

# IES LM-79-19

## MEASUREMENT AND TEST REPORT

For

### GREEN CREATIVE LTD

Room 3603, Level 36, Tower 1, Enterprise Square Five, 38 Wang Chiu Road, Kowloon Bay, KL, Hong Kong

**Test Model: 15T8U6/840/DIR**

<b>Report Type:</b>	Electrical and Photometric tests including: Luminous Flux, Chromaticity, Luminous Intensity Distribution
<b>Project Engineer:</b>	Bay Wang
<b>Report Number:</b>	RKSB210819032-10
<b>Test Date:</b>	2021-08-25 to 2021-09-04
<b>Report Date:</b>	2021-09-10
<b>Reviewed By:</b>	Seven Xia/ EE Engineer
<b>Prepared By:</b>	Bay Area Compliance Laboratories Corp. (Kunshan). No. 248 Chenghu Road, Kunshan, Jiangsu Province, People's Republic of China Tel: +86-0512-86175000 Fax: +86-0512-88934268
<b>Accreditation:</b>	The A2LA Accreditation Number 4323.01.

## 1. Product Description #

### General Information:

Two samples were received on 2021-08-19 and used for testing. A standard 0.88 ballast factor (BF) instant-start electronic ballast was used during LM-79 test, detailed as below:

Model Tested: 15T8U6/840/DIR  
Manufacturer: GREEN CREATIVE LTD  
Brand Name: GREEN CREATIVE  
Product Designation: Replacement Lamps ("Plug and Play") (UL Type A)  
Lamp Shape: T8 U-Bend  
Lamp base: G13  
Lamp length: 2 foot(24")  
Burning Time Before Test: 0hour (For New Products)  
Auxiliary ballast Model No.: OSRAM QTP 2\*32T8/UNV ISN-SC

### Rated Values:

Rated Voltage/Frequency: 120-277VAC 50/60Hz  
Rated Power: 17.5W  
Nominal CCT: 4000K  
Nominal Lumen Output: 2200lm

## 2. Standards Used

- IES LM-79-19: Approved Method: Optical and Electrical Measurements of Solid-state Lighting Products
- ANSI C82.77-10-2014: Harmonic Emission Limits – Related Power Quality Requirements for Lighting Equipment
- IES TM-30-18: IES Method for Evaluating Light Source Color Rendition

## 3. Description of Test Equipment

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
2.0m integrating sphere	EVERFINE	R98	G121960CS1361154D	2020-12-23	2021-12-22
spectroradiometer	EVERFINE	HAAS-2000	M12048CS1361148	2020-12-23	2021-12-22
Digital CC&CV DC Power Supply	EVERFINE	WY305	G115986CN1361134	2020-11-25	2021-11-24
Thermal Meter	ANYMETRE	TH-20E	N/A	2020-11-30	2021-11-29
Standard Light Source	EVERFINE	D215S	G119786CS1361115	2020-10-20	2021-10-19
Digital Power Meter	YOKOGAWA	WT210	91KB35700	2021-03-16	2022-03-15
Intelligence ac power supply	EVERFINE	DPS1005	G119890CS1361121	2020-12-25	2021-12-24
AC Power Supply	INVENTFINE	CHP-5KVA	900511765	2020-11-25	2021-11-24
DC Power Supply	INVENTFINE	WL3010	JWDMP030001	2020-11-25	2021-11-24
Power Meter	INVENTFINE	WT500	GSDSQ200007	2021-03-16	2022-03-15

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
Goniophotometer	INVENTFINE	GPM-1900	YWGCF120001	2020-12-23	2021-12-22
Wireless Weather Station	ZHONGXING	KG218	N/A	2020-11-27	2021-11-26
Standard Light Source	INVENTFINE	N/A	JWBYR040008	2020-12-23	2021-12-22

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 ANSI/IES LM-79-19. The product was operated at rated voltage or at voltage required by manufacturer. The ambient temperature of the sample was maintained at  $25^{\circ}\text{C} \pm 1.2^{\circ}\text{C}$  during measurement. And relative humidity is maintained between 10% 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.

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

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

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

### Goniophotometer System

The goniophotometer system is calibrated by standard light source before measurement.

Type C goniophotometer was used for measuring total luminous flux, luminous intensity distribution, and color spatial uniformity. The product was operated in its intended orientation in application and was recorded in this report. For measurement of luminous intensity distribution, the horizontal angle (C plane) test intervals were set 22.5 degree, the vertical angle ( $\gamma$ ) test intervals were set 1 degree while data for 5 degree intervals is reported.

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]

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

Test orientation: **Downward**

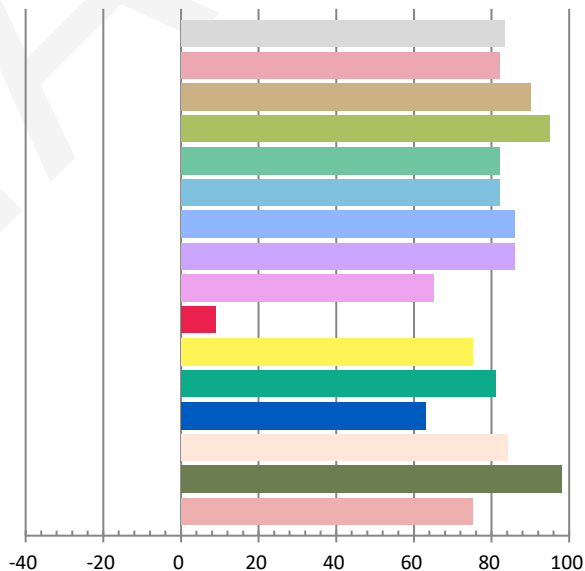
### Photometric and Electrical Measurement Result

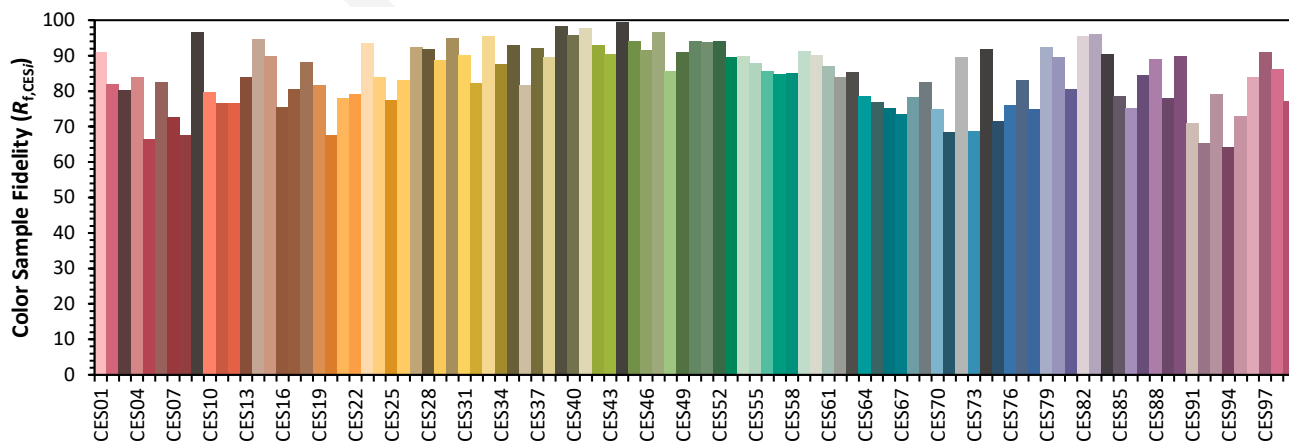
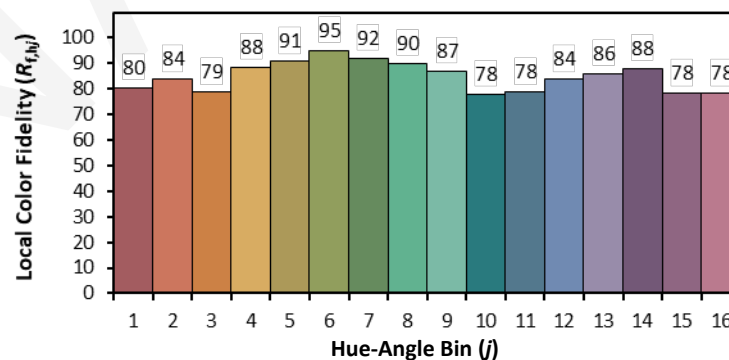
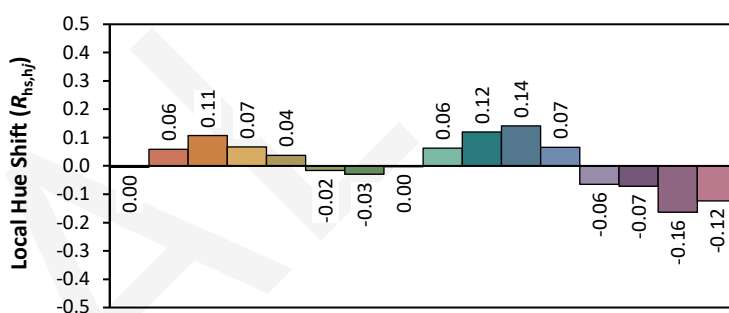
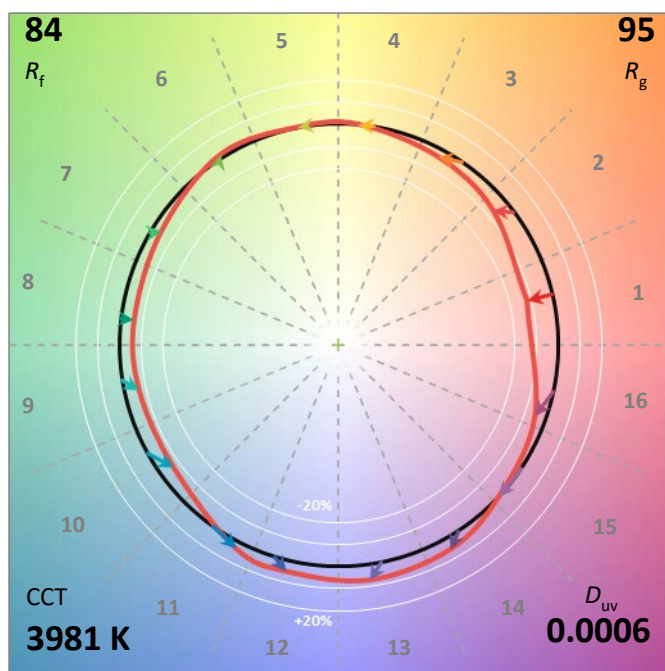
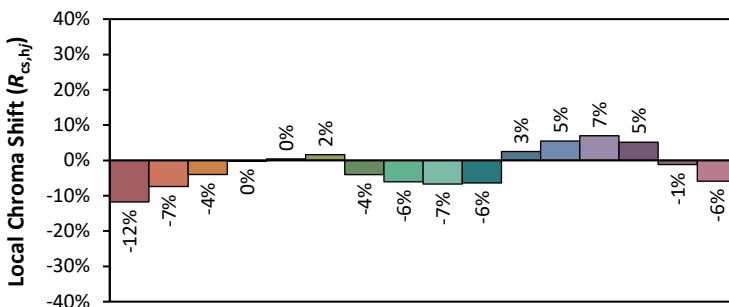
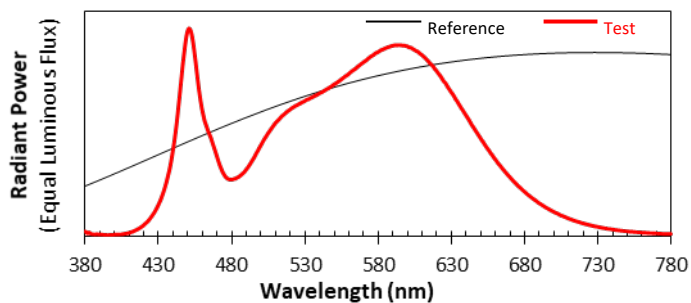
Voltage(V)	Frequency(Hz)	Current(A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy(lm/W)
120.1	60	0.1463	17.53	0.9969	2423.9	138.3

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
7.377	3982	0.000694	0.3817	0.3791	0.2250	0.5028

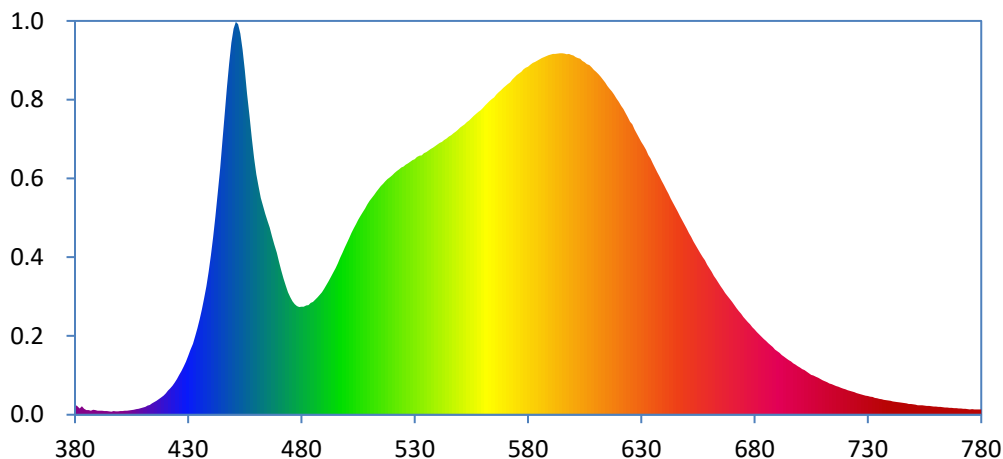
### Color Rendering Index

<b>Ra</b>			
<b>83.3</b>			
<b>R1</b>	<b>R2</b>	<b>R3</b>	<b>R4</b>
82	90	95	82
<b>R5</b>	<b>R6</b>	<b>R7</b>	<b>R8</b>
82	86	86	65
<b>R9</b>	<b>R10</b>	<b>R11</b>	<b>R12</b>
9	75	81	63
<b>R13</b>	<b>R14</b>	<b>R15</b>	
84	98	75	





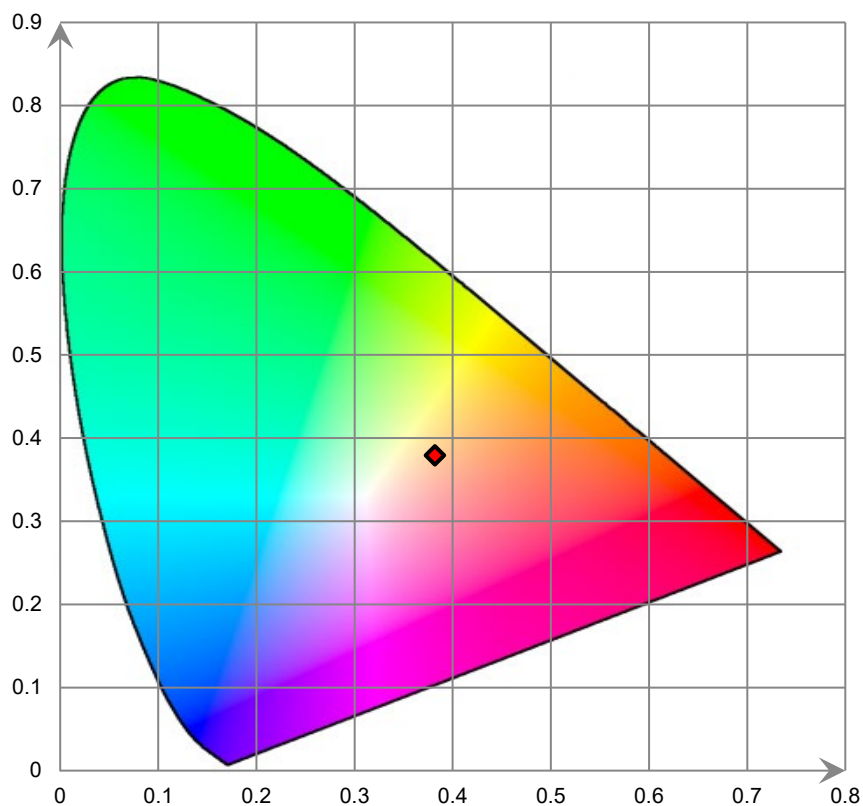
### Relative Spectral Power Distribution



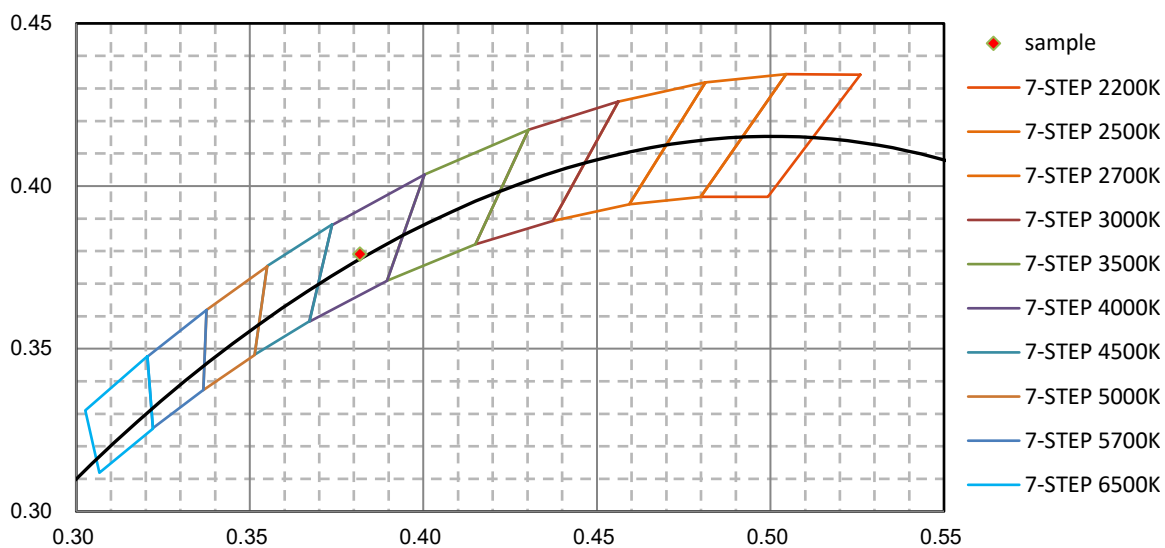
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	1.159E+00	421	2.798E+00	462	2.526E+01	503	2.171E+01	544	3.220E+01
381	1.041E+00	422	3.073E+00	463	2.434E+01	504	2.217E+01	545	3.243E+01
382	7.456E-01	423	3.378E+00	464	2.339E+01	505	2.269E+01	546	3.258E+01
383	9.773E-01	424	3.757E+00	465	2.259E+01	506	2.315E+01	547	3.280E+01
384	6.839E-01	425	4.167E+00	466	2.180E+01	507	2.362E+01	548	3.299E+01
385	5.403E-01	426	4.629E+00	467	2.080E+01	508	2.406E+01	549	3.320E+01
386	5.271E-01	427	5.098E+00	468	1.986E+01	509	2.452E+01	550	3.348E+01
387	4.797E-01	428	5.623E+00	469	1.889E+01	510	2.495E+01	551	3.366E+01
388	5.775E-01	429	6.183E+00	470	1.782E+01	511	2.527E+01	552	3.386E+01
389	5.296E-01	430	6.830E+00	471	1.680E+01	512	2.559E+01	553	3.409E+01
390	4.584E-01	431	7.547E+00	472	1.586E+01	513	2.597E+01	554	3.430E+01
391	4.668E-01	432	8.279E+00	473	1.503E+01	514	2.633E+01	555	3.457E+01
392	4.527E-01	433	9.156E+00	474	1.426E+01	515	2.664E+01	556	3.484E+01
393	4.155E-01	434	1.010E+01	475	1.370E+01	516	2.690E+01	557	3.508E+01
394	4.434E-01	435	1.114E+01	476	1.322E+01	517	2.721E+01	558	3.531E+01
395	3.958E-01	436	1.229E+01	477	1.288E+01	518	2.747E+01	559	3.551E+01
396	3.647E-01	437	1.361E+01	478	1.268E+01	519	2.771E+01	560	3.577E+01
397	4.122E-01	438	1.498E+01	479	1.255E+01	520	2.793E+01	561	3.605E+01
398	3.985E-01	439	1.666E+01	480	1.258E+01	521	2.820E+01	562	3.633E+01
399	3.843E-01	440	1.857E+01	481	1.259E+01	522	2.841E+01	563	3.657E+01
400	4.417E-01	441	2.070E+01	482	1.273E+01	523	2.859E+01	564	3.679E+01
401	4.394E-01	442	2.308E+01	483	1.277E+01	524	2.881E+01	565	3.699E+01
402	4.725E-01	443	2.569E+01	484	1.302E+01	525	2.894E+01	566	3.734E+01
403	4.644E-01	444	2.870E+01	485	1.315E+01	526	2.914E+01	567	3.757E+01
404	5.061E-01	445	3.189E+01	486	1.341E+01	527	2.929E+01	568	3.781E+01
405	5.367E-01	446	3.499E+01	487	1.366E+01	528	2.949E+01	569	3.808E+01
406	5.715E-01	447	3.810E+01	488	1.398E+01	529	2.966E+01	570	3.832E+01
407	6.559E-01	448	4.090E+01	489	1.425E+01	530	2.979E+01	571	3.855E+01
408	7.000E-01	449	4.337E+01	490	1.469E+01	531	3.003E+01	572	3.876E+01
409	7.641E-01	450	4.499E+01	491	1.512E+01	532	3.020E+01	573	3.908E+01
410	8.322E-01	451	4.579E+01	492	1.557E+01	533	3.025E+01	574	3.932E+01
411	9.149E-01	452	4.552E+01	493	1.605E+01	534	3.051E+01	575	3.958E+01
412	1.052E+00	453	4.444E+01	494	1.660E+01	535	3.062E+01	576	3.977E+01
413	1.140E+00	454	4.257E+01	495	1.711E+01	536	3.078E+01	577	3.996E+01
414	1.317E+00	455	4.017E+01	496	1.764E+01	537	3.099E+01	578	4.026E+01
415	1.461E+00	456	3.742E+01	497	1.830E+01	538	3.112E+01	579	4.045E+01
416	1.624E+00	457	3.473E+01	498	1.887E+01	539	3.129E+01	580	4.058E+01
417	1.827E+00	458	3.219E+01	499	1.947E+01	540	3.150E+01	581	4.079E+01
418	2.014E+00	459	2.993E+01	500	2.002E+01	541	3.168E+01	582	4.101E+01
419	2.219E+00	460	2.804E+01	501	2.057E+01	542	3.181E+01	583	4.111E+01
420	2.475E+00	461	2.660E+01	502	2.118E+01	543	3.201E+01	584	4.126E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	4.143E+01	626	3.386E+01	667	1.421E+01	708	4.302E+00	749	1.233E+00
586	4.156E+01	627	3.327E+01	668	1.384E+01	709	4.173E+00	750	1.222E+00
587	4.169E+01	628	3.275E+01	669	1.348E+01	710	4.018E+00	751	1.160E+00
588	4.178E+01	629	3.230E+01	670	1.314E+01	711	3.896E+00	752	1.113E+00
589	4.189E+01	630	3.179E+01	671	1.276E+01	712	3.789E+00	753	1.111E+00
590	4.199E+01	631	3.138E+01	672	1.241E+01	713	3.656E+00	754	1.086E+00
591	4.205E+01	632	3.088E+01	673	1.208E+01	714	3.554E+00	755	1.044E+00
592	4.205E+01	633	3.028E+01	674	1.176E+01	715	3.441E+00	756	1.016E+00
593	4.210E+01	634	2.984E+01	675	1.141E+01	716	3.339E+00	757	1.010E+00
594	4.212E+01	635	2.929E+01	676	1.110E+01	717	3.265E+00	758	9.876E-01
595	4.213E+01	636	2.878E+01	677	1.081E+01	718	3.147E+00	759	9.686E-01
596	4.210E+01	637	2.824E+01	678	1.053E+01	719	3.046E+00	760	9.359E-01
597	4.202E+01	638	2.776E+01	679	1.020E+01	720	2.952E+00	761	9.148E-01
598	4.206E+01	639	2.725E+01	680	9.946E+00	721	2.855E+00	762	9.005E-01
599	4.195E+01	640	2.676E+01	681	9.625E+00	722	2.776E+00	763	8.886E-01
600	4.188E+01	641	2.625E+01	682	9.349E+00	723	2.702E+00	764	8.548E-01
601	4.169E+01	642	2.576E+01	683	9.100E+00	724	2.620E+00	765	8.250E-01
602	4.159E+01	643	2.521E+01	684	8.824E+00	725	2.529E+00	766	8.017E-01
603	4.151E+01	644	2.463E+01	685	8.584E+00	726	2.463E+00	767	7.985E-01
604	4.125E+01	645	2.416E+01	686	8.331E+00	727	2.374E+00	768	7.721E-01
605	4.109E+01	646	2.366E+01	687	8.110E+00	728	2.293E+00	769	7.530E-01
606	4.086E+01	647	2.315E+01	688	7.893E+00	729	2.235E+00	770	7.164E-01
607	4.075E+01	648	2.266E+01	689	7.605E+00	730	2.197E+00	771	7.171E-01
608	4.048E+01	649	2.218E+01	690	7.389E+00	731	2.119E+00	772	6.878E-01
609	4.019E+01	650	2.168E+01	691	7.201E+00	732	2.056E+00	773	6.873E-01
610	3.997E+01	651	2.117E+01	692	6.966E+00	733	1.975E+00	774	6.531E-01
611	3.969E+01	652	2.073E+01	693	6.779E+00	734	1.909E+00	775	6.309E-01
612	3.940E+01	653	2.021E+01	694	6.559E+00	735	1.857E+00	776	6.419E-01
613	3.906E+01	654	1.974E+01	695	6.367E+00	736	1.813E+00	777	6.298E-01
614	3.873E+01	655	1.930E+01	696	6.195E+00	737	1.738E+00	778	6.032E-01
615	3.834E+01	656	1.886E+01	697	5.997E+00	738	1.718E+00	779	6.040E-01
616	3.798E+01	657	1.836E+01	698	5.836E+00	739	1.668E+00	780	6.047E-01
617	3.769E+01	658	1.799E+01	699	5.640E+00	740	1.616E+00		
618	3.732E+01	659	1.747E+01	700	5.499E+00	741	1.557E+00		
619	3.685E+01	660	1.705E+01	701	5.301E+00	742	1.507E+00		
620	3.647E+01	661	1.664E+01	702	5.196E+00	743	1.472E+00		
621	3.602E+01	662	1.616E+01	703	5.014E+00	744	1.430E+00		
622	3.563E+01	663	1.579E+01	704	4.832E+00	745	1.383E+00		
623	3.516E+01	664	1.541E+01	705	4.661E+00	746	1.343E+00		
624	3.466E+01	665	1.498E+01	706	4.584E+00	747	1.311E+00		
625	3.416E+01	666	1.460E+01	707	4.427E+00	748	1.269E+00		

CIE 1931xy Chromaticity Diagram



7-Step Chromaticity Quadrangles





### [Goniophotometer System]

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

Test orientation: **Downward**

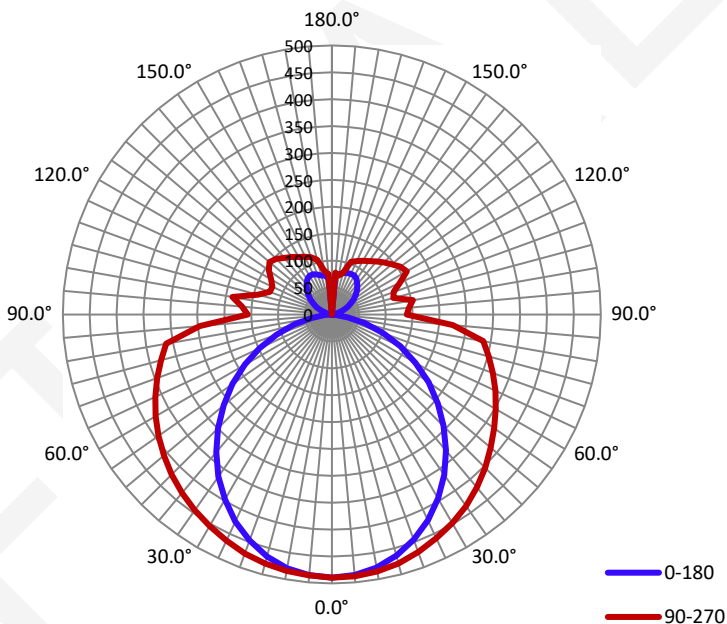
### Electrical Measurement

Input Voltage(V)	Frequency(Hz)	Input Current(A)	Power (W)	Power Factor
120.0	60	0.147	17.58	0.997

### Photometric Measurement

Luminous Flux(lm)	Efficacy(lm/W)	$I_{max}(cd)$	S/MH(C0/180)	S/MH(C90/270)
2432.3	138.4	489.6	1.21	1.39

### Luminous Intensity Distribution



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle(50% $I_{max}$ ):	104.0	141.7	169.1	141.8	139.2
Field Angle(10% $I_{max}$ ):	358.7	358.5	358.4	358.7	358.6

### Luminous Intensity (cd) Distribution Data

C y	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0.0°	489.3	489.3	489.3	489.3	489.3	489.3	489.3	489.3
5.0°	486.4	485.9	486.3	486.5	488.6	487.1	486.9	487.2
10.0°	478.0	477.7	479.4	481.0	485.3	482.1	480.6	480.3
15.0°	464.2	464.7	469.3	473.5	479.1	474.5	471.5	467.7
20.0°	445.4	447.0	455.5	463.1	470.2	465.2	458.2	451.2
25.0°	422.3	425.6	438.5	451.0	459.3	453.2	441.9	430.4
30.0°	394.8	400.7	418.6	437.4	448.0	439.7	423.0	406.5
35.0°	363.9	372.6	397.8	421.8	434.9	424.3	402.4	379.5
40.0°	330.1	343.3	374.7	405.5	419.8	408.4	380.2	350.0
45.0°	294.1	311.6	351.3	388.7	403.0	391.3	357.3	319.4
50.0°	257.6	279.4	327.1	371.3	385.5	374.2	333.6	287.9
55.0°	219.2	246.9	303.6	353.1	368.5	356.4	309.8	256.3
60.0°	179.5	214.9	281.3	334.4	351.8	338.1	287.0	224.1
65.0°	140.5	183.7	258.9	316.1	335.3	318.7	264.7	193.5
70.0°	101.6	154.9	237.0	298.5	318.4	301.2	244.1	164.0
75.0°	63.8	128.9	217.2	280.6	301.9	283.8	223.4	137.0
80.0°	30.6	105.9	197.3	262.9	285.7	267.1	205.2	114.0
85.0°	6.6	82.8	162.8	208.4	225.7	221.2	182.8	94.1
90.0°	0.0	40.8	92.9	128.2	139.6	130.3	102.7	54.0
95.0°	0.0	37.4	105.8	135.9	143.8	130.1	96.0	38.1
100.0°	6.8	46.4	82.3	132.2	152.9	132.6	81.6	43.8
105.0°	14.5	55.9	87.9	109.7	118.2	109.0	87.2	55.4
110.0°	23.2	57.0	109.6	119.0	122.2	118.0	108.2	56.5
115.0°	31.9	58.0	117.1	139.7	140.0	139.7	115.5	58.0
120.0°	41.0	60.5	112.6	150.8	160.8	150.5	111.3	59.8
125.0°	50.1	63.4	108.2	145.0	155.2	144.2	107.9	63.4
130.0°	58.4	65.8	104.0	135.3	145.3	135.7	104.0	66.1
135.0°	66.5	68.8	100.1	127.7	136.7	128.1	100.7	69.6
140.0°	73.6	73.2	99.2	120.7	128.3	119.7	97.5	74.0
145.0°	80.1	75.5	98.5	115.7	120.9	113.7	96.0	78.0
150.0°	83.7	78.7	97.6	111.2	114.9	108.1	94.1	81.2
155.0°	83.0	81.0	93.9	106.6	109.6	102.5	84.4	82.5
160.0°	82.3	82.5	90.8	101.6	104.1	85.9	82.7	77.7
165.0°	79.3	80.3	88.0	91.3	80.5	79.2	74.1	69.5
170.0°	75.8	75.7	81.5	78.2	73.4	72.6	65.5	64.9
175.0°	74.3	74.0	66.7	59.7	78.1	68.9	74.3	75.6
180.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Luminous Intensity (cd) Distribution Data (cont.)

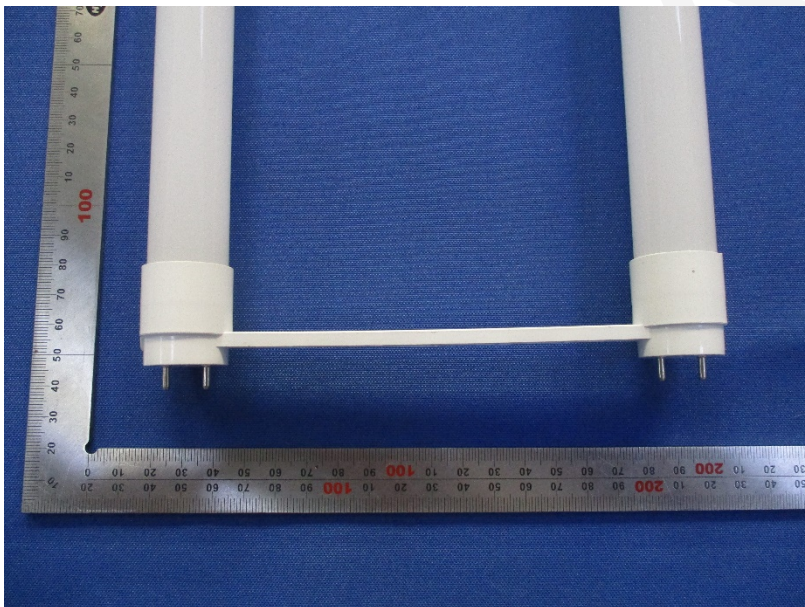
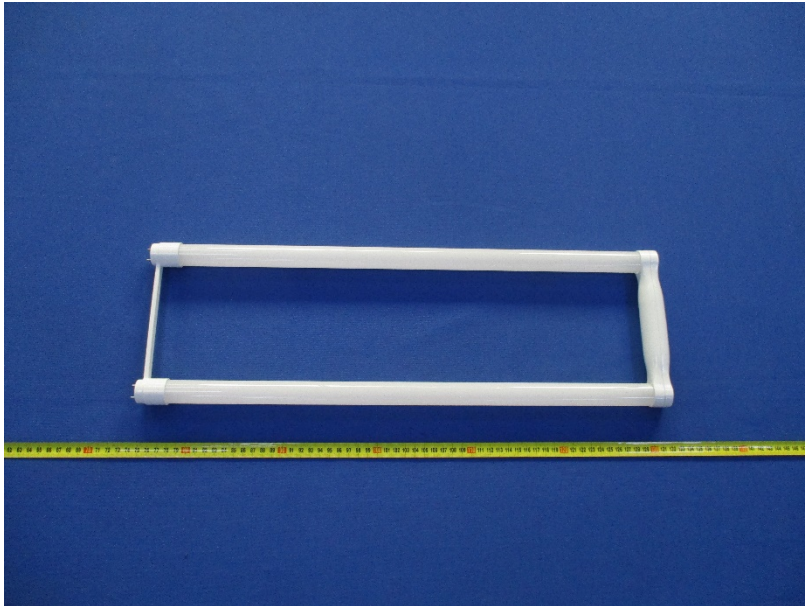
C y	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
0.0°	489.3	489.3	489.3	489.3	489.3	489.3	489.3	489.3
5.0°	486.4	487.5	488.9	489.1	487.1	489.2	488.1	487.1
10.0°	479.0	480.8	484.1	486.6	484.2	486.4	483.1	479.3
15.0°	465.5	469.9	475.7	481.7	479.4	481.2	473.7	467.7
20.0°	447.1	453.0	464.5	474.0	472.8	473.3	461.4	449.8
25.0°	424.7	432.6	449.8	464.1	463.8	463.1	446.2	429.4
30.0°	397.5	409.3	431.9	452.5	454.3	450.6	428.0	404.8
35.0°	367.7	382.2	413.2	439.3	444.2	437.7	407.9	377.1
40.0°	334.2	352.7	392.0	425.2	433.2	422.8	386.5	347.1
45.0°	299.4	322.2	369.3	409.7	421.3	407.1	363.7	315.5
50.0°	262.1	290.2	346.5	393.8	407.8	391.2	340.5	283.1
55.0°	225.4	258.8	323.6	376.9	393.4	374.8	317.5	250.8
60.0°	186.5	226.1	301.3	360.0	378.0	357.7	295.0	218.2
65.0°	148.0	195.7	279.7	342.6	362.0	340.2	273.8	187.2
70.0°	109.4	166.8	258.7	325.2	345.3	321.8	252.7	159.1
75.0°	72.7	140.5	238.7	308.8	328.7	304.5	232.4	133.8
80.0°	38.8	117.2	220.6	291.7	312.5	287.0	212.7	110.7
85.0°	12.4	93.8	195.8	240.1	246.4	226.0	173.8	86.8
90.0°	0.0	53.1	113.0	145.2	156.1	142.5	101.8	44.6
95.0°	0.0	46.5	116.3	153.6	167.7	160.0	125.4	46.0
100.0°	5.7	41.0	101.4	165.4	187.9	165.0	100.8	41.9
105.0°	12.7	52.3	87.8	124.1	142.5	124.1	86.6	54.1
110.0°	21.6	59.6	91.9	114.3	122.6	113.5	90.7	63.4
115.0°	30.4	59.7	104.3	117.2	121.7	116.5	102.6	63.1
120.0°	39.3	63.1	115.4	127.7	130.0	126.4	116.8	65.7
125.0°	48.7	66.7	114.4	140.3	142.6	139.3	118.4	69.9
130.0°	57.4	71.1	106.0	144.2	151.5	145.5	116.4	74.5
135.0°	65.4	76.7	104.5	134.3	146.5	139.0	112.2	79.4
140.0°	73.0	79.6	103.8	126.8	137.4	132.1	109.5	82.3
145.0°	79.4	84.6	103.7	121.9	130.3	124.9	107.7	86.4
150.0°	83.2	85.3	103.2	116.7	123.4	119.2	106.5	85.2
155.0°	82.4	85.3	97.8	112.2	118.4	114.3	105.2	84.5
160.0°	79.2	82.8	89.5	109.1	112.9	109.9	99.5	84.9
165.0°	75.0	72.0	84.0	87.1	104.8	102.2	92.3	81.9
170.0°	74.1	67.0	76.6	79.4	82.5	89.1	87.2	80.1
175.0°	67.4	61.8	65.0	75.5	75.2	75.8	74.0	73.7
180.0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

### Zonal Lumen Density Measurement

Deg	Flux (lm)	%
0-5	11.7	0.48
5-10	34.5	1.43
10-15	56.6	2.33
15-20	76.8	3.15
20-25	94.7	3.89
25-30	109.8	4.52
30-35	121.9	5.02
35-40	131.0	5.39
40-45	136.9	5.63
45-50	139.6	5.74
50-55	139.5	5.73
55-60	136.7	5.62
60-65	131.8	5.40
65-70	125.0	5.13
70-75	116.8	4.80
75-80	107.9	4.44
80-85	95.8	3.94
85-90	66.1	2.72
90-95	49.5	2.03
95-100	52.6	2.17
100-105	46.0	1.90
105-110	43.9	1.81
110-115	46.0	1.89
115-120	48.0	1.98
120-125	47.9	1.97
125-130	45.8	1.89
130-135	42.3	1.73
135-140	38.0	1.57
140-145	33.8	1.39
145-150	29.5	1.22
150-155	25.0	1.02
155-160	20.0	0.81
160-165	14.5	0.60
165-170	9.5	0.39
170-175	5.2	0.22
175-180	1.6	0.07

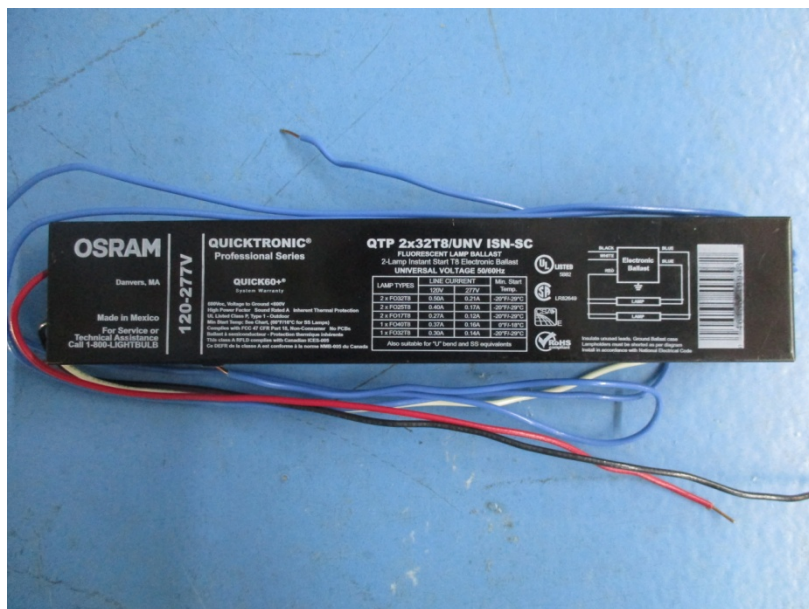
Deg	Flux (lm)	%
0-5	11.7	0.48
0-10	46.3	1.91
0-15	102.9	4.23
0-20	179.7	7.39
0-25	274.4	11.28
0-30	384.3	15.80
0-35	506.3	20.82
0-40	637.4	26.21
0-45	774.3	31.83
0-50	913.9	37.57
0-55	1053.3	43.31
0-60	1190.0	48.93
0-65	1321.8	54.34
0-70	1446.7	59.48
0-75	1563.5	64.28
0-80	1671.4	68.72
0-85	1767.1	72.65
0-90	1833.4	75.38
0-95	1882.7	77.40
0-100	1935.2	79.56
0-105	1981.3	81.46
0-110	2025.2	83.27
0-115	2071.2	85.16
0-120	2119.2	87.13
0-125	2167.1	89.10
0-130	2212.9	90.98
0-135	2255.1	92.72
0-140	2293.1	94.28
0-145	2327.0	95.67
0-150	2356.5	96.89
0-155	2381.4	97.91
0-160	2401.2	98.73
0-165	2415.8	99.32
0-170	2425.3	99.72
0-175	2430.6	99.93
0-180	2432.3	100.00

## 6. Product Photo





## Ballast



## 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. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.
3. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.
4. 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\*\*\*\*\*