



UL-CCIC Company Limited  
No.2 Chengwan Road,  
Suzhou Industrial Park  
Suzhou 215122, China  
86-512-68086400



## Photometric Test Report

### Relevant Standards

IES LM-79-2008

### Prepared For

**P.Q.L., Inc.**  
2285 Ward Avenue  
Simi Valley, CA 93065

### Catalog Number

55231

### Project Number

4787668865

### Report Number

4787668865\_34

### Test Date

11/11/2016

### Issue Date

11/30/2016

Prepared By

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Approved By

*Duff Yang*

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The results contained in this report pertain only to the tested sample.

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## 1.0 Test List

Test Item	Test	Test Date	Model Number	Tests Conducted By
1	Integrating Sphere Test for the Lower CCT	11/11/2016	55231	Elvis Wu
2	Goniophotometer Test	11/11/2016	55231	Elvis Wu

### Remark (if any)

1. UL test equipment information is recorded on Meter Use in UL's Laboratory Project Management (LPM) database.



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## 2.0 Production Description

**Luminaire Description:** High-bay Luminaires for Commercial and Industrial Buildings **Model Number:** 55231

**Rated Voltage:** 120~277V

**Frequency:** 50/60 Hz

**LED Package:** STWxA2PD-xx

### Photos of Luminaire Characteristics





### 3.0 LM-79 Measurement and Test Results

#### 3.1 Integrating Sphere Test for the lower CCT

Model No.	55231		Sample ID.	628450-002	
Driver No.	N/A	Operate time (Min.)	80	Stabilization time (Min.)	70

#### Test Method

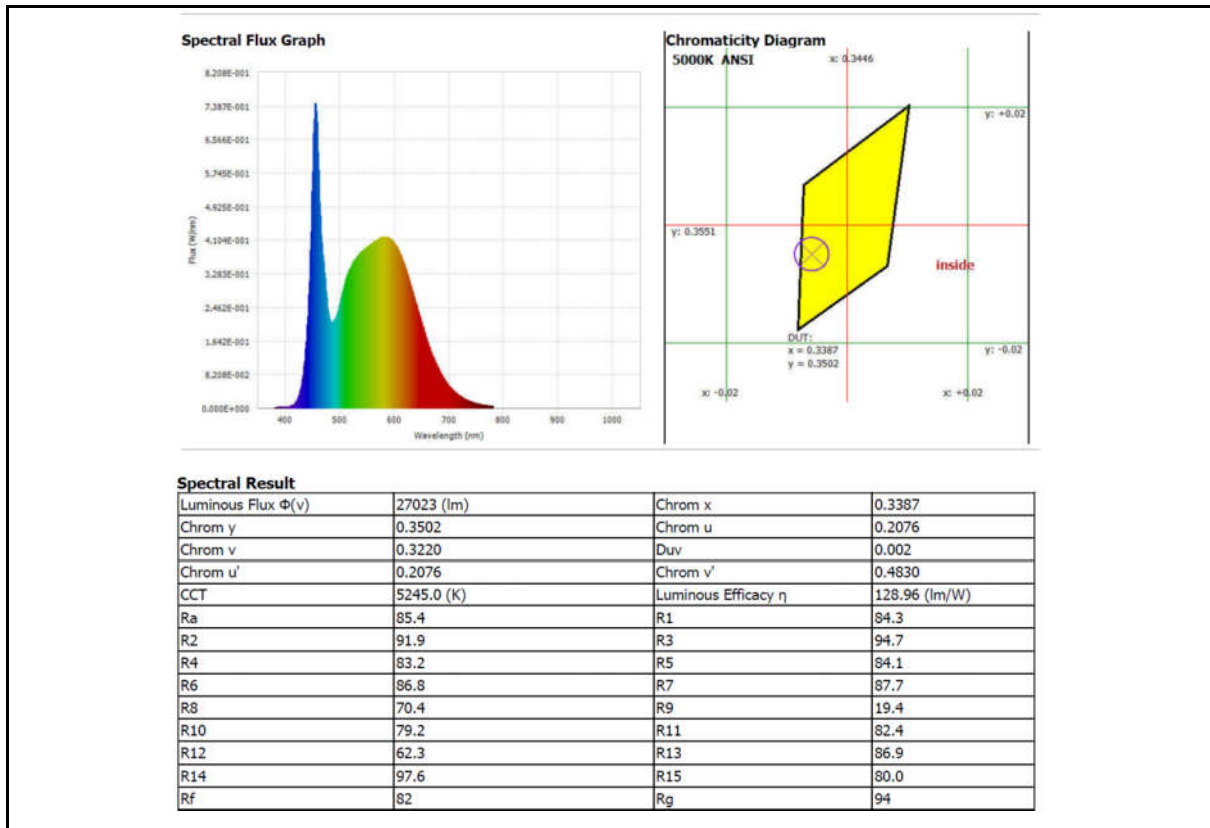
1. The sample was tested according to the IES LM-79-2008.
2. Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25° C ± 1° C.
3. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. The sample was operated at rated voltage and was stabilized before measurement. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at 1 nm intervals over the range of 380 to 780 nm.

#### Integrating Sphere Test Conditions

Temperature (°C)	Voltage (Vac)	Frequency(Hz)	Current (A)	Power (W)	Power Factor	Current THD
25.5	120.01	60	1.7509	209.55	0.9973	6.00%

#### Test Results

Orientation	CCT (K)	CRI (Ra)	Duv	Luminous Flux (lm)	Luminous Efficacy (lm/W)
Horizontal	5245	83.2	0.002	27023.0	128.96





### 3.0 LM-79 Measurement and Test Results

#### 3.2 Goniophotometer Test

<b>Model No.</b>	55231		<b>Sample ID.</b>	628450-002	
<b>Driver No.</b>	N/A	<b>Operate time (Min.)</b>	80	<b>Stabilization time (Min.)</b>	70

#### Test Method

1. The sample was tested according to the IES LM-79-2008.
2. Photometric parameters were measured using a type C goniophotometer and software.
3. The ambient temperature shall be maintained at 25° C ± 1° C, measured at a point not more than 1 m from the sample and at the same height as the sample.
4. The samples were operated at rated voltage and was stabilized before measurement. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 0.5° vertical intervals and 22.5° horizontal intervals.

#### Goniophotometer Test Conditions

Temperature (°C)	Voltage (Vac)	Frequency	Current (A)	Power (W)	Power Factor
24.9	119.99	60	1.7571	210.13	0.9966

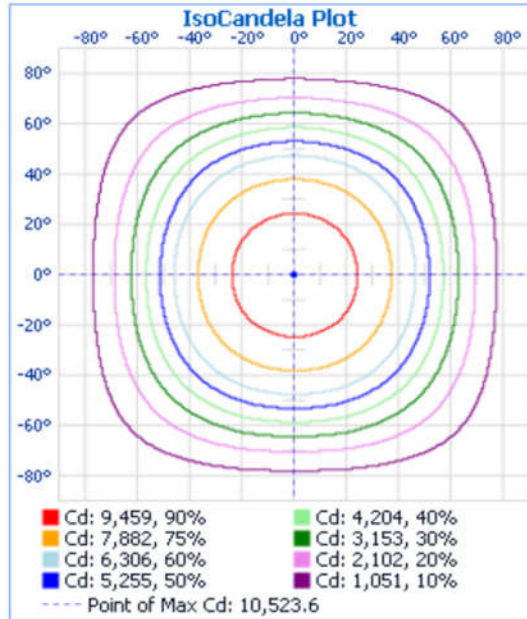
#### Test Result

Orientation	Flux (lm)	Field Angle (10%)		Beam Angle (50%)		Luminous Efficacy (lm/W)
		Horizontal Spread	Vertical Spread	Horizontal Spread	Vertical Spread	
Horizontal	27495.75	154.5	156	103.1	106.4	130.9

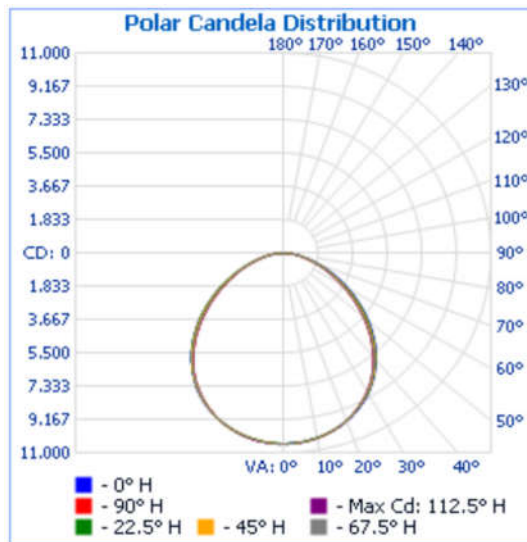


### 3.2 Goniophotometer Test (Cont'd)

#### IsoCandela Plot



#### Polar Candela Distribution





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### 3.2 Goniophotometer Test (Cont'd)

#### Zonal Lumen Summary

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	8,182.6	29.8%
0-40	13,342.9	48.5%
0-60	22,718.8	82.6%
60-90	4,708.8	17.1%
70-100	1,840.1	6.7%
90-120	26.0	0.1%
0-90	27,427.7	99.8%
90-180	68.1	0.2%
0-180	27,495.8	100%

#### Lumens Per Zone

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-5	250.7	0.9%	90-95	6.6	0%
5-10	744.2	2.7%	95-100	4.3	0%
10-15	1,213.7	4.4%	100-105	3.8	0%
15-20	1,643.3	6.0%	105-110	3.7	0%
20-25	2,015.6	7.3%	110-115	3.9	0%
25-30	2,315.1	8.4%	115-120	3.8	0%
30-35	2,526.9	9.2%	120-125	3.9	0%
35-40	2,633.5	9.6%	125-130	4.4	0%
40-45	2,625.3	9.5%	130-135	4.7	0%
45-50	2,501.6	9.1%	135-140	4.9	0%
50-55	2,276.3	8.3%	140-145	4.9	0%
55-60	1,972.6	7.2%	145-150	4.6	0%
60-65	1,622.7	5.9%	150-155	4.1	0%
65-70	1,256.8	4.6%	155-160	3.4	0%
70-75	898.1	3.3%	160-165	2.8	0%
75-80	570.3	2.1%	165-170	2.3	0%
80-85	285.1	1.0%	170-175	1.5	0%
85-90	75.9	0.3%	175-180	0.5	0%



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### 3.2 Goniophotometer Test (Cont'd)

#### Intensity Data(cd)

	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
0	10510	10510	10510	10510	10510	10510	10510	10510	10510	10510	10510	10510	10510	10510	10510	10510	10510
1	10502	10490	10511	10522	10506	10524	10514	10484	10506	10484	10514	10524	10506	10522	10511	10490	10502
2	10485	10483	10504	10517	10510	10512	10496	10475	10504	10475	10496	10512	10510	10517	10504	10483	10485
3	10472	10481	10504	10509	10507	10501	10486	10471	10496	10471	10486	10501	10507	10509	10504	10481	10472
4	10491	10471	10482	10498	10489	10498	10478	10457	10483	10457	10478	10498	10489	10498	10482	10471	10491
5	10467	10459	10463	10470	10470	10486	10464	10445	10476	10445	10464	10486	10470	10470	10463	10459	10467
6	10456	10425	10457	10460	10464	10453	10444	10425	10457	10425	10444	10453	10464	10460	10457	10425	10456
7	10408	10406	10429	10446	10440	10424	10417	10403	10438	10403	10417	10424	10440	10446	10429	10406	10408
8	10395	10378	10411	10426	10414	10406	10391	10364	10418	10364	10391	10406	10414	10426	10411	10378	10395
9	10388	10359	10382	10395	10385	10364	10354	10347	10367	10347	10354	10364	10385	10395	10382	10359	10388
10	10338	10318	10348	10355	10351	10341	10331	10314	10323	10314	10331	10341	10351	10355	10348	10318	10338
11	10306	10285	10310	10319	10321	10306	10298	10283	10310	10283	10298	10306	10321	10319	10310	10285	10306
12	10274	10251	10268	10294	10270	10262	10246	10244	10243	10244	10246	10262	10270	10294	10268	10251	10274
13	10224	10200	10225	10229	10225	10233	10210	10195	10206	10195	10210	10233	10229	10225	10200	10224	10224
14	10192	10162	10180	10177	10172	10186	10170	10149	10158	10149	10170	10186	10177	10177	10180	10162	10192
15	10142	10118	10145	10126	10129	10142	10114	10103	10111	10103	10114	10142	10129	10126	10145	10118	10142
16	10092	10068	10079	10063	10075	10072	10057	10047	10040	10047	10057	10072	10075	10063	10079	10068	10092
17	10035	10016	10019	10011	10018	10019	10015	9995	9995	9995	10015	10019	10018	10011	10019	10016	10035
18	9975	9948	9946	9952	9946	9948	9946	9926	9946	9926	9946	9948	9946	9952	9946	9948	9975
19	9918	9892	9895	9879	9876	9891	9885	9873	9888	9873	9885	9891	9876	9879	9895	9892	9918
20	9850	9804	9814	9805	9805	9823	9827	9800	9825	9800	9827	9823	9805	9805	9814	9804	9850
25	9448	9425	9402	9391	9372	9389	9403	9406	9429	9406	9430	9389	9372	9391	9402	9425	9448
30	8962	8936	8895	8846	8843	8863	8898	8896	8924	8896	8898	8863	8846	8846	8895	8936	8962
35	8363	8324	8284	8228	8186	8219	8270	8282	8285	8282	8270	8219	8186	8228	8284	8324	8363
40	7624	7579	7557	7456	7410	7456	7530	7565	7573	7565	7530	7456	7410	7456	7557	7579	7624
45	6812	6748	6693	6585	6529	6575	6664	6734	6734	6734	6664	6575	6529	6585	6693	6748	6812
50	5915	5842	5723	5601	5558	5625	5734	5823	5832	5823	5734	5625	5558	5601	5723	5842	5915
55	4962	4876	4772	4640	4576	4633	4766	4867	4856	4867	4766	4633	4576	4640	4772	4876	4962
60	4013	3921	3806	3680	3626	3677	3800	3908	3882	3908	3800	3677	3626	3680	3806	3921	4013
65	3095	2999	2904	2802	2758	2797	2900	2958	3000	2958	2900	2797	2758	2802	2904	2999	3095
70	2241	2158	2084	2012	1985	2011	2082	2154	2114	2154	2082	2011	1985	2012	2084	2158	2241
75	1487	1428	1377	1334	1315	1324	1367	1412	1386	1412	1367	1324	1315	1334	1377	1428	1487
80	846	802	776	756	749	749	768	792	776	792	768	749	749	756	776	802	846
85	332	306	301	300	298	294	294	294	284	294	294	294	298	300	301	306	332
90	20	22	28	34	38	34	26	19	18	19	26	34	38	34	28	22	20
95	9	9	8	9	7	9	8	8	11	8	8	9	7	9	8	9	9
100	8	8	7	5	6	8	6	9	9	9	6	8	6	5	7	8	8
105	8	6	8	6	5	7	7	8	6	8	7	7	5	6	8	6	8
110	8	6	8	7	6	8	8	8	8	8	8	8	6	7	8	6	8
115	9	9	7	10	6	10	7	8	7	8	7	10	6	10	7	9	9
120	6	7	9	9	5	8	8	8	10	8	8	8	5	9	9	7	6
125	10	11	10	10	9	9	10	10	8	10	10	9	9	10	10	11	10
130	10	10	13	12	6	11	13	11	9	11	13	11	6	12	13	10	10
135	12	11	14	12	10	14	15	12	14	12	15	14	10	12	14	11	12
140	13	16	15	13	11	12	16	16	13	16	16	12	11	13	15	16	13
145	18	16	17	13	11	12	15	16	18	16	15	12	11	13	17	16	18
150	17	18	17	13	14	16	16	17	18	17	16	16	14	13	17	18	17
155	16	18	16	15	13	14	17	19	19	19	17	14	13	15	16	18	16
160	18	18	17	15	14	14	16	16	16	16	16	14	14	15	17	18	18
165	17	19	19	17	17	15	19	18	20	18	19	15	17	17	19	19	17
170	20	21	24	24	22	20	21	20	21	20	21	20	22	24	24	21	20
175	19	20	22	24	26	25	23	21	20	21	23	25	26	24	22	20	19
180	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24





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