

IES LM-79-08

MEASUREMENT AND TEST REPORT

For

P.Q.L., Inc.

2285 Ward Avenue / Simi Valley, CA 93065

Test Model: 83232

Report Type:	Electrical and Photometric tests including: Luminous Flux, Chromaticity, Luminous Intensity Distribution, THD
Test Engineer:	Daniel Duan <i>Daniel Duan</i>
Report Number:	RSZ160316516-10
Test Date:	2016-04-16 to 2016-04-20
Report Date:	2016-06-13
Reviewed By:	Jeanne Han/Safety Manager <i>Jeanne Han</i>
Prepared By:	Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008
Test Facility:	Test facility was located at Pu Long Cun 69, Puxinghu Industrial Area, Tangxia Town, Dongguan, Guangdong, P.R.China.
Accreditation:	The NVLAP Lab Code is 200707-0.

STATEMENT: This test may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Shenzhen). The test data was only valid for the test sample(s). This report **must not** be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Federal Government. 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 2016-03-16 and used for testing.

Model Tested: 83232
 Manufacturer: P.Q.L., Inc.
 Brand Name: Superior Life®
 Product Designation: Parking Garage Luminaires
 Dimmable: Continuous Dimming
 Dimming Range: 10% to 100%
 Burning Time Before Test: 0hour(For New Products)

Rated Values:

Rated Voltage/Frequency: 120-277V AC 60Hz
 Rated Power: 65W
 Nominal CCT: 4000K
 Nominal Lumen Output: 6450lm

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 NVLAP accreditation scope)

3. Description of Test Equipment

Device	Manufacturer	Model No	Serial No	Test Range	Calibration date	Calibration due date
2.0m integrating sphere	EVERFINE	R98	11010018	R98	2015-11-09	2016-11-08
High accuracy array spectroradiometer	EVERFINE	HAAS-2000	1012016T	380-780nm	2016-03-10	2017-03-09
Digital Power Meter	EVERFINE	PF2010A	1011004	600V/20A	2015-07-24	2016-07-23
Digital CC&CV DC Power Supply	EVERFINE	WY305-V1	1101047	30V/5A	2015-07-27	2016-07-26
Temperature/humidity/clock	Victor	VC230	EE023	0~40°C0~90%	2016-03-21	2017-03-20
Standard Light Source	SENSING	N/A	LSD090808	N/A	2015-09-25	2016-09-24
Special zero-voltage synchronous switching AC	EVERFINE	DPS1010-YF	1011001T	30V/5A	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	15/30/60/150/300/600 V	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	Manufacturer	Model No	Serial No	Test Range	Calibration date	Calibration due date
Standard Light Source	EVERFINE	D908	1012003	N/A	2015-09-08	2016-09-07

Statement of Traceability: Bay Area Compliance Laboratories Corp. (Shenzhen) 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°C±1°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=1.8% (K=2), at the 95% confidence level. The uncertainty of the correlated color temperature measurements is U=20K (K=2), at the 95% confidence level. The uncertainty of the CRI is U=1.8 (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 (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 intensity is U=2.82% (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°C±1°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**

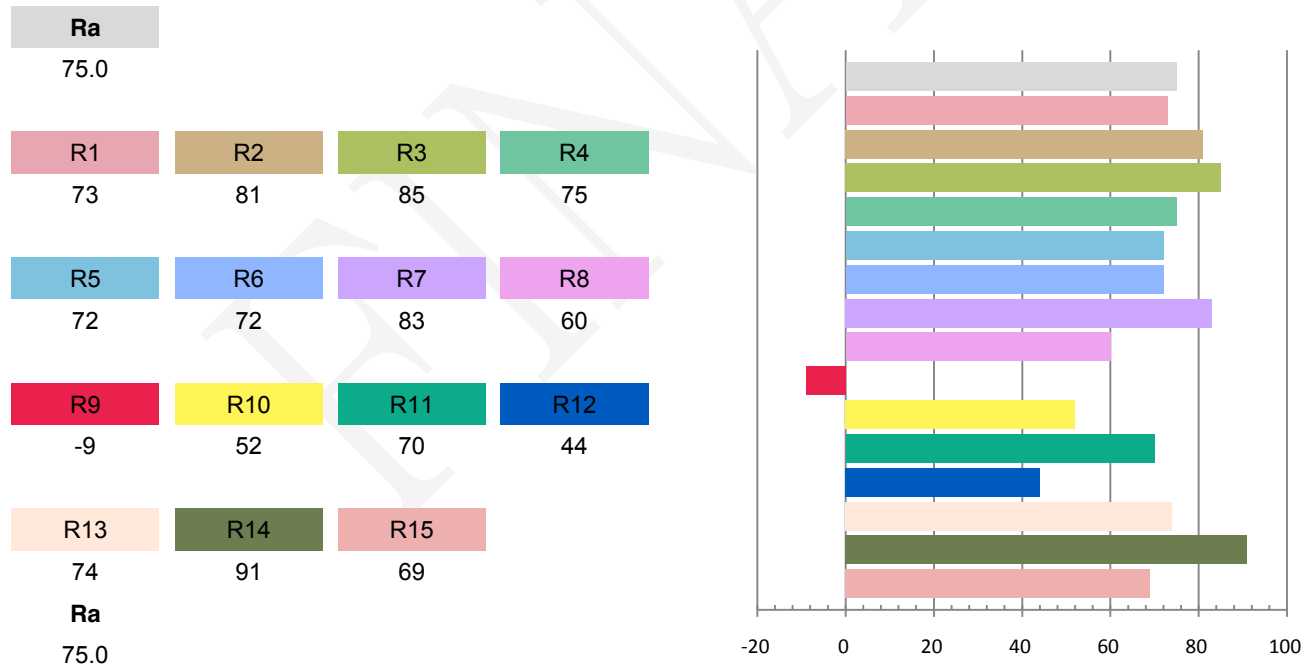
Test orientation: **Downward**

Photometric and Electrical Measurement Result

Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.0	60	0.5356	63.88	0.9936	6458	101.1

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
19.200	3917	-0.00037	0.3839	0.3781	0.2269	0.5027

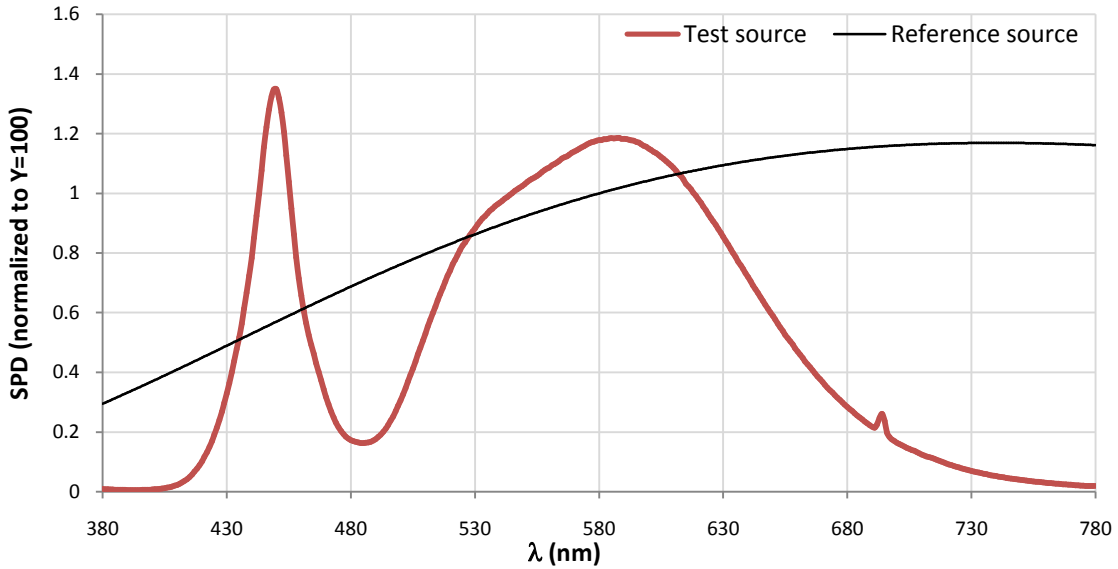
Color Rendering Index



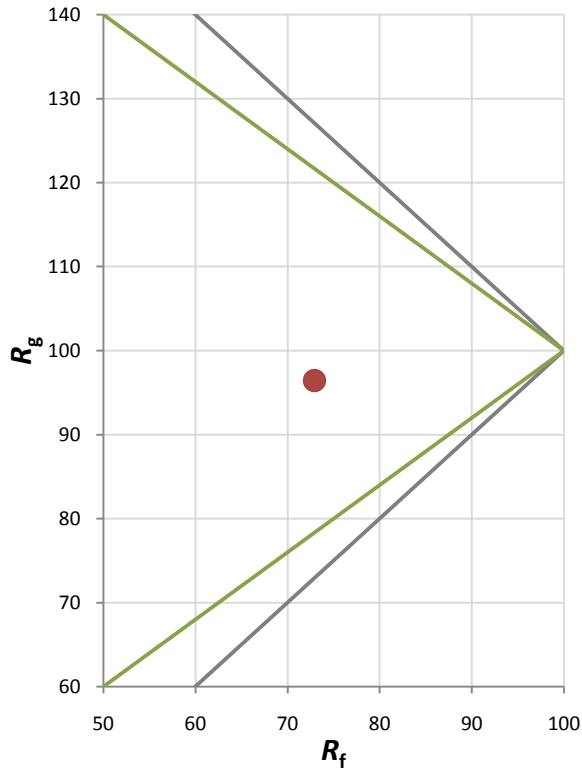
Fidelity Index and Gamut Index

Fidelity Index R_f	73
Gamut Index R_g	96

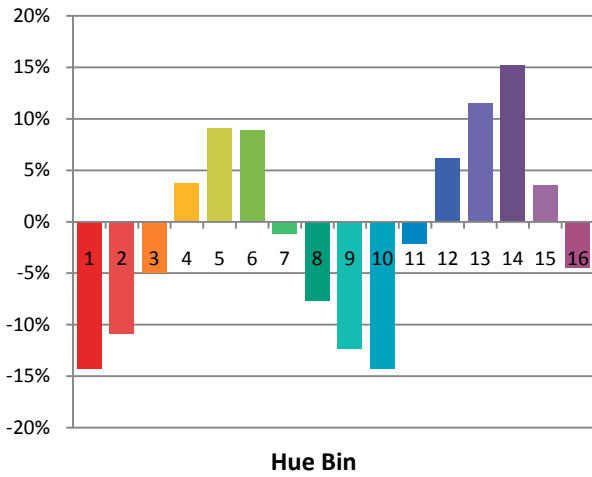
Spectral Power Distribution Comparison



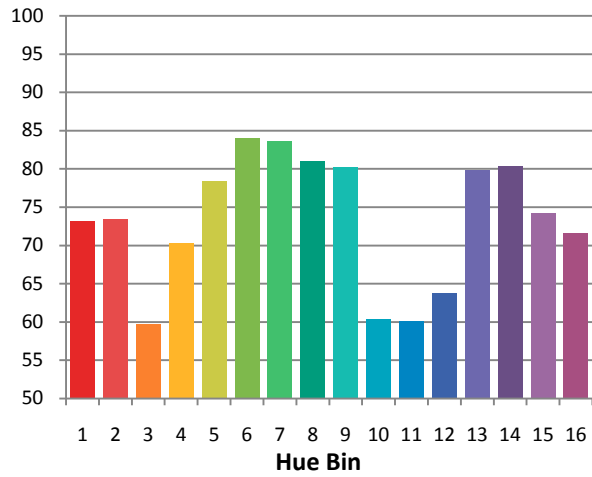
Plot of R_g versus R_f



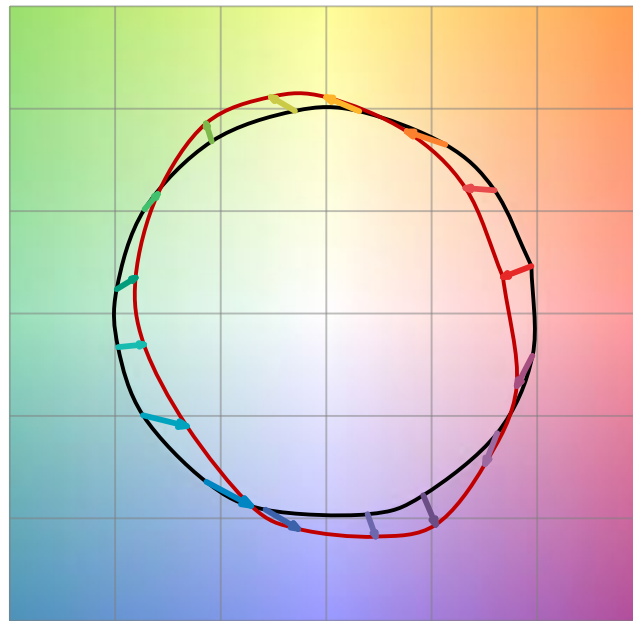
Chroma Shift by Hue



Rf by Hue

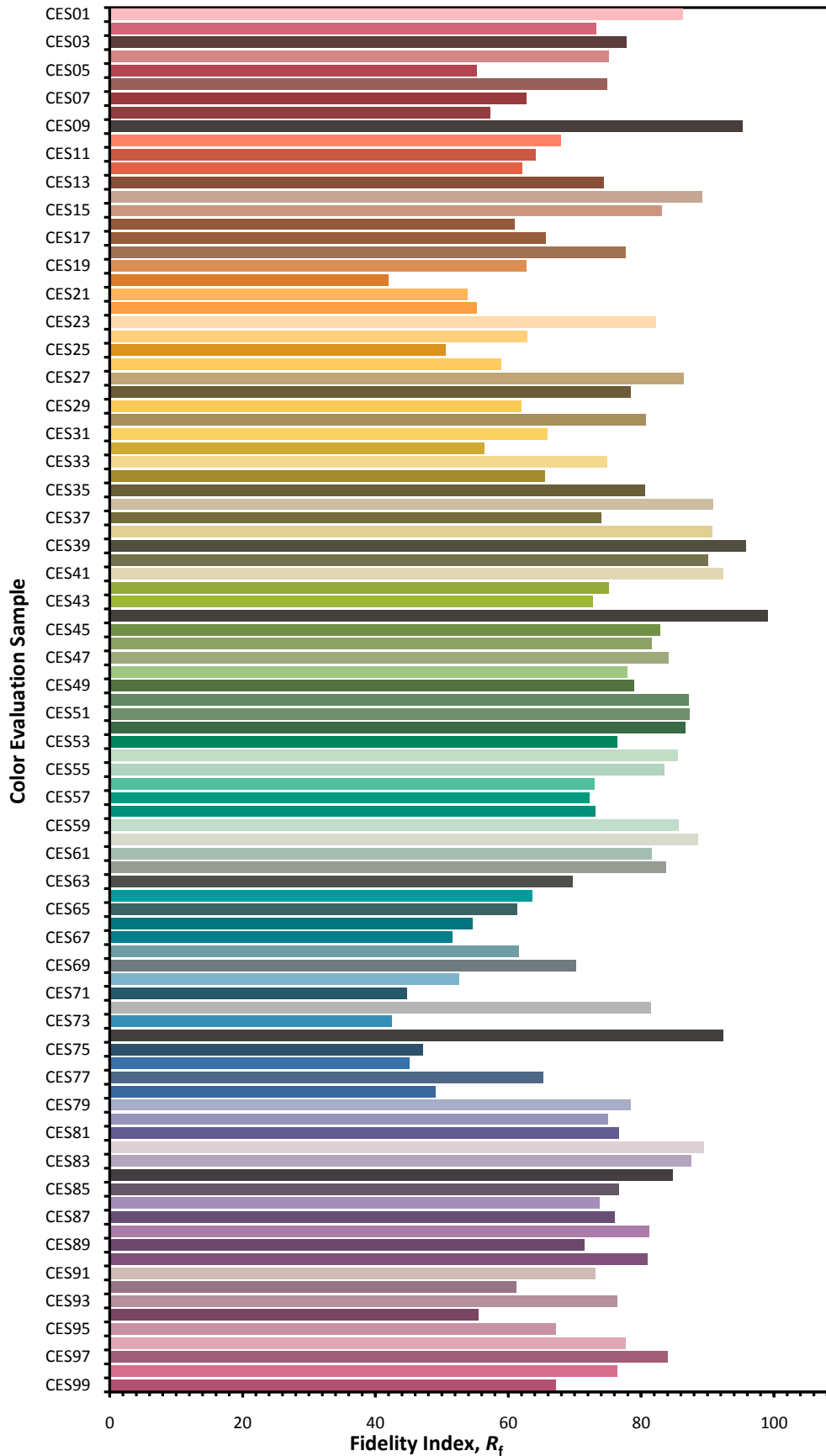


Color Vector Graphic

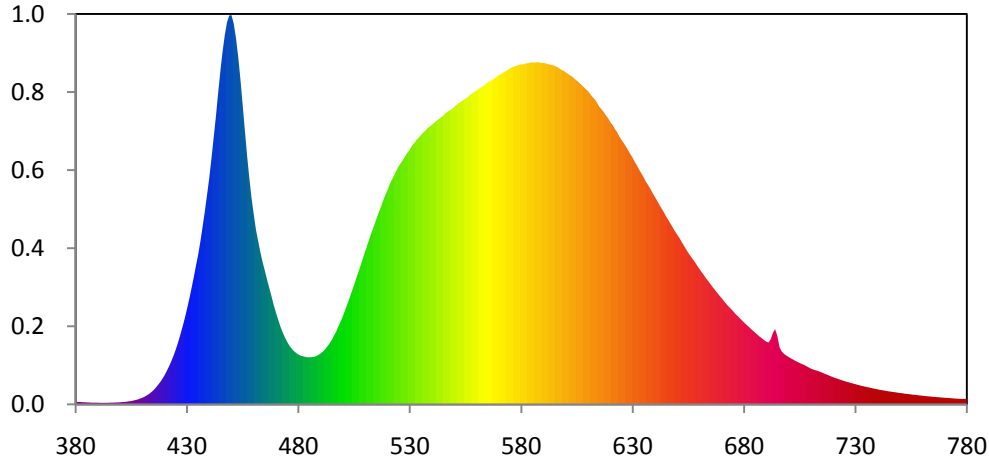


— Reference Illuminat — Test Source

Color Fidelity by CES Sample



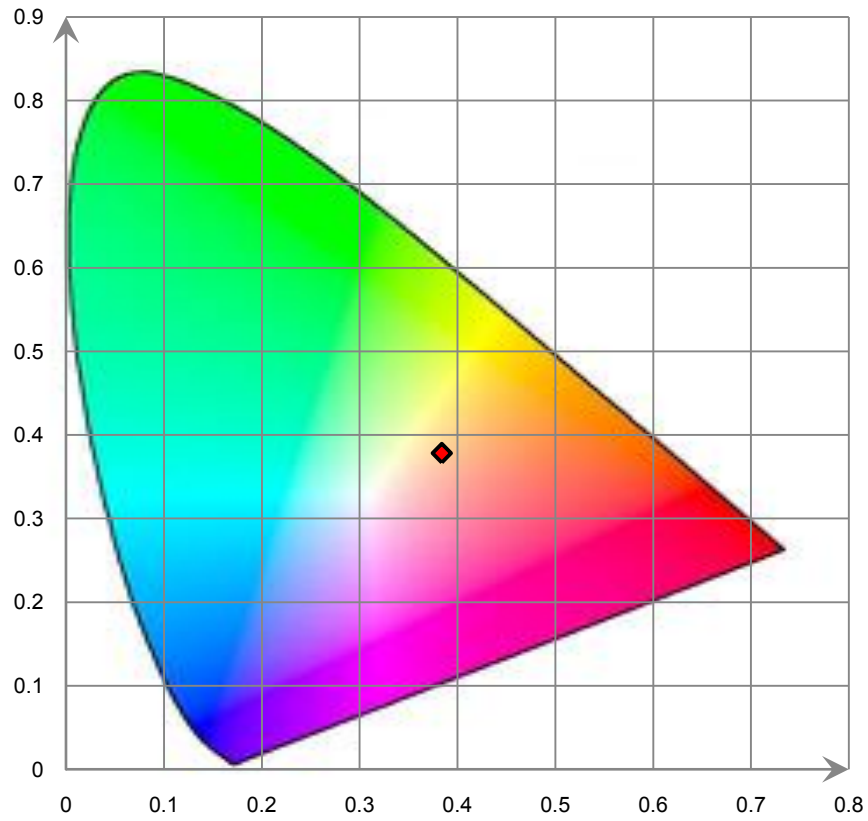
Relative Spectral Power Distribution



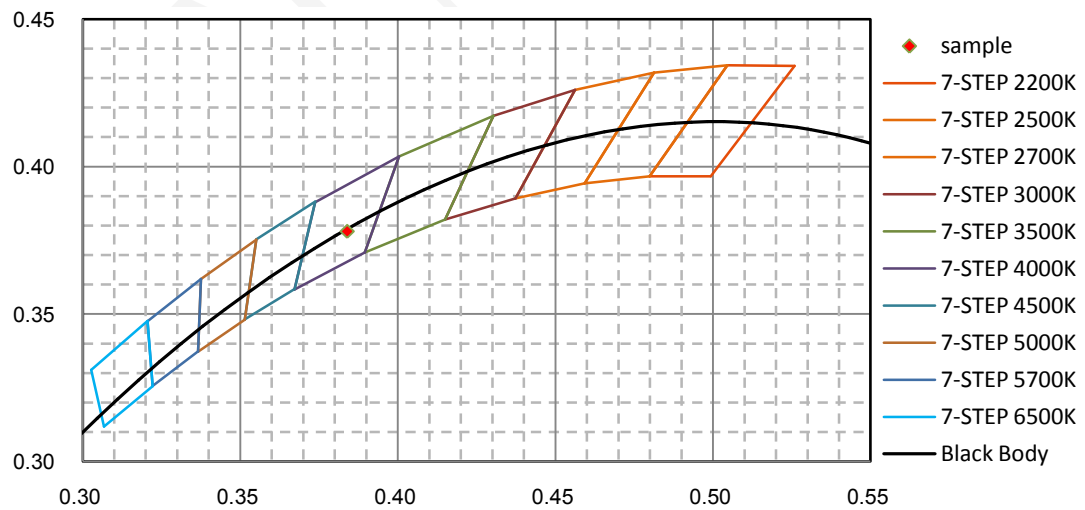
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	9.248E-01	421	1.102E+01	462	5.341E+01	503	3.486E+01	544	9.399E+01
381	7.732E-01	422	1.250E+01	463	4.966E+01	504	3.695E+01	545	9.454E+01
382	8.066E-01	423	1.414E+01	464	4.650E+01	505	3.904E+01	546	9.531E+01
383	7.099E-01	424	1.599E+01	465	4.369E+01	506	4.125E+01	547	9.585E+01
384	7.026E-01	425	1.802E+01	466	4.073E+01	507	4.344E+01	548	9.631E+01
385	6.392E-01	426	2.022E+01	467	3.805E+01	508	4.561E+01	549	9.677E+01
386	6.158E-01	427	2.272E+01	468	3.531E+01	509	4.783E+01	550	9.740E+01
387	5.721E-01	428	2.533E+01	469	3.244E+01	510	5.005E+01	551	9.810E+01
388	5.556E-01	429	2.808E+01	470	2.996E+01	511	5.230E+01	552	9.863E+01
389	5.693E-01	430	3.116E+01	471	2.765E+01	512	5.443E+01	553	9.915E+01
390	5.328E-01	431	3.434E+01	472	2.543E+01	513	5.657E+01	554	9.955E+01
391	5.101E-01	432	3.786E+01	473	2.355E+01	514	5.857E+01	555	1.001E+02
392	5.101E-01	433	4.140E+01	474	2.192E+01	515	6.065E+01	556	1.006E+02
393	5.120E-01	434	4.519E+01	475	2.049E+01	516	6.266E+01	557	1.013E+02
394	5.093E-01	435	4.884E+01	476	1.923E+01	517	6.458E+01	558	1.019E+02
395	5.351E-01	436	5.320E+01	477	1.827E+01	518	6.660E+01	559	1.024E+02
396	5.811E-01	437	5.797E+01	478	1.747E+01	519	6.847E+01	560	1.027E+02
397	5.801E-01	438	6.304E+01	479	1.686E+01	520	7.006E+01	561	1.034E+02
398	6.146E-01	439	6.844E+01	480	1.634E+01	521	7.204E+01	562	1.038E+02
399	6.381E-01	440	7.401E+01	481	1.597E+01	522	7.353E+01	563	1.043E+02
400	6.844E-01	441	8.041E+01	482	1.576E+01	523	7.496E+01	564	1.048E+02
401	7.590E-01	442	8.737E+01	483	1.559E+01	524	7.655E+01	565	1.055E+02
402	8.064E-01	443	9.426E+01	484	1.544E+01	525	7.793E+01	566	1.059E+02
403	8.778E-01	444	1.018E+02	485	1.542E+01	526	7.901E+01	567	1.062E+02
404	9.991E-01	445	1.091E+02	486	1.547E+01	527	8.014E+01	568	1.067E+02
405	1.092E+00	446	1.155E+02	487	1.557E+01	528	8.132E+01	569	1.074E+02
406	1.266E+00	447	1.210E+02	488	1.579E+01	529	8.245E+01	570	1.078E+02
407	1.445E+00	448	1.252E+02	489	1.621E+01	530	8.341E+01	571	1.082E+02
408	1.612E+00	449	1.274E+02	490	1.662E+01	531	8.465E+01	572	1.087E+02
409	1.912E+00	450	1.275E+02	491	1.729E+01	532	8.554E+01	573	1.091E+02
410	2.167E+00	451	1.247E+02	492	1.801E+01	533	8.659E+01	574	1.095E+02
411	2.537E+00	452	1.201E+02	493	1.897E+01	534	8.730E+01	575	1.100E+02
412	2.948E+00	453	1.139E+02	494	1.994E+01	535	8.817E+01	576	1.104E+02
413	3.413E+00	454	1.065E+02	495	2.110E+01	536	8.898E+01	577	1.107E+02
414	3.996E+00	455	9.826E+01	496	2.251E+01	537	8.962E+01	578	1.109E+02
415	4.651E+00	456	8.968E+01	497	2.383E+01	538	9.042E+01	579	1.112E+02
416	5.461E+00	457	8.151E+01	498	2.552E+01	539	9.101E+01	580	1.114E+02
417	6.338E+00	458	7.418E+01	499	2.716E+01	540	9.158E+01	581	1.114E+02
418	7.293E+00	459	6.758E+01	500	2.889E+01	541	9.220E+01	582	1.117E+02
419	8.390E+00	460	6.218E+01	501	3.085E+01	542	9.290E+01	583	1.117E+02
420	9.587E+00	461	5.718E+01	502	3.282E+01	543	9.338E+01	584	1.119E+02

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	1.120E+02	626	8.564E+01	667	3.749E+01	708	1.254E+01	749	3.842E+00
586	1.119E+02	627	8.450E+01	668	3.654E+01	709	1.212E+01	750	3.727E+00
587	1.120E+02	628	8.323E+01	669	3.563E+01	710	1.174E+01	751	3.653E+00
588	1.121E+02	629	8.199E+01	670	3.478E+01	711	1.143E+01	752	3.515E+00
589	1.118E+02	630	8.081E+01	671	3.387E+01	712	1.119E+01	753	3.435E+00
590	1.118E+02	631	7.945E+01	672	3.297E+01	713	1.099E+01	754	3.348E+00
591	1.117E+02	632	7.822E+01	673	3.214E+01	714	1.071E+01	755	3.255E+00
592	1.115E+02	633	7.687E+01	674	3.142E+01	715	1.043E+01	756	3.170E+00
593	1.113E+02	634	7.561E+01	675	3.064E+01	716	1.010E+01	757	3.103E+00
594	1.112E+02	635	7.438E+01	676	2.978E+01	717	9.789E+00	758	3.008E+00
595	1.108E+02	636	7.290E+01	677	2.908E+01	718	9.521E+00	759	2.922E+00
596	1.106E+02	637	7.179E+01	678	2.832E+01	719	9.200E+00	760	2.837E+00
597	1.101E+02	638	7.061E+01	679	2.759E+01	720	8.910E+00	761	2.766E+00
598	1.096E+02	639	6.923E+01	680	2.687E+01	721	8.636E+00	762	2.691E+00
599	1.093E+02	640	6.798E+01	681	2.618E+01	722	8.390E+00	763	2.612E+00
600	1.087E+02	641	6.675E+01	682	2.551E+01	723	8.127E+00	764	2.552E+00
601	1.083E+02	642	6.543E+01	683	2.483E+01	724	7.896E+00	765	2.487E+00
602	1.077E+02	643	6.420E+01	684	2.415E+01	725	7.653E+00	766	2.428E+00
603	1.073E+02	644	6.299E+01	685	2.352E+01	726	7.443E+00	767	2.348E+00
604	1.066E+02	645	6.165E+01	686	2.288E+01	727	7.227E+00	768	2.296E+00
605	1.060E+02	646	6.048E+01	687	2.221E+01	728	7.038E+00	769	2.225E+00
606	1.054E+02	647	5.918E+01	688	2.167E+01	729	6.817E+00	770	2.175E+00
607	1.047E+02	648	5.802E+01	689	2.108E+01	730	6.620E+00	771	2.119E+00
608	1.040E+02	649	5.672E+01	690	2.056E+01	731	6.408E+00	772	2.066E+00
609	1.033E+02	650	5.562E+01	691	2.024E+01	732	6.228E+00	773	2.018E+00
610	1.026E+02	651	5.455E+01	692	2.125E+01	733	6.048E+00	774	1.951E+00
611	1.017E+02	652	5.327E+01	693	2.339E+01	734	5.866E+00	775	1.906E+00
612	1.007E+02	653	5.204E+01	694	2.466E+01	735	5.700E+00	776	1.859E+00
613	9.995E+01	654	5.086E+01	695	2.240E+01	736	5.548E+00	777	1.805E+00
614	9.890E+01	655	4.965E+01	696	1.875E+01	737	5.383E+00	778	1.797E+00
615	9.756E+01	656	4.861E+01	697	1.728E+01	738	5.214E+00	779	1.799E+00
616	9.673E+01	657	4.761E+01	698	1.654E+01	739	5.064E+00	780	1.801E+00
617	9.580E+01	658	4.659E+01	699	1.600E+01	740	4.923E+00		
618	9.470E+01	659	4.545E+01	700	1.555E+01	741	4.773E+00		
619	9.373E+01	660	4.441E+01	701	1.510E+01	742	4.659E+00		
620	9.252E+01	661	4.334E+01	702	1.469E+01	743	4.523E+00		
621	9.155E+01	662	4.236E+01	703	1.430E+01	744	4.389E+00		
622	9.033E+01	663	4.130E+01	704	1.392E+01	745	4.255E+00		
623	8.922E+01	664	4.037E+01	705	1.356E+01	746	4.154E+00		
624	8.787E+01	665	3.941E+01	706	1.322E+01	747	4.064E+00		
625	8.669E+01	666	3.838E+01	707	1.293E+01	748	3.947E+00		

CIE 1931 x y Chromaticity Diagram



7-Step Chromaticity Quadrangles



[Goniophotometer System]

Total operating time for luminous intensity distribution: 1.0 hour

Test orientation: **Downward**

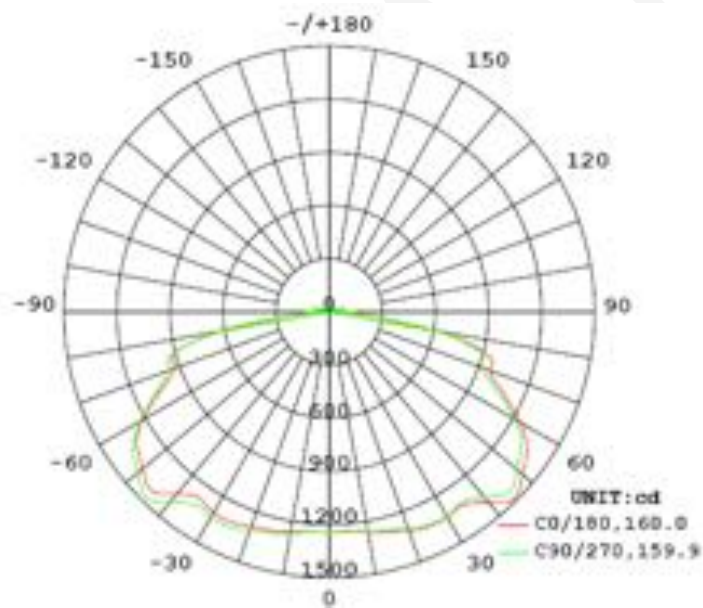
Electrical Measurement

Input Voltage (V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120	60	0.5358	63.93	0.9939

Photometric Measurement

Luminous Flux (lm)	Efficacy (lm/W)	I _{max} (cd)	S/MH (C0/180)	S/MH (C90/270)
6546.7	102.40	1501	1.71	1.65

Luminous Intensity Distribution



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle (50% I _{max}):	160.0	159.9	159.9	159.7	159.9
Field Angle (10% I _{max}):	174.9	174.2	174.5	174.0	174.4

Luminous Intensity (cd) Distribution Data

C \ y	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0.0°	1245	1245	1245	1245	1245	1245	1245	1245
5.0°	1241	1242	1241	1242	1244	1247	1247	1245
10.0°	1256	1262	1261	1268	1273	1274	1272	1269
15.0°	1276	1282	1283	1289	1290	1296	1293	1289
20.0°	1289	1294	1300	1313	1316	1319	1320	1316
25.0°	1309	1312	1319	1333	1338	1341	1340	1339
30.0°	1309	1310	1316	1326	1337	1339	1339	1337
35.0°	1280	1281	1289	1311	1326	1334	1331	1333
40.0°	1339	1348	1366	1391	1402	1417	1427	1421
45.0°	1424	1430	1449	1465	1470	1492	1499	1501
50.0°	1378	1384	1391	1404	1419	1431	1422	1431
55.0°	1328	1332	1345	1351	1360	1376	1385	1365
60.0°	1215	1217	1223	1237	1235	1239	1241	1243
65.0°	1055	1058	1060	1074	1084	1086	1082	1068
70.0°	932	941	953	969	967	962	979	961
75.0°	908	899	909	915	919	901	898	894
80.0°	624	627	630	626	623	596	580	587
85.0°	237	237	233	245	239	227	213	225
90.0°	39	38	56	51	46	47	49	42
95.0°	26	28	2	1	1	1	2	25
100.0°	32	14	3	61	82	61	3	7
105.0°	5	3	4	67	90	66	5	1
110.0°	6	1	5	29	41	28	5	1
115.0°	1	1	4	13	18	13	4	1
120.0°	1	1	3	10	14	11	3	1
125.0°	1	1	3	8	10	8	3	1
130.0°	1	1	2	7	8	7	2	1
135.0°	1	1	1	5	7	5	2	1
140.0°	1	1	1	2	5	2	2	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	1	1	1	1	2	2

Luminous Intensity (cd) Distribution Data (cont.)

C y	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
0.0°	1245	1245	1245	1245	1245	1245	1245	1245
5.0°	1244	1241	1239	1240	1237	1238	1239	1240
10.0°	1263	1258	1258	1257	1257	1255	1253	1251
15.0°	1288	1283	1280	1277	1274	1274	1274	1276
20.0°	1312	1309	1306	1305	1299	1297	1289	1287
25.0°	1336	1332	1328	1330	1326	1323	1315	1309
30.0°	1337	1329	1332	1337	1333	1332	1317	1314
35.0°	1329	1315	1313	1311	1309	1303	1289	1282
40.0°	1405	1385	1383	1374	1367	1354	1338	1332
45.0°	1486	1461	1455	1456	1437	1443	1434	1415
50.0°	1429	1396	1385	1395	1384	1392	1384	1365
55.0°	1368	1337	1319	1324	1326	1332	1330	1321
60.0°	1247	1221	1208	1221	1210	1220	1218	1220
65.0°	1085	1064	1056	1058	1045	1055	1062	1066
70.0°	966	950	950	939	920	933	938	942
75.0°	917	911	914	900	891	898	913	921
80.0°	619	600	605	598	614	638	635	642
85.0°	244	235	226	232	235	247	238	252
90.0°	67	53	42	43	42	49	51	55
95.0°	34	26	2	1	1	1	1	27
100.0°	18	6	2	63	79	54	2	18
105.0°	2	1	4	62	85	61	3	3
110.0°	1	1	4	26	38	26	4	1
115.0°	1	1	3	12	16	12	3	1
120.0°	1	1	3	9	12	9	3	1
125.0°	1	1	2	7	9	7	2	1
130.0°	1	1	2	6	8	6	2	1
135.0°	1	1	1	5	6	5	1	1
140.0°	1	1	1	1	4	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	1	1	1
160.0°	1	1	1	1	1	1	1	1
165.0°	1	1	1	1	1	1	1	1
170.0°	1	1	1	1	1	1	1	1
175.0°	2	1	1	1	1	1	1	1
180.0°	2	2	2	2	1	1	2	2

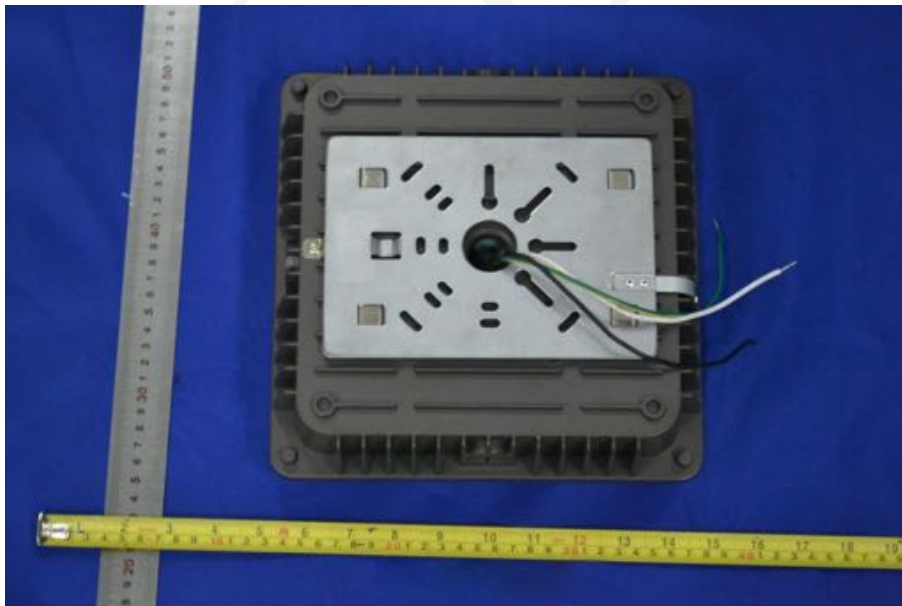
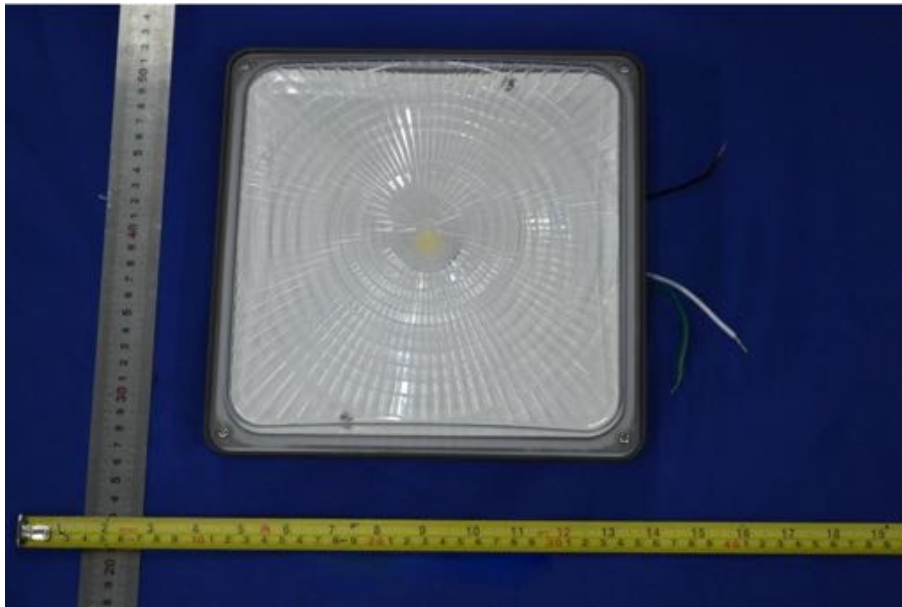
Zonal Lumen Density Measurement

Deg	Flux (lm)	%	Deg	Flux (lm)	%
0-5	29.7	0.45	0-5	29.7	0.45
5-10	89.6	1.37	0-10	119.2	1.82
10-15	151.1	2.31	0-15	270.3	4.13
15-20	213.1	3.25	0-20	483.4	7.38
20-25	276.3	4.22	0-25	759.7	11.60
25-30	336.3	5.14	0-30	1096.0	16.74
30-35	387.3	5.92	0-35	1483.3	22.66
35-40	446.5	6.82	0-40	1929.9	29.48
40-45	527.8	8.06	0-45	2457.7	37.54
45-50	579.3	8.85	0-50	3037.0	46.39
50-55	595.9	9.10	0-55	3632.9	55.49
55-60	597.1	9.12	0-60	4230.0	64.61
60-65	557.1	8.51	0-65	4787.1	73.12
65-70	504.8	7.71	0-70	5291.9	80.83
70-75	490.1	7.49	0-75	5782.0	88.32
75-80	416.4	6.36	0-80	6198.5	94.68
80-85	215.7	3.30	0-85	6414.2	97.98
85-90	68.7	1.05	0-90	6482.9	99.03
90-95	9.4	0.14	0-95	6492.3	99.17
95-100	10.2	0.16	0-100	6502.6	99.33
100-105	17.5	0.26	0-105	6520.1	99.59
105-110	11.0	0.17	0-110	6531.1	99.76
110-115	4.6	0.07	0-115	6535.7	99.83
115-120	2.7	0.04	0-120	6538.4	99.87
120-125	2.2	0.04	0-125	6540.6	99.91
125-130	1.7	0.02	0-130	6542.3	99.93
130-135	1.3	0.02	0-135	6543.6	99.95
135-140	0.9	0.02	0-140	6544.4	99.97
140-145	0.5	0.00	0-145	6544.9	99.97
145-150	0.4	0.01	0-150	6545.4	99.98
150-155	0.4	0.01	0-155	6545.8	99.99
155-160	0.3	0.00	0-160	6546.1	99.99
160-165	0.3	0.00	0-165	6546.4	99.99
165-170	0.2	0.01	0-170	6546.6	100.00
170-175	0.1	0.00	0-175	6546.7	100.00
175-180	0.0	0.00	0-180	6546.7	100.00

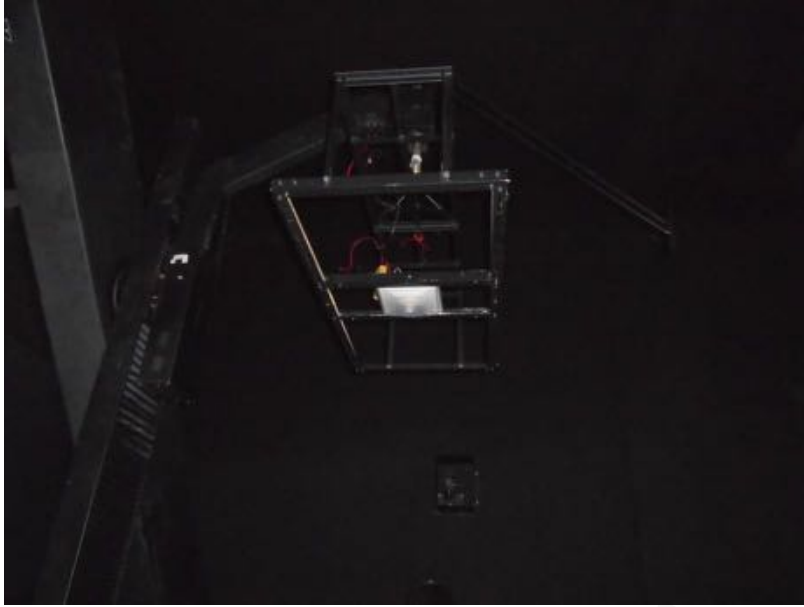
[Additional Test]

Test Item	Test Voltage (V)	Frequency (Hz)	Test Result
Power Factor:	277.0	60	0.9239
Total Harmonic Distortion:	277.0	60	11.32%
Total Harmonic Distortion:	120.0	60	7.12%

6. Product Photo



7. Product Test orientation in the Goniophotometer



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

FINAL