

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: MCR6/9CCT5S/DUALDIM/EXT

Report Type:	Electrical and Photometric tests including: Luminous Flux, Chromaticity, Luminous Intensity Distribution
Project Engineer:	Bay Wang
Report Number:	RKSB220907005-10-2
Test Date:	2022-09-09 to 2022-09-12
Report Date:	2022-09-19
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:	MCR6/9CCT5S/DUALDIM/EXT
Manufacturer:	GREEN CREATIVE LTD
Brand Name:	GREEN CREATIVE
Product Designation:	Ceiling Mount
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:	10W
Nominal CCT:	2700K/3000K/3500K/4000K/5000K
Nominal Lumen Output:	780lm/800lm/820lm/840lm/860lm

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 10W

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

Test orientation: **Downward**

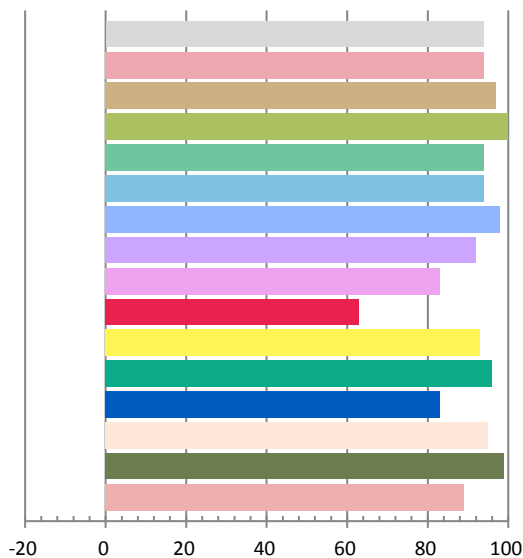
Photometric and Electrical Measurement Result

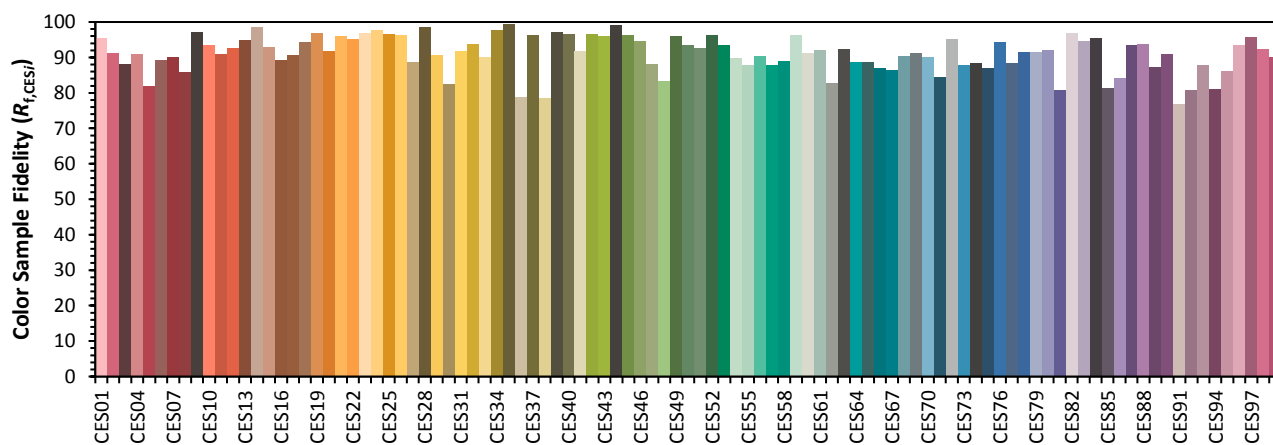
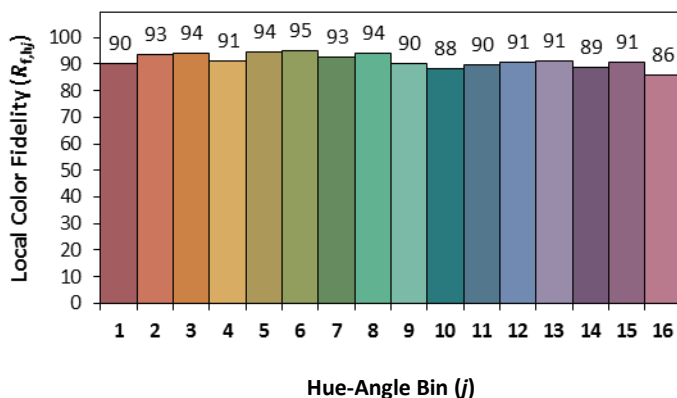
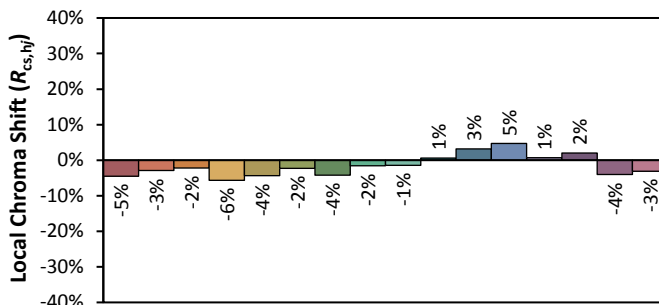
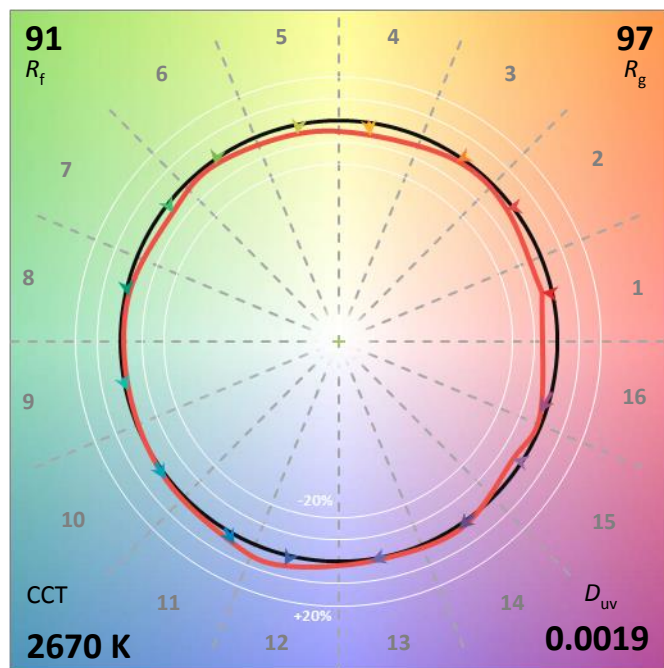
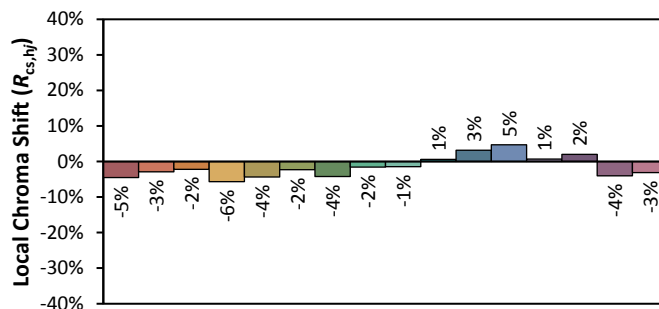
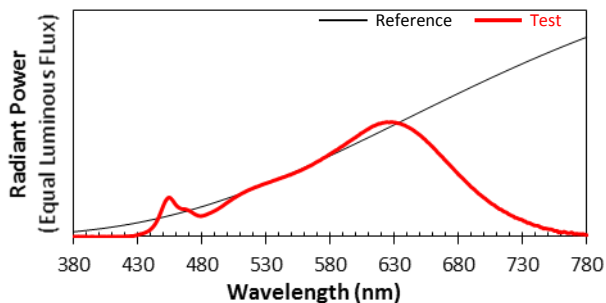
Voltage(V)	Frequency(Hz)	Current(A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy(lm/W)
120.00	60	0.0851	10.04	0.9829	851.36	84.83

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
3.010	2670	0.00190	0.4657	0.4171	0.2633	0.5307

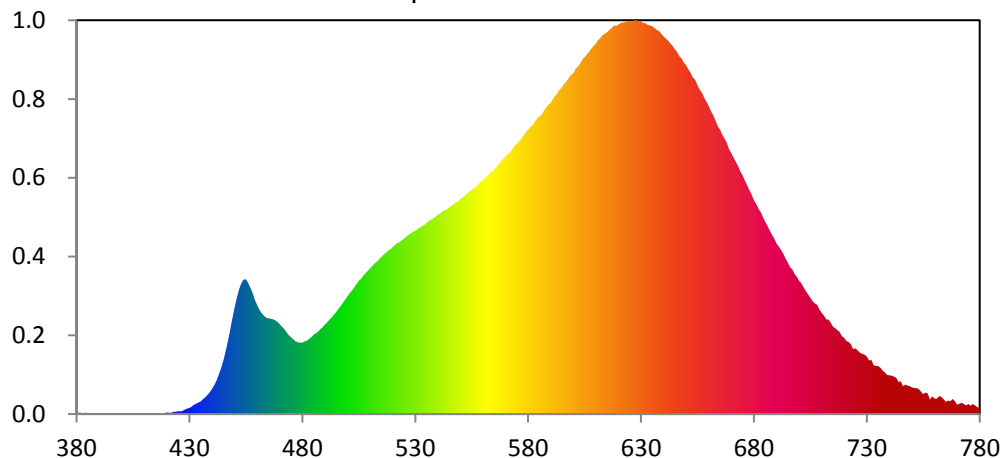
Color Rendering Index

Ra			
93.9			
R1	R2	R3	R4
94	97	100	94
R5	R6	R7	R8
94	98	92	83
R9	R10	R11	R12
63	93	96	83
R13	R14	R15	
95	99	89	





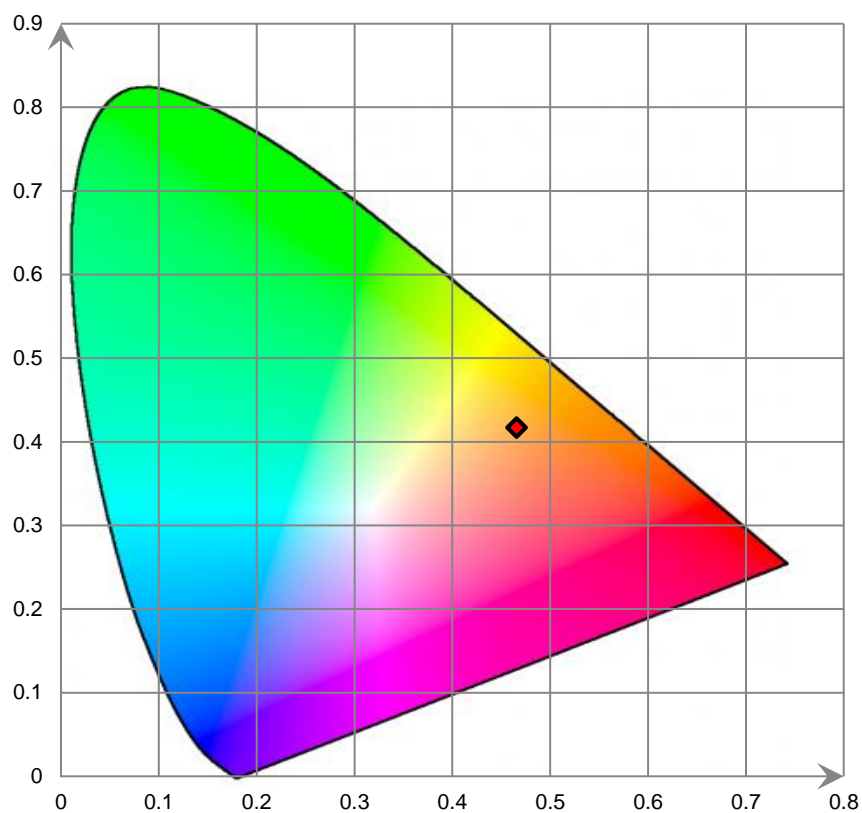
Relative Spectral Power Distribution



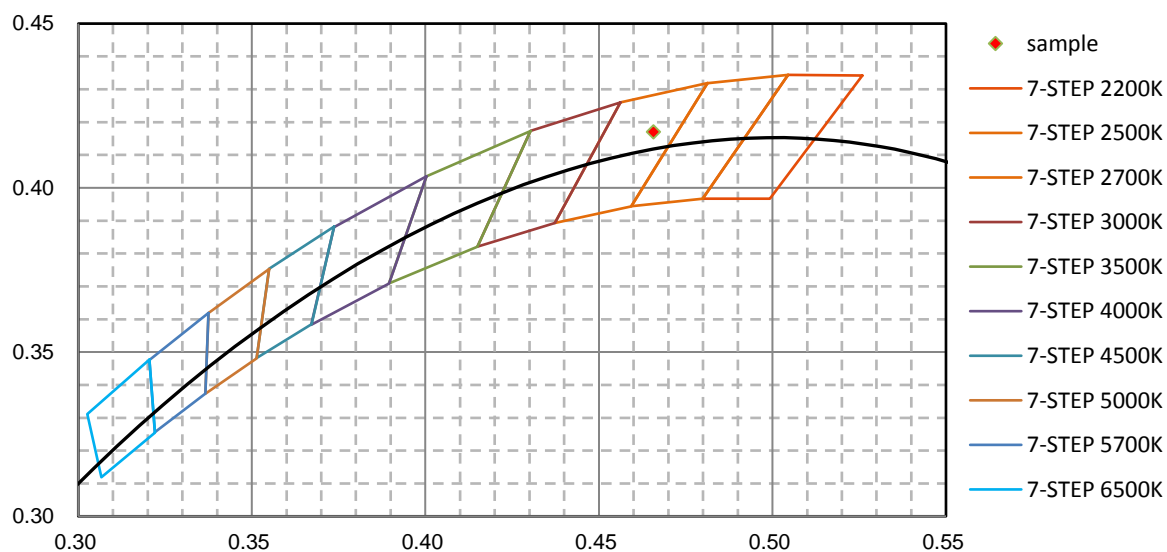
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380	4.280E-02	421	7.220E-02	462	4.847E+00	503	6.096E+00	544	9.842E+00
381	5.880E-02	422	6.670E-02	463	4.726E+00	504	6.248E+00	545	9.930E+00
382	5.970E-02	423	1.113E-01	464	4.634E+00	505	6.399E+00	546	1.001E+01
383	1.810E-02	424	1.162E-01	465	4.606E+00	506	6.493E+00	547	1.010E+01
384	6.810E-02	425	1.375E-01	466	4.589E+00	507	6.653E+00	548	1.019E+01
385	4.920E-02	426	1.245E-01	467	4.562E+00	508	6.767E+00	549	1.021E+01
386	3.700E-03	427	1.586E-01	468	4.508E+00	509	6.878E+00	550	1.034E+01
387	4.320E-02	428	2.170E-01	469	4.435E+00	510	7.008E+00	551	1.042E+01
388	1.780E-02	429	2.640E-01	470	4.324E+00	511	7.128E+00	552	1.049E+01
389	9.300E-03	430	3.028E-01	471	4.208E+00	512	7.244E+00	553	1.060E+01
390	6.290E-02	431	3.594E-01	472	4.091E+00	513	7.332E+00	554	1.069E+01
391	1.950E-02	432	4.487E-01	473	3.939E+00	514	7.456E+00	555	1.077E+01
392	6.100E-03	433	4.880E-01	474	3.805E+00	515	7.562E+00	556	1.086E+01
393	3.000E-03	434	5.597E-01	475	3.682E+00	516	7.673E+00	557	1.093E+01
394	1.100E-02	435	6.106E-01	476	3.582E+00	517	7.753E+00	558	1.106E+01
395	4.750E-02	436	7.137E-01	477	3.492E+00	518	7.852E+00	559	1.117E+01
396	1.640E-02	437	8.067E-01	478	3.452E+00	519	7.928E+00	560	1.126E+01
397	2.500E-03	438	9.147E-01	479	3.431E+00	520	8.018E+00	561	1.136E+01
398	1.160E-02	439	1.041E+00	480	3.441E+00	521	8.126E+00	562	1.145E+01
399	6.000E-04	440	1.214E+00	481	3.490E+00	522	8.224E+00	563	1.159E+01
400	0.000E+00	441	1.412E+00	482	3.522E+00	523	8.265E+00	564	1.167E+01
401	1.350E-02	442	1.624E+00	483	3.619E+00	524	8.336E+00	565	1.177E+01
402	1.590E-02	443	1.905E+00	484	3.689E+00	525	8.436E+00	566	1.188E+01
403	2.460E-02	444	2.210E+00	485	3.812E+00	526	8.522E+00	567	1.202E+01
404	1.110E-02	445	2.579E+00	486	3.882E+00	527	8.605E+00	568	1.214E+01
405	3.010E-02	446	3.003E+00	487	3.964E+00	528	8.680E+00	569	1.228E+01
406	4.600E-03	447	3.501E+00	488	4.074E+00	529	8.759E+00	570	1.238E+01
407	6.770E-02	448	4.024E+00	489	4.174E+00	530	8.826E+00	571	1.252E+01
408	1.110E-02	449	4.583E+00	490	4.289E+00	531	8.886E+00	572	1.260E+01
409	3.890E-02	450	5.118E+00	491	4.398E+00	532	8.973E+00	573	1.273E+01
410	5.200E-02	451	5.595E+00	492	4.524E+00	533	9.032E+00	574	1.290E+01
411	2.460E-02	452	5.995E+00	493	4.645E+00	534	9.099E+00	575	1.299E+01
412	3.680E-02	453	6.279E+00	494	4.784E+00	535	9.189E+00	576	1.312E+01
413	7.700E-03	454	6.465E+00	495	4.910E+00	536	9.284E+00	577	1.323E+01
414	3.220E-02	455	6.483E+00	496	5.063E+00	537	9.342E+00	578	1.339E+01
415	2.440E-02	456	6.326E+00	497	5.206E+00	538	9.413E+00	579	1.354E+01
416	3.320E-02	457	6.085E+00	498	5.366E+00	539	9.479E+00	580	1.367E+01
417	3.010E-02	458	5.804E+00	499	5.514E+00	540	9.585E+00	581	1.379E+01
418	3.900E-02	459	5.472E+00	500	5.669E+00	541	9.638E+00	582	1.392E+01
419	3.910E-02	460	5.229E+00	501	5.826E+00	542	9.727E+00	583	1.407E+01
420	7.300E-02	461	4.998E+00	502	5.949E+00	543	9.811E+00	584	1.422E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	1.431E+01	626	1.886E+01	667	1.325E+01	708	5.249E+00	749	1.342E+00
586	1.441E+01	627	1.893E+01	668	1.306E+01	709	5.021E+00	750	1.281E+00
587	1.460E+01	628	1.894E+01	669	1.275E+01	710	4.867E+00	751	1.248E+00
588	1.475E+01	629	1.889E+01	670	1.256E+01	711	4.733E+00	752	1.244E+00
589	1.489E+01	630	1.889E+01	671	1.231E+01	712	4.557E+00	753	1.200E+00
590	1.497E+01	631	1.880E+01	672	1.211E+01	713	4.543E+00	754	1.084E+00
591	1.516E+01	632	1.880E+01	673	1.191E+01	714	4.387E+00	755	9.591E-01
592	1.529E+01	633	1.872E+01	674	1.165E+01	715	4.203E+00	756	1.026E+00
593	1.544E+01	634	1.869E+01	675	1.147E+01	716	4.123E+00	757	9.801E-01
594	1.561E+01	635	1.865E+01	676	1.123E+01	717	4.035E+00	758	6.954E-01
595	1.572E+01	636	1.855E+01	677	1.099E+01	718	3.945E+00	759	8.447E-01
596	1.588E+01	637	1.846E+01	678	1.076E+01	719	3.736E+00	760	7.341E-01
597	1.600E+01	638	1.841E+01	679	1.055E+01	720	3.669E+00	761	7.412E-01
598	1.616E+01	639	1.828E+01	680	1.028E+01	721	3.518E+00	762	8.624E-01
599	1.631E+01	640	1.815E+01	681	1.012E+01	722	3.458E+00	763	8.133E-01
600	1.641E+01	641	1.806E+01	682	9.888E+00	723	3.363E+00	764	7.180E-01
601	1.660E+01	642	1.795E+01	683	9.715E+00	724	3.135E+00	765	5.870E-01
602	1.671E+01	643	1.783E+01	684	9.490E+00	725	3.153E+00	766	6.548E-01
603	1.685E+01	644	1.770E+01	685	9.255E+00	726	3.051E+00	767	6.232E-01
604	1.705E+01	645	1.755E+01	686	9.068E+00	727	2.947E+00	768	7.325E-01
605	1.716E+01	646	1.741E+01	687	8.838E+00	728	2.894E+00	769	6.126E-01
606	1.730E+01	647	1.721E+01	688	8.643E+00	729	2.856E+00	770	4.531E-01
607	1.742E+01	648	1.710E+01	689	8.429E+00	730	2.755E+00	771	4.941E-01
608	1.757E+01	649	1.691E+01	690	8.184E+00	731	2.570E+00	772	5.420E-01
609	1.771E+01	650	1.678E+01	691	8.055E+00	732	2.605E+00	773	4.801E-01
610	1.781E+01	651	1.658E+01	692	7.876E+00	733	2.360E+00	774	4.266E-01
611	1.797E+01	652	1.641E+01	693	7.696E+00	734	2.307E+00	775	4.822E-01
612	1.808E+01	653	1.619E+01	694	7.464E+00	735	2.305E+00	776	4.009E-01
613	1.822E+01	654	1.605E+01	695	7.286E+00	736	2.228E+00	777	4.769E-01
614	1.829E+01	655	1.579E+01	696	7.059E+00	737	2.097E+00	778	4.033E-01
615	1.836E+01	656	1.560E+01	697	6.960E+00	738	1.997E+00	779	3.247E-01
616	1.848E+01	657	1.544E+01	698	6.750E+00	739	1.875E+00	780	2.863E-01
617	1.856E+01	658	1.521E+01	699	6.611E+00	740	1.862E+00		
618	1.868E+01	659	1.500E+01	700	6.397E+00	741	1.856E+00		
619	1.866E+01	660	1.481E+01	701	6.304E+00	742	1.808E+00		
620	1.874E+01	661	1.456E+01	702	6.096E+00	743	1.739E+00		
621	1.881E+01	662	1.437E+01	703	5.936E+00	744	1.538E+00		
622	1.883E+01	663	1.411E+01	704	5.751E+00	745	1.577E+00		
623	1.886E+01	664	1.384E+01	705	5.607E+00	746	1.344E+00		
624	1.891E+01	665	1.368E+01	706	5.433E+00	747	1.415E+00		
625	1.890E+01	666	1.343E+01	707	5.313E+00	748	1.377E+00		

CIE 1931xy Chromaticity Diagram



7-Step Chromaticity Quadrangles



Control Setting: 3000K 10W

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

Test orientation: **Downward**

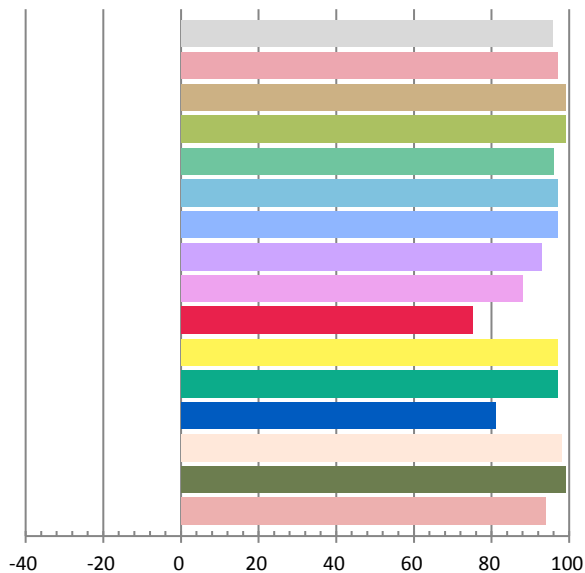
Photometric and Electrical Measurement Result

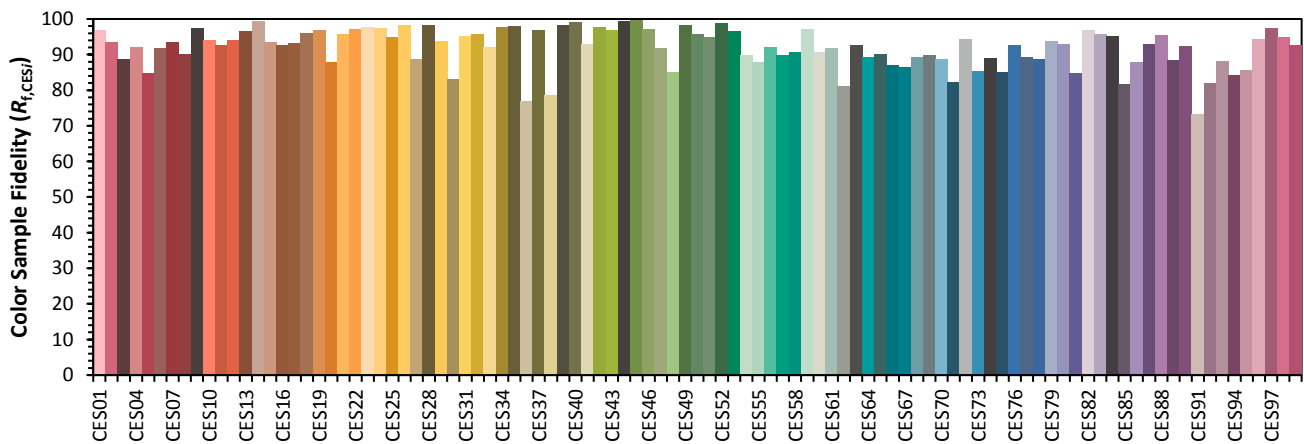
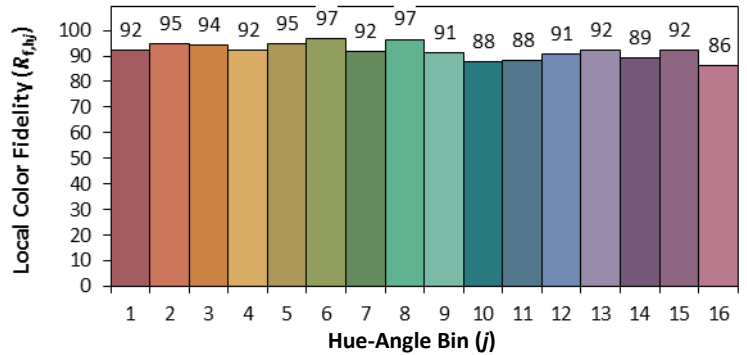
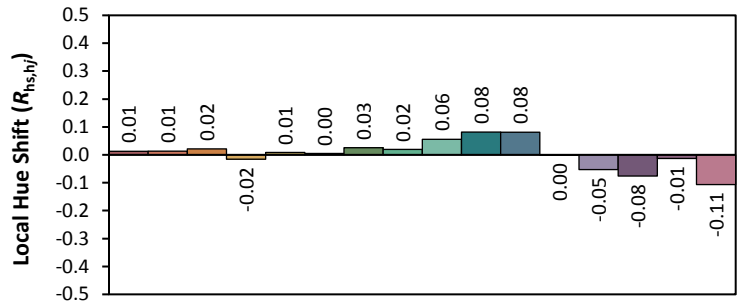
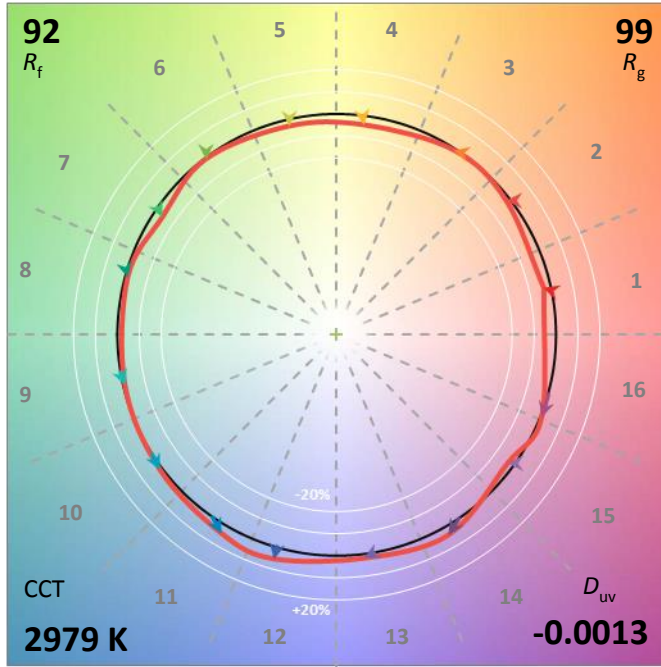
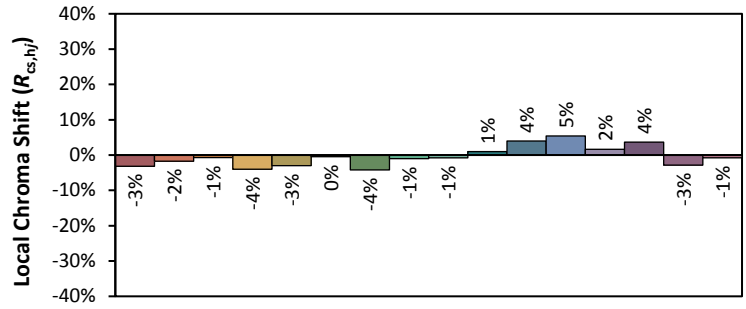
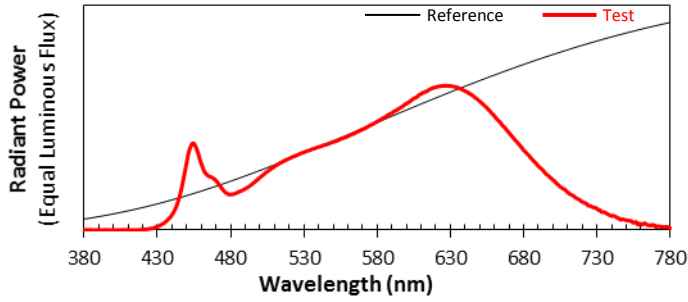
Voltage(V)	Frequency(Hz)	Current(A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy(lm/W)
120.0	60	0.0849	10.01	0.9831	896.21	89.53

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
3.190	2979	-0.00125	0.4366	0.4008	0.2518	0.5201

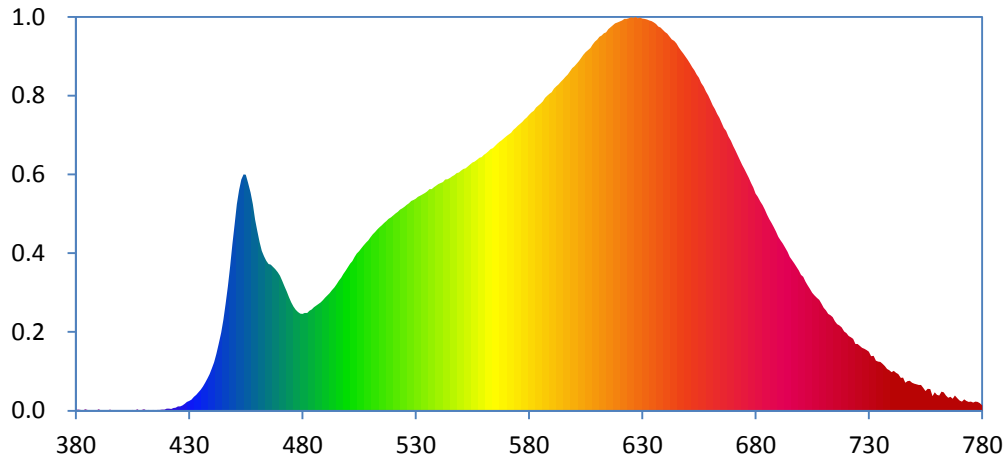
Color Rendering Index

Ra			
95.7			
R1	R2	R3	R4
97	99	99	96
R5	R6	R7	R8
97	97	93	88
R9	R10	R11	R12
75	97	97	81
R13	R14	R15	
98	99	94	





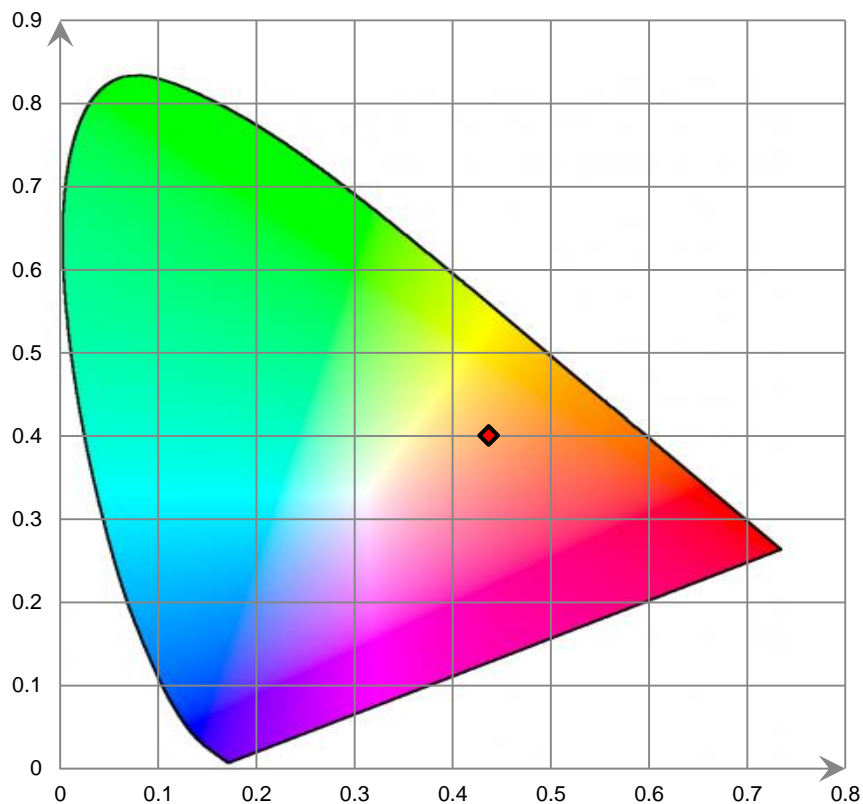
Relative Spectral Power Distribution



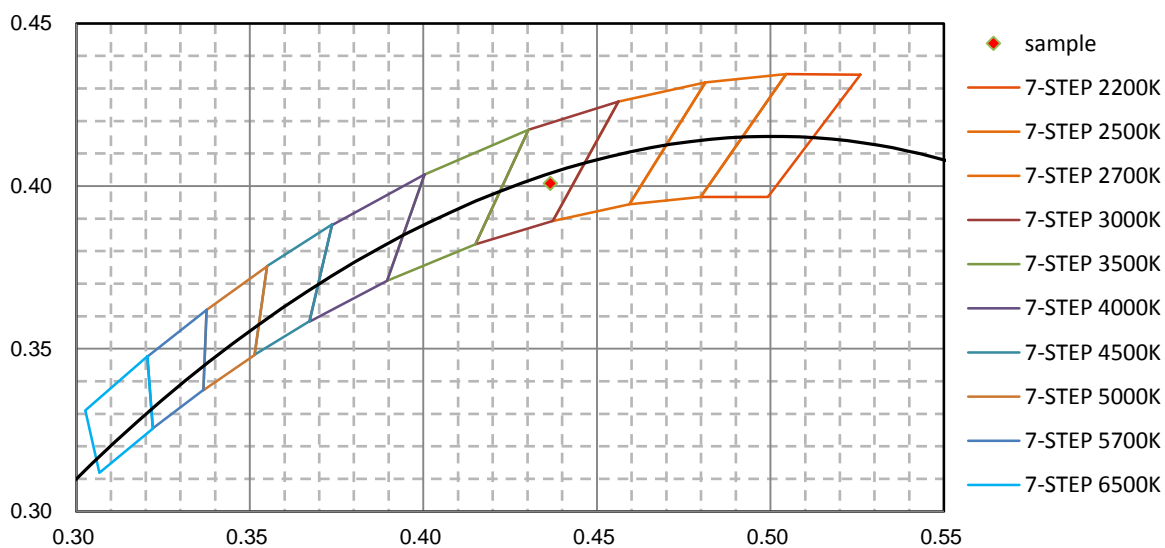
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	3.140E-02	421	9.790E-02	462	7.519E+00	503	7.244E+00	544	1.091E+01
381	4.840E-02	422	8.860E-02	463	7.267E+00	504	7.406E+00	545	1.095E+01
382	4.360E-02	423	1.361E-01	464	7.053E+00	505	7.512E+00	546	1.103E+01
383	1.060E-02	424	1.483E-01	465	6.909E+00	506	7.651E+00	547	1.109E+01
384	7.220E-02	425	1.979E-01	466	6.876E+00	507	7.790E+00	548	1.119E+01
385	3.060E-02	426	2.038E-01	467	6.773E+00	508	7.920E+00	549	1.122E+01
386	2.500E-03	427	2.495E-01	468	6.663E+00	509	8.030E+00	550	1.131E+01
387	2.650E-02	428	3.165E-01	469	6.515E+00	510	8.178E+00	551	1.138E+01
388	8.400E-03	429	4.112E-01	470	6.345E+00	511	8.307E+00	552	1.141E+01
389	6.600E-03	430	4.594E-01	471	6.112E+00	512	8.420E+00	553	1.150E+01
390	6.270E-02	431	5.274E-01	472	5.855E+00	513	8.537E+00	554	1.159E+01
391	1.940E-02	432	6.572E-01	473	5.607E+00	514	8.642E+00	555	1.168E+01
392	7.700E-03	433	7.445E-01	474	5.333E+00	515	8.726E+00	556	1.173E+01
393	9.800E-03	434	8.610E-01	475	5.104E+00	516	8.833E+00	557	1.182E+01
394	2.110E-02	435	9.809E-01	476	4.902E+00	517	8.930E+00	558	1.190E+01
395	5.370E-02	436	1.142E+00	477	4.755E+00	518	9.025E+00	559	1.195E+01
396	1.270E-02	437	1.321E+00	478	4.640E+00	519	9.110E+00	560	1.205E+01
397	3.200E-03	438	1.513E+00	479	4.575E+00	520	9.195E+00	561	1.213E+01
398	6.900E-03	439	1.723E+00	480	4.563E+00	521	9.282E+00	562	1.222E+01
399	4.000E-04	440	2.003E+00	481	4.598E+00	522	9.365E+00	563	1.231E+01
400	0.000E+00	441	2.281E+00	482	4.609E+00	523	9.462E+00	564	1.236E+01
401	1.570E-02	442	2.667E+00	483	4.703E+00	524	9.529E+00	565	1.247E+01
402	1.650E-02	443	3.119E+00	484	4.774E+00	525	9.605E+00	566	1.257E+01
403	1.870E-02	444	3.663E+00	485	4.867E+00	526	9.696E+00	567	1.266E+01
404	1.720E-02	445	4.292E+00	486	4.951E+00	527	9.769E+00	568	1.273E+01
405	3.550E-02	446	5.041E+00	487	5.026E+00	528	9.871E+00	569	1.285E+01
406	6.800E-03	447	5.849E+00	488	5.104E+00	529	9.918E+00	570	1.293E+01
407	6.120E-02	448	6.789E+00	489	5.206E+00	530	9.984E+00	571	1.301E+01
408	5.300E-03	449	7.820E+00	490	5.323E+00	531	1.008E+01	572	1.308E+01
409	3.850E-02	450	8.762E+00	491	5.437E+00	532	1.013E+01	573	1.321E+01
410	6.260E-02	451	9.719E+00	492	5.541E+00	533	1.019E+01	574	1.331E+01
411	2.830E-02	452	1.039E+01	493	5.670E+00	534	1.025E+01	575	1.342E+01
412	3.810E-02	453	1.088E+01	494	5.814E+00	535	1.033E+01	576	1.351E+01
413	3.100E-03	454	1.112E+01	495	5.966E+00	536	1.043E+01	577	1.360E+01
414	3.310E-02	455	1.111E+01	496	6.123E+00	537	1.044E+01	578	1.372E+01
415	2.440E-02	456	1.073E+01	497	6.261E+00	538	1.052E+01	579	1.381E+01
416	3.870E-02	457	1.026E+01	498	6.443E+00	539	1.060E+01	580	1.393E+01
417	3.860E-02	458	9.720E+00	499	6.590E+00	540	1.067E+01	581	1.404E+01
418	4.650E-02	459	8.996E+00	500	6.757E+00	541	1.071E+01	582	1.413E+01
419	4.980E-02	460	8.463E+00	501	6.927E+00	542	1.076E+01	583	1.427E+01
420	1.014E-01	461	7.953E+00	502	7.050E+00	543	1.088E+01	584	1.436E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	1.445E+01	626	1.849E+01	667	1.318E+01	708	5.223E+00	749	1.317E+00
586	1.455E+01	627	1.854E+01	668	1.292E+01	709	5.033E+00	750	1.280E+00
587	1.473E+01	628	1.847E+01	669	1.271E+01	710	4.845E+00	751	1.245E+00
588	1.483E+01	629	1.851E+01	670	1.247E+01	711	4.725E+00	752	1.214E+00
589	1.493E+01	630	1.847E+01	671	1.225E+01	712	4.559E+00	753	1.210E+00
590	1.500E+01	631	1.845E+01	672	1.203E+01	713	4.502E+00	754	1.072E+00
591	1.516E+01	632	1.842E+01	673	1.180E+01	714	4.410E+00	755	9.279E-01
592	1.527E+01	633	1.837E+01	674	1.158E+01	715	4.218E+00	756	1.028E+00
593	1.536E+01	634	1.833E+01	675	1.138E+01	716	4.082E+00	757	1.020E+00
594	1.549E+01	635	1.828E+01	676	1.117E+01	717	4.021E+00	758	6.868E-01
595	1.560E+01	636	1.820E+01	677	1.096E+01	718	3.924E+00	759	8.653E-01
596	1.572E+01	637	1.809E+01	678	1.071E+01	719	3.731E+00	760	7.475E-01
597	1.582E+01	638	1.803E+01	679	1.050E+01	720	3.659E+00	761	7.159E-01
598	1.598E+01	639	1.793E+01	680	1.022E+01	721	3.525E+00	762	8.938E-01
599	1.613E+01	640	1.783E+01	681	1.007E+01	722	3.457E+00	763	8.699E-01
600	1.621E+01	641	1.776E+01	682	9.844E+00	723	3.380E+00	764	7.179E-01
601	1.634E+01	642	1.762E+01	683	9.687E+00	724	3.137E+00	765	6.130E-01
602	1.646E+01	643	1.748E+01	684	9.464E+00	725	3.136E+00	766	6.519E-01
603	1.661E+01	644	1.741E+01	685	9.231E+00	726	3.051E+00	767	5.737E-01
604	1.676E+01	645	1.728E+01	686	9.021E+00	727	2.959E+00	768	7.158E-01
605	1.687E+01	646	1.711E+01	687	8.837E+00	728	2.911E+00	769	5.763E-01
606	1.697E+01	647	1.696E+01	688	8.640E+00	729	2.856E+00	770	4.805E-01
607	1.707E+01	648	1.682E+01	689	8.424E+00	730	2.781E+00	771	4.345E-01
608	1.725E+01	649	1.666E+01	690	8.195E+00	731	2.574E+00	772	5.407E-01
609	1.738E+01	650	1.652E+01	691	8.027E+00	732	2.580E+00	773	4.536E-01
610	1.747E+01	651	1.635E+01	692	7.877E+00	733	2.352E+00	774	4.078E-01
611	1.760E+01	652	1.617E+01	693	7.683E+00	734	2.308E+00	775	4.354E-01
612	1.766E+01	653	1.602E+01	694	7.474E+00	735	2.299E+00	776	3.851E-01
613	1.776E+01	654	1.582E+01	695	7.241E+00	736	2.214E+00	777	4.337E-01
614	1.781E+01	655	1.567E+01	696	7.086E+00	737	2.102E+00	778	4.202E-01
615	1.796E+01	656	1.543E+01	697	6.940E+00	738	1.972E+00	779	3.503E-01
616	1.806E+01	657	1.525E+01	698	6.770E+00	739	1.902E+00	780	2.535E-01
617	1.815E+01	658	1.502E+01	699	6.613E+00	740	1.818E+00		
618	1.824E+01	659	1.484E+01	700	6.396E+00	741	1.871E+00		
619	1.829E+01	660	1.462E+01	701	6.302E+00	742	1.792E+00		
620	1.833E+01	661	1.438E+01	702	6.076E+00	743	1.721E+00		
621	1.838E+01	662	1.420E+01	703	5.892E+00	744	1.540E+00		
622	1.844E+01	663	1.397E+01	704	5.730E+00	745	1.558E+00		
623	1.845E+01	664	1.380E+01	705	5.556E+00	746	1.326E+00		
624	1.848E+01	665	1.355E+01	706	5.438E+00	747	1.395E+00		
625	1.852E+01	666	1.331E+01	707	5.307E+00	748	1.412E+00		

CIE 1931xy Chromaticity Diagram



7-StepChromaticity Quadrangles



Control Setting: 3500K 10W

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

Test orientation: **Downward**

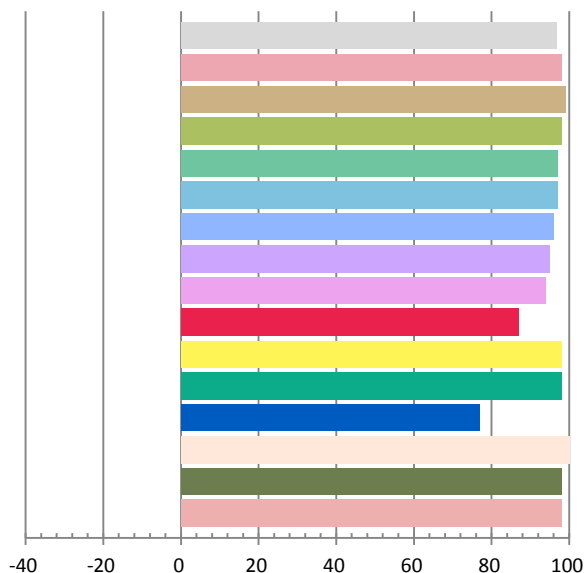
Photometric and Electrical Measurement Result

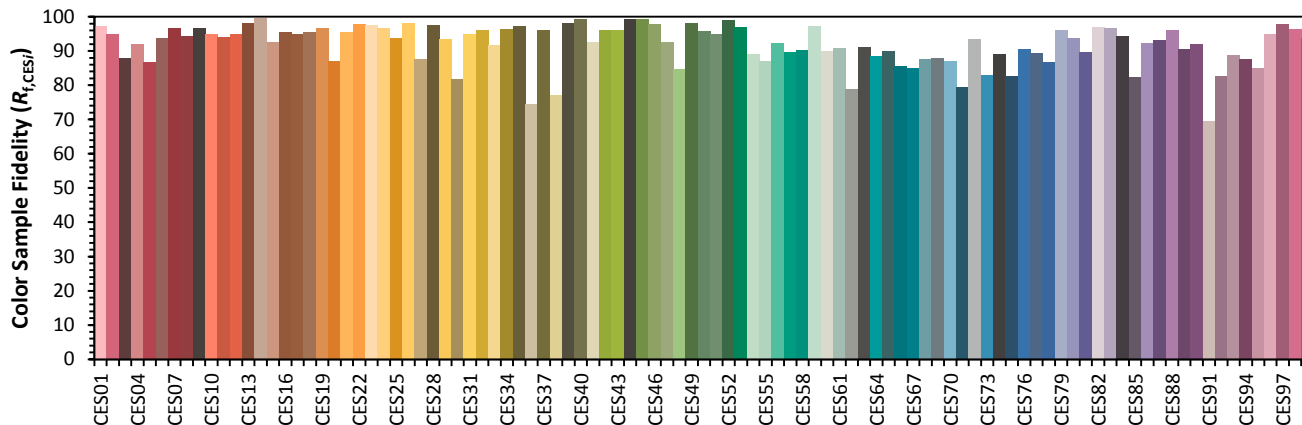
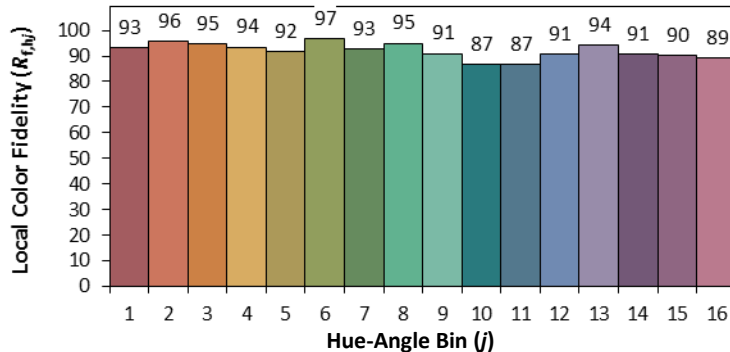
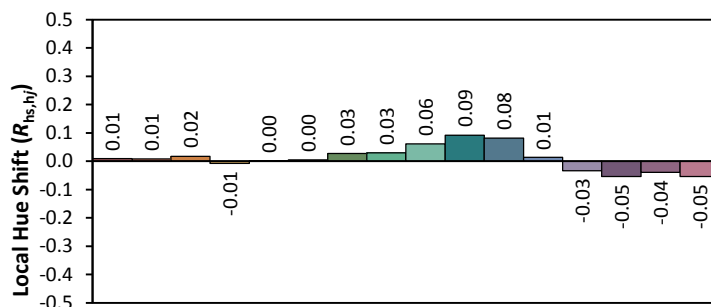
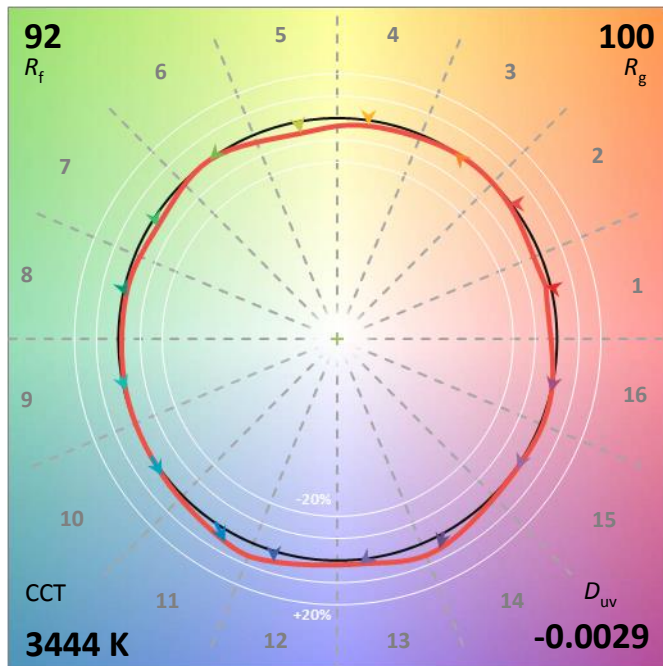
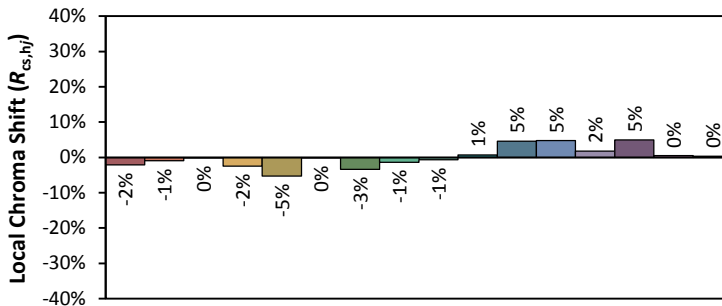
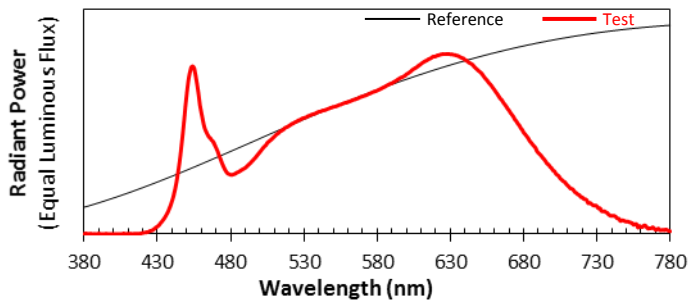
Voltage(V)	Frequency(Hz)	Current(A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy(lm/W)
120.0	60	0.0849	10.02	0.9827	931.94	93.05

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
3.332	3444	-0.00292	0.4054	0.3842	0.2385	0.5085

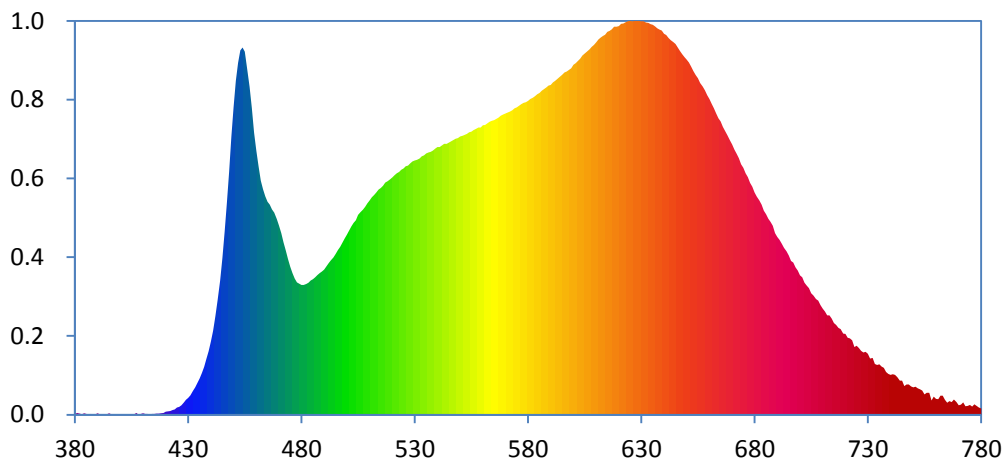
Color Rendering Index

Ra			
96.9			
R1	R2	R3	R4
98	99	98	97
R5	R6	R7	R8
97	96	95	94
R9	R10	R11	R12
87	98	98	77
R13	R14	R15	
100	98	98	





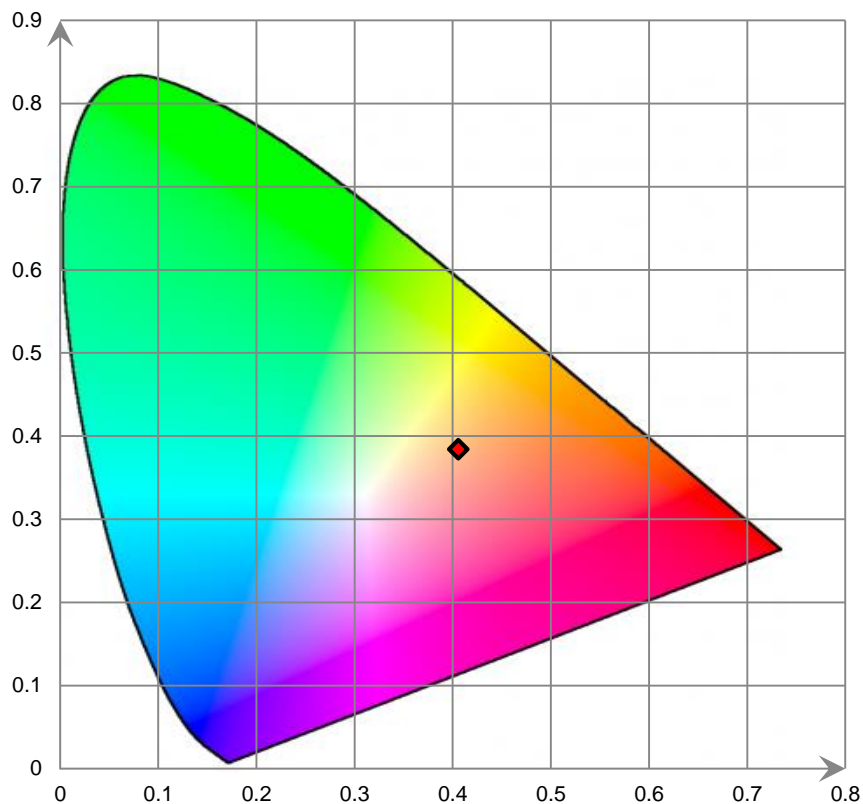
Relative Spectral Power Distribution



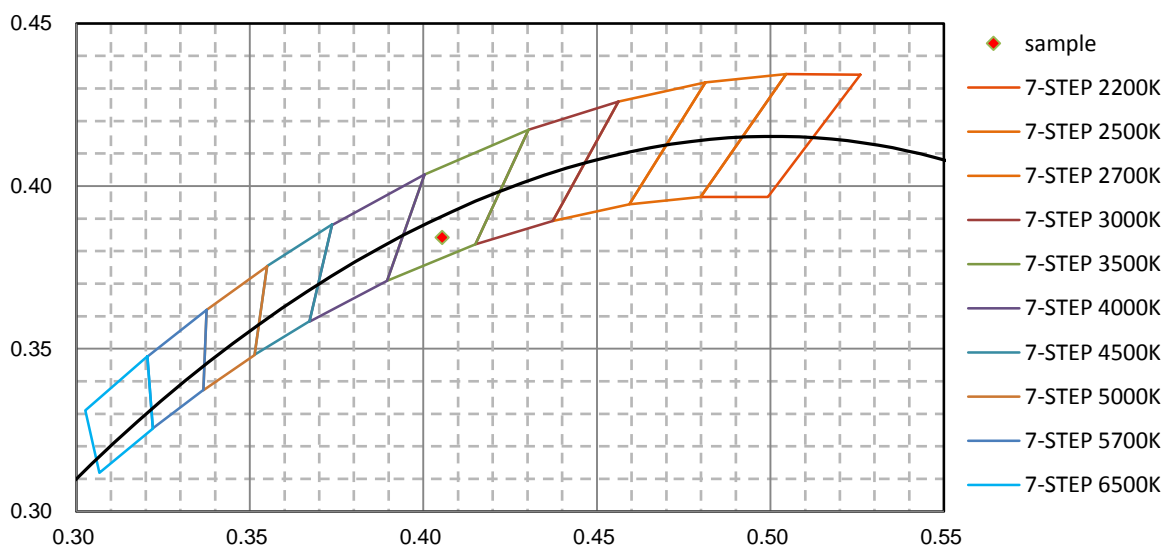
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	3.540E-02	421	1.514E-01	462	1.039E+01	503	8.501E+00	544	1.201E+01
381	7.150E-02	422	1.632E-01	463	9.999E+00	504	8.627E+00	545	1.206E+01
382	5.410E-02	423	2.061E-01	464	9.692E+00	505	8.859E+00	546	1.213E+01
383	2.410E-02	424	2.283E-01	465	9.450E+00	506	8.975E+00	547	1.218E+01
384	6.900E-02	425	3.210E-01	466	9.318E+00	507	9.093E+00	548	1.224E+01
385	3.340E-02	426	3.428E-01	467	9.107E+00	508	9.209E+00	549	1.227E+01
386	1.100E-02	427	4.261E-01	468	8.962E+00	509	9.367E+00	550	1.234E+01
387	3.420E-02	428	5.363E-01	469	8.680E+00	510	9.493E+00	551	1.236E+01
388	1.210E-02	429	6.562E-01	470	8.373E+00	511	9.642E+00	552	1.240E+01
389	2.430E-02	430	7.478E-01	471	8.049E+00	512	9.743E+00	553	1.246E+01
390	6.810E-02	431	8.647E-01	472	7.635E+00	513	9.848E+00	554	1.253E+01
391	2.450E-02	432	1.060E+00	473	7.293E+00	514	9.986E+00	555	1.256E+01
392	8.700E-03	433	1.214E+00	474	6.907E+00	515	1.005E+01	556	1.262E+01
393	8.900E-03	434	1.414E+00	475	6.564E+00	516	1.015E+01	557	1.268E+01
394	2.010E-02	435	1.607E+00	476	6.273E+00	517	1.030E+01	558	1.274E+01
395	6.630E-02	436	1.855E+00	477	6.040E+00	518	1.036E+01	559	1.273E+01
396	1.570E-02	437	2.114E+00	478	5.872E+00	519	1.043E+01	560	1.283E+01
397	9.500E-03	438	2.471E+00	479	5.807E+00	520	1.052E+01	561	1.285E+01
398	1.160E-02	439	2.812E+00	480	5.758E+00	521	1.061E+01	562	1.291E+01
399	2.000E-03	440	3.247E+00	481	5.754E+00	522	1.071E+01	563	1.299E+01
400	2.000E-04	441	3.731E+00	482	5.801E+00	523	1.077E+01	564	1.304E+01
401	2.020E-02	442	4.360E+00	483	5.859E+00	524	1.086E+01	565	1.307E+01
402	2.450E-02	443	5.077E+00	484	5.956E+00	525	1.092E+01	566	1.312E+01
403	1.000E-02	444	5.957E+00	485	6.013E+00	526	1.102E+01	567	1.317E+01
404	1.420E-02	445	6.952E+00	486	6.089E+00	527	1.105E+01	568	1.326E+01
405	2.380E-02	446	8.117E+00	487	6.192E+00	528	1.114E+01	569	1.332E+01
406	4.700E-03	447	9.384E+00	488	6.276E+00	529	1.122E+01	570	1.335E+01
407	7.780E-02	448	1.076E+01	489	6.347E+00	530	1.128E+01	571	1.341E+01
408	1.190E-02	449	1.233E+01	490	6.441E+00	531	1.131E+01	572	1.345E+01
409	3.920E-02	450	1.364E+01	491	6.571E+00	532	1.136E+01	573	1.350E+01
410	5.870E-02	451	1.481E+01	492	6.715E+00	533	1.146E+01	574	1.358E+01
411	3.120E-02	452	1.560E+01	493	6.843E+00	534	1.150E+01	575	1.363E+01
412	4.180E-02	453	1.616E+01	494	6.979E+00	535	1.158E+01	576	1.371E+01
413	2.200E-03	454	1.628E+01	495	7.136E+00	536	1.163E+01	577	1.377E+01
414	4.110E-02	455	1.610E+01	496	7.296E+00	537	1.166E+01	578	1.383E+01
415	3.030E-02	456	1.538E+01	497	7.449E+00	538	1.171E+01	579	1.386E+01
416	4.680E-02	457	1.454E+01	498	7.633E+00	539	1.180E+01	580	1.392E+01
417	5.610E-02	458	1.360E+01	499	7.805E+00	540	1.187E+01	581	1.399E+01
418	6.100E-02	459	1.250E+01	500	7.978E+00	541	1.187E+01	582	1.406E+01
419	8.160E-02	460	1.172E+01	501	8.162E+00	542	1.194E+01	583	1.413E+01
420	1.317E-01	461	1.101E+01	502	8.345E+00	543	1.201E+01	584	1.422E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	1.427E+01	626	1.745E+01	667	1.259E+01	708	5.060E+00	749	1.261E+00
586	1.436E+01	627	1.746E+01	668	1.240E+01	709	4.864E+00	750	1.220E+00
587	1.444E+01	628	1.746E+01	669	1.217E+01	710	4.710E+00	751	1.239E+00
588	1.451E+01	629	1.746E+01	670	1.199E+01	711	4.576E+00	752	1.169E+00
589	1.459E+01	630	1.744E+01	671	1.176E+01	712	4.411E+00	753	1.127E+00
590	1.462E+01	631	1.744E+01	672	1.158E+01	713	4.405E+00	754	1.070E+00
591	1.473E+01	632	1.739E+01	673	1.138E+01	714	4.259E+00	755	9.082E-01
592	1.480E+01	633	1.738E+01	674	1.111E+01	715	4.067E+00	756	9.768E-01
593	1.489E+01	634	1.732E+01	675	1.094E+01	716	3.983E+00	757	9.780E-01
594	1.499E+01	635	1.729E+01	676	1.071E+01	717	3.846E+00	758	6.363E-01
595	1.507E+01	636	1.721E+01	677	1.053E+01	718	3.789E+00	759	8.030E-01
596	1.517E+01	637	1.714E+01	678	1.027E+01	719	3.593E+00	760	6.967E-01
597	1.521E+01	638	1.707E+01	679	1.012E+01	720	3.580E+00	761	6.859E-01
598	1.529E+01	639	1.703E+01	680	9.848E+00	721	3.414E+00	762	8.383E-01
599	1.536E+01	640	1.689E+01	681	9.678E+00	722	3.388E+00	763	8.380E-01
600	1.552E+01	641	1.683E+01	682	9.497E+00	723	3.302E+00	764	6.671E-01
601	1.559E+01	642	1.670E+01	683	9.314E+00	724	2.998E+00	765	5.276E-01
602	1.569E+01	643	1.660E+01	684	9.043E+00	725	3.052E+00	766	6.046E-01
603	1.578E+01	644	1.653E+01	685	8.888E+00	726	2.955E+00	767	5.583E-01
604	1.592E+01	645	1.644E+01	686	8.694E+00	727	2.835E+00	768	6.774E-01
605	1.601E+01	646	1.628E+01	687	8.545E+00	728	2.761E+00	769	5.593E-01
606	1.610E+01	647	1.612E+01	688	8.378E+00	729	2.795E+00	770	4.214E-01
607	1.619E+01	648	1.599E+01	689	8.054E+00	730	2.701E+00	771	4.545E-01
608	1.631E+01	649	1.586E+01	690	7.883E+00	731	2.486E+00	772	5.491E-01
609	1.640E+01	650	1.575E+01	691	7.749E+00	732	2.516E+00	773	3.773E-01
610	1.651E+01	651	1.562E+01	692	7.589E+00	733	2.254E+00	774	3.834E-01
611	1.663E+01	652	1.544E+01	693	7.394E+00	734	2.209E+00	775	4.366E-01
612	1.672E+01	653	1.523E+01	694	7.246E+00	735	2.229E+00	776	3.691E-01
613	1.679E+01	654	1.506E+01	695	7.055E+00	736	2.132E+00	777	4.610E-01
614	1.685E+01	655	1.491E+01	696	6.816E+00	737	2.074E+00	778	3.924E-01
615	1.698E+01	656	1.471E+01	697	6.745E+00	738	1.895E+00	779	3.131E-01
616	1.701E+01	657	1.455E+01	698	6.537E+00	739	1.808E+00	780	2.809E-01
617	1.709E+01	658	1.439E+01	699	6.400E+00	740	1.763E+00		
618	1.720E+01	659	1.417E+01	700	6.176E+00	741	1.802E+00		
619	1.721E+01	660	1.399E+01	701	6.098E+00	742	1.768E+00		
620	1.724E+01	661	1.378E+01	702	5.855E+00	743	1.671E+00		
621	1.733E+01	662	1.358E+01	703	5.730E+00	744	1.506E+00		
622	1.735E+01	663	1.336E+01	704	5.616E+00	745	1.515E+00		
623	1.740E+01	664	1.315E+01	705	5.387E+00	746	1.268E+00		
624	1.744E+01	665	1.301E+01	706	5.284E+00	747	1.347E+00		
625	1.746E+01	666	1.276E+01	707	5.130E+00	748	1.340E+00		

CIE 1931xy Chromaticity Diagram



7-StepChromaticity Quadrangles



Control Setting: 4000K 10W

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

Test orientation: **Downward**

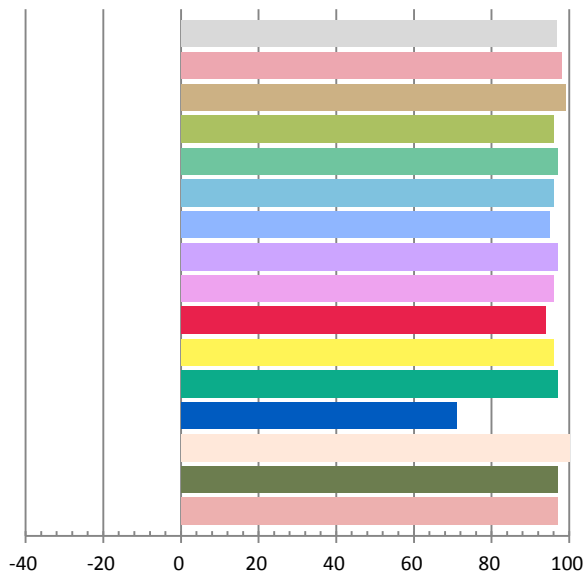
Photometric and Electrical Measurement Result

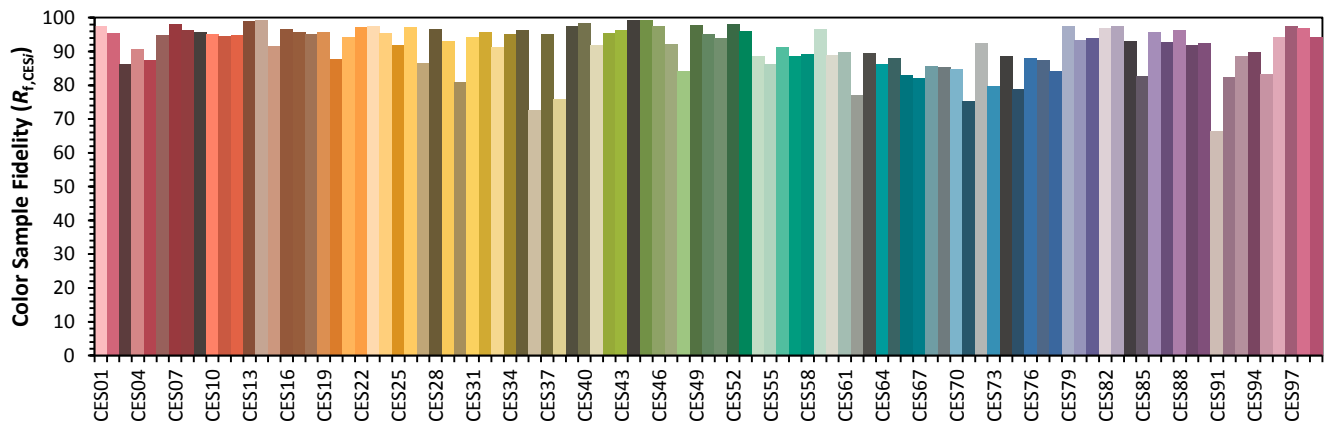
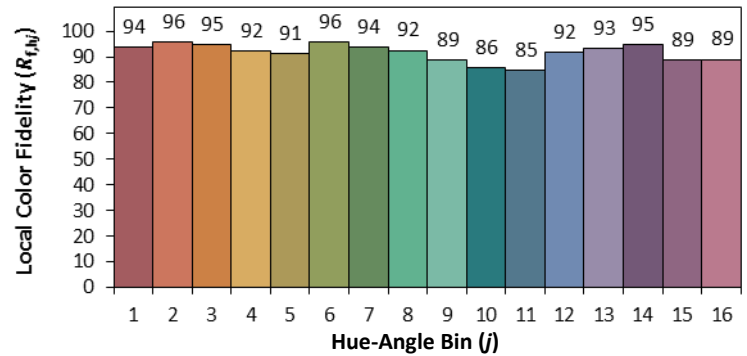
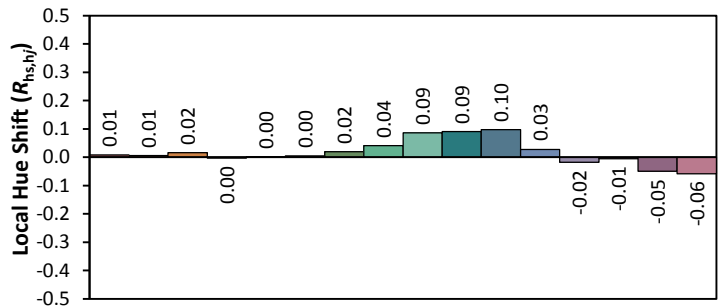
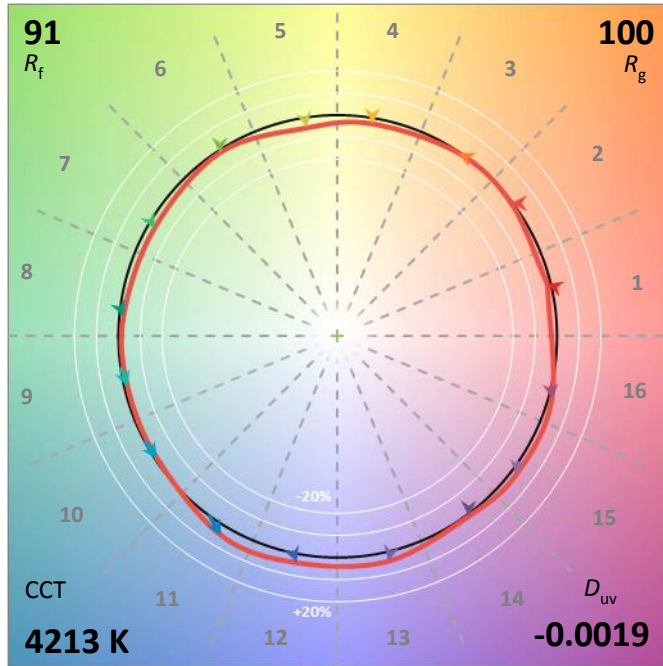
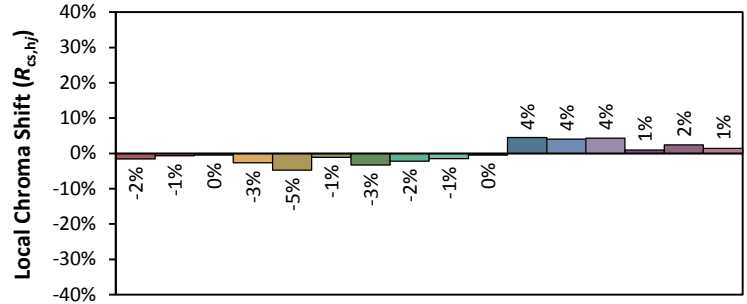
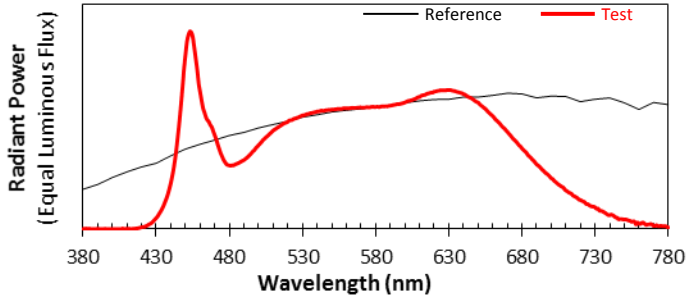
Voltage(V)	Frequency(Hz)	Current(A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy(lm/W)
120.0	60	0.085	10.03	0.9833	954.19	95.13

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
3.414	4213	-0.00192	0.3704	0.3663	0.2227	0.4954

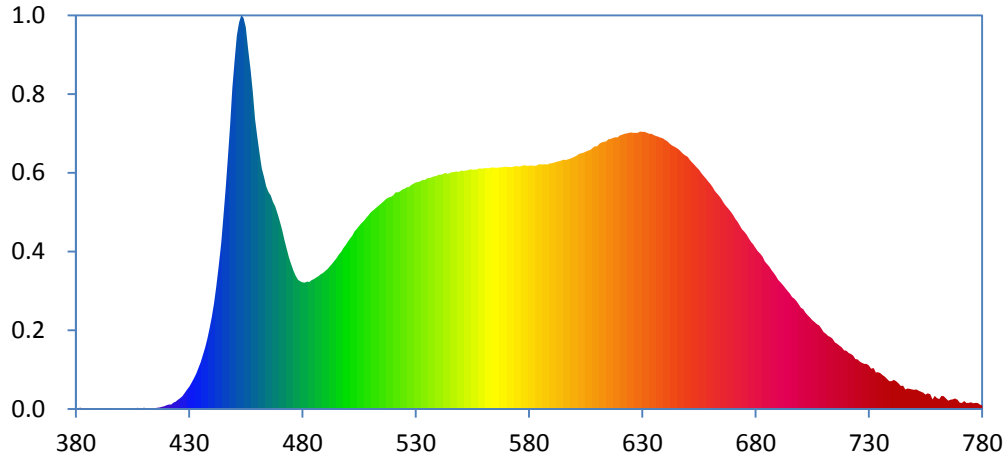
Color Rendering Index

Ra			
96.9			
R1	R2	R3	R4
98	99	96	97
R5	R6	R7	R8
96	95	97	96
R9	R10	R11	R12
94	96	97	71
R13	R14	R15	
100	97	97	





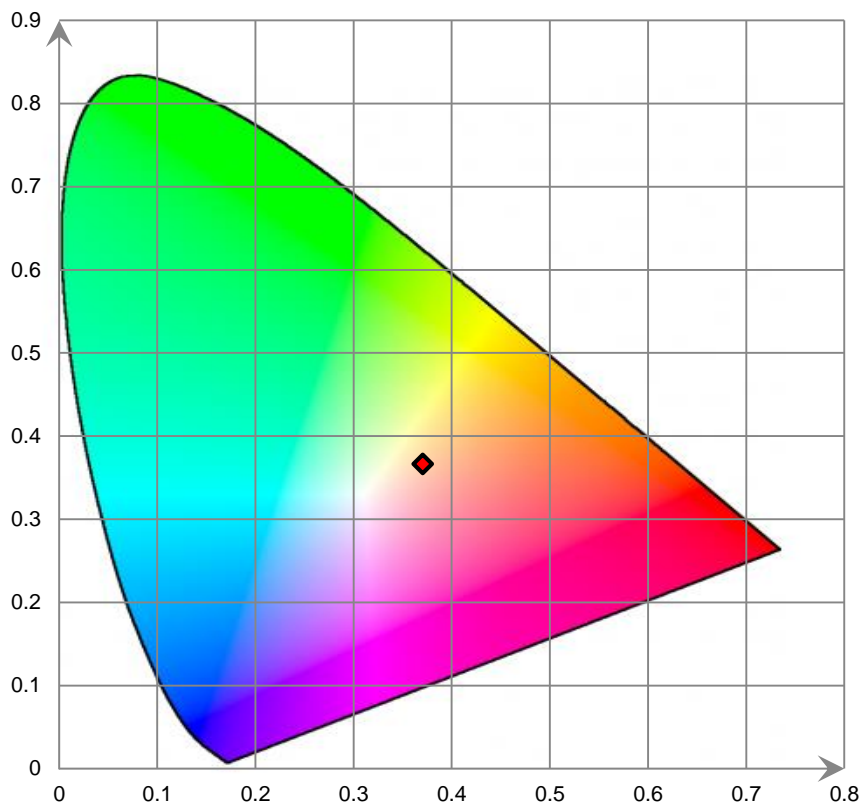
Relative Spectral Power Distribution



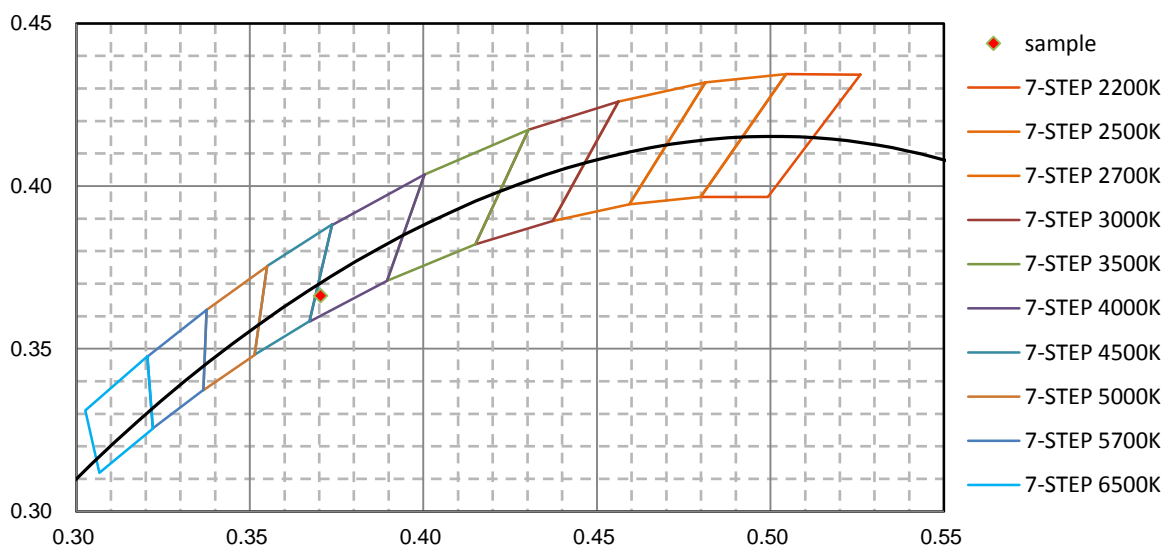
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	3.210E-02	421	2.505E-01	462	1.350E+01	503	9.964E+00	544	1.319E+01
381	5.530E-02	422	2.624E-01	463	1.302E+01	504	1.010E+01	545	1.324E+01
382	7.210E-02	423	3.555E-01	464	1.248E+01	505	1.027E+01	546	1.328E+01
383	2.170E-02	424	4.234E-01	465	1.217E+01	506	1.041E+01	547	1.330E+01
384	6.080E-02	425	5.276E-01	466	1.198E+01	507	1.056E+01	548	1.333E+01
385	3.740E-02	426	6.075E-01	467	1.162E+01	508	1.071E+01	549	1.330E+01
386	4.700E-03	427	7.252E-01	468	1.137E+01	509	1.087E+01	550	1.337E+01
387	2.850E-02	428	8.974E-01	469	1.091E+01	510	1.102E+01	551	1.335E+01
388	1.820E-02	429	1.075E+00	470	1.048E+01	511	1.113E+01	552	1.338E+01
389	1.900E-02	430	1.241E+00	471	1.001E+01	512	1.124E+01	553	1.339E+01
390	6.500E-02	431	1.463E+00	472	9.453E+00	513	1.136E+01	554	1.344E+01
391	1.920E-02	432	1.726E+00	473	8.975E+00	514	1.145E+01	555	1.344E+01
392	1.010E-02	433	1.974E+00	474	8.495E+00	515	1.157E+01	556	1.343E+01
393	1.720E-02	434	2.292E+00	475	8.116E+00	516	1.167E+01	557	1.344E+01
394	1.520E-02	435	2.631E+00	476	7.751E+00	517	1.179E+01	558	1.349E+01
395	5.240E-02	436	3.033E+00	477	7.477E+00	518	1.187E+01	559	1.349E+01
396	1.560E-02	437	3.441E+00	478	7.247E+00	519	1.191E+01	560	1.350E+01
397	5.500E-03	438	3.946E+00	479	7.167E+00	520	1.199E+01	561	1.352E+01
398	1.050E-02	439	4.542E+00	480	7.110E+00	521	1.215E+01	562	1.350E+01
399	1.040E-02	440	5.182E+00	481	7.094E+00	522	1.216E+01	563	1.353E+01
400	1.400E-03	441	5.967E+00	482	7.140E+00	523	1.221E+01	564	1.356E+01
401	1.780E-02	442	6.917E+00	483	7.129E+00	524	1.232E+01	565	1.354E+01
402	1.990E-02	443	7.977E+00	484	7.239E+00	525	1.236E+01	566	1.355E+01
403	1.920E-02	444	9.261E+00	485	7.296E+00	526	1.244E+01	567	1.355E+01
404	1.230E-02	445	1.079E+01	486	7.374E+00	527	1.246E+01	568	1.356E+01
405	2.670E-02	446	1.235E+01	487	7.449E+00	528	1.257E+01	569	1.359E+01
406	4.800E-03	447	1.410E+01	488	7.554E+00	529	1.264E+01	570	1.359E+01
407	8.110E-02	448	1.592E+01	489	7.641E+00	530	1.271E+01	571	1.358E+01
408	1.470E-02	449	1.803E+01	490	7.730E+00	531	1.272E+01	572	1.358E+01
409	4.750E-02	450	1.954E+01	491	7.855E+00	532	1.278E+01	573	1.360E+01
410	6.790E-02	451	2.096E+01	492	7.989E+00	533	1.286E+01	574	1.363E+01
411	4.020E-02	452	2.168E+01	493	8.140E+00	534	1.286E+01	575	1.361E+01
412	4.270E-02	453	2.209E+01	494	8.312E+00	535	1.294E+01	576	1.361E+01
413	6.700E-03	454	2.194E+01	495	8.472E+00	536	1.297E+01	577	1.365E+01
414	4.700E-02	455	2.142E+01	496	8.678E+00	537	1.300E+01	578	1.367E+01
415	5.510E-02	456	2.023E+01	497	8.824E+00	538	1.305E+01	579	1.364E+01
416	8.270E-02	457	1.903E+01	498	9.038E+00	539	1.308E+01	580	1.365E+01
417	9.320E-02	458	1.777E+01	499	9.194E+00	540	1.315E+01	581	1.367E+01
418	1.253E-01	459	1.625E+01	500	9.393E+00	541	1.314E+01	582	1.364E+01
419	1.640E-01	460	1.526E+01	501	9.567E+00	542	1.318E+01	583	1.365E+01
420	2.236E-01	461	1.435E+01	502	9.740E+00	543	1.326E+01	584	1.372E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	1.373E+01	626	1.550E+01	667	1.138E+01	708	4.685E+00	749	1.099E+00
586	1.372E+01	627	1.550E+01	668	1.125E+01	709	4.505E+00	750	1.073E+00
587	1.374E+01	628	1.550E+01	669	1.106E+01	710	4.317E+00	751	1.095E+00
588	1.372E+01	629	1.556E+01	670	1.087E+01	711	4.231E+00	752	1.035E+00
589	1.377E+01	630	1.554E+01	671	1.067E+01	712	4.094E+00	753	9.692E-01
590	1.380E+01	631	1.555E+01	672	1.050E+01	713	4.039E+00	754	9.223E-01
591	1.383E+01	632	1.549E+01	673	1.029E+01	714	3.927E+00	755	8.154E-01
592	1.387E+01	633	1.545E+01	674	1.008E+01	715	3.738E+00	756	8.754E-01
593	1.390E+01	634	1.544E+01	675	9.947E+00	716	3.665E+00	757	8.346E-01
594	1.393E+01	635	1.537E+01	676	9.786E+00	717	3.558E+00	758	5.348E-01
595	1.399E+01	636	1.531E+01	677	9.571E+00	718	3.470E+00	759	7.465E-01
596	1.397E+01	637	1.528E+01	678	9.370E+00	719	3.290E+00	760	6.197E-01
597	1.401E+01	638	1.523E+01	679	9.238E+00	720	3.270E+00	761	5.641E-01
598	1.404E+01	639	1.518E+01	680	9.028E+00	721	3.147E+00	762	7.411E-01
599	1.409E+01	640	1.509E+01	681	8.847E+00	722	3.097E+00	763	7.253E-01
600	1.415E+01	641	1.504E+01	682	8.705E+00	723	2.992E+00	764	5.965E-01
601	1.423E+01	642	1.491E+01	683	8.547E+00	724	2.798E+00	765	4.724E-01
602	1.431E+01	643	1.480E+01	684	8.282E+00	725	2.795E+00	766	5.311E-01
603	1.434E+01	644	1.472E+01	685	8.133E+00	726	2.668E+00	767	5.363E-01
604	1.439E+01	645	1.466E+01	686	7.992E+00	727	2.581E+00	768	5.871E-01
605	1.443E+01	646	1.456E+01	687	7.791E+00	728	2.530E+00	769	5.226E-01
606	1.450E+01	647	1.443E+01	688	7.638E+00	729	2.528E+00	770	3.593E-01
607	1.455E+01	648	1.431E+01	689	7.445E+00	730	2.438E+00	771	3.499E-01
608	1.465E+01	649	1.421E+01	690	7.235E+00	731	2.264E+00	772	4.496E-01
609	1.474E+01	650	1.415E+01	691	7.119E+00	732	2.298E+00	773	3.423E-01
610	1.474E+01	651	1.396E+01	692	6.974E+00	733	2.058E+00	774	3.414E-01
611	1.489E+01	652	1.382E+01	693	6.803E+00	734	2.063E+00	775	3.797E-01
612	1.495E+01	653	1.369E+01	694	6.620E+00	735	2.009E+00	776	3.260E-01
613	1.498E+01	654	1.356E+01	695	6.487E+00	736	1.903E+00	777	3.425E-01
614	1.501E+01	655	1.344E+01	696	6.293E+00	737	1.809E+00	778	3.508E-01
615	1.513E+01	656	1.325E+01	697	6.188E+00	738	1.689E+00	779	2.629E-01
616	1.515E+01	657	1.307E+01	698	6.047E+00	739	1.573E+00	780	2.101E-01
617	1.521E+01	658	1.293E+01	699	5.879E+00	740	1.559E+00		
618	1.525E+01	659	1.277E+01	700	5.678E+00	741	1.642E+00		
619	1.525E+01	660	1.263E+01	701	5.606E+00	742	1.570E+00		
620	1.536E+01	661	1.245E+01	702	5.408E+00	743	1.463E+00		
621	1.538E+01	662	1.223E+01	703	5.271E+00	744	1.298E+00		
622	1.544E+01	663	1.209E+01	704	5.131E+00	745	1.308E+00		
623	1.546E+01	664	1.194E+01	705	4.988E+00	746	1.097E+00		
624	1.550E+01	665	1.176E+01	706	4.884E+00	747	1.146E+00		
625	1.551E+01	666	1.155E+01	707	4.756E+00	748	1.139E+00		

CIE 1931xy Chromaticity Diagram



7-StepChromaticity Quadrangles



Control Setting: 5000K 10W

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

Test orientation: **Downward**

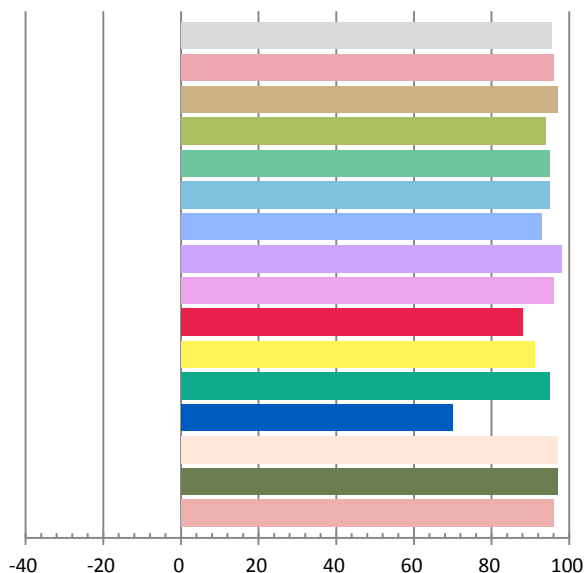
Photometric and Electrical Measurement Result

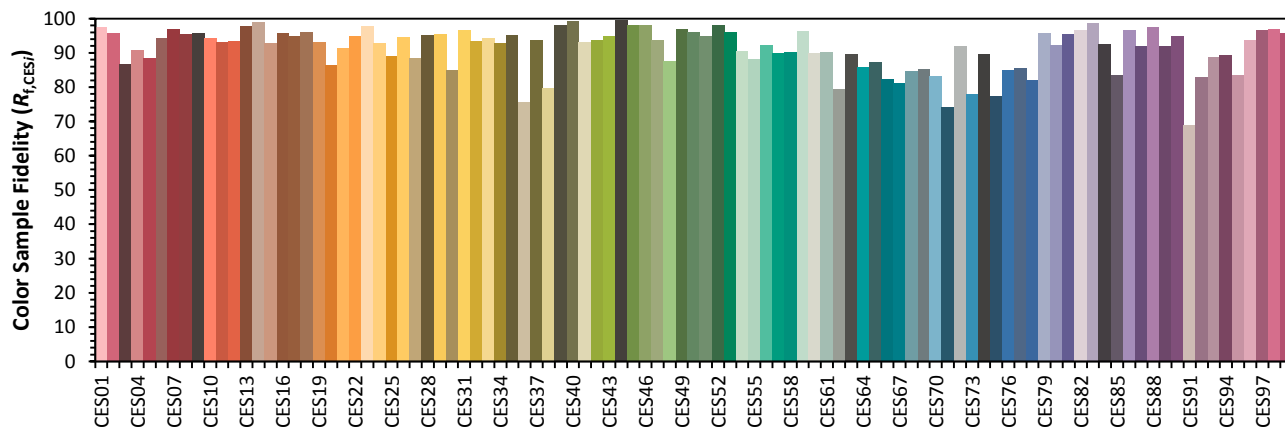
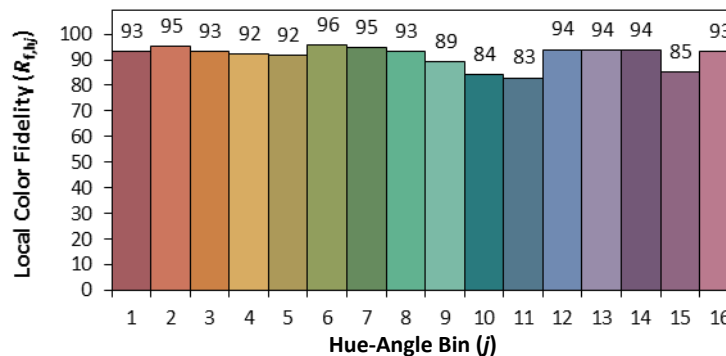
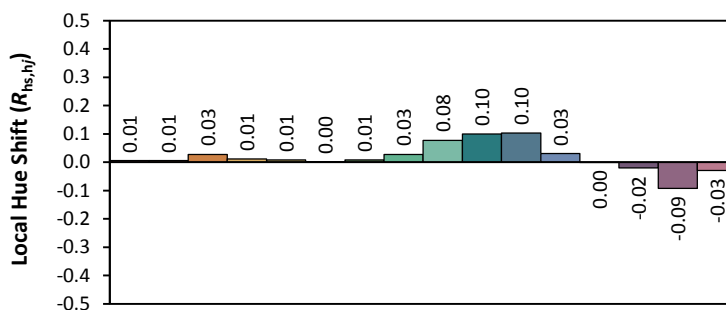
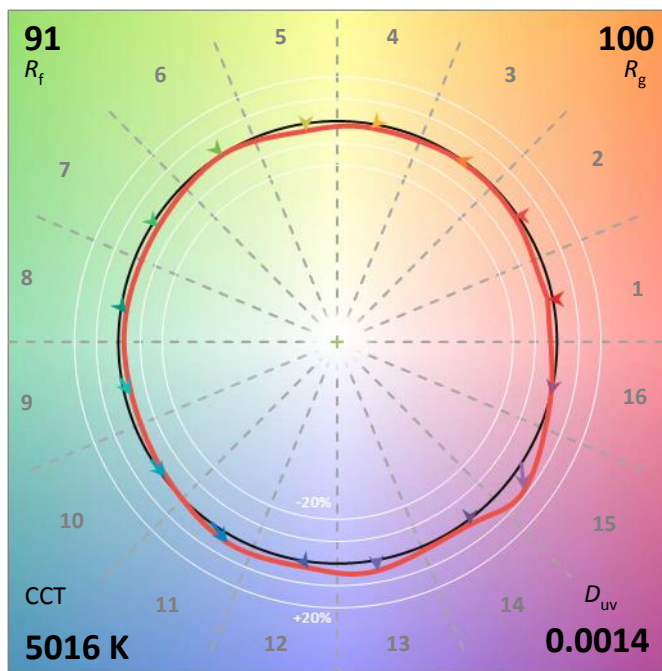
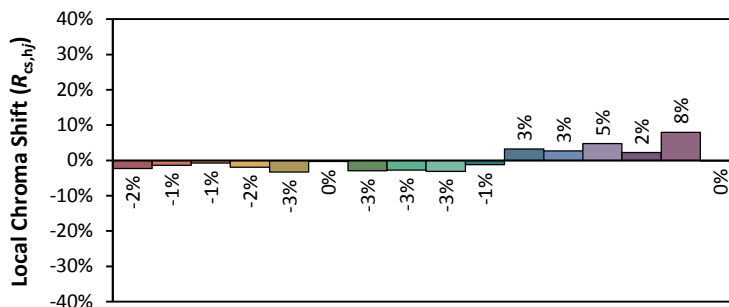
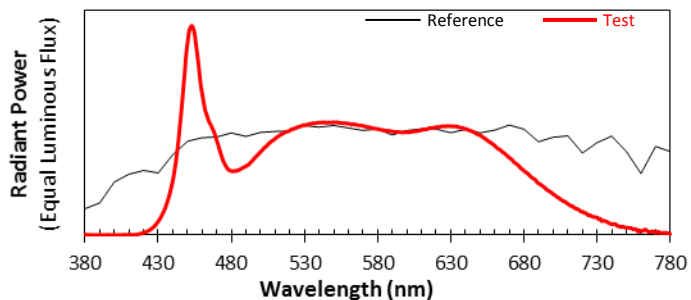
Voltage(V)	Frequency(Hz)	Current(A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy(lm/W)
120.0	60	0.0849	10.02	0.9834	950.96	94.91

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
3.387	5016	0.00139	0.3449	0.3542	0.2103	0.4859

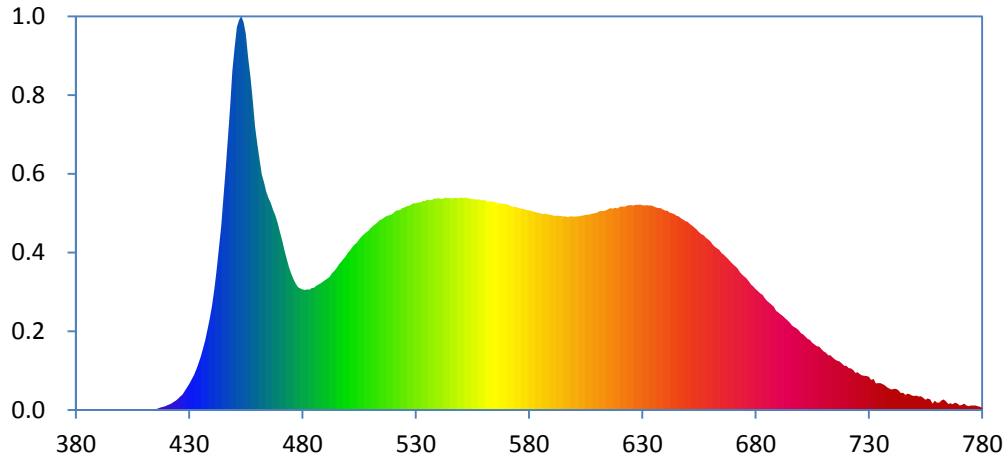
Color Rendering Index

Ra			
95.4			
R1	R2	R3	R4
96	97	94	95
R5	R6	R7	R8
95	93	98	96
R9	R10	R11	R12
88	91	95	70
R13	R14	R15	
97	97	96	





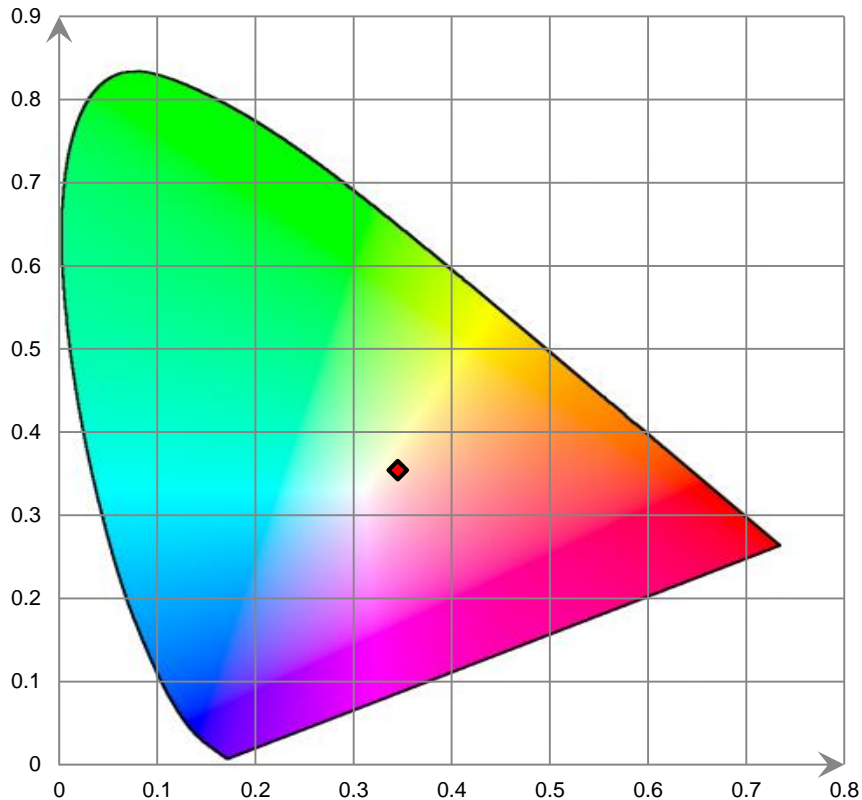
Relative Spectral Power Distribution



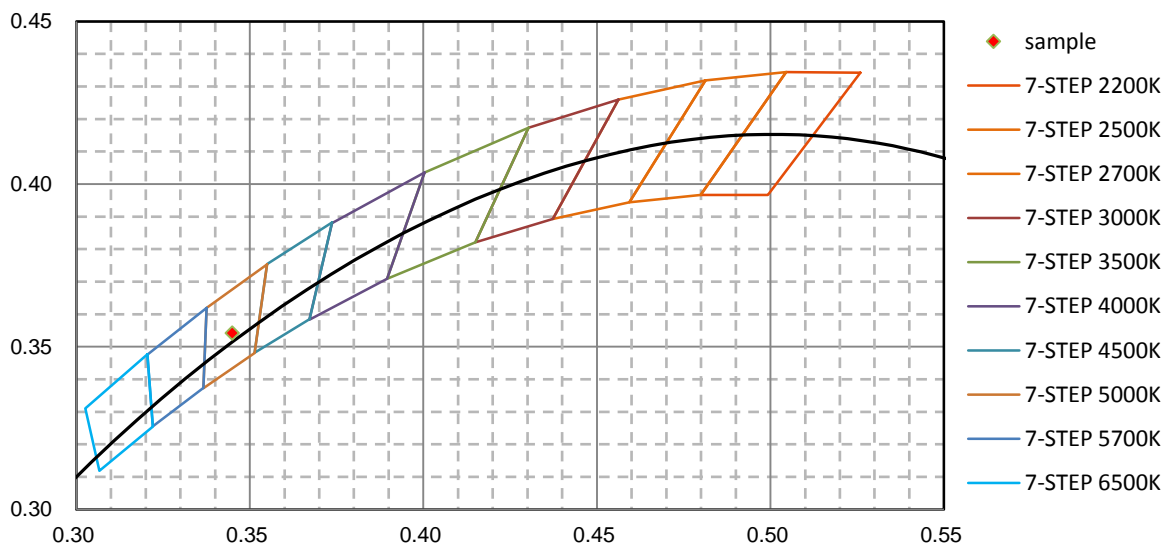
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	5.690E-02	421	3.647E-01	462	1.544E+01	503	1.085E+01	544	1.388E+01
381	5.420E-02	422	4.252E-01	463	1.492E+01	504	1.098E+01	545	1.389E+01
382	5.150E-02	423	5.347E-01	464	1.431E+01	505	1.119E+01	546	1.388E+01
383	1.610E-02	424	6.145E-01	465	1.389E+01	506	1.136E+01	547	1.391E+01
384	4.290E-02	425	7.382E-01	466	1.357E+01	507	1.152E+01	548	1.390E+01
385	2.450E-02	426	8.912E-01	467	1.315E+01	508	1.164E+01	549	1.388E+01
386	7.300E-03	427	1.019E+00	468	1.278E+01	509	1.176E+01	550	1.394E+01
387	2.460E-02	428	1.240E+00	469	1.223E+01	510	1.192E+01	551	1.390E+01
388	1.660E-02	429	1.467E+00	470	1.165E+01	511	1.207E+01	552	1.393E+01
389	2.380E-02	430	1.695E+00	471	1.111E+01	512	1.218E+01	553	1.389E+01
390	4.140E-02	431	1.984E+00	472	1.046E+01	513	1.230E+01	554	1.385E+01
391	1.490E-02	432	2.293E+00	473	9.901E+00	514	1.244E+01	555	1.385E+01
392	2.100E-03	433	2.649E+00	474	9.359E+00	515	1.250E+01	556	1.382E+01
393	9.000E-04	434	3.037E+00	475	8.951E+00	516	1.262E+01	557	1.380E+01
394	1.300E-02	435	3.482E+00	476	8.578E+00	517	1.272E+01	558	1.382E+01
395	4.880E-02	436	4.001E+00	477	8.292E+00	518	1.276E+01	559	1.375E+01
396	1.800E-02	437	4.556E+00	478	8.062E+00	519	1.281E+01	560	1.376E+01
397	1.820E-02	438	5.251E+00	479	7.972E+00	520	1.291E+01	561	1.372E+01
398	1.400E-03	439	5.969E+00	480	7.902E+00	521	1.304E+01	562	1.365E+01
399	1.000E-04	440	6.781E+00	481	7.874E+00	522	1.310E+01	563	1.370E+01
400	0.000E+00	441	7.809E+00	482	7.917E+00	523	1.312E+01	564	1.365E+01
401	2.110E-02	442	9.033E+00	483	7.894E+00	524	1.324E+01	565	1.365E+01
402	3.350E-02	443	1.041E+01	484	8.001E+00	525	1.328E+01	566	1.356E+01
403	2.350E-02	444	1.201E+01	485	8.016E+00	526	1.338E+01	567	1.355E+01
404	6.300E-03	445	1.391E+01	486	8.141E+00	527	1.339E+01	568	1.354E+01
405	2.450E-02	446	1.577E+01	487	8.229E+00	528	1.348E+01	569	1.351E+01
406	5.000E-03	447	1.780E+01	488	8.313E+00	529	1.356E+01	570	1.349E+01
407	7.740E-02	448	1.986E+01	489	8.412E+00	530	1.355E+01	571	1.342E+01
408	1.410E-02	449	2.224E+01	490	8.512E+00	531	1.360E+01	572	1.337E+01
409	4.180E-02	450	2.372E+01	491	8.617E+00	532	1.363E+01	573	1.333E+01
410	5.610E-02	451	2.509E+01	492	8.742E+00	533	1.370E+01	574	1.331E+01
411	4.450E-02	452	2.559E+01	493	8.952E+00	534	1.370E+01	575	1.328E+01
412	4.880E-02	453	2.582E+01	494	9.134E+00	535	1.378E+01	576	1.322E+01
413	2.500E-02	454	2.544E+01	495	9.310E+00	536	1.377E+01	577	1.319E+01
414	7.670E-02	455	2.467E+01	496	9.539E+00	537	1.377E+01	578	1.315E+01
415	6.350E-02	456	2.317E+01	497	9.718E+00	538	1.385E+01	579	1.312E+01
416	9.180E-02	457	2.177E+01	498	9.912E+00	539	1.387E+01	580	1.309E+01
417	1.476E-01	458	2.025E+01	499	1.008E+01	540	1.388E+01	581	1.304E+01
418	1.926E-01	459	1.856E+01	500	1.030E+01	541	1.386E+01	582	1.301E+01
419	2.294E-01	460	1.743E+01	501	1.047E+01	542	1.385E+01	583	1.297E+01
420	3.046E-01	461	1.643E+01	502	1.068E+01	543	1.393E+01	584	1.293E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	1.291E+01	626	1.341E+01	667	1.003E+01	708	4.149E+00	749	9.547E-01
586	1.284E+01	627	1.346E+01	668	9.889E+00	709	3.991E+00	750	9.182E-01
587	1.289E+01	628	1.344E+01	669	9.701E+00	710	3.853E+00	751	9.518E-01
588	1.285E+01	629	1.346E+01	670	9.552E+00	711	3.753E+00	752	8.893E-01
589	1.283E+01	630	1.343E+01	671	9.424E+00	712	3.600E+00	753	9.109E-01
590	1.277E+01	631	1.341E+01	672	9.271E+00	713	3.594E+00	754	8.028E-01
591	1.275E+01	632	1.343E+01	673	9.040E+00	714	3.441E+00	755	6.841E-01
592	1.274E+01	633	1.341E+01	674	8.879E+00	715	3.311E+00	756	7.700E-01
593	1.273E+01	634	1.341E+01	675	8.758E+00	716	3.244E+00	757	6.927E-01
594	1.272E+01	635	1.334E+01	676	8.630E+00	717	3.191E+00	758	4.276E-01
595	1.270E+01	636	1.328E+01	677	8.436E+00	718	3.067E+00	759	6.076E-01
596	1.269E+01	637	1.325E+01	678	8.218E+00	719	2.911E+00	760	4.918E-01
597	1.266E+01	638	1.325E+01	679	8.100E+00	720	2.908E+00	761	4.947E-01
598	1.270E+01	639	1.316E+01	680	7.938E+00	721	2.764E+00	762	6.373E-01
599	1.270E+01	640	1.308E+01	681	7.802E+00	722	2.739E+00	763	6.951E-01
600	1.268E+01	641	1.308E+01	682	7.645E+00	723	2.627E+00	764	5.667E-01
601	1.269E+01	642	1.295E+01	683	7.548E+00	724	2.442E+00	765	4.082E-01
602	1.271E+01	643	1.290E+01	684	7.333E+00	725	2.480E+00	766	4.441E-01
603	1.274E+01	644	1.285E+01	685	7.151E+00	726	2.352E+00	767	3.899E-01
604	1.277E+01	645	1.275E+01	686	7.030E+00	727	2.273E+00	768	4.917E-01
605	1.280E+01	646	1.269E+01	687	6.913E+00	728	2.249E+00	769	4.209E-01
606	1.281E+01	647	1.256E+01	688	6.783E+00	729	2.219E+00	770	2.892E-01
607	1.285E+01	648	1.249E+01	689	6.517E+00	730	2.182E+00	771	3.431E-01
608	1.287E+01	649	1.237E+01	690	6.391E+00	731	1.983E+00	772	4.256E-01
609	1.291E+01	650	1.233E+01	691	6.282E+00	732	2.034E+00	773	2.916E-01
610	1.296E+01	651	1.218E+01	692	6.173E+00	733	1.741E+00	774	2.525E-01
611	1.304E+01	652	1.208E+01	693	6.015E+00	734	1.776E+00	775	3.068E-01
612	1.305E+01	653	1.195E+01	694	5.887E+00	735	1.775E+00	776	3.032E-01
613	1.305E+01	654	1.184E+01	695	5.721E+00	736	1.712E+00	777	2.915E-01
614	1.309E+01	655	1.167E+01	696	5.545E+00	737	1.613E+00	778	2.668E-01
615	1.318E+01	656	1.154E+01	697	5.439E+00	738	1.493E+00	779	2.231E-01
616	1.323E+01	657	1.147E+01	698	5.354E+00	739	1.414E+00	780	1.436E-01
617	1.320E+01	658	1.130E+01	699	5.225E+00	740	1.346E+00		
618	1.327E+01	659	1.119E+01	700	5.040E+00	741	1.378E+00		
619	1.322E+01	660	1.105E+01	701	4.959E+00	742	1.392E+00		
620	1.333E+01	661	1.085E+01	702	4.799E+00	743	1.301E+00		
621	1.334E+01	662	1.070E+01	703	4.665E+00	744	1.108E+00		
622	1.332E+01	663	1.059E+01	704	4.593E+00	745	1.144E+00		
623	1.338E+01	664	1.049E+01	705	4.400E+00	746	9.811E-01		
624	1.343E+01	665	1.029E+01	706	4.304E+00	747	1.078E+00		
625	1.342E+01	666	1.017E+01	707	4.177E+00	748	1.023E+00		

CIE 1931xy Chromaticity Diagram



7-StepChromaticity Quadrangles



[Goniophotometer System]

Control Setting: 2700K 10W

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

Test orientation: **Downward**

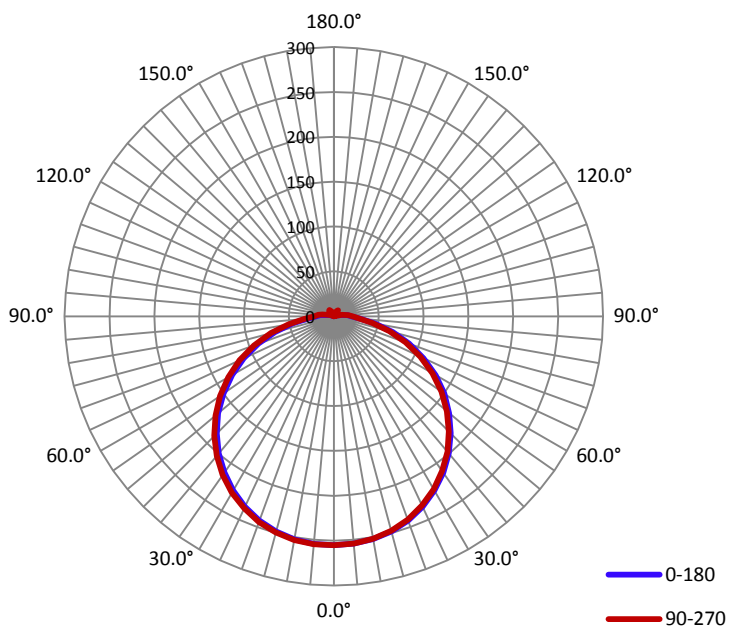
Electrical Measurement

Input Voltage(V)	Frequency(Hz)	Input Current(A)	Power (W)	Power Factor
120.0	60	0.0850	10.09	0.9870

Photometric Measurement

Luminous Flux(lm)	Efficacy(lm/W)	$I_{max}(cd)$	S/MH(C0/180)	S/MH(C90/270)
855.7	84.85	255.3	1.31	1.31

Luminous Intensity Distribution



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle(50% I_{max}):	121.7	121.7	122.0	121.8	121.8
Field Angle(10% I_{max}):	172.9	173.3	173.9	173.3	173.4

Luminous Intensity (cd) Distribution Data

C y	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0.0°	255	255	255	255	255	255	255	255
5.0°	254	254	254	254	254	254	255	255
10.0°	252	252	252	252	252	252	252	253
15.0°	248	248	248	247	247	248	248	249
20.0°	242	242	241	241	241	241	242	243
25.0°	234	234	233	232	233	233	234	235
30.0°	224	223	223	222	223	223	224	225
35.0°	213	212	211	211	211	211	212	213
40.0°	199	198	197	197	197	197	198	200
45.0°	184	183	182	182	182	182	183	185
50.0°	168	166	165	165	165	165	166	168
55.0°	150	148	147	147	147	147	149	150
60.0°	131	129	128	127	127	128	129	131
65.0°	111	109	107	106	107	108	109	110
70.0°	89	87	86	85	85	86	88	89
75.0°	68	66	65	64	64	65	66	68
80.0°	47	46	44	44	44	45	46	48
85.0°	30	29	28	28	28	28	29	30
90.0°	20	20	20	21	21	21	21	21
95.0°	15	14	11	15	16	12	11	16
100.0°	8	4	1	7	9	3	2	7
105.0°	4	1	0	1	1	0	0	3
110.0°	3	0	0	1	2	1	0	2
115.0°	1	0	1	1	1	1	1	0
120.0°	1	1	1	1	1	1	1	1
125.0°	1	1	1	1	1	1	1	1
130.0°	2	1	2	2	2	2	2	2
135.0°	2	2	3	3	3	3	3	3
140.0°	2	3	4	5	6	5	4	3
145.0°	2	3	5	7	8	6	4	3
150.0°	2	3	5	6	7	5	3	2
155.0°	2	2	4	5	5	4	3	2
160.0°	2	2	3	4	4	3	2	2
165.0°	1	1	1	1	1	1	1	1
170.0°	1	1	1	1	1	1	1	1
175.0°	1	1	1	1	1	1	1	1
180.0°	0	0	0	0	0	0	0	0

Luminous Intensity (cd) Distribution Data (cont.)

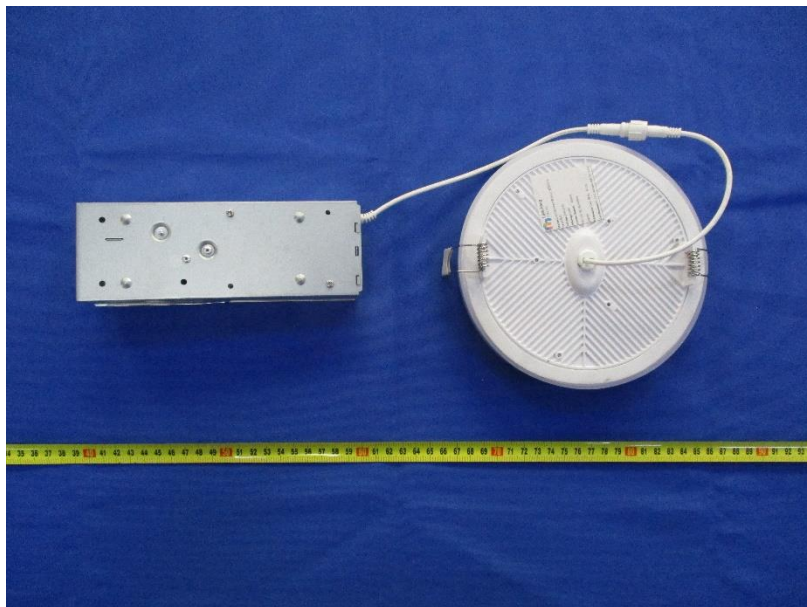
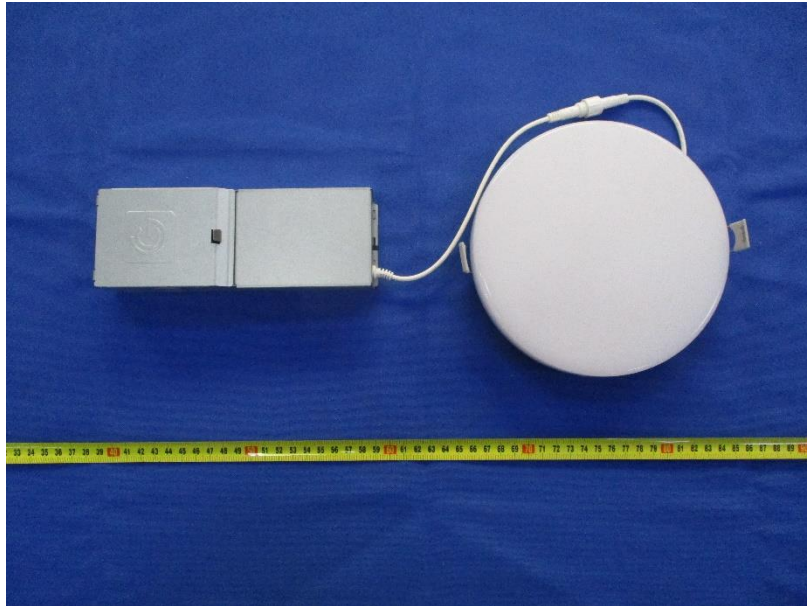
C y	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
0.0°	255	255	255	255	255	255	255	255
5.0°	255	255	255	255	255	255	255	255
10.0°	252	253	253	253	253	253	253	252
15.0°	248	249	249	249	250	249	249	248
20.0°	242	243	244	244	244	243	243	242
25.0°	234	235	236	236	236	236	235	234
30.0°	224	225	226	227	227	226	226	225
35.0°	213	214	215	216	216	215	214	213
40.0°	199	201	202	203	203	202	201	200
45.0°	185	186	187	188	189	188	186	185
50.0°	168	170	171	172	172	171	170	168
55.0°	150	152	154	155	155	154	152	151
60.0°	131	133	135	136	136	135	133	131
65.0°	111	113	115	115	116	115	113	111
70.0°	89	91	93	95	95	94	92	90
75.0°	68	69	71	73	72	72	70	68
80.0°	47	49	50	51	51	51	49	47
85.0°	29	31	32	33	33	32	31	29
90.0°	20	20	20	22	22	21	19	19
95.0°	15	12	12	16	17	13	11	14
100.0°	7	4	4	10	13	7	2	6
105.0°	5	2	1	6	7	3	1	4
110.0°	3	1	1	2	4	2	1	2
115.0°	1	1	1	1	1	1	1	1
120.0°	1	1	1	1	1	1	1	1
125.0°	1	1	1	1	1	1	1	1
130.0°	2	2	2	2	2	2	2	2
135.0°	2	3	4	4	4	4	3	3
140.0°	2	4	6	8	8	7	4	3
145.0°	2	4	6	8	9	7	4	3
150.0°	2	3	5	7	7	6	4	3
155.0°	2	3	4	6	6	5	3	2
160.0°	2	2	3	4	5	4	3	2
165.0°	1	1	1	1	1	1	1	1
170.0°	1	1	1	1	1	1	1	1
175.0°	1	1	1	1	1	1	1	1
180.0°	0	0	0	0	0	0	0	0

Zonal Lumen Density Measurement

Deg	Flux (lm)	%
0-5	6.0	0.72
5-10	18.2	2.11
10-15	29.6	3.47
15-20	40.5	4.73
20-25	50.0	5.84
25-30	58.0	6.78
30-35	64.4	7.52
35-40	68.8	8.05
40-45	71.1	8.32
45-50	71.3	8.33
50-55	69.3	8.11
55-60	65.0	7.61
60-65	58.9	6.88
65-70	50.8	5.94
70-75	41.1	4.82
75-80	30.8	3.60
80-85	20.7	2.42
85-90	13.3	1.56
90-95	9.6	1.11
95-100	5.1	0.59
100-105	2.1	0.25
105-110	1.1	0.12
110-115	0.5	0.06
115-120	0.5	0.05
120-125	0.5	0.05
125-130	0.6	0.08
130-135	1.0	0.11
135-140	1.4	0.16
140-145	1.5	0.20
145-150	1.5	0.16
150-155	1.0	0.12
155-160	0.7	0.08
160-165	0.4	0.04
165-170	0.0	0.00
170-175	0.0	0.00
175-180	0.0	0.00

Deg	Flux (lm)	%
0-5	6.1	0.71
0-10	24.2	2.83
0-15	53.9	6.30
0-20	94.4	11.03
0-25	144.4	16.87
0-30	202.4	23.66
0-35	266.9	31.19
0-40	335.7	39.23
0-45	406.9	47.55
0-50	478.2	55.89
0-55	547.5	63.98
0-60	612.6	71.59
0-65	671.4	78.47
0-70	722.2	84.40
0-75	763.4	89.22
0-80	794.2	92.82
0-85	814.9	95.24
0-90	828.3	96.80
0-95	837.8	97.91
0-100	842.8	98.50
0-105	844.9	98.74
0-110	845.9	98.86
0-115	846.4	98.92
0-120	846.8	98.96
0-125	847.2	99.01
0-130	847.8	99.09
0-135	848.8	99.20
0-140	850.2	99.37
0-145	851.9	99.56
0-150	853.3	99.73
0-155	854.4	99.85
0-160	855.1	99.93
0-165	855.4	99.97
0-170	855.5	99.99
0-175	855.6	100.00
0-180	855.7	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.
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*****END OF REPORT*****