



# IES LM-79-08

## MEASUREMENT AND TEST REPORT

For

**P.Q.L.,Inc.**

2285 Ward Avenue . Simi Valley,CA 93065

**Test Model: 93687**

<b>Report Type:</b>	Electrical and Photometric tests including: Luminous Flux, Chromaticity, Luminous Intensity Distribution, THD
<b>Test Engineer:</b>	Daniel Duan <i>Daniel Duan</i>
<b>Report Number:</b>	RKS160902001-10
<b>Test Date:</b>	2016-09-07 to 2016-09-08
<b>Report Date:</b>	2016-09-09
<b>Reviewed By:</b>	Jeanne Han/EE Manager <i>Jeanne Han</i>
<b>Prepared By:</b>	Bay Area Compliance Laboratories Corp. (Dongguan). Pu Long Cun 69, Puxinghu Industrial Area, Tangxia Town, Dongguan, Guangdong, P.R.China. Tel: +86-0769-86858888 Fax:+86-0769-86858588
<b>Test Facility:</b>	Test facility was located at Pu Long Cun 69, Puxinghu Industrial Area, Tangxia Town, Dongguan, Guangdong, P.R.China.
<b>Accreditation:</b>	The IAS Accreditation Number TL-460.

**Note:** The test data was only valid for the test sample(s). This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Dongguan). This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

## 1. Product Description

### General Information:

One sample was received on 2016-09-02 and used for testing.

Model Tested:	93687
Manufacturer:	P.Q.L., Inc.
Brand Name:	Superior Life®
Product Designation:	Linear Retrofit Kits for 2x4 Luminaires
Dimmable:	Non- Dimmable
Burning Time Before Test:	0hour(For New Products)
Auxiliary Equipment:	Lithonia 2GT8 lensed 2X4 Troffer

### Rated Values:

Rated Voltage/Frequency:	100-277VAC, 50/60Hz
Rated Power:	50W
Nominal CCT:	4000K
Nominal Lumen Output:	6400 lm (For Linear Retrofit Kit)
Nominal CRI:	80

## 2. Standards Used

IES LM-79-08: Approved Method: Electrical & Photometric Measurement of Solid-state Lighting Products  
ANSI C82.77-2002: Harmonic Emission Limits – Related Power Quality Requirements for Lighting  
IES TM-30-15: IES Method for Evaluating Light Source Color Rendition (This method is not in IAS accreditation scope)

## 3. Description of Test Equipment

Device	Manufacture	Model No	Serial No	Test Range	Calibration date	Calibration due date
Integrating Sphere	SENSING	SPR-600	S09008	25~50°C	2016-03-10	2017-03-09
Spectral photometer	SENSING	SPR3000	90902027	350nm~800nm	2016-03-10	2017-03-09
Power Meter	YOKOGAWA	WT-210	91j926132	15/30/60/150/300/600 V	2016-03-04	2017-03-03
AC Power Supply	ALL Power	APW-105N	970663	220V±10% 50HZ	2016-03-04	2017-03-03
Standard Light Source	EVERFINE	D204	01331191	24V/100W	2016-08-27	2017-08-26
Thermal Meter	SENSING	N/A	N/A	25、50°C	2016-03-10	2017-03-09
DC Power Supply	ITECH	IT6154	0061 0417 6471 0010 19	0~32V	2016-03-04	2017-03-03
AC Power Supply	EVERFINE	VPS1030 PWM	1012017	0-150V, 0-300V	2016-03-04	2017-03-03
DC Power Supply	EVERFINE	WY12010	1009009	30V/5A	2016-03-04	2017-03-03
Power Meter	YOKOGAWA	WT-210	91KB35700	15/30/60/150/300/600V	2016-03-04	2017-03-03
Goniophotometer	EVERFINE	GO-R5000	YG108492N10120001	1600mm,3000W/10A	2016-03-10	2017-03-09
Wireless Remote Sensor	N/A	433MHz	N/A	0°C~50°C;-20°C~60°C	2016-03-21	2017-03-20

Device	Manufacture	Model No	Serial No	Test Range	Calibration date	Calibration due date
Standard Light Source	EVERFINE	D908	1012003	N/A	2016-09-06	2017-09-05

Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) 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.

$4\pi$  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  $U=2.1\%$  ( $K=2$ ), at the 95% confidence level. The uncertainty of the correlated color temperature measurements is  $U=32\text{K}$  ( $K=2$ ), at the 95% confidence level. The uncertainty of the CRI is  $U=2.1$  ( $K=2$ ), at the 95% confidence level.

The uncertainty of power meter AC current  $U=0.19\%$  of rdg, AC Voltage  $U=0.15\%$  of rdg, Power  $U=0.20\%$  ( $K=2$ ), 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 ( $\gamma$ ) 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 intensity is  $U=1.6\%$  ( $K=2$ ), at the 95% confidence level.

##### Additional Test

The Additional Test item may not be covered by IESNA LM-79-2008. Additional test including power factor, off-state power and THD, was measured by Digital Power Meter after stabilized at  $25^{\circ}\text{C}\pm 1^{\circ}\text{C}$ . Test voltage for THD and power factor test would be equal to rated voltage or, in case of a voltage range, maximum value of that range.

The uncertainty of power meter AC current  $U=0.19\%$  of rdg, AC Voltage  $U=0.15\%$  of rdg, Power  $U=0.20\%$  ( $K=2$ ), at the 95% confidence level.

##### Fidelity Index and Gamut Index Calculation

The  $R_f$ ,  $R_g$  was calculated according to IES TM-30-15 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**

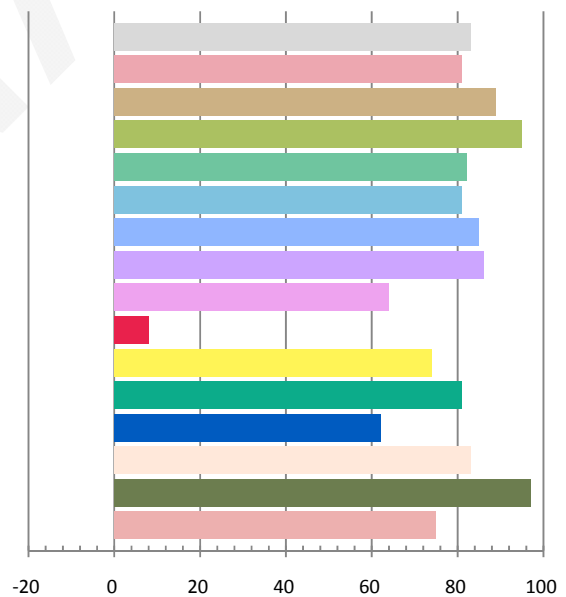
### Photometric and Electrical Measurement Result

Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.0	60	0.4465	53.02	0.9894	5818.3	109.74

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
17.576	3989	0.00112	0.3817	0.3800	0.2247	0.5032

### Color Rendering Index

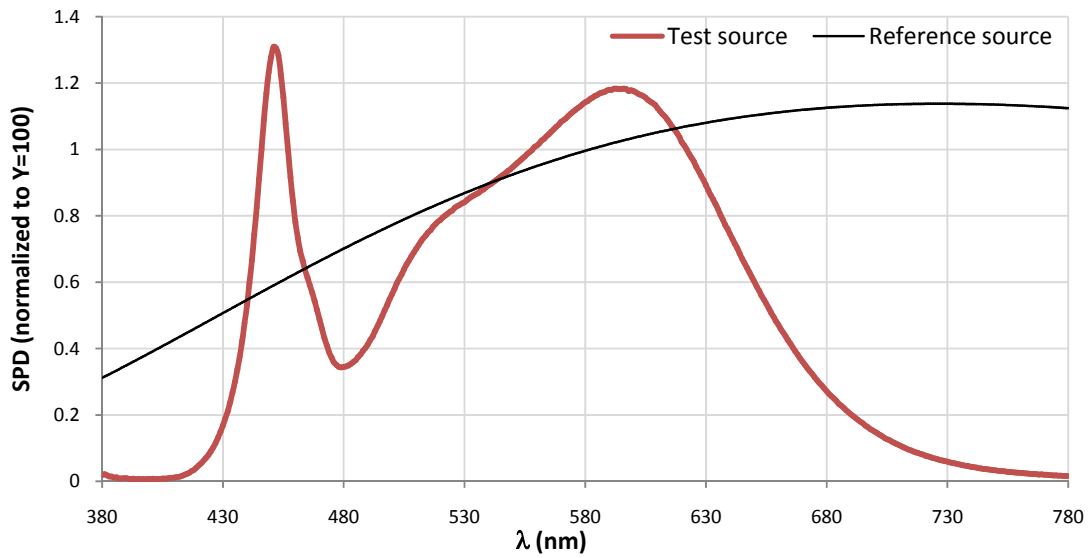
Ra			
<b>83.0</b>			
R1	R2	R3	R4
81	89	95	82
R5	R6	R7	R8
81	85	86	64
R9	R10	R11	R12
8	74	81	62
R13	R14	R15	
83	97	75	



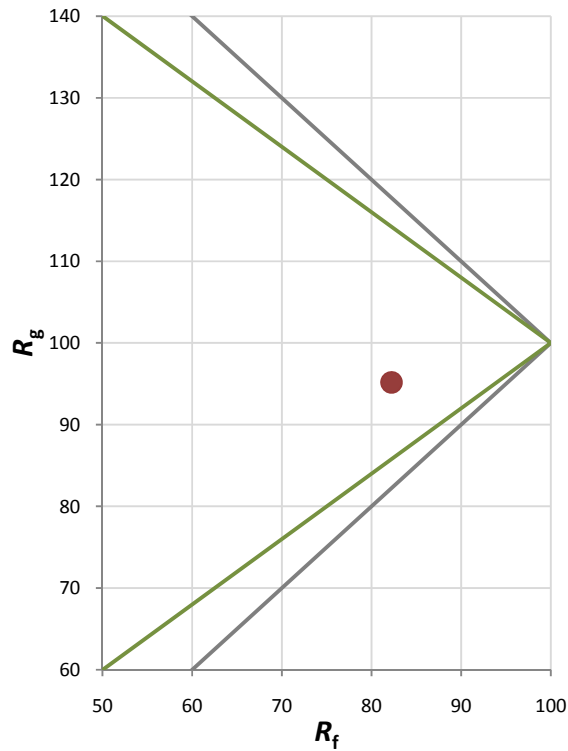
Fidelity Index and Gamut Index

Fidelity Index $R_f$	82
Gamut Index $R_g$	95

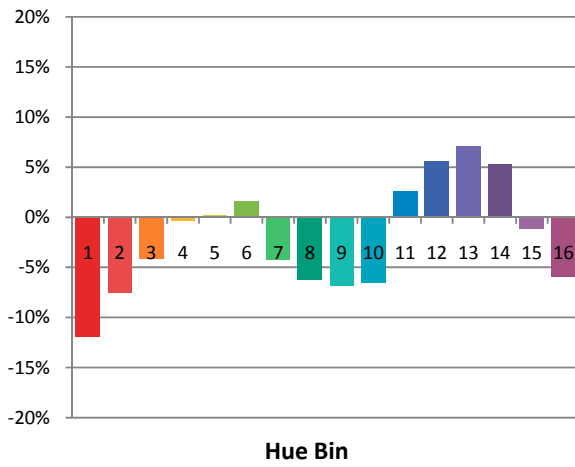
Spectral Power Distribution Comparison



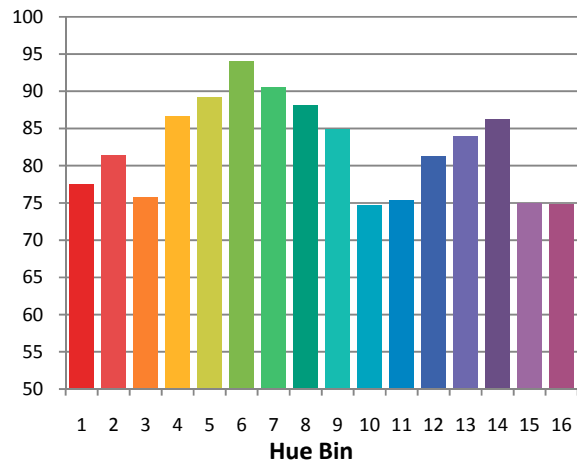
Plot of  $R_g$  versus  $R_f$



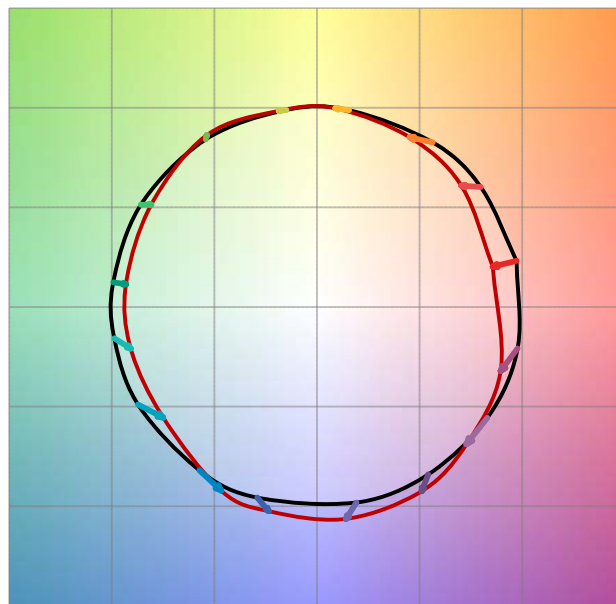
Chroma Shift by Hue



$R_f$  by Hue

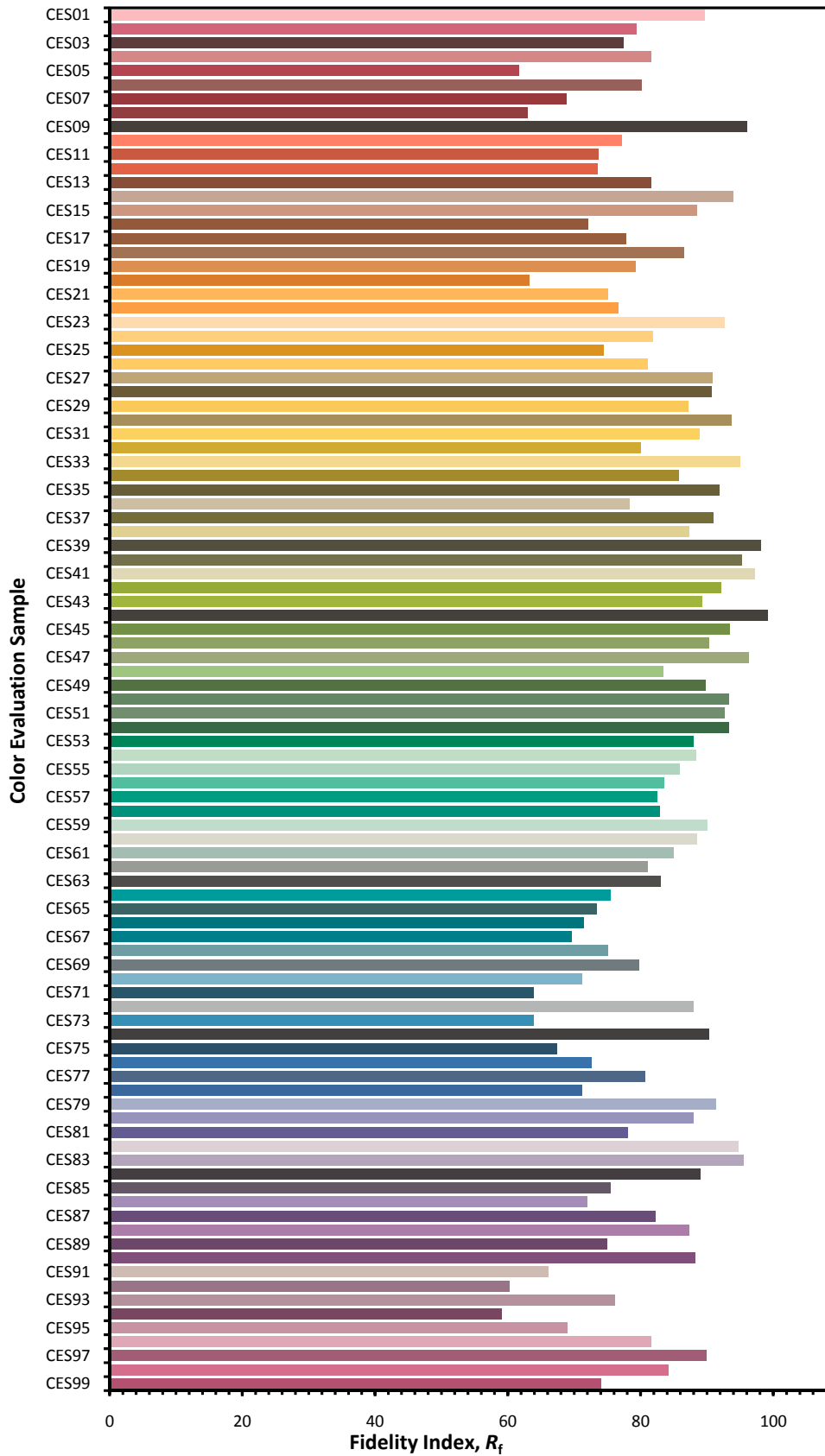


Color Vector Graphic

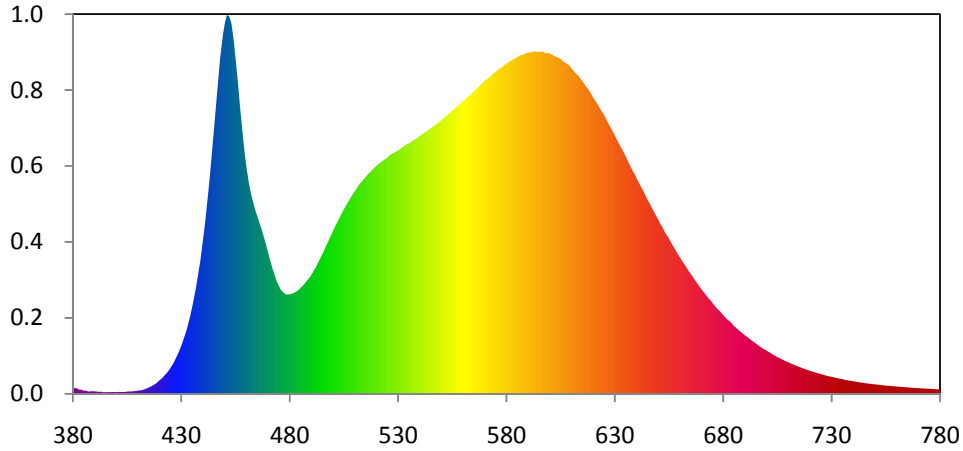


— Reference Illuminant — Test Source

**Color Fidelity by CES Sample**



**Relative Spectral Power Distribution**

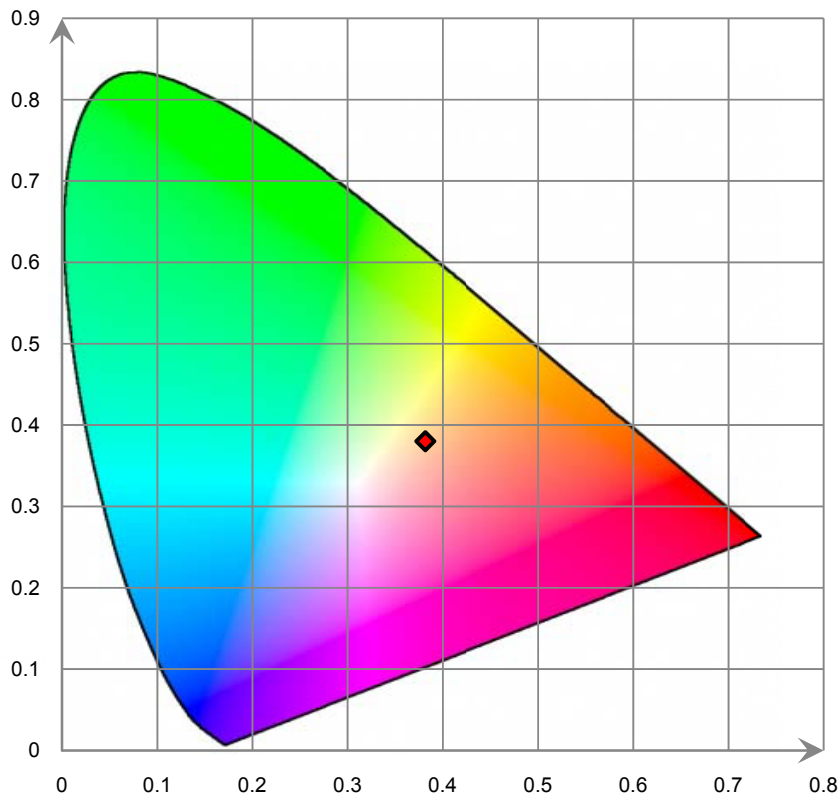


nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	1.592E+00	421	4.613E+00	462	5.915E+01	503	5.195E+01	544	7.773E+01
381	1.800E+00	422	5.318E+00	463	5.669E+01	504	5.313E+01	545	7.820E+01
382	1.542E+00	423	5.992E+00	464	5.427E+01	505	5.441E+01	546	7.866E+01
383	1.243E+00	424	6.779E+00	465	5.228E+01	506	5.564E+01	547	7.915E+01
384	1.204E+00	425	7.707E+00	466	5.036E+01	507	5.660E+01	548	7.966E+01
385	9.357E-01	426	8.745E+00	467	4.835E+01	508	5.770E+01	549	8.009E+01
386	1.010E+00	427	9.850E+00	468	4.623E+01	509	5.867E+01	550	8.066E+01
387	7.228E-01	428	1.126E+01	469	4.392E+01	510	5.967E+01	551	8.122E+01
388	7.458E-01	429	1.267E+01	470	4.159E+01	511	6.060E+01	552	8.178E+01
389	7.897E-01	430	1.431E+01	471	3.919E+01	512	6.160E+01	553	8.229E+01
390	7.952E-01	431	1.617E+01	472	3.691E+01	513	6.240E+01	554	8.285E+01
391	6.450E-01	432	1.800E+01	473	3.499E+01	514	6.311E+01	555	8.338E+01
392	6.330E-01	433	2.027E+01	474	3.315E+01	515	6.392E+01	556	8.400E+01
393	6.592E-01	434	2.286E+01	475	3.174E+01	516	6.447E+01	557	8.453E+01
394	5.211E-01	435	2.555E+01	476	3.055E+01	517	6.537E+01	558	8.500E+01
395	5.793E-01	436	2.878E+01	477	2.989E+01	518	6.598E+01	559	8.582E+01
396	5.285E-01	437	3.208E+01	478	2.940E+01	519	6.662E+01	560	8.618E+01
397	5.714E-01	438	3.610E+01	479	2.926E+01	520	6.706E+01	561	8.673E+01
398	5.005E-01	439	4.065E+01	480	2.933E+01	521	6.771E+01	562	8.749E+01
399	6.233E-01	440	4.523E+01	481	2.950E+01	522	6.820E+01	563	8.791E+01
400	5.230E-01	441	5.096E+01	482	2.975E+01	523	6.866E+01	564	8.855E+01
401	6.596E-01	442	5.660E+01	483	3.014E+01	524	6.917E+01	565	8.913E+01
402	5.786E-01	443	6.341E+01	484	3.062E+01	525	6.952E+01	566	8.976E+01
403	6.059E-01	444	7.030E+01	485	3.111E+01	526	7.022E+01	567	9.036E+01
404	5.796E-01	445	7.765E+01	486	3.191E+01	527	7.064E+01	568	9.095E+01
405	6.846E-01	446	8.526E+01	487	3.258E+01	528	7.093E+01	569	9.154E+01
406	7.112E-01	447	9.269E+01	488	3.345E+01	529	7.134E+01	570	9.227E+01
407	7.289E-01	448	9.960E+01	489	3.421E+01	530	7.163E+01	571	9.269E+01
408	8.388E-01	449	1.050E+02	490	3.509E+01	531	7.218E+01	572	9.318E+01
409	8.907E-01	450	1.090E+02	491	3.627E+01	532	7.267E+01	573	9.380E+01
410	9.584E-01	451	1.115E+02	492	3.722E+01	533	7.310E+01	574	9.438E+01
411	1.080E+00	452	1.112E+02	493	3.858E+01	534	7.343E+01	575	9.487E+01
412	1.188E+00	453	1.093E+02	494	3.982E+01	535	7.378E+01	576	9.538E+01
413	1.366E+00	454	1.045E+02	495	4.108E+01	536	7.412E+01	577	9.586E+01
414	1.642E+00	455	9.859E+01	496	4.251E+01	537	7.468E+01	578	9.628E+01
415	1.900E+00	456	9.185E+01	497	4.394E+01	538	7.496E+01	579	9.682E+01
416	2.191E+00	457	8.477E+01	498	4.526E+01	539	7.550E+01	580	9.731E+01
417	2.607E+00	458	7.799E+01	499	4.671E+01	540	7.596E+01	581	9.759E+01
418	2.929E+00	459	7.192E+01	500	4.799E+01	541	7.635E+01	582	9.813E+01
419	3.510E+00	460	6.658E+01	501	4.931E+01	542	7.681E+01	583	9.847E+01
420	4.098E+00	461	6.253E+01	502	5.084E+01	543	7.726E+01	584	9.890E+01

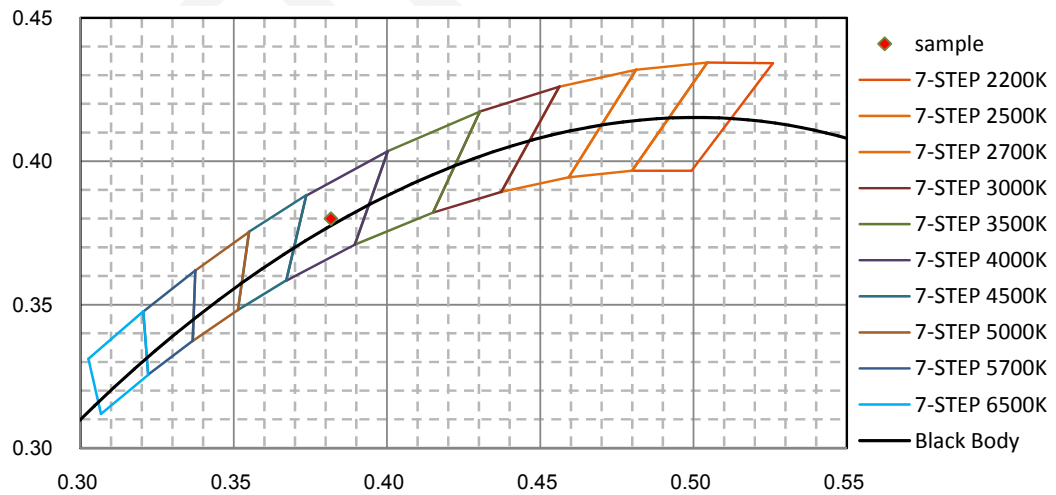


nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	9.917E+01	626	8.076E+01	667	3.338E+01	708	9.875E+00	749	2.891E+00
586	9.958E+01	627	7.960E+01	668	3.251E+01	709	9.576E+00	750	2.807E+00
587	9.978E+01	628	7.844E+01	669	3.160E+01	710	9.292E+00	751	2.707E+00
588	9.997E+01	629	7.733E+01	670	3.070E+01	711	8.971E+00	752	2.650E+00
589	1.003E+02	630	7.604E+01	671	2.989E+01	712	8.701E+00	753	2.594E+00
590	1.005E+02	631	7.469E+01	672	2.908E+01	713	8.396E+00	754	2.513E+00
591	1.005E+02	632	7.347E+01	673	2.829E+01	714	8.132E+00	755	2.412E+00
592	1.008E+02	633	7.235E+01	674	2.760E+01	715	7.943E+00	756	2.353E+00
593	1.008E+02	634	7.119E+01	675	2.676E+01	716	7.660E+00	757	2.318E+00
594	1.007E+02	635	6.987E+01	676	2.595E+01	717	7.423E+00	758	2.235E+00
595	1.007E+02	636	6.848E+01	677	2.523E+01	718	7.254E+00	759	2.206E+00
596	1.008E+02	637	6.720E+01	678	2.459E+01	719	6.998E+00	760	2.160E+00
597	1.007E+02	638	6.584E+01	679	2.386E+01	720	6.832E+00	761	2.146E+00
598	1.002E+02	639	6.476E+01	680	2.315E+01	721	6.563E+00	762	2.036E+00
599	1.004E+02	640	6.348E+01	681	2.243E+01	722	6.396E+00	763	2.009E+00
600	1.002E+02	641	6.219E+01	682	2.185E+01	723	6.193E+00	764	1.950E+00
601	9.988E+01	642	6.098E+01	683	2.127E+01	724	5.981E+00	765	1.900E+00
602	9.948E+01	643	5.984E+01	684	2.067E+01	725	5.835E+00	766	1.880E+00
603	9.920E+01	644	5.848E+01	685	1.992E+01	726	5.638E+00	767	1.798E+00
604	9.893E+01	645	5.717E+01	686	1.943E+01	727	5.444E+00	768	1.742E+00
605	9.852E+01	646	5.605E+01	687	1.886E+01	728	5.349E+00	769	1.783E+00
606	9.791E+01	647	5.484E+01	688	1.829E+01	729	5.174E+00	770	1.677E+00
607	9.746E+01	648	5.362E+01	689	1.773E+01	730	5.052E+00	771	1.679E+00
608	9.707E+01	649	5.243E+01	690	1.721E+01	731	4.840E+00	772	1.624E+00
609	9.661E+01	650	5.127E+01	691	1.670E+01	732	4.736E+00	773	1.581E+00
610	9.577E+01	651	5.004E+01	692	1.625E+01	733	4.623E+00	774	1.510E+00
611	9.502E+01	652	4.898E+01	693	1.576E+01	734	4.436E+00	775	1.516E+00
612	9.427E+01	653	4.768E+01	694	1.528E+01	735	4.322E+00	776	1.469E+00
613	9.369E+01	654	4.665E+01	695	1.487E+01	736	4.162E+00	777	1.449E+00
614	9.287E+01	655	4.559E+01	696	1.433E+01	737	4.052E+00	778	1.391E+00
615	9.197E+01	656	4.447E+01	697	1.391E+01	738	3.951E+00	779	1.386E+00
616	9.109E+01	657	4.330E+01	698	1.346E+01	739	3.853E+00	780	1.389E+00
617	9.027E+01	658	4.223E+01	699	1.310E+01	740	3.681E+00		
618	8.942E+01	659	4.113E+01	700	1.272E+01	741	3.622E+00		
619	8.839E+01	660	4.017E+01	701	1.233E+01	742	3.535E+00		
620	8.708E+01	661	3.908E+01	702	1.192E+01	743	3.378E+00		
621	8.626E+01	662	3.819E+01	703	1.157E+01	744	3.309E+00		
622	8.526E+01	663	3.724E+01	704	1.114E+01	745	3.191E+00		
623	8.410E+01	664	3.618E+01	705	1.079E+01	746	3.135E+00		
624	8.310E+01	665	3.532E+01	706	1.055E+01	747	3.062E+00		
625	8.209E+01	666	3.432E+01	707	1.018E+01	748	2.956E+00		

**CIE 1931 x y Chromaticity Diagram**



**7-Step Chromaticity Quadrangles**



**[Goniophotometer System]**

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

Test orientation: **Downward**

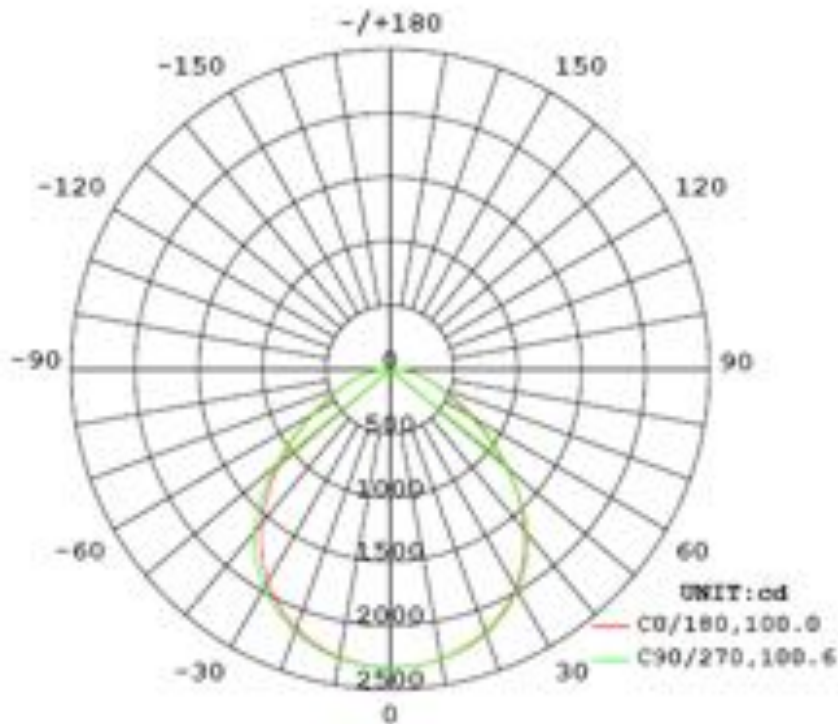
**Electrical Measurement**

Input Voltage (V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.1	60	0.4456	52.99	0.9902

**Photometric Measurement**

Luminous Flux (lm)	Efficacy (lm/W)	I <sub>max</sub> (cd)	S/MH (C0/180)	S/MH (C90/270)
5822.2	109.87	2329.0	1.26	1.27

**Luminous Intensity Distribution**



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle (50% I <sub>max</sub> ):	100.0	101.8	100.6	102.3	101.2
Field Angle (10% I <sub>max</sub> ):	157.3	149.7	158.7	149.4	153.8

**Luminous Intensity (cd) Distribution Data**

C \ γ	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0.0°	2326	2326	2326	2326	2326	2326	2326	2326
5.0°	2313	2314	2314	2316	2318	2318	2320	2317
10.0°	2281	2283	2285	2289	2293	2294	2295	2293
15.0°	2225	2229	2236	2243	2247	2248	2251	2248
20.0°	2149	2154	2163	2170	2179	2181	2183	2181
25.0°	2046	2054	2066	2076	2087	2091	2094	2090
30.0°	1918	1927	1945	1956	1971	1975	1978	1972
35.0°	1756	1770	1791	1809	1831	1838	1835	1822
40.0°	1566	1583	1611	1630	1653	1666	1661	1643
45.0°	1353	1371	1408	1418	1433	1454	1459	1433
50.0°	1128	1147	1182	1167	1166	1199	1231	1203
55.0°	904	922	936	924	923	938	982	968
60.0°	709	699	697	691	690	702	730	743
65.0°	539	498	478	503	510	498	498	532
70.0°	398	350	318	377	386	367	321	373
75.0°	288	250	228	287	299	280	224	273
80.0°	202	175	169	200	213	199	173	192
85.0°	100	91	82	96	98	101	95	104
90.0°	1	15	13	15	15	1	3	25
95.0°	0	1	1	0	0	0	1	1
100.0°	1	1	1	1	1	1	1	1
105.0°	1	1	1	1	1	1	1	1
110.0°	1	1	1	1	1	1	1	1
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°	1	1	1	1	1	1	1	1
135.0°	1	1	1	1	1	1	1	1
140.0°	1	1	1	2	2	2	1	1
145.0°	1	2	2	2	2	2	2	2
150.0°	2	2	2	2	2	2	2	2
155.0°	2	2	2	2	2	2	2	2
160.0°	2	2	2	2	2	2	2	2
165.0°	2	2	2	2	2	2	2	2
170.0°	2	2	2	2	2	2	2	2
175.0°	2	2	2	2	2	2	2	2
180.0°	2	2	2	2	2	2	2	2

Luminous Intensity (cd) Distribution Data (cont.)

C \ γ	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
0.0°	2326	2326	2326	2326	2326	2326	2326	2326
5.0°	2320	2320	2320	2321	2319	2318	2317	2313
10.0°	2295	2296	2298	2299	2298	2294	2289	2283
15.0°	2247	2252	2258	2261	2259	2254	2244	2230
20.0°	2182	2188	2195	2198	2194	2187	2174	2158
25.0°	2090	2098	2108	2108	2105	2094	2082	2058
30.0°	1971	1984	1995	1998	1992	1978	1958	1936
35.0°	1823	1837	1853	1860	1852	1832	1809	1780
40.0°	1642	1659	1679	1682	1670	1653	1629	1594
45.0°	1431	1448	1474	1460	1445	1442	1425	1385
50.0°	1202	1219	1235	1203	1190	1196	1203	1162
55.0°	971	988	984	953	943	954	968	940
60.0°	757	750	736	714	716	723	729	725
65.0°	573	529	498	514	526	521	508	530
70.0°	422	365	327	384	399	384	337	383
75.0°	307	262	233	297	310	289	234	279
80.0°	218	188	182	218	228	202	175	191
85.0°	121	110	109	120	117	109	95	101
90.0°	18	17	14	18	1	1	0	0
95.0°	0	1	0	0	0	0	0	0
100.0°	0	1	1	1	0	0	1	0
105.0°	1	1	1	1	1	1	1	1
110.0°	1	1	1	1	1	1	1	1
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°	1	1	1	1	1	1	1	1
135.0°	1	1	1	1	1	1	1	1
140.0°	1	1	1	1	1	1	1	1
145.0°	1	1	1	1	1	1	1	1
150.0°	1	1	1	1	1	1	1	1
155.0°	1	1	1	1	1	2	2	2
160.0°	1	1	1	1	2	2	2	2
165.0°	2	2	1	1	1	1	2	2
170.0°	2	2	2	1	1	1	2	2
175.0°	2	2	2	2	1	1	2	2
180.0°	2	2	2	2	2	2	2	2

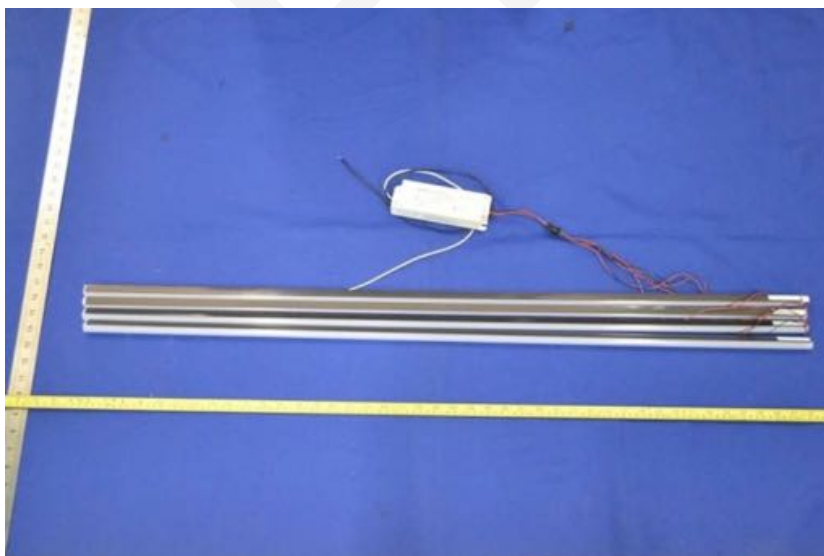
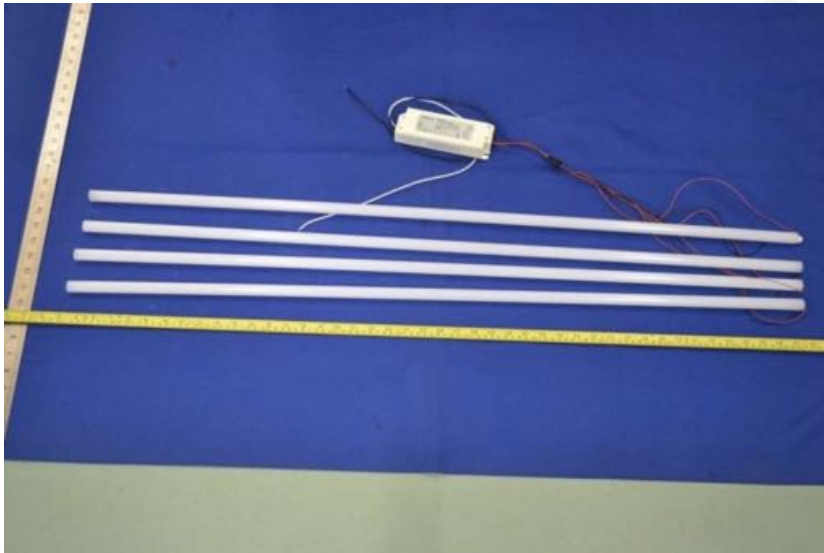
**Zonal Lumen Density Measurement**

Deg	Flux (lm)	%	Deg	Flux (lm)	%
0-5	55.5	0.95	0-5	55.5	0.95
5-10	164.9	2.84	0-10	220.4	3.79
10-15	269.2	4.62	0-15	489.6	8.41
15-20	364.6	6.26	0-20	854.2	14.67
20-25	447.1	7.68	0-25	1301.3	22.35
25-30	512.8	8.81	0-30	1814.1	31.16
30-35	557.6	9.57	0-35	2371.7	40.73
35-40	577.2	9.92	0-40	2948.9	50.65
40-45	568.1	9.76	0-45	3517.0	60.41
45-50	528.8	9.08	0-50	4045.8	69.49
50-55	464.6	7.98	0-55	4510.4	77.47
55-60	385.1	6.61	0-60	4895.5	84.08
60-65	297.9	5.12	0-65	5193.4	89.20
65-70	221.0	3.80	0-70	5414.4	93.00
70-75	165.5	2.84	0-75	5579.9	95.84
75-80	124.6	2.14	0-80	5704.6	97.98
80-85	82.4	1.41	0-85	5787.0	99.39
85-90	28.6	0.50	0-90	5815.5	99.89
90-95	0.9	0.01	0-95	5816.4	99.90
95-100	0.3	0.01	0-100	5816.7	99.91
100-105	0.3	0.00	0-105	5817.0	99.91
105-110	0.4	0.01	0-110	5817.4	99.92
110-115	0.4	0.00	0-115	5817.8	99.92
115-120	0.4	0.01	0-120	5818.1	99.93
120-125	0.4	0.01	0-125	5818.5	99.94
125-130	0.4	0.00	0-130	5818.9	99.94
130-135	0.4	0.01	0-135	5819.4	99.95
135-140	0.4	0.01	0-140	5819.8	99.96
140-145	0.5	0.01	0-145	5820.3	99.97
145-150	0.5	0.00	0-150	5820.7	99.97
150-155	0.4	0.01	0-155	5821.2	99.98
155-160	0.4	0.01	0-160	5821.5	99.99
160-165	0.3	0.00	0-165	5821.8	99.99
165-170	0.2	0.01	0-170	5822.0	100.00
170-175	0.1	0.00	0-175	5822.2	100.00
175-180	0.0	0.00	0-180	5822.2	100.00

**[Additional Test]**

Test Item	Test Voltage (V)	Frequency (Hz)	Test Result
Power Factor:	277.0	60	0.922
Total Harmonic Distortion:	277.0	60	8.03%
Total Harmonic Distortion:	120.0	60	9.50%
Total Harmonic Distortion:	100.0	60	7.47%
Power Factor:	100.0	60	0.9957

**6. Product Photo**



## 7. Product Test orientation in the Goniophotometer



Auxiliary Equipment (Recessed Troffer)



\*\*\*\*\*END OF REPORT\*\*\*\*\*