



Report No.: GZE1712020-D

NVLAP LAB CODE 201011-0

LM-79-08 Test Report

For

P.Q.L., Inc.

(Brand Name: Superior Life®)

2285 Ward Avenue / Simi Valley, CA 93065

Direct Linear Ambient Luminaires

Model name(s): 8702X_15W_30K, 87020, 87021

Representative (Tested) Model: 8702X_15W_30K

Model Different: All construction and rating are the same, except CCT

Test & Report By:

Bill Luo

Engineer: Bill Luo

Date: Mar.06,2018

Review By:

Univ Xie

Manager: Univ Xie

Note: 1.The results contained in this report pertain only to the tested samples.

2.This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Laboratory: Standard-Tech Co. Ltd Testing Center

NVLAP CODE: 201011-0

Report Format Number STD/QR4909-A/2

Address: Standard-Tech Building, No.6 Guanhong Road,Guangzhou Science City, Guangzhou 510663, China

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<http://www.standard-tech.com>

1.1 Product Information:

Organization Name	P.Q.L., Inc.	
Brand Name		
Model Number	8702X_15W_30K, 87020, 87021	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Direct Linear Ambient Luminaires	
Rated Voltage / Frequency	120Vac, 50/60 Hz	
Nominal Power	15W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K,4000K,5000K	
LED Manufacturer	ShenZhen JuFei Optoelectronics Co., Ltd.	
LED Model	2835 White SMD LED	
Sample Number	GZE1712020-D1(3000K)	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s
Photo		
		

1.2 Test Specifications:

Date of Receipt	Dec.24,2017
Date of Test	Dec.26,2017
Test item	<ol style="list-style-type: none"> 1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Electrical Parameters
Reference Standard	<ol style="list-style-type: none"> 1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	QD25

1.3 Test Methods

1) Photometric and Light Distribution Measurement – Goniophotometer Method:

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$, measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 1 ° vertical intervals and 22.5 ° horizontal intervals.

2) Electrical Measurements:

Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.

2.1 Electrical, Photometric and Chromaticity Measurements
(Refer to Work Instruction QD25)

Test date	2017-12-26	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	8702X_15W_30K		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE171202 0-D1	120.0	60	0.1218	14.19	0.9711	15.73
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Photometric Measurement – Goniophotometer Method:

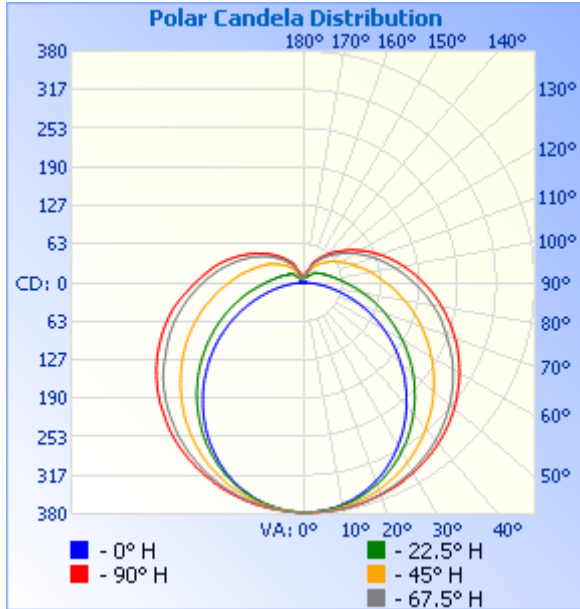
Parameter	Result	DLC V4.0 Pass Criteria	
Test Voltage (V)	120.0	--	
Frequency (Hz)	60		
Total Luminous (lm)	1794.4	--	
Total Luminous (lm)/Total Length(ft)	455.4	>=375lm/ft(-10%)	
Luminous Efficacy (lm/W)	126.46	Standard: >= 105(-3%)	Premium: >= 130(-3%)
Zonal lumens in the 0-60 °zone (%)	51.8	>= 40(-3)	
Beam Angle (°)	142.5	--	
Center Beam Candle Power (cd)	377	--	

Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	298.1	16.6%
0-40	496.2	27.7%
0-60	930.1	51.8%
60-90	506.8	28.2%
70-100	415.7	23.2%
90-120	255.9	14.3%
0-90	1,436.9	80.1%
90-180	357.5	19.9%
0-180	1,794.4	100%

Lumens Per Zone					
Zone	Lumens	%Total	Zone	Lumens	%Total
0-10	35.8	2.0%	90-100	108.2	6%
10-20	103.2	5.8%	100-110	84.4	4.7%
20-30	159.2	8.9%	110-120	63.3	3.5%
30-40	198.1	11.0%	120-130	44.9	2.5%
40-50	217.2	12.1%	130-140	29.0	1.6%
50-60	216.7	12.1%	140-150	16.8	0.9%
60-70	199.3	11.1%	150-160	7.5	0.4%
70-80	170.4	9.5%	160-170	2.8	0.2%
80-90	137.0	7.6%	170-180	0.6	0%

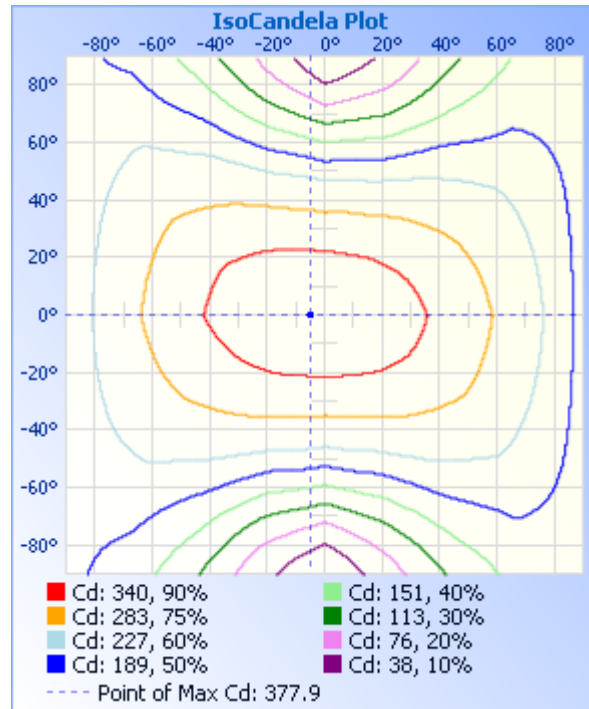
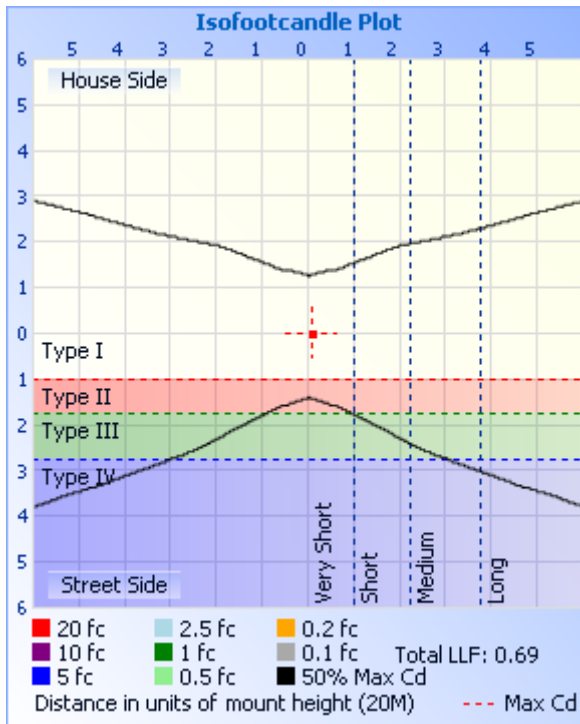
Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width	
3.33M	3.15 fc	9.19 M	6.82 M
6.67M	0.79 fc	18.37 M	13.63 M
10.00M	0.35 fc	27.57 M	20.45 M
13.33M	0.20 fc	36.75 M	27.27 M
16.67M	0.13 fc	45.94 M	34.09 M
20.00M	0.09 fc	55.13 M	40.91 M

■ Vert. Spread: 108.1°
■ Horiz. Spread: 91.3°



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Table--1

UNIT: cd

C (DEG) \ Y (DEG)	0	23	45	68	90	113	135	158	180	203	225	248	270	293	315	338
0	377	377	377	377	377	377	377	377	377	377	377	377	377	377	377	377
5	376	376	376	376	376	376	377	377	378	377	376	375	374	374	375	376
10	373	372	372	370	370	371	374	376	377	374	372	370	368	368	370	373
15	370	368	365	361	361	364	369	374	375	371	366	360	357	358	364	368
20	364	361	355	348	347	353	363	370	371	365	356	346	343	345	354	361
25	358	352	343	333	330	339	353	364	367	357	344	331	326	330	342	354
30	350	341	328	314	310	321	341	357	361	348	331	312	305	311	330	344
35	341	330	312	293	288	302	328	348	353	337	315	292	281	291	314	333
40	331	316	294	271	264	281	313	338	345	325	298	270	256	269	298	322
45	319	302	276	247	237	259	296	326	334	312	279	246	229	246	281	309
50	306	287	257	222	210	236	279	313	323	298	261	220	201	222	262	295
55	292	272	237	196	182	212	261	299	309	284	242	194	173	198	244	280
60	278	255	217	170	153	188	242	284	296	268	223	168	143	174	226	263
65	262	239	197	145	123	164	224	267	281	252	204	142	114	151	207	246
70	246	222	178	120	94.1	141	205	249	265	236	184	118	85.2	129	189	231
75	230	205	158	97.3	66.2	120	187	234	248	219	165	96.3	58.4	108	170	214
80	212	189	141	77.1	41.3	101	170	217	231	203	148	76.7	34.5	89.9	153	197
85	194	172	124	60.0	20.3	83.4	152	199	214	186	132	60.4	15.5	73.6	137	180
90	177	157	109	46.6	6.52	69.7	136	181	197	170	117	48.1	4.22	60.9	121	164
95	162	143	96.9	37.0	3.25	59.2	122	165	181	156	105	39.6	3.23	51.4	109	149
100	149	129	86.0	30.9	2.98	50.8	109	150	165	142	94.1	33.6	3.44	44.3	97.3	135
105	134	117	76.3	26.7	3.08	44.2	97.2	135	149	127	83.9	29.0	3.44	38.8	86.2	122
110	121	104	67.7	23.6	2.88	39.0	86.6	122	134	115	74.3	26.2	3.54	34.5	77.0	109
115	108	92.5	59.6	20.0	2.93	34.5	77.5	109	120	103	65.9	23.9	3.54	29.1	69.0	96.9
120	95.3	81.9	52.8	19.8	3.03	31.0	68.7	95.9	106	91.0	58.5	21.8	3.49	27.4	61.4	85.9
125	83.7	72.0	46.8	18.3	2.78	27.6	60.6	84.1	93.2	80.3	52.0	20.5	3.18	25.3	52.9	75.6
130	73.0	63.1	41.6	12.8	2.58	25.2	52.9	73.1	81.2	70.1	45.7	14.2	3.13	22.6	45.4	65.7
135	63.2	54.5	36.4	11.2	2.53	18.2	45.9	63.7	70.6	61.1	40.1	13.2	3.13	13.6	40.2	56.3
140	54.2	47.1	29.1	9.25	2.53	15.1	39.5	54.3	60.2	52.4	34.9	12.0	3.23	11.5	33.5	48.2
145	45.9	40.0	24.2	8.00	2.63	13.0	32.6	45.6	50.6	44.4	31.3	11.5	3.44	9.27	26.2	39.8
150	38.5	32.5	12.9	8.09	2.63	11.3	21.4	37.7	42.0	37.8	20.6	11.1	3.64	8.66	13.7	31.2
155	30.8	17.8	12.0	8.09	3.13	9.68	16.8	25.5	33.9	28.1	18.0	10.9	4.05	7.76	12.1	15.8
160	18.7	13.1	10.6	7.55	3.54	8.51	13.6	17.0	19.7	18.5	15.6	10.3	4.90	5.59	10.3	11.9
165	14.8	9.57	9.54	6.70	4.39	7.36	10.3	12.6	14.7	13.7	12.2	8.85	5.15	5.09	9.19	10.1
170	10.8	7.99	8.53	5.95	4.85	5.54	8.43	8.59	9.85	9.60	8.74	7.63	5.10	5.29	6.80	9.13
175	5.55	5.80	5.91	5.25	5.21	5.09	5.23	5.52	5.75	5.64	5.10	4.85	5.00	5.29	5.28	5.82
180	2.75	4.47	4.69	5.05	5.31	5.09	4.77	4.39	2.75	2.70	4.59	4.75	5.10	5.34	4.98	4.70

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3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
EE-09	Goniophotometer system	2017-07-01	2018-06-30
D908S	Standard Lamp	2017-07-01	2018-06-30
PF210	Power Meter for Goniophotometer	2017-07-01	2018-06-30
ST-R-181A	Temperature Tester	2017-07-01	2018-06-30

Uncertainty:

Photometric Measurement(Goniophotometer):1.62%

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