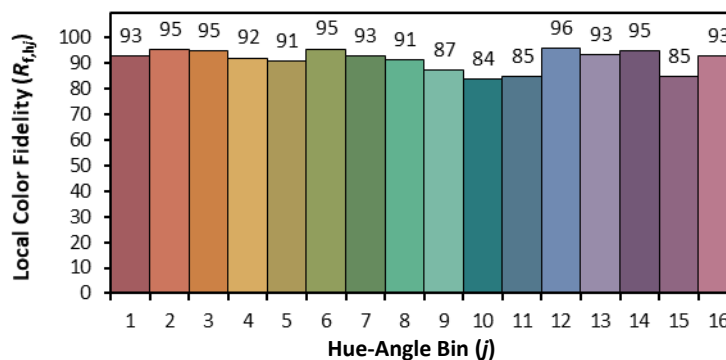
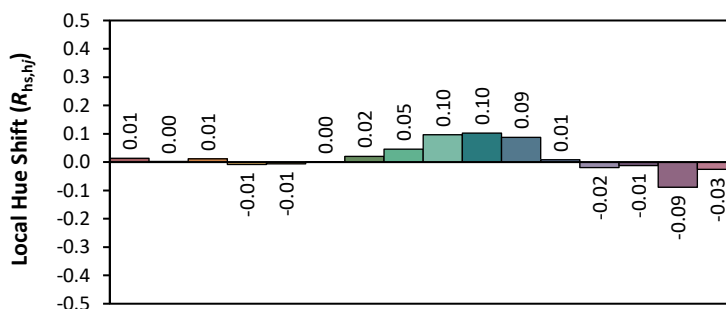
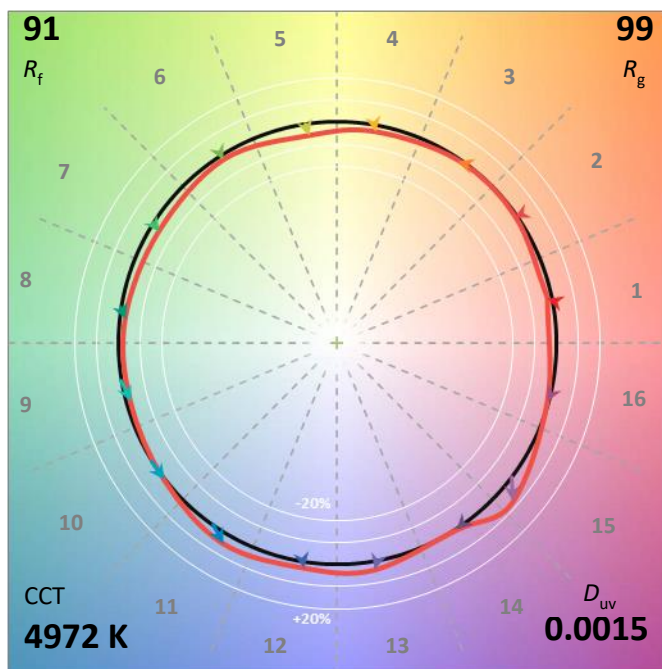
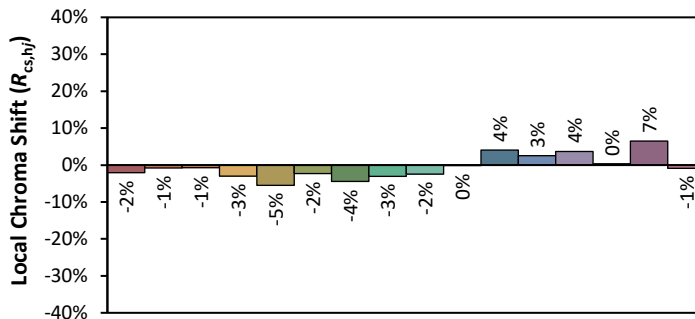
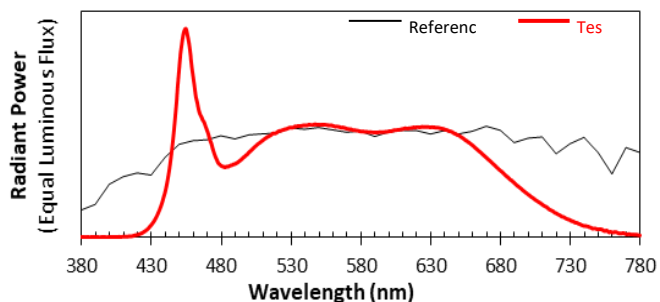
Voltage(V)	Frequency(Hz)	Current(A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy(lm/W)
120.0	60	0.1483	17.67	0.9926	1735.6	98.24

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
6.217	4972	0.00149	0.3462	0.3555	0.2107	0.4867

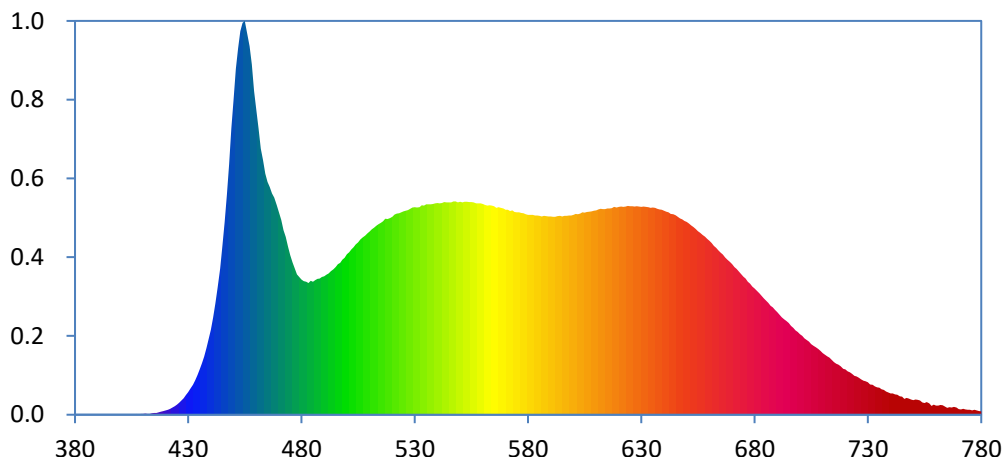
Color Rendering Index

Ra			
95.4			
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	





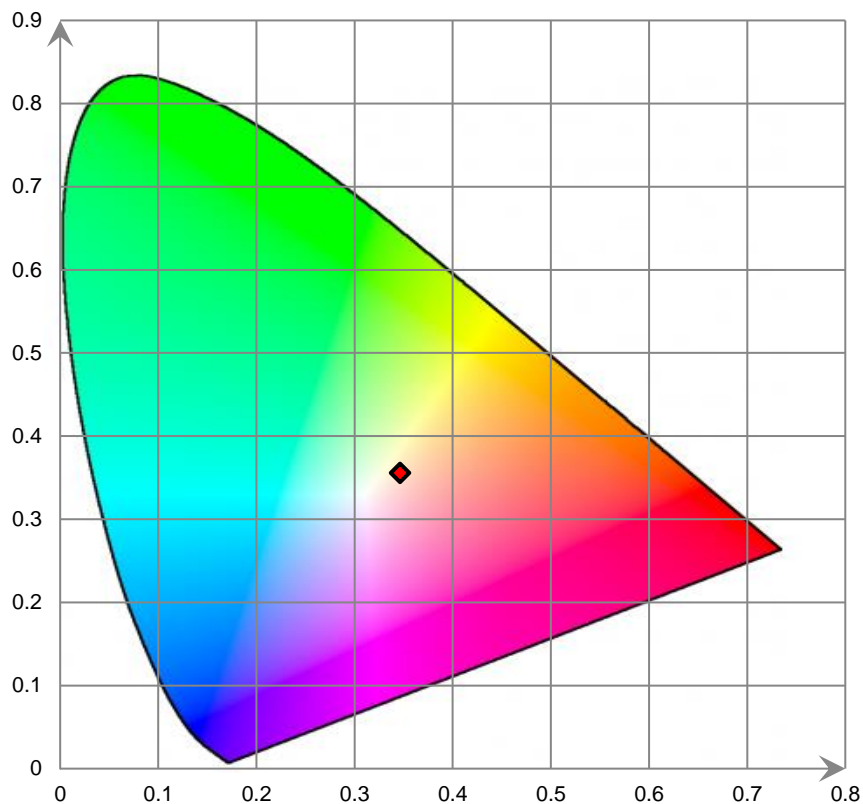
Relative Spectral Power Distribution



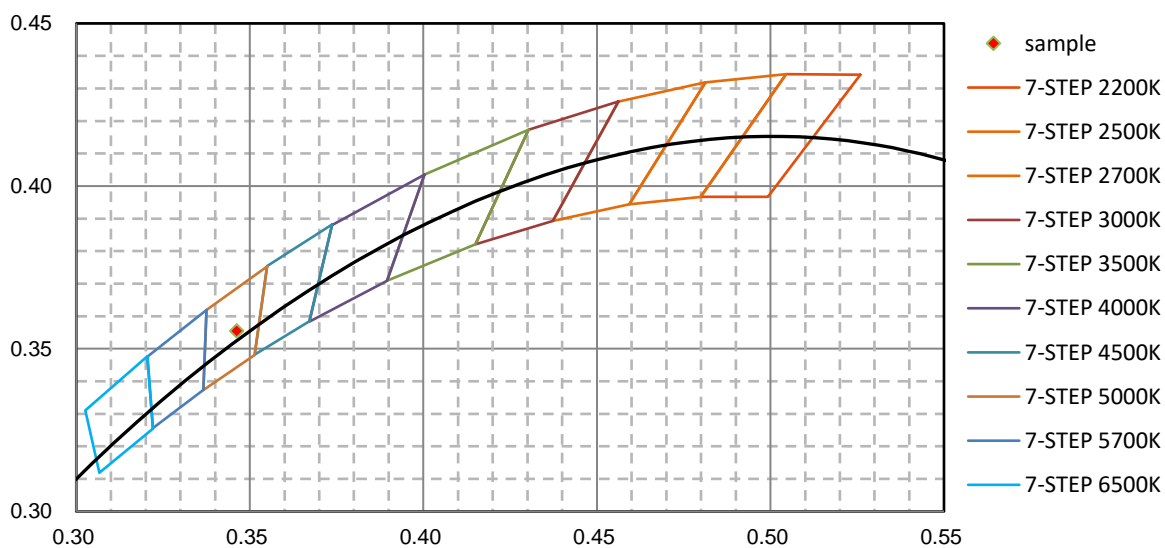
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	5.940E-02	421	6.010E-01	462	3.154E+01	503	1.985E+01	544	2.518E+01
381	4.430E-02	422	7.151E-01	463	3.018E+01	504	2.019E+01	545	2.518E+01
382	3.890E-02	423	8.564E-01	464	2.859E+01	505	2.044E+01	546	2.518E+01
383	1.130E-02	424	1.016E+00	465	2.759E+01	506	2.075E+01	547	2.528E+01
384	5.190E-02	425	1.212E+00	466	2.697E+01	507	2.101E+01	548	2.527E+01
385	3.940E-02	426	1.419E+00	467	2.622E+01	508	2.121E+01	549	2.517E+01
386	3.600E-03	427	1.687E+00	468	2.573E+01	509	2.148E+01	550	2.526E+01
387	4.850E-02	428	1.966E+00	469	2.482E+01	510	2.171E+01	551	2.515E+01
388	1.580E-02	429	2.334E+00	470	2.396E+01	511	2.197E+01	552	2.525E+01
389	2.810E-02	430	2.680E+00	471	2.307E+01	512	2.217E+01	553	2.523E+01
390	6.140E-02	431	3.089E+00	472	2.186E+01	513	2.242E+01	554	2.520E+01
391	2.580E-02	432	3.534E+00	473	2.109E+01	514	2.259E+01	555	2.519E+01
392	1.860E-02	433	4.078E+00	474	1.993E+01	515	2.273E+01	556	2.516E+01
393	1.500E-02	434	4.670E+00	475	1.893E+01	516	2.292E+01	557	2.506E+01
394	2.960E-02	435	5.370E+00	476	1.807E+01	517	2.324E+01	558	2.504E+01
395	5.930E-02	436	6.096E+00	477	1.735E+01	518	2.321E+01	559	2.507E+01
396	1.950E-02	437	6.905E+00	478	1.665E+01	519	2.330E+01	560	2.499E+01
397	2.190E-02	438	7.879E+00	479	1.633E+01	520	2.346E+01	561	2.488E+01
398	1.900E-03	439	8.973E+00	480	1.605E+01	521	2.373E+01	562	2.479E+01
399	2.700E-03	440	1.005E+01	481	1.585E+01	522	2.383E+01	563	2.483E+01
400	4.000E-04	441	1.151E+01	482	1.576E+01	523	2.387E+01	564	2.478E+01
401	1.780E-02	442	1.318E+01	483	1.562E+01	524	2.399E+01	565	2.470E+01
402	2.570E-02	443	1.506E+01	484	1.586E+01	525	2.411E+01	566	2.454E+01
403	4.040E-02	444	1.733E+01	485	1.576E+01	526	2.419E+01	567	2.460E+01
404	2.630E-02	445	2.001E+01	486	1.594E+01	527	2.426E+01	568	2.453E+01
405	6.570E-02	446	2.281E+01	487	1.610E+01	528	2.441E+01	569	2.444E+01
406	1.840E-02	447	2.604E+01	488	1.615E+01	529	2.455E+01	570	2.431E+01
407	9.610E-02	448	2.967E+01	489	1.634E+01	530	2.460E+01	571	2.429E+01
408	3.070E-02	449	3.397E+01	490	1.640E+01	531	2.456E+01	572	2.414E+01
409	7.760E-02	450	3.740E+01	491	1.659E+01	532	2.461E+01	573	2.421E+01
410	1.124E-01	451	4.100E+01	492	1.674E+01	533	2.485E+01	574	2.405E+01
411	1.278E-01	452	4.343E+01	493	1.702E+01	534	2.480E+01	575	2.398E+01
412	9.230E-02	453	4.546E+01	494	1.724E+01	535	2.493E+01	576	2.398E+01
413	9.450E-02	454	4.644E+01	495	1.752E+01	536	2.494E+01	577	2.392E+01
414	1.830E-01	455	4.668E+01	496	1.784E+01	537	2.494E+01	578	2.386E+01
415	1.979E-01	456	4.528E+01	497	1.802E+01	538	2.498E+01	579	2.377E+01
416	2.057E-01	457	4.369E+01	498	1.837E+01	539	2.506E+01	580	2.370E+01
417	2.810E-01	458	4.151E+01	499	1.861E+01	540	2.508E+01	581	2.369E+01
418	3.604E-01	459	3.838E+01	500	1.902E+01	541	2.504E+01	582	2.368E+01
419	4.533E-01	460	3.613E+01	501	1.926E+01	542	2.510E+01	583	2.360E+01
420	5.164E-01	461	3.392E+01	502	1.958E+01	543	2.522E+01	584	2.362E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	2.359E+01	626	2.472E+01	667	1.866E+01	708	7.782E+00	749	1.819E+00
586	2.348E+01	627	2.469E+01	668	1.839E+01	709	7.554E+00	750	1.745E+00
587	2.359E+01	628	2.473E+01	669	1.812E+01	710	7.320E+00	751	1.791E+00
588	2.353E+01	629	2.467E+01	670	1.783E+01	711	7.098E+00	752	1.784E+00
589	2.351E+01	630	2.465E+01	671	1.752E+01	712	6.909E+00	753	1.681E+00
590	2.348E+01	631	2.469E+01	672	1.727E+01	713	6.782E+00	754	1.448E+00
591	2.347E+01	632	2.463E+01	673	1.699E+01	714	6.512E+00	755	1.368E+00
592	2.347E+01	633	2.461E+01	674	1.669E+01	715	6.221E+00	756	1.500E+00
593	2.353E+01	634	2.452E+01	675	1.638E+01	716	6.064E+00	757	1.336E+00
594	2.357E+01	635	2.455E+01	676	1.613E+01	717	5.933E+00	758	1.058E+00
595	2.351E+01	636	2.451E+01	677	1.577E+01	718	5.755E+00	759	1.201E+00
596	2.357E+01	637	2.441E+01	678	1.552E+01	719	5.463E+00	760	1.084E+00
597	2.358E+01	638	2.435E+01	679	1.518E+01	720	5.356E+00	761	1.074E+00
598	2.363E+01	639	2.429E+01	680	1.495E+01	721	5.156E+00	762	1.166E+00
599	2.363E+01	640	2.417E+01	681	1.470E+01	722	5.020E+00	763	1.134E+00
600	2.371E+01	641	2.406E+01	682	1.440E+01	723	4.834E+00	764	9.847E-01
601	2.380E+01	642	2.399E+01	683	1.410E+01	724	4.607E+00	765	8.264E-01
602	2.378E+01	643	2.382E+01	684	1.377E+01	725	4.553E+00	766	8.792E-01
603	2.386E+01	644	2.377E+01	685	1.353E+01	726	4.390E+00	767	8.508E-01
604	2.399E+01	645	2.365E+01	686	1.326E+01	727	4.179E+00	768	9.440E-01
605	2.397E+01	646	2.348E+01	687	1.291E+01	728	4.037E+00	769	8.459E-01
606	2.403E+01	647	2.326E+01	688	1.274E+01	729	3.954E+00	770	6.754E-01
607	2.405E+01	648	2.315E+01	689	1.244E+01	730	3.854E+00	771	6.161E-01
608	2.410E+01	649	2.295E+01	690	1.216E+01	731	3.591E+00	772	7.033E-01
609	2.417E+01	650	2.286E+01	691	1.187E+01	732	3.567E+00	773	6.147E-01
610	2.422E+01	651	2.268E+01	692	1.155E+01	733	3.354E+00	774	5.795E-01
611	2.434E+01	652	2.243E+01	693	1.134E+01	734	3.224E+00	775	6.002E-01
612	2.440E+01	653	2.225E+01	694	1.109E+01	735	3.197E+00	776	5.050E-01
613	2.437E+01	654	2.201E+01	695	1.087E+01	736	3.007E+00	777	5.989E-01
614	2.436E+01	655	2.176E+01	696	1.053E+01	737	2.940E+00	778	5.063E-01
615	2.445E+01	656	2.158E+01	697	1.030E+01	738	2.741E+00	779	4.377E-01
616	2.446E+01	657	2.130E+01	698	1.002E+01	739	2.634E+00	780	3.893E-01
617	2.447E+01	658	2.112E+01	699	9.822E+00	740	2.524E+00		
618	2.465E+01	659	2.084E+01	700	9.525E+00	741	2.535E+00		
619	2.456E+01	660	2.061E+01	701	9.353E+00	742	2.423E+00		
620	2.465E+01	661	2.037E+01	702	9.043E+00	743	2.375E+00		
621	2.468E+01	662	2.003E+01	703	8.863E+00	744	2.189E+00		
622	2.465E+01	663	1.979E+01	704	8.648E+00	745	2.144E+00		
623	2.467E+01	664	1.949E+01	705	8.383E+00	746	1.886E+00		
624	2.476E+01	665	1.923E+01	706	8.175E+00	747	1.982E+00		
625	2.472E+01	666	1.899E+01	707	7.971E+00	748	1.933E+00		

CIE 1931xy Chromaticity Diagram



7-StepChromaticity Quadrangles



[Goniophotometer System]

Control Setting: 2700K

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

Test orientation: **Downward**

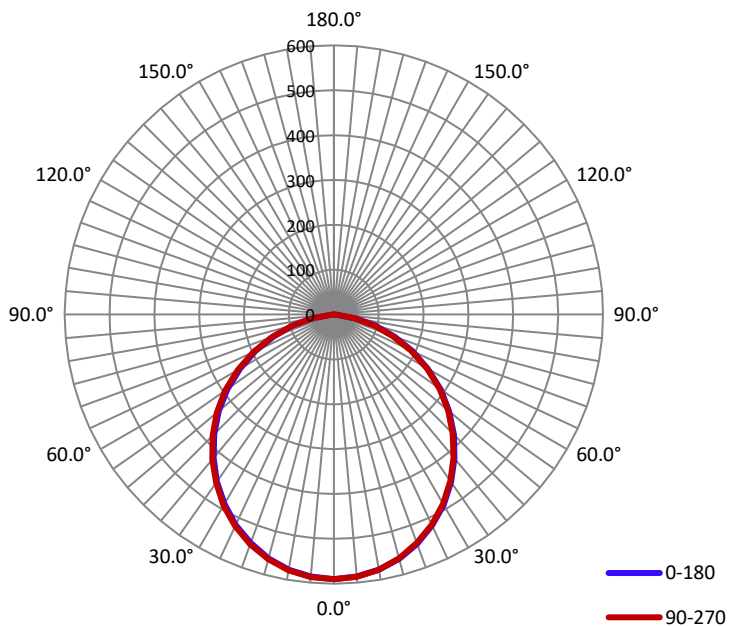
Electrical Measurement

Input Voltage(V)	Frequency(Hz)	Input Current(A)	Power (W)	Power Factor
120.0	60	0.1490	17.86	0.9950

Photometric Measurement

Luminous Flux(lm)	Efficacy(lm/W)	I _{max} (cd)	S/MH(C0/180)	S/MH(C90/270)
1598.6	89.56	590.1	1.23	1.23

Luminous Intensity Distribution



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle(50%I _{max}):	109.1	109.2	109.3	109.2	109.2
Field Angle(10%I _{max}):	157.9	158.2	157.6	157.7	157.9

Luminous Intensity (cd) Distribution Data

C y	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0.0°	590	590	590	590	590	590	590	590
5.0°	586	587	587	587	587	586	586	587
10.0°	578	578	577	577	577	577	578	578
15.0°	564	563	563	562	563	563	563	564
20.0°	544	543	543	542	542	542	542	544
25.0°	518	518	517	516	517	517	518	519
30.0°	490	489	487	486	487	487	488	490
35.0°	456	455	454	453	453	453	454	456
40.0°	418	417	416	415	415	417	417	419
45.0°	378	377	376	375	375	376	377	379
50.0°	336	334	333	333	333	333	334	337
55.0°	291	290	288	288	288	288	289	292
60.0°	243	242	240	240	240	241	241	243
65.0°	194	193	192	191	190	191	193	195
70.0°	145	143	142	141	140	140	142	145
75.0°	97	95	95	92	92	93	95	98
80.0°	51	50	49	47	47	47	49	52
85.0°	10	11	10	8	8	9	11	12
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.)

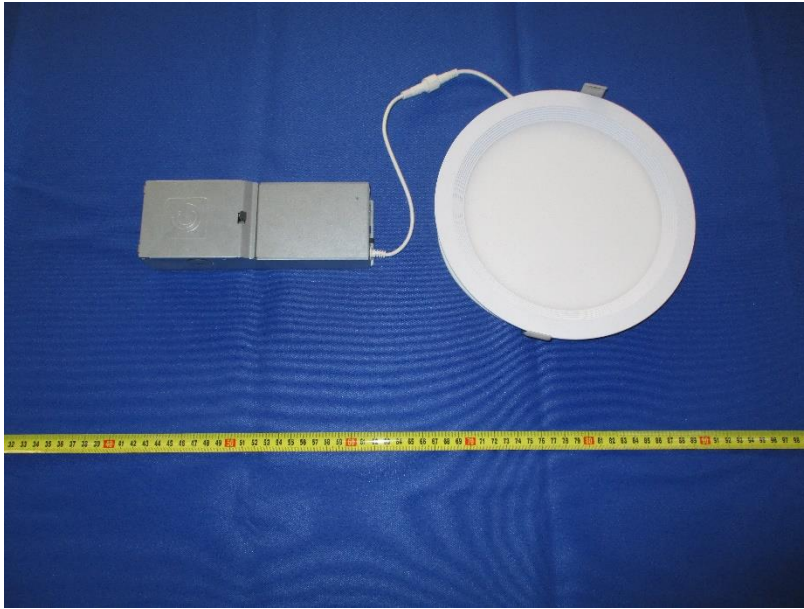
C y	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
0.0°	590	590	590	590	590	590	590	590
5.0°	586	587	588	588	587	587	587	587
10.0°	577	578	579	579	579	578	578	577
15.0°	563	564	564	564	564	564	563	563
20.0°	542	544	544	545	545	544	543	542
25.0°	517	518	520	520	520	519	518	518
30.0°	487	489	490	491	491	490	489	488
35.0°	454	456	457	458	458	457	456	455
40.0°	417	419	421	421	421	420	419	418
45.0°	377	379	380	381	382	381	379	377
50.0°	334	338	339	340	340	338	337	335
55.0°	290	292	294	296	296	294	293	290
60.0°	241	244	247	248	247	246	245	242
65.0°	192	195	197	198	197	196	195	193
70.0°	142	145	148	147	147	146	144	143
75.0°	93	97	99	98	97	97	94	93
80.0°	48	51	53	52	50	49	49	49
85.0°	10	11	13	12	11	11	11	9
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	14.1	0.90
5-10	41.7	2.61
10-15	67.7	4.24
15-20	91.3	5.71
20-25	111.3	6.96
25-30	127.4	7.97
30-35	138.9	8.69
35-40	145.7	9.11
40-45	147.4	9.23
45-50	144.3	9.02
50-55	136.3	8.52
55-60	123.4	7.73
60-65	106.1	6.64
65-70	85.4	5.33
70-75	62.4	3.90
75-80	38.6	2.40
80-85	15.8	0.99
85-90	1.0	0.06
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	14.1	0.88
0-10	55.7	3.49
0-15	123.4	7.72
0-20	214.6	13.42
0-25	325.9	20.39
0-30	453.3	28.36
0-35	592.3	37.05
0-40	738.0	46.16
0-45	885.4	55.38
0-50	1029.6	64.41
0-55	1166.0	72.94
0-60	1289.5	80.66
0-65	1395.6	87.30
0-70	1480.9	92.63
0-75	1543.2	96.53
0-80	1581.8	98.95
0-85	1597.6	99.94
0-90	1598.6	100.00
0-95	1598.6	100.00
0-100	1598.6	100.00
0-105	1598.6	100.00
0-110	1598.6	100.00
0-115	1598.6	100.00
0-120	1598.6	100.00
0-125	1598.6	100.00
0-130	1598.6	100.00
0-135	1598.6	100.00
0-140	1598.6	100.00
0-145	1598.6	100.00
0-150	1598.6	100.00
0-155	1598.6	100.00
0-160	1598.6	100.00
0-165	1598.6	100.00
0-170	1598.6	100.00
0-175	1598.6	100.00
0-180	1598.6	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*****