



Report No.: GZE160245-G-PL

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

## Replacement Lamps for Parking Garage Luminaires (Type B)

Model name(s): 91135

Representative (Tested) Model: 2700K  
5700K

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

Test & Report By:

Review By:

*Johnson Sun*

*Tommy Liang*

Engineer: Johnson Sun

Manager: Tommy Liang

Date: Apr.08,2016

Note: 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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<b>Performance Assessment:</b>
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Model name	CCT(K)	Total Luminous (lm)	Power (W)	Luminous Efficacy (lm/W)
2700K	2700K	3740.5	54.31	68.87
3000K	3000K	3791.6 <sup>*1</sup>	54.38 <sup>*2</sup>	69.73 <sup>*3</sup>
3500K	3500K	3842.7 <sup>*1</sup>	54.38 <sup>*2</sup>	70.67 <sup>*3</sup>
4000K	4000K	3893.8 <sup>*1</sup>	54.38 <sup>*2</sup>	71.61 <sup>*3</sup>
4500K	4500K	3944.8 <sup>*1</sup>	54.38 <sup>*2</sup>	72.55 <sup>*3</sup>
<b>91135</b>	5000K	3995.9 <sup>*1</sup>	54.38 <sup>*2</sup>	73.49 <sup>*3</sup>
5700K	5700K	4047	54.44	74.34

\*1: This value is calculated and the calculation formula is as below:

$$3791.6 = (4047 - 3740.5) / 6 + 3740.5$$

$$3842.7 = (4047 - 3740.5) / 6 + 3791.6$$

$$3893.8 = (4047 - 3740.5) / 6 + 3842.7$$

$$3944.8 = (4047 - 3740.5) / 6 + 3893.8$$

$$3995.9 = (4047 - 3740.5) / 6 + 3944.8$$

\*2: This value is calculated and the calculation formula is as below:

$$54.38 = (54.44 + 54.31) / 2$$

\*3: This value is calculated and the calculation formula is as below:

$$69.73 = 3791.6 / 54.38$$

$$70.67 = 3842.7 / 54.38$$

$$71.61 = 3893.8 / 54.38$$

$$72.55 = 3944.8 / 54.38$$

$$73.49 = 3995.9 / 54.38$$

U.S. Department of Energy

**Lighting Facts™ Uniform LM-79 Reporting Template**
**Laboratory Information:**

Name of Test Laboratory	Standard-Tech Co., Ltd.
Date of Test Report	Apr.08,2016
Test Report No.	GZE160245-G-PL
Laboratory Contact Name	Tommy Liang

**Product Information:**

Organization Name	P.Q.L., Inc.	
Brand Name	Superior Life®	
Model Number	2700K	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Replacement Lamps for Parking Garage Luminaires (Type B)	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

**Integrating Sphere**
**Goniophotometer**
**Electrical Measurements:**

	Output	Output	
Input Wattage	--	54.31	W
Input Current	--	0.4598	A
Input Voltage (ac)	--	120.0	V
Power Factor	--	0.9843	
Off-State Power	--	0	W

**Photometric Characteristics**

Total Initial Lumen Output	--	3740.5	lm
Initial Lumen Efficacy	--	68.87	lm/w
Correlated color temperature / CCT	2738	--	K
Color rendering index / CRI	83.4	--	
R9 Value	16	--	
Duv	0.0022	--	
<b>Luminous Intensity Distribution</b>			
Center beam candlepower (if applicable)		506	cd
Beam angle (if applicable)		174.1	°
Zonal lumens in the 0°-60° zone	-----	47.1	%
Zonal lumens in the 60°-90° zone		39.2	%
Zonal lumens in the 90°-120° zone		11.5	%
Zonal lumens in the 120°-180° zone		2.2	%

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**Laboratory Information:**

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Date of Test Report	Apr.08,2016
Test Report No.	GZE160245-G-PL
Laboratory Contact Name	Tommy Liang

**Product Information:**

Organization Name	P.Q.L., Inc.	
Brand Name	Superior Life®	
Model Number	5700K	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Replacement Lamps for Parking Garage Luminaires (Type B)	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

**Integrating Sphere**
**Goniophotometer**
**Electrical Measurements:**

	Output	Output	
Input Wattage	54.44	--	W
Input Current	0.4617	--	A
Input Voltage (ac)	120.0	--	V
Power Factor	0.9826	--	
Off-State Power	0	--	W

**Photometric Characteristics**

Total Initial Lumen Output	4047	--	lm
Initial Lumen Efficacy	74.34	--	lm/w
Correlated color temperature / CCT	5931	--	K
Color rendering index / CRI	82.4	--	
R9 Value	0	--	
Duv	0.0036	--	

**Luminous Intensity Distribution**

Center beam candlepower (if applicable)	-----	--	cd
Beam angle (if applicable)		--	°
Zonal lumens in the 0°-60° zone		--	%
Zonal lumens in the 60°-90° zone		--	%
Zonal lumens in the 90°-120° zone		--	%
Zonal lumens in the 120°-180° zone		--	%

Test Specifications:

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Date of Receipt	: Jan.05,2016
Date of Test	: Apr.05,2016
Test item	: Total Luminous Flux, Luminous Distribution Intensity, Luminous Efficacy, Correlated Color Temperature, Color Rendering Index, Chromaticity Coordinate, Electrical parameters
Reference Standard	IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources CIE 15-2004 Technical Report Colorimetry IESNA LM-16-93 Practical Guide to Colorimetry of Light Source IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	QD25

### Test Methods

#### 1. Photometric and Electrical measurements – Light Distribution 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 Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at  $1\text{ }^{\circ}$  vertical intervals and  $22.5\text{ }^{\circ}$  horizontal intervals.

#### 2. Photometric and Electrical Measurements – Integrating Sphere Method:

Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at  $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ . 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 120 Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at least 5 nm intervals over the range of 380 to 780 nm.

**1. Product Information:**

Brand Name	Superior Life®
Model Number	91135
Luminaire Type	Replacement Lamps for Parking Garage Luminaires (Type B)
Rated Voltage / Frequency	100~ 277Vac, 50/60Hz
Nominal Power	54W
Rated Initial Lamp Lumen	--
Declared CCT	2700K,3000K,3500K,4000K,4500K,5000K,5700K
LED Manufacturer	Guangzhou Hongli Opto-Electronic Co., Ltd.
LED Model	HL-A-2835DW-S1-08-HR3
Sample Receipt Date	Jan.05,2015
Sample Number	GZE160245-G1 2700K,G2 5700K

**Photo**



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<b>2.1 Electrical, Photometric and Chromaticity Measurements</b> (Refer to Work Instruction QD25)	<b>IES LM-79 2008</b>
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<b>Test date</b>	2016-04-05	<b>Test Ambient:</b>	25.2 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	2700K		

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE160245	120.0	60	0.4598	54.31	0.9843	9.46
-G1	277.0	60	0.2039	52.01	0.9207	15.98

**Sphere-Spectroradiometer Method in LITHONIA VRC70ML 120/277M6:**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	82	R9	16
Frequency (Hz)	60	R2	92	R10	82
Color Rendering Index (CRI)	83.4	R3	96	R11	79
R9	16	R4	80	R12	73
CCT (K)	2738	R5	81	R13	84
Chromaticity (x, y)	x=0.4606 y=0.4168	R6	91	R14	99
Chromaticity (u', v')	u'=0.2602 v'=0.5298	R7	84	R15	75
Duv	0.0022	R8	61	--	--

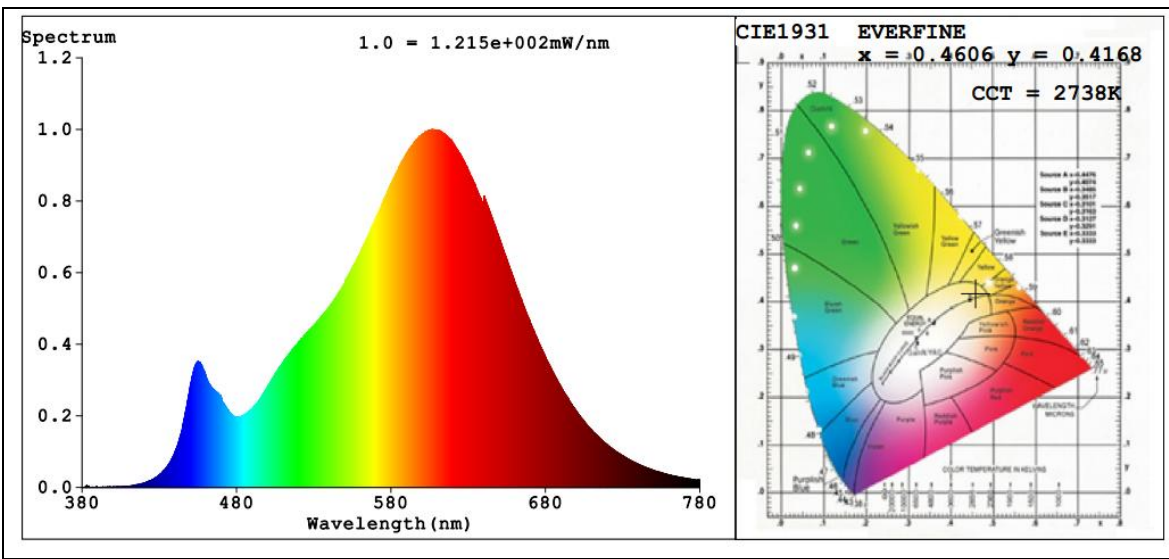
**Goniophotometer Method in LITHONIA VRC70ML 120/277M6:**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	3740.5
Luminous Efficacy (lm/W)	68.87
Beam Angle °	174.1
Center Beam Candle Power (cd)	506

**Goniophotometer Method in LITHONIA VRC70ML 120/277M6:**

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	3601.8
Luminous Efficacy (lm/W)	69.25

**Spectral Power Distribution & Chromaticity Diagram**



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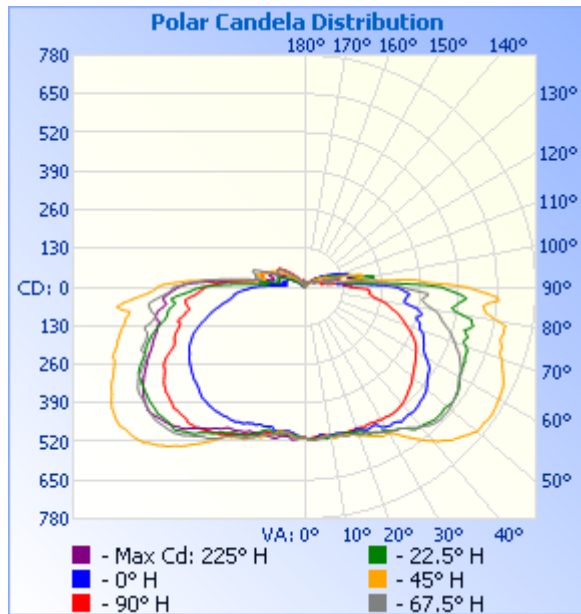


**Zonal Lumen Tabulation**

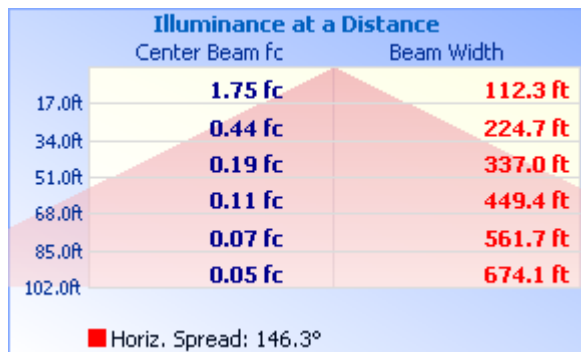
<b>Zonal Lumen Summary</b>		
Zone	Lumens	% Luminaire
0-30	435.3	11.6%
0-40	788.1	21.1%
0-60	1,763.6	47.1%
60-90	1,467.2	39.2%
70-100	1,159.8	31%
90-120	429.3	11.5%
0-90	3,230.9	86.3%
90-180	511.4	13.7%
0-180	3,742.2	100%

<b>Lumens Per Zone</b>					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	48.0	1.3%	90-100	223.2	6%
10-20	143.8	3.8%	100-110	125.5	3.4%
20-30	243.5	6.5%	110-120	80.7	2.2%
30-40	352.8	9.4%	120-130	49.4	1.3%
40-50	456.1	12.2%	130-140	21.3	0.6%
50-60	519.4	13.9%	140-150	7.5	0.2%
60-70	530.6	14.2%	150-160	2.3	0.1%
70-80	498.1	13.3%	160-170	1.3	0%
80-90	438.5	11.7%	170-180	0.3	0%

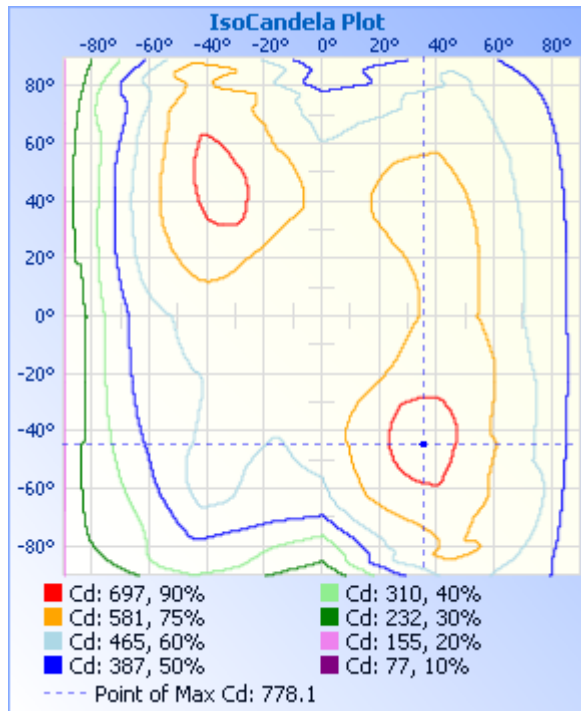
### Photometric Data



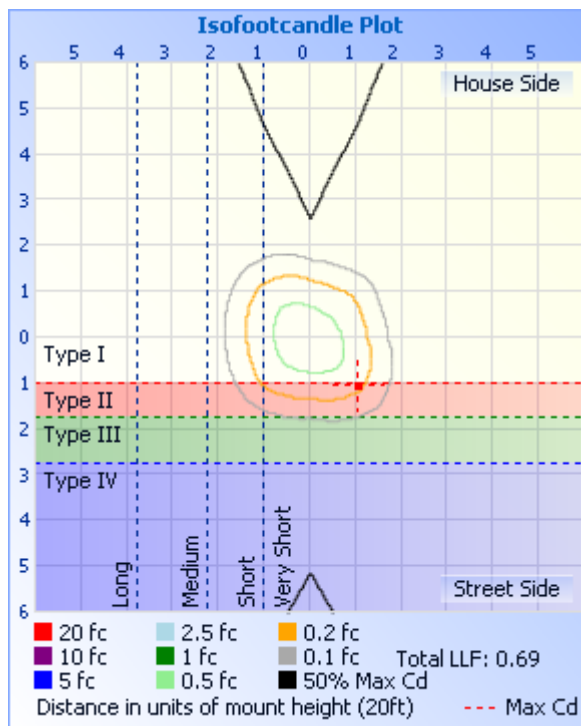
### Illuminance Plots



### ISOCANDELA DIAGRAM



### ISOLUX DIAGRAM



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**Candela Table - Type C**

	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	506	506	506	506	506	506	506	506	506	506	506	506	506	506	506	506	506
1	510	511	510	509	508	507	506	505	505	505	505	504	503	504	506	508	510
2	512	513	513	512	509	510	509	504	501	503	507	507	505	508	509	508	512
3	512	513	515	515	508	511	510	503	500	501	507	507	504	510	511	508	512
4	510	511	515	518	505	510	509	497	494	498	507	504	498	508	514	505	510
5	505	509	513	513	503	502	509	497	491	500	500	495	492	501	514	504	505
6	500	508	509	512	502	499	507	497	487	500	496	493	492	499	507	504	500
7	502	509	509	510	502	502	502	494	488	499	493	496	494	498	505	504	502
8	509	515	509	505	503	503	497	493	489	498	491	498	500	501	505	514	509
9	507	514	506	507	507	504	499	495	488	498	490	501	501	505	506	519	507
10	505	509	508	511	508	506	500	494	490	495	492	502	503	506	513	514	505
11	505	508	518	511	510	506	499	495	495	499	500	507	505	504	518	513	505
12	504	507	518	511	509	509	502	495	492	499	507	509	506	502	518	511	504
13	504	508	512	511	508	507	501	488	483	496	510	510	504	503	516	509	504
14	507	508	515	512	509	502	498	480	483	492	512	512	503	504	516	510	507
15	509	510	516	517	510	500	492	476	485	497	518	511	507	502	516	510	509
16	508	508	517	521	510	498	491	473	488	502	526	517	512	499	512	511	508
17	512	510	519	521	508	496	489	477	487	508	528	522	515	503	516	511	512
18	514	514	519	521	506	495	487	483	484	518	530	529	517	509	520	512	514
19	512	516	526	522	508	493	487	476	490	522	533	535	518	511	520	515	512
20	509	518	532	527	507	495	485	473	493	527	538	538	526	515	518	514	509
21	513	519	533	532	507	492	483	475	490	534	548	543	533	516	519	515	513
22	516	524	538	534	509	493	483	470	494	540	552	548	535	519	525	518	516
23	521	533	544	531	514	491	481	469	496	540	552	549	539	519	529	517	521
24	525	542	548	533	510	489	484	470	502	543	552	552	542	521	531	517	525
25	523	541	555	539	509	490	482	470	504	543	556	555	545	524	533	518	523
26	521	546	557	542	508	488	478	475	504	545	562	559	551	529	536	523	521
27	520	550	564	547	512	493	477	475	510	550	565	564	556	534	537	523	520
28	527	550	569	555	513	494	476	473	510	556	570	569	560	541	537	518	527
29	539	552	566	558	511	491	475	475	510	559	579	579	569	545	540	522	539

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30	543	559	568	562	515	486	480	471	511	564	591	587	572	552	550	534	543
31	546	564	573	565	516	487	483	470	510	572	604	594	573	559	556	542	546
32	549	569	582	567	515	485	482	468	512	581	613	600	576	565	560	549	549
33	546	572	595	571	518	484	484	468	512	586	624	606	580	570	566	552	546
34	548	574	607	574	518	483	489	471	512	590	635	607	581	577	576	553	548
35	553	580	618	581	519	481	490	472	512	598	646	613	587	582	581	557	553
36	559	588	630	586	518	479	488	470	514	606	655	621	590	588	587	562	559
37	555	598	642	592	518	477	486	473	513	618	669	627	594	591	593	564	555
38	555	607	655	600	516	476	489	474	512	624	679	633	598	595	603	568	555
39	553	609	665	608	514	475	494	470	512	628	687	642	599	599	611	570	553
40	556	612	675	612	512	475	497	467	510	634	699	649	601	605	622	572	556
41	557	612	688	619	510	475	499	466	509	640	710	653	601	606	630	571	557
42	556	617	695	626	506	473	498	468	508	648	717	660	597	608	634	571	556
43	554	620	705	631	503	470	498	467	507	650	728	661	597	610	640	575	554
44	553	624	716	635	499	468	499	463	504	645	734	664	597	612	646	576	553
45	549	627	721	637	494	465	499	461	500	645	742	666	598	611	649	575	549
46	547	627	727	640	491	463	501	457	495	647	753	667	596	612	654	575	547
47	546	627	733	638	487	463	500	457	492	648	757	670	600	613	655	573	546
48	543	625	743	638	484	459	501	455	490	649	763	673	597	613	660	573	543
49	541	624	748	639	480	454	502	453	486	653	766	672	593	611	664	571	541
50	536	626	757	637	474	451	504	450	485	652	768	671	591	609	667	569	536
51	531	629	759	635	470	449	506	447	482	650	769	670	589	606	671	566	531
52	524	631	758	633	465	443	506	444	479	649	772	668	586	599	671	563	524
53	518	631	758	629	462	440	508	443	477	649	778	666	586	594	667	561	518
54	513	629	762	628	457	436	508	438	471	648	777	665	580	593	664	560	513
55	508	627	762	624	454	432	507	436	468	645	776	664	577	590	661	557	508
56	506	624	764	623	450	430	504	435	466	643	773	663	573	591	654	553	506
57	502	620	761	617	446	428	504	435	462	642	769	663	564	591	648	549	502
58	493	616	761	612	441	427	502	434	458	639	766	660	557	590	642	545	493
59	483	608	757	608	437	425	500	436	454	638	760	656	550	586	634	538	483
60	472	602	756	604	434	424	500	436	447	635	752	648	546	578	627	532	472
61	463	600	755	601	430	424	500	435	444	634	743	641	543	572	619	522	463

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62	454	601	751	597	426	425	501	434	441	633	737	631	535	566	610	514	454
63	450	597	749	591	420	422	501	433	436	628	732	618	525	557	602	506	450
64	448	596	746	585	413	419	501	432	429	619	722	605	509	548	592	501	448
65	443	596	739	577	406	415	502	429	422	608	712	594	493	540	585	497	443
66	439	591	733	572	398	410	502	426	415	597	706	583	480	530	576	492	439
67	436	588	726	564	389	407	501	424	408	586	698	581	476	518	567	490	436
68	432	590	717	553	379	403	497	421	399	579	691	587	473	510	558	486	432
69	425	586	714	545	369	397	493	417	388	572	686	590	470	506	551	482	425
70	414	578	707	539	361	393	485	410	378	566	689	581	464	502	544	475	414
71	410	566	696	528	354	386	478	403	366	555	679	570	456	496	538	467	410
72	409	569	694	521	345	378	471	397	354	546	669	560	447	487	530	463	409
73	404	576	696	513	336	371	462	390	343	536	660	556	440	479	523	460	404
74	393	565	689	501	328	364	452	384	332	523	657	552	436	470	518	451	393
75	391	559	682	490	319	356	443	375	323	511	647	557	442	469	512	445	391
76	400	574	686	480	305	346	432	368	313	496	641	554	432	470	506	448	400
77	406	583	688	471	297	340	421	358	299	484	635	533	416	463	505	453	406
78	398	576	687	465	287	335	416	348	287	475	623	520	408	453	512	450	398
79	389	573	690	458	275	326	409	336	276	470	617	511	397	446	513	446	389
80	365	540	663	443	261	317	400	328	263	468	612	516	397	437	507	429	365
81	346	511	637	427	245	307	391	321	253	460	601	522	402	438	498	409	346
82	338	502	616	412	234	296	385	317	246	447	596	525	403	441	482	400	338
83	343	513	610	404	229	292	378	312	241	439	622	529	404	445	470	404	343
84	345	521	605	397	219	288	379	307	238	448	636	528	404	445	474	406	345
85	348	534	621	403	218	286	383	300	231	450	615	511	388	437	478	408	348
86	354	547	656	415	222	284	386	293	220	432	582	491	370	420	476	409	354
87	345	533	650	417	217	279	379	281	208	405	550	471	359	404	462	404	345
88	333	507	614	381	215	266	365	265	191	383	523	456	352	391	449	391	333
89	323	481	577	349	180	242	330	255	184	370	505	446	342	377	438	375	323
90	310	461	546	330	154	219	302	240	169	347	497	444	338	366	427	355	310
91	277	411	486	309	157	204	274	217	151	309	477	411	321	351	411	313	277
92	226	333	417	274	132	190	248	162	121	248	434	390	299	332	382	250	226
93	189	274	390	254	131	186	197	119	79	182	394	360	278	306	333	203	189

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94	137	176	369	245	134	175	171	89	61	121	328	335	257	277	283	141	137
95	110	147	260	243	140	149	135	94	64	124	277	291	230	255	239	137	110
96	122	141	202	161	106	109	127	106	122	154	218	250	201	226	196	142	122
97	135	178	170	123	75	99	143	98	96	137	168	214	184	197	176	167	135
98	164	236	129	115	73	91	134	81	96	116	163	183	163	174	167	193	164
99	181	235	152	93	67	84	121	65	78	93	153	149	138	148	159	194	181
100	179	222	200	71	55	89	113	57	67	86	138	152	124	139	149	192	179
101	167	188	195	68	55	113	117	60	62	86	134	167	131	133	122	184	167
102	152	171	198	73	72	107	109	69	63	91	140	169	142	128	110	180	152
103	149	165	185	75	120	99	101	77	70	89	153	168	143	121	108	178	149
104	150	163	163	94	110	93	95	81	75	89	165	170	148	113	105	181	150
105	153	152	142	121	107	86	90	78	76	88	168	173	147	105	106	177	153
106	152	139	127	107	109	80	85	76	70	85	156	179	149	108	110	173	152
107	147	130	116	106	94	73	81	74	66	93	149	183	150	115	118	166	147
108	141	122	109	73	83	65	77	72	65	95	142	182	153	117	124	153	141
109	134	116	102	61	66	59	74	70	63	92	138	173	150	115	125	144	134
110	128	109	93	51	58	54	73	68	63	90	135	159	149	109	122	139	128
111	123	102	89	46	51	50	74	66	62	86	132	143	144	106	120	132	123
112	119	97	85	41	46	48	76	64	62	83	128	134	136	101	117	126	119
113	113	92	83	38	43	47	77	61	61	79	128	122	129	96	110	117	113
114	108	87	81	35	41	46	77	59	60	75	126	112	120	91	103	108	108
115	100	83	80	33	40	46	76	57	58	71	124	103	114	85	98	101	100
116	93	77	78	30	41	46	75	54	56	66	122	98	109	83	94	94	93
117	88	72	74	31	42	47	72	51	55	62	118	99	102	85	89	87	88
118	84	68	70	32	43	49	68	48	52	58	114	104	100	86	85	80	84
119	80	65	66	33	45	51	64	45	49	55	110	105	103	88	80	74	80
120	75	61	62	34	48	52	59	42	46	52	103	106	106	90	78	70	75
121	71	59	58	36	49	52	54	38	43	48	96	106	106	91	77	66	71
122	69	55	54	36	51	52	50	34	39	45	89	106	106	92	75	60	69
123	64	52	50	37	52	52	46	30	36	42	84	105	106	93	73	54	64
124	59	48	47	38	52	50	42	26	33	39	78	104	105	93	69	49	59
125	54	43	42	38	52	49	38	23	30	36	73	102	105	91	67	44	54

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126	50	40	39	37	51	46	35	20	27	33	68	98	105	88	63	42	50
127	46	36	34	35	51	43	31	18	24	30	64	93	104	85	59	39	46
128	42	32	29	34	48	41	28	14	22	27	59	89	98	81	55	35	42
129	38	29	25	32	45	38	25	12	18	25	55	85	94	79	51	30	38
130	24	27	22	31	43	36	22	12	10	23	51	81	89	77	46	28	24
131	9	24	18	29	40	33	20	12	5	21	47	76	84	73	42	25	9
132	12	22	15	28	38	31	17	11	9	18	44	72	81	68	37	23	12
133	20	18	13	27	35	29	16	10	14	16	42	69	77	65	33	20	20
134	21	16	12	26	33	27	15	9	12	14	40	66	72	61	30	17	21
135	19	14	12	24	31	25	14	7	11	9	38	62	69	57	28	14	19
136	17	11	11	23	29	24	13	5	9	7	36	59	65	54	26	11	17
137	14	8	11	22	27	22	12	4	8	5	33	56	61	51	24	8	14
138	11	6	10	21	25	20	11	3	6	4	31	53	58	48	23	6	11
139	9	4	10	20	24	19	11	1	5	2	29	50	55	45	21	4	9
140	7	2	10	19	22	18	10	1	4	1	27	47	51	42	20	2	7
141	5	1	9	18	21	17	9	1	3	1	24	43	48	39	19	1	5
142	3	1	8	16	20	16	8	1	3	1	22	40	45	36	17	1	3
143	1	1	7	15	18	15	8	1	2	1	20	38	42	33	15	1	1
144	1	1	7	14	17	14	7	1	1	1	18	35	39	31	14	1	1
145	1	1	6	13	16	13	7	1	1	1	15	32	36	29	12	1	1
146	1	1	5	13	15	12	6	1	1	1	13	29	34	26	11	1	1
147	1	1	5	12	14	12	5	1	1	1	10	27	31	24	9	1	1
148	1	1	4	11	13	15	6	1	1	1	8	24	29	22	8	1	1
149	1	1	4	9	12	9	8	1	1	1	5	21	26	20	6	1	1
150	1	1	3	8	10	8	15	1	4	1	1	19	23	18	5	1	1
151	1	1	3	8	9	8	9	1	1	1	1	16	21	16	3	1	1
152	1	1	2	7	8	7	12	2	1	1	1	13	19	14	1	1	1
153	1	1	1	6	7	6	10	4	1	1	1	11	17	12	1	1	1
154	1	1	1	5	6	9	4	10	5	1	0	8	14	10	1	1	1
155	1	1	0	4	6	18	2	19	6	1	0	6	12	8	1	1	1
156	0	1	0	3	5	17	2	16	5	1	0	1	10	6	1	1	0
157	0	0	0	2	7	11	1	16	3	1	0	1	8	3	0	0	0

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158	0	1	0	1	10	15	1	17	6	6	0	1	6	1	0	0	0
159	0	0	0	0	10	15	1	26	1	3	0	1	2	1	0	0	0
160	0	4	0	0	12	9	1	29	1	12	0	1	1	1	0	0	0
161	0	0	0	0	16	9	1	30	1	10	0	4	1	0	0	0	0
162	0	3	0	2	16	14	1	16	1	9	0	6	1	0	0	0	0
163	0	5	9	0	9	8	1	18	1	7	1	9	0	0	0	0	0
164	0	7	14	0	9	7	1	27	3	6	6	4	0	0	0	0	0
165	0	10	15	0	10	1	1	30	3	4	6	3	0	0	0	0	0
166	0	12	10	0	1	1	1	31	7	3	5	3	0	0	0	0	0
167	0	15	8	0	1	1	1	15	14	3	5	0	0	0	0	0	0
168	0	12	8	0	1	1	1	18	13	2	1	0	0	0	4	0	0
169	0	1	2	0	1	0	7	24	2	2	1	0	5	0	14	1	0
170	0	1	0	0	0	0	12	27	2	1	1	1	14	0	14	2	0
171	0	0	0	0	0	0	6	29	0	1	1	1	15	0	10	2	0
172	0	0	0	0	0	0	2	16	0	1	10	4	22	0	1	1	0
173	0	0	0	0	0	0	11	13	0	1	2	15	27	0	1	1	0
174	0	0	0	0	0	0	8	3	0	0	0	24	1	0	0	1	0
175	0	0	0	0	0	0	0	1	0	0	0	12	0	0	0	0	0
176	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
177	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
178	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
179	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

<b>2.1 Electrical, Photometric and Chromaticity Measurements</b> (Refer to Work Instruction QD25)	<b>IES LM-79 2008</b>
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<b>Test date</b>	2016-04-05	<b>Test Ambient:</b>	25.2 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	5700K		

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE160245	120.0	60	0.4617	54.44	0.9826	9.42
-G2	277.0	60	0.2047	52.14	0.9195	15.93

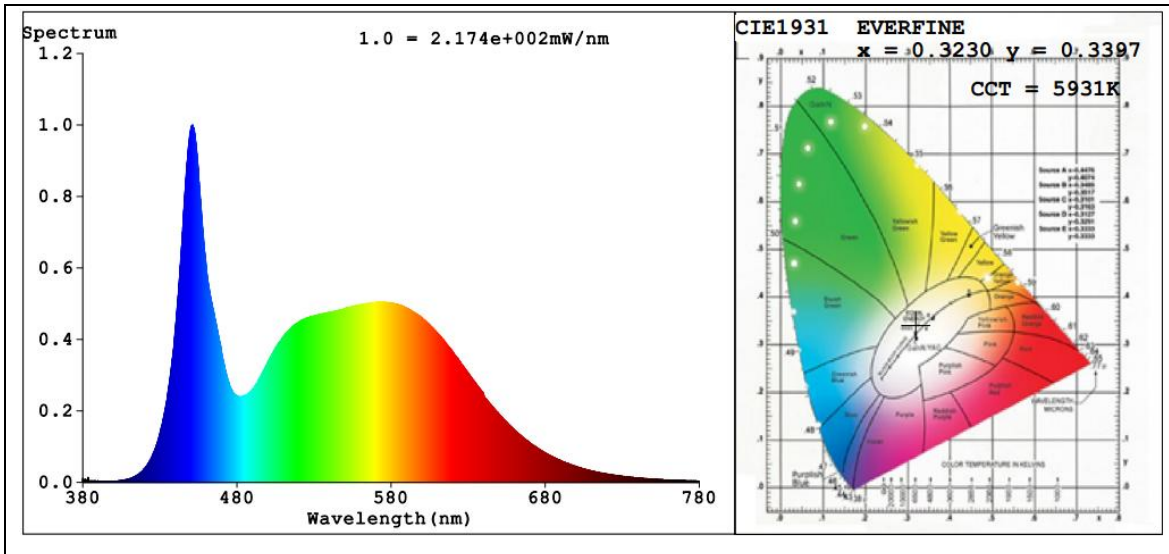
**Sphere-Spectroradiometer Method in LITHONIA VRC70ML 120/277M6:**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	80	R9	0
Frequency (Hz)	60	R2	87	R10	70
Color Rendering Index (CRI)	82.4	R3	92	R11	81
R9	0	R4	82	R12	59
CCT (K)	5931	R5	81	R13	82
Chromaticity (x, y)	x=0.3230 y=0.3397	R6	83	R14	96
Chromaticity (u', v')	u'=0.2009 v'=0.4754	R7	87	R15	75
Duv	0.0036	R8	67	--	--
Total Luminous (lm)	4047				
Luminous Efficacy (lm/W)	74.34				

**Sphere-Spectroradiometer Method in LITHONIA VRC70ML 120/277M6:**

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	3905
Luminous Efficacy (lm/W)	74.89

**Spectral Power Distribution & Chromaticity Diagram**



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**3. Test Equipment**

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-336	2 meter Integrating Sphere	2015-07-01	2016-06-30
ST-R-331	Spectral analysis system HAAS-2000	2015-07-01	2016-06-30
D204	Standard Lamp	2015-07-01	2016-06-30
PF2010	Power Meter for Integrating Sphere	2015-07-01	2016-06-30
EE-09	Goniophotometer system	2015-07-01	2016-06-30
D908S	Standard Lamp	2015-07-01	2016-06-30
PF210	Power Meter for Goniophotometer	2015-07-01	2016-06-30
ST-R-181A	Temperature Tester	2015-07-01	2016-06-30
Uncertainty Photometric Measurement (Sphere):1.74% Chromaticity Measurement(Sphere):14.3K Photometric Measurement(Goniophotometer):1.62%			

**\*\*\*\*\* END OF DATASHEET PACKAGE \*\*\*\*\***