

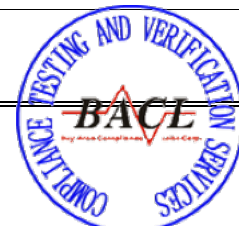
IES LM -79-08

MEASUREMENT AND TEST REPORT For

Premium Quality Lighting, Inc.
2285 Ward Avenue / Simi Valley, CA 93065

Test Model: 83217

Report Type:	Electrical and Photometric test including: Luminous Flux, Color, Luminous Intensity Distribution, THD, Power Factor
Test Engineer:	Daniel Duan <i>Daniel Duan</i>
Report Number :	RSZ150804506-10
Test Date:	2015-07-23 to 2015-08-06
Report Date:	2015-08-11
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.



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1. Product Description

General Information:

One sample was received on 2015-07-21 and used for testing. Sample No.: RSZ150804506

Model Tested : 83217
 Manufacturer: Premium Quality Lighting, Inc.
 Brand Name: Superior Life®
 Product Designation: Outdoor Wall -Mounted Area Luminaires
 Dimmable: Non-Dimmable
 Burning Time Before Test : 0 hour (For New Products)

Rated Values:

Rated Voltage /Frequency : AC120 -277V 60Hz
 Rated Power : 25W
 Nominal CCT: 4000K
 Nominal Light Output: 2126 lm

2. Standards Used

- IESNA 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

3. Description of Test Equipment

Device	Manufacture	Model No	Serial No	Test Range	Calibration date	Calibration due date
Integrating Sphere	SENSING	SPR -600	S09008	1.5 meter	2015-03-24	2016-03-24
Spectral photometer	SENSING	SPR3000	90902027	380nm ~800nm	2015-03-24	2016-03-24
Power Meter	YOKOGAWA	WT -210	91j926132	15/30/60/150/300/600 V	2015-03-05	2016-03-05
AC Power Supply	ALL Power	APW -105N	970613	0V-300V 50 -400Hz	2015-03-05	2016-03-05
Standard Light Source	EVERFINE	D204	LSD090808	N/A	2014-08-05	2015-08-05
Thermal Meter	SENSING	N/A	N/A	25 °C,45 °C,55 °C	2015-03-05	2016-03-05
DC Power Supply	ITECH	IT6154	0061 0417 6471 0010 19	0~60V	2015-03-05	2016-03-05
AC Power Supply	EVERFINE	VPS1030 PWM	1012017	0-150V , 0-300V	2015-03-05	2016-03-05
DC Power Supply	EVERFINE	WY12010	1009009	30V/5A	2015-03-05	2016-03-05
Power Meter	YOKOGAWA	WT -210	91KB35700	15/30/60/150/300/600 V	2015-03-05	2016-03-05
Goniophotometer	EVERFINE	GO -R5000	YG108492N10120001	1600mm,3000W/10A	2015-03-20	2016-03-20
Thermal Meter	Victor	VC230	EE091	0~40 °C 0~90%	2013-04-01	2016-03-31
Standard Light Source	EVERFINE	D908	1012003	N/A	2015-05-15	2016-05-14

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 $25^{\circ}\text{C}\pm 1^{\circ}\text{C}$ during measurement. And relative humidity is less than 65%.

Integrating Sphere System

The system includes AC power source, digital power meter, DC power supply, spectrophotometer, and integrating sphere. The integrating sphere system is calibrated by standard light source before measurement. The system and standard light source has been calibrated regularly and traceable to the National Primary Standards.

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 $U=2.1\%$ ($K=2$), 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. The standard light source has been calibrated regularly and traceable to the National Primary Standards.

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 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 $25^{\circ}\text{C}\pm 1^{\circ}\text{C}$. 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.

5. Test Result

[Integrating Sphere System]

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

Test orientation: **Downward**

Electrical Measurement

Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
119.98	60.0	0.2114	25.26	0.996

Photometric Measurement

Luminous Flux (lm)	Radiant Flux (W)	Efficacy (lm/W)	CCT (K)	Duv
2126.311	6.497	84.177	4087	-1.10E-04

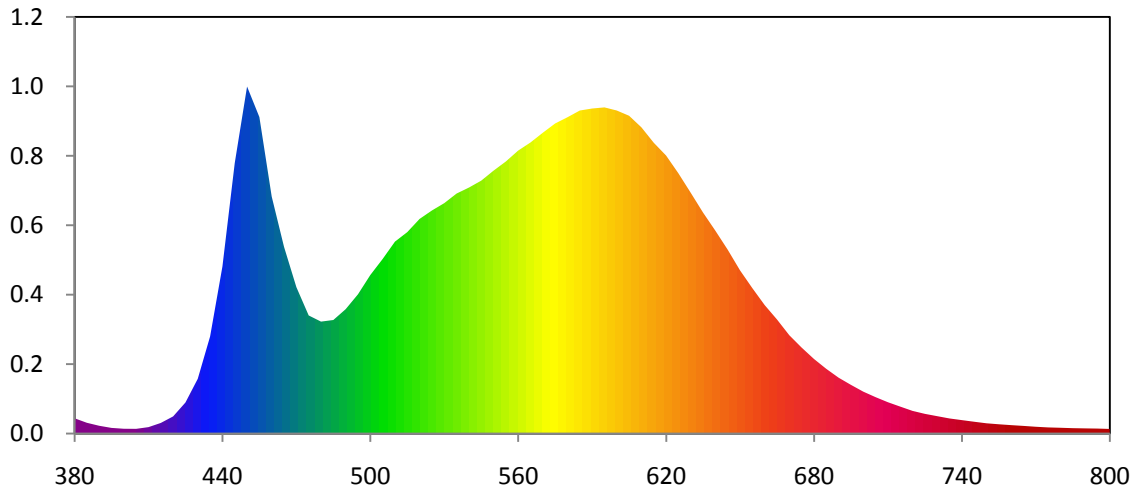
Chromaticity Coordinate

x	y	u	v	u'	v'
0.3766	0.3741	0.2236	0.3332	0.2236	0.4998

Color Rendering Index

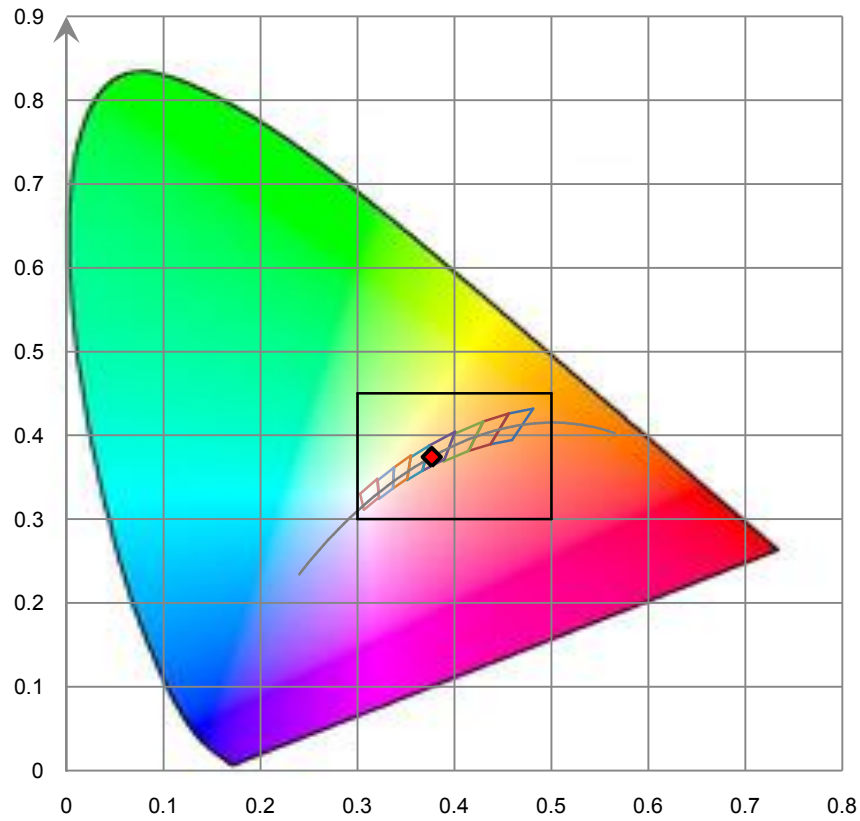
Ra			
83.0			
R1 81	R2 90	R3 95	R4 81
R5 81	R6 85	R7 86	R8 64
R9 8	R10 75	R11 80	R12 63
R13 84	R14 97	R15 75	

Relative Spectral Power Distribution

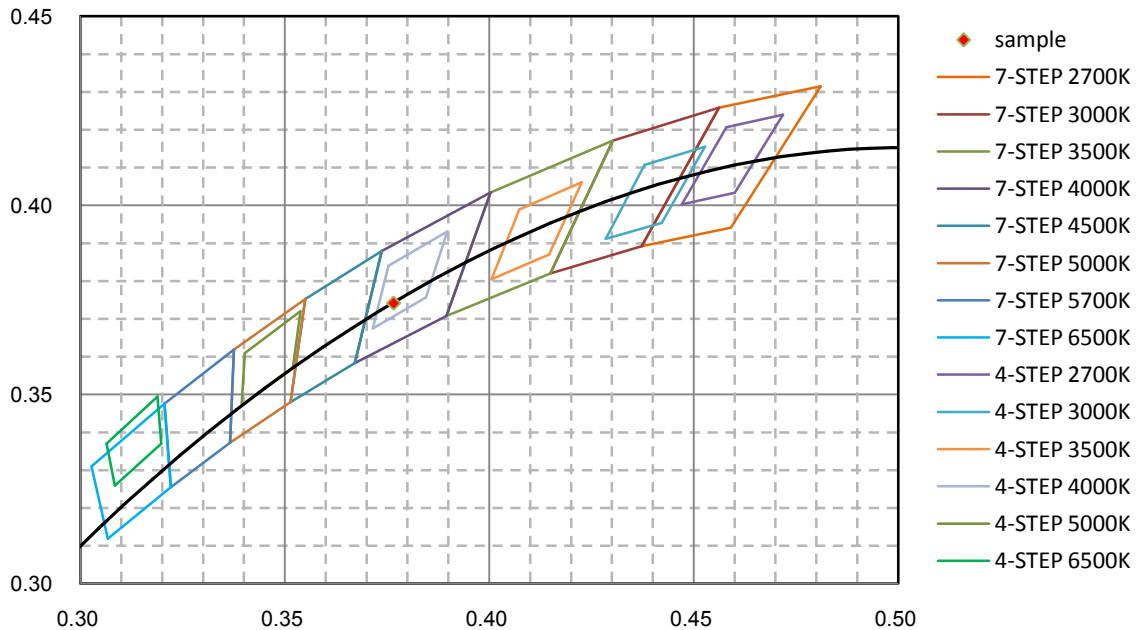


nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	8.155E-03	465	9.957E-02	550	1.402E-01	635	1.178E-01	720	1.210E-02
385	5.752E-03	470	7.808E-02	555	1.451E-01	640	1.082E-01	725	1.051E-02
390	4.155E-03	475	6.299E-02	560	1.509E-01	645	9.806E-02	730	9.280E-03
395	3.025E-03	480	5.970E-02	565	1.552E-01	650	8.704E-02	735	8.052E-03
400	2.567E-03	485	6.055E-02	570	1.604E-01	655	7.753E-02	740	7.176E-03
405	2.529E-03	490	6.632E-02	575	1.653E-01	660	6.852E-02	745	6.301E-03
410	3.435E-03	495	7.425E-02	580	1.687E-01	665	6.083E-02	750	5.481E-03
415	5.666E-03	500	8.452E-02	585	1.722E-01	670	5.243E-02	755	4.958E-03
420	9.146E-03	505	9.306E-02	590	1.733E-01	675	4.585E-02	760	4.504E-03
425	1.656E-02	510	1.023E-01	595	1.739E-01	680	3.978E-02	765	4.086E-03
430	2.919E-02	515	1.074E-01	600	1.722E-01	685	3.451E-02	770	3.632E-03
435	5.179E-02	520	1.145E-01	605	1.694E-01	690	2.979E-02	775	3.279E-03
440	8.908E-02	525	1.189E-01	610	1.633E-01	695	2.597E-02	780	3.091E-03
445	1.442E-01	530	1.228E-01	615	1.551E-01	700	2.236E-02	785	2.872E-03
450	1.850E-01	535	1.280E-01	620	1.482E-01	705	1.941E-02	790	2.758E-03
455	1.687E-01	540	1.312E-01	625	1.388E-01	710	1.672E-02	795	2.667E-03
460	1.264E-01	545	1.348E-01	630	1.284E-01	715	1.438E-02	800	2.465E-03

CIE 1931 x y Chromaticity Diagram



7-Step & 4-Step Chromaticity Quadrangles



[Goniophotometer System]

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

Test orientation: **Downward**

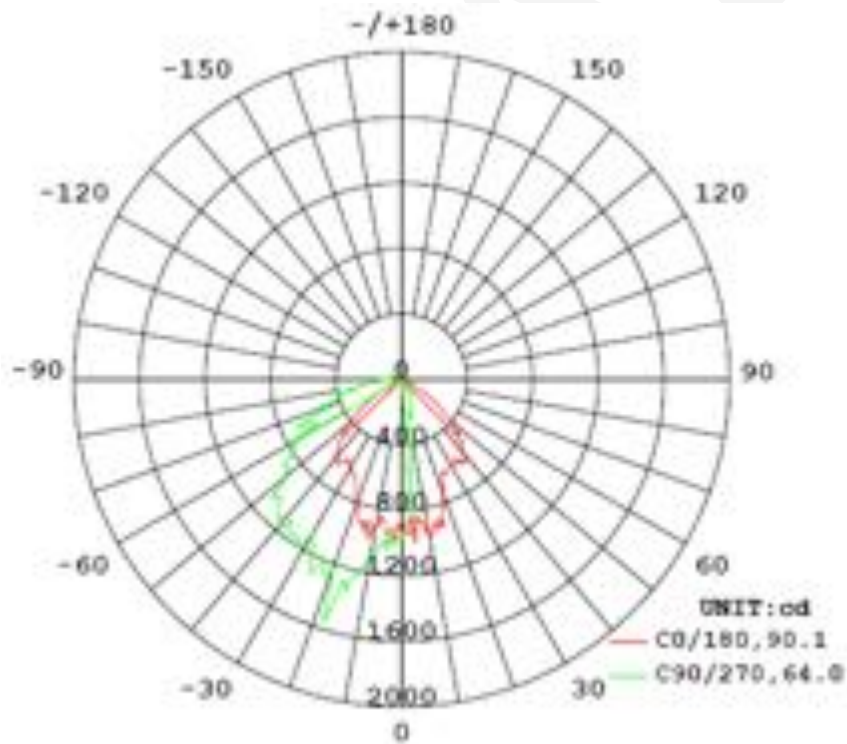
Electrical Measurement

Input Voltage (V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.0	60.0	0.2099	25.07	0.9952

Photometric Measurement

Luminous Flux (lm)	Efficacy (lm/W)	I _{max} (cd)	S/MH (C0/180)	S/MH (C90/270)
2129.32	84.94	1557	0.87	0.24

Luminous Intensity Distribution



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle (50% I _{max}):	90.1	72.8	64.0	71.3	74.6
Field Angle (10% I _{max}):	124.1	114.3	105.1	116.7	115.1

Luminous Intensity (cd) Distribution Data

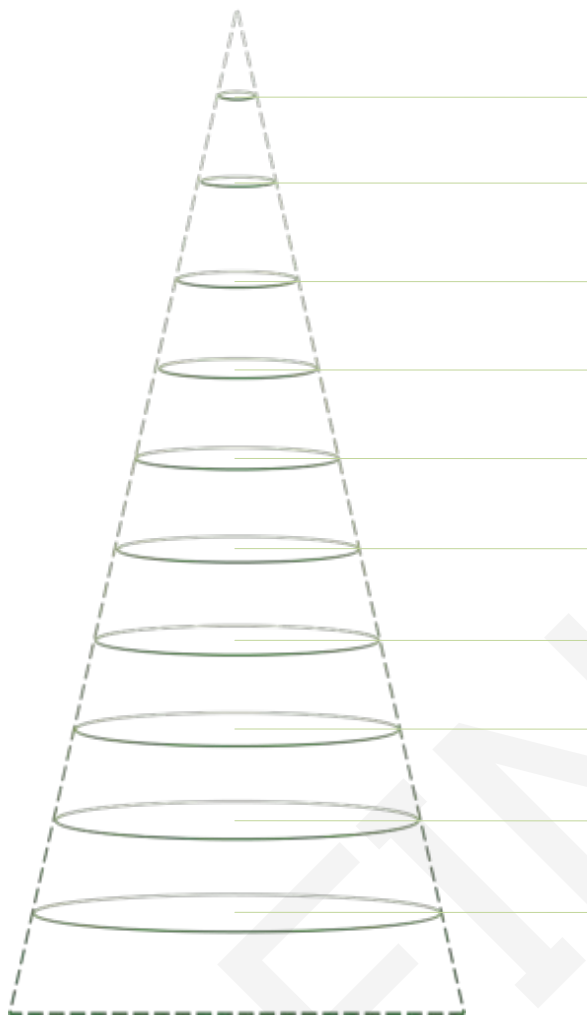
C y	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0.0°	958	958	958	958	958	958	958	958
5.0°	943	867	988	954	1052	903	862	893
10.0°	916	933	1022	1069	1101	1085	971	894
15.0°	894	839	1113	1230	1336	1222	1060	817
20.0°	829	938	1238	1402	1225	1199	1176	884
25.0°	664	800	1138	1219	1306	1165	1021	766
30.0°	618	913	1160	1161	1076	1094	1100	888
35.0°	597	967	1129	1164	1155	1127	1072	902
40.0°	644	909	1062	1124	1180	1065	1012	862
45.0°	539	774	986	1004	1041	1021	952	748
50.0°	423	660	855	934	921	917	837	650
55.0°	284	525	705	867	845	832	701	509
60.0°	146	375	588	746	794	746	581	384
65.0°	50	240	463	632	704	635	466	265
70.0°	20	142	302	474	525	447	305	164
75.0°	12	61	212	377	409	351	237	77
80.0°	10	31	123	229	286	265	130	35
85.0°	8	26	57	126	155	129	65	26
90.0°	7	21	41	67	87	72	42	20
95.0°	4	17	34	54	73	57	34	17
100.0°	4	15	28	46	61	47	28	14
105.0°	4	13	24	40	54	41	24	13
110.0°	4	11	21	35	45	35	20	11
115.0°	3	10	18	30	39	30	17	10
120.0°	3	8	16	26	33	25	15	8
125.0°	3	8	14	22	26	22	14	7
130.0°	3	7	13	19	21	19	13	7
135.0°	2	6	12	17	17	17	11	6
140.0°	2	6	10	14	14	13	10	6
145.0°	2	5	8	11	12	11	8	5
150.0°	2	4	7	9	10	9	6	4
155.0°	2	3	5	7	8	7	5	3
160.0°	2	3	4	5	6	5	4	3
165.0°	2	2	3	3	4	3	3	2
170.0°	1	1	2	2	2	2	2	1
175.0°	1	1	1	1	1	1	1	1
180.0°	1	1	1	1	1	1	1	1

Luminous Intensity (cd) Distribution Data (cont.)

C \ y	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
0.0°	958	958	958	958	958	958	958	958
5.0°	1007	1010	747	768	668	591	804	872
10.0°	905	958	750	382	250	344	517	825
15.0°	879	893	500	200	247	188	423	850
20.0°	740	760	253	205	170	210	201	715
25.0°	645	523	169	214	102	208	185	461
30.0°	607	397	168	149	59	109	172	324
35.0°	638	289	109	59	30	45	117	226
40.0°	550	238	57	16	16	16	51	184
45.0°	466	175	23	8	6	8	20	137
50.0°	395	110	12	5	6	5	11	91
55.0°	264	50	8	5	4	4	7	51
60.0°	149	20	6	3	2	2	5	19
65.0°	59	12	5	2	2	2	4	12
70.0°	23	9	4	1	1	1	3	9
75.0°	16	8	3	1	1	1	3	8
80.0°	11	6	3	1	1	1	3	6
85.0°	8	5	2	1	1	1	2	5
90.0°	6	4	2	1	1	1	2	3
95.0°	5	3	1	1	1	1	1	3
100.0°	4	3	1	1	1	1	2	3
105.0°	4	2	1	0	1	1	1	2
110.0°	4	2	1	1	1	1	1	2
115.0°	3	2	1	1	1	1	1	2
120.0°	3	1	1	1	1	1	1	2
125.0°	3	1	1	1	1	1	1	1
130.0°	3	1	1	1	1	1	1	1
135.0°	2	2	1	1	1	1	1	1
140.0°	2	1	1	1	1	1	1	1
145.0°	2	1	1	1	1	1	1	1
150.0°	2	1	1	1	1	1	1	1
155.0°	2	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°	1	1	1	1	1	1	1	1
180.0°	1	1	1	1	1	1	1	1

Average Area Illumination Figure

Angle: 74.60°. Flux out: 956.0 lm.



Height (m)	Diameter (cm)	E _{avg} (lx)	E _{max} (lx)
0.5	76.2	1611.0	4819.0
1.0	152.4	476.8	1349.0
1.5	228.5	179.0	535.5
2.0	304.7	119.2	337.3
2.5	380.9	64.4	192.8
3.0	457.1	53.0	149.9
3.5	533.3	32.9	98.4
4.0	609.4	29.8	84.3
4.5	685.6	19.9	59.5
5.0	761.8	19.1	54.0

Zonal Lumen Density Measurement

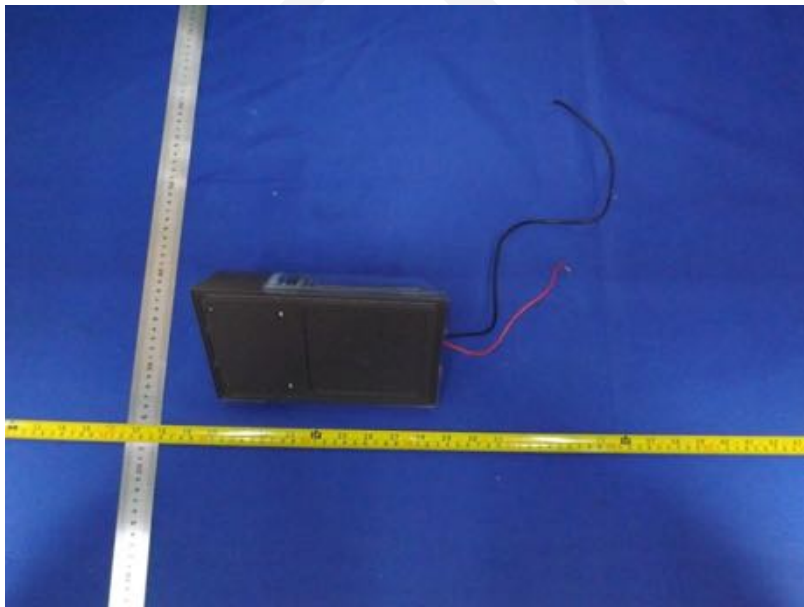
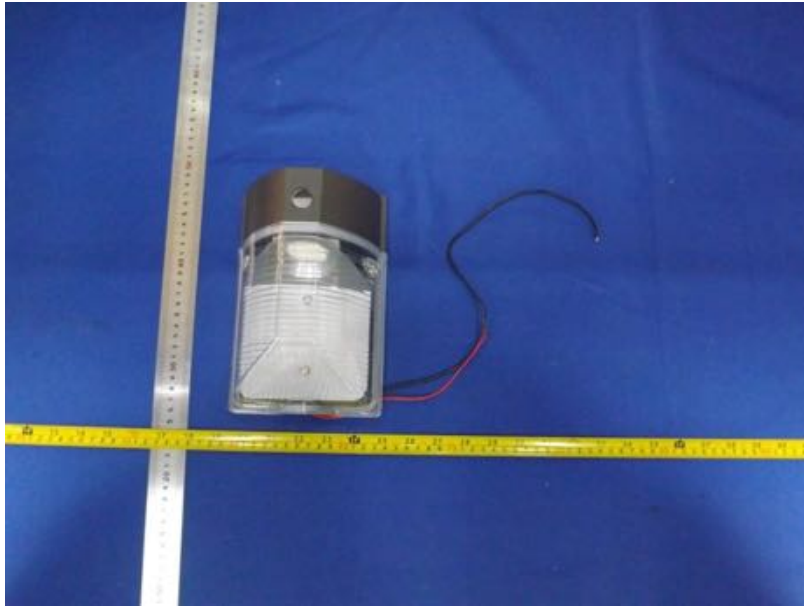
Deg	Flux (lm)	%
0-5	21.1	0.99
5-10	58.8	2.76
10-15	97.0	4.56
15-20	131.0	6.15
20-25	145.0	6.81
25-30	163.1	7.66
30-35	182.6	8.57
35-40	194.2	9.12
40-45	197.1	9.26
45-50	187.8	8.82
50-55	169.0	7.94
55-60	145.5	6.83
60-65	115.9	5.44
65-70	92.5	4.35
70-75	70.4	3.31
75-80	48.7	2.28
80-85	29.8	1.40
85-90	16.4	0.77
90-95	11.6	0.55
95-100	9.5	0.45
100-105	8.1	0.38
105-110	6.9	0.32
110-115	5.7	0.27
115-120	4.8	0.22
120-125	3.9	0.19
125-130	3.2	0.15
130-135	2.7	0.12
135-140	2.1	0.10
140-145	1.6	0.08
145-150	1.2	0.06
150-155	0.8	0.03
155-160	0.6	0.03
160-165	0.3	0.02
165-170	0.2	0.01
170-175	0.1	0.00
175-180	0.0	0.00

Deg	Flux (lm)	%
0-5	21.1	0.99
0-10	79.9	3.75
0-15	177.0	8.31
0-20	307.9	14.46
0-25	452.9	21.27
0-30	616.0	28.93
0-35	798.6	37.50
0-40	992.8	46.62
0-45	1189.9	55.88
0-50	1377.7	64.70
0-55	1546.7	72.64
0-60	1692.2	79.47
0-65	1808.1	84.91
0-70	1900.6	89.26
0-75	1971.0	92.57
0-80	2019.7	94.85
0-85	2049.5	96.25
0-90	2065.9	97.02
0-95	2077.5	97.57
0-100	2087.1	98.02
0-105	2095.2	98.40
0-110	2102.0	98.72
0-115	2107.8	98.99
0-120	2112.6	99.21
0-125	2116.5	99.40
0-130	2119.7	99.55
0-135	2122.4	99.67
0-140	2124.5	99.77
0-145	2126.1	99.85
0-150	2127.3	99.91
0-155	2128.1	99.94
0-160	2128.7	99.97
0-165	2129.1	99.99
0-170	2129.2	100.00
0-175	2129.3	100.00
0-180	2129.3	100.00

[Additional Test]

Test Item	Test Voltage (V)	Frequency (Hz)	Test Result
Power Factor:	277	60	0.9183
Total Harmonic Distortion:	277	60	16.63%
Total Harmonic Distortion:	120	60	7.02%

6. Product Photo



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