



Report No.: GZE150956-F

NVLAP LAB CODE 201011-0

## LM-79-08 Test Report

For

### Premium Quality Lighting, Inc.

2285 Ward Avenue,  
Simi Valley, CA 93065

(Brand Name: Superior Life®)

## High-bay Luminaires for Commercial and Industrial Buildings

Model name(s): 90414

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

Test & Report By:

*Dendi Lin*

Engineer: Dendi Lin

Date: Oct.26,2015

Review By:

*Tommy Liang*

Manager: Tommy Liang

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: 8th floor, Block B, No. 11 Caipin Road, Guangzhou Science City, Tianhe, Guangzhou 510663, China

Tel: 8620-3229 0320

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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	Oct.26,2015
Test Report No.	GZE150956-F
Laboratory Contact Name	Tommy Liang

**Product Information:**

Organization Name	Premium Quality Lighting, Inc.	
Brand Name	Superior Life®	
Model Number	90414	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	High-bay Luminaires for Commercial and Industrial Buildings	
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	--	95.18	W
Input Current	--	0.7959	A
Input Voltage (ac)	--	120.0	V
Power Factor	--	0.9966	
Off-State Power	--	0	W

**Photometric Characteristics**

--

Total Initial Lumen Output	--	11689	lm
Initial Lumen Efficacy	--	122.81	lm/w
Correlated color temperature / CCT	4098	--	K
Color rendering index / CRI	74.9	--	
R9 Value	0	--	
Duv	-0.0006	--	
<b>Luminous Intensity Distribution</b>			
Center beam candlepower (if applicable)	-----	8478	cd
Beam angle (if applicable)		67.8	°
Zonal lumens in the 0°-60° zone		87.3	%
Zonal lumens in the 60°-90° zone		9.4	%
Zonal lumens in the 90°-120° zone		2.5	%
Zonal lumens in the 120°-180° zone		0.7	%

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Date of Test Report	Oct.26,2015
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Laboratory Contact Name	Tommy Liang

**Product Information:**

Organization Name	Premium Quality Lighting, Inc.	
Brand Name	Superior Life®	
Model Number	90414	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	High-bay Luminaires for Commercial and Industrial Buildings	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	

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

Input Wattage	95.57	--	W
Input Current	0.8034	--	A
Input Voltage (ac)	120.0	--	V
Power Factor	0.9913	--	
Off-State Power	0	--	W

**Photometric Characteristics**

Total Initial Lumen Output	12041	--	lm
Initial Lumen Efficacy	125.99	--	lm/w
Correlated color temperature / CCT	4820	--	K
Color rendering index / CRI	73.8	--	
R9 Value	0	--	
Duv	0.0041	--	

**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		%

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Test Specifications:	
Date of Receipt	: Oct.08,2015
Date of Test	: Oct.10,2015
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  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ , 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  $1^{\circ}$  vertical intervals and  $22.5^{\circ}$  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  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ . 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.

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**1. Product Information:**

Brand Name	Superior Life®
Model Number	90414
Luminaire Type	High-bay Luminaires for Commercial and Industrial Buildings
Rated Voltage / Frequency	100~ 277V, 50/60 Hz
Nominal Power	100W
Rated Initial Lamp Lumen	--
Declared CCT	4100K,4500K,5000K,5500K
LED Manufacturer	Nichia Corporation
LED Model	NF2L757DR
Sample Receipt Date	Oct.08,2015
Sample Number	GZE150956-F1(4100K),F2(5500K)

**Photo**



<b>2.2 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>	2015-10-10	<b>Test Ambient:</b>	25.2 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	90414		

### Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE150956	120.0	60	0.7959	95.18	0.9966	6.11
-F1	277.0	60	0.3578	94.02	0.9487	11.95

### Sphere-Spectroradiometer Method :

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	74.9
R9	0
CCT (K)	4098
Chromaticity (x, y)	x=0.3759 y=0.3726
Chromaticity (u', v')	u'=0.2237 v'=0.4991
Duv	-0.0006

Special Color Rendering Indices			
R1	72	R9	0
R2	82	R10	57
R3	89	R11	69
R4	73	R12	50
R5	72	R13	73
R6	74	R14	94
R7	82	R15	66
R8	55	--	--

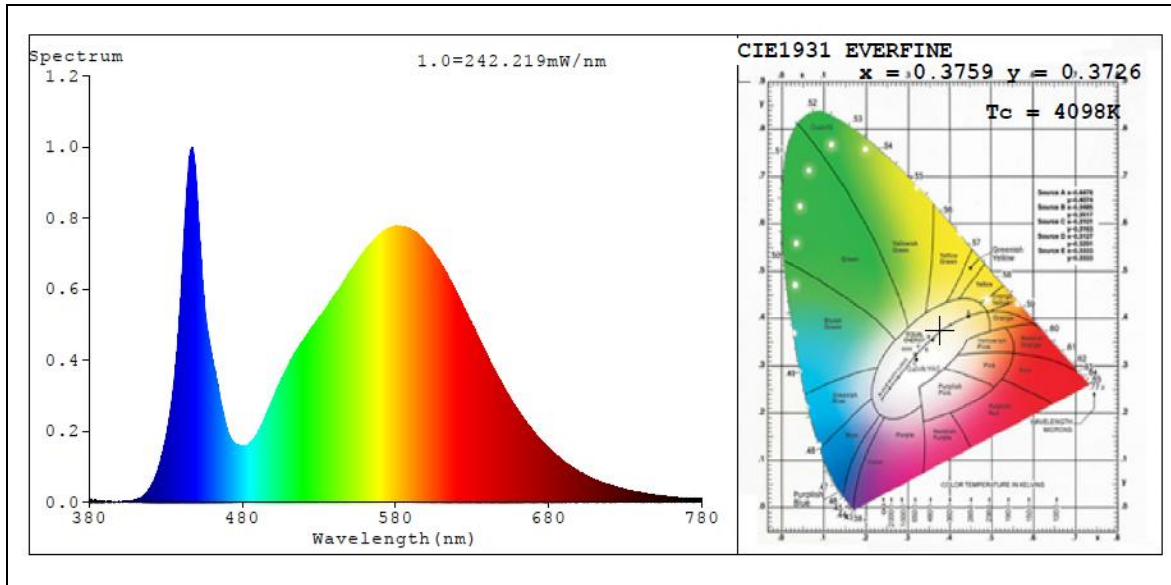
### Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	11689
Luminous Efficacy (lm/W)	122.81
Beam Angle°	67.8
Center Beam Candle Power (cd)	8478

### Goniophotometer Method for 277V:

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	11661
Luminous Efficacy (lm/W)	124.03

**Spectral Power Distribution & Chromaticity Diagram**



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**Zonal Lumen Tabulation**

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	6,439.7	55.1%
0-40	8,771.8	75.1%
0-60	10,206.4	87.3%
60-90	1,103.8	9.4%
70-100	797.8	6.8%
90-120	287.3	2.5%
0-90	11,310.2	96.8%
90-180	377.0	3.2%
0-180	11,687.3	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	806.5	6.9%	90-100	142.4	1.2%
10-20	2,209.2	18.9%	100-110	100.4	0.9%
20-30	3,424.0	29.3%	110-120	44.5	0.4%
30-40	2,332.2	20.0%	120-130	26.7	0.2%
40-50	824.3	7.1%	130-140	20.4	0.2%
50-60	610.3	5.2%	140-150	16.4	0.1%
60-70	448.3	3.8%	150-160	13.4	0.1%
70-80	344.2	2.9%	160-170	9.6	0.1%
80-90	311.3	2.7%	170-180	3.3	0%

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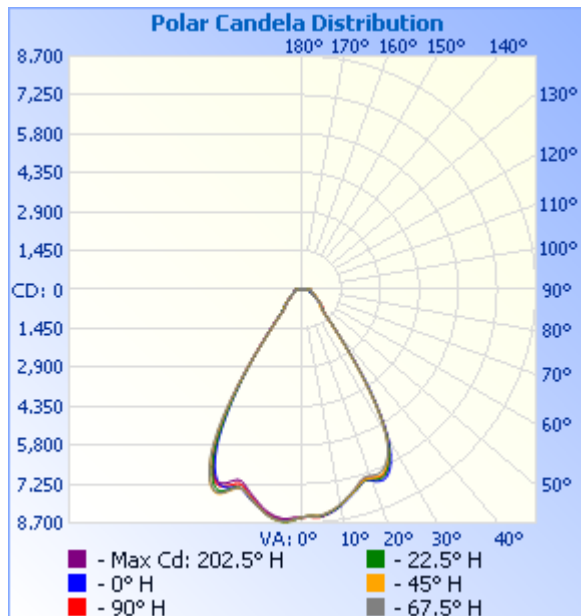
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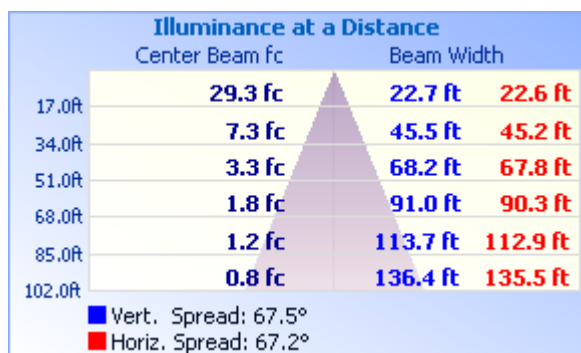
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### Photometric Data



### Illuminance Plots



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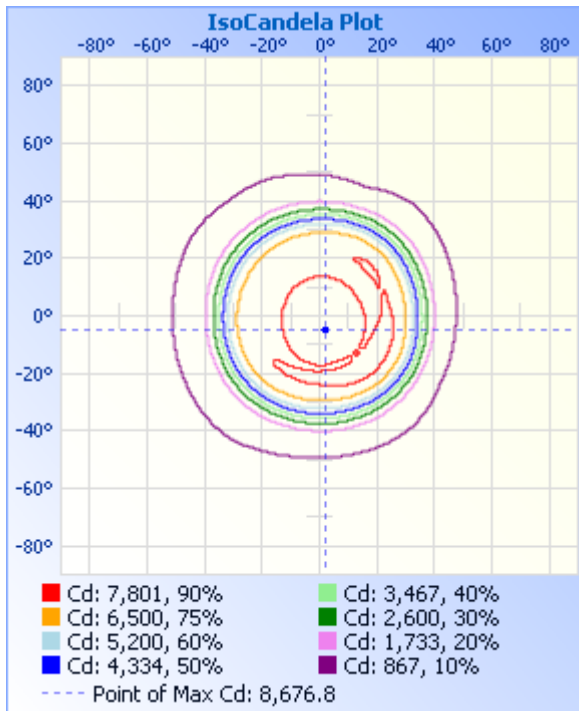
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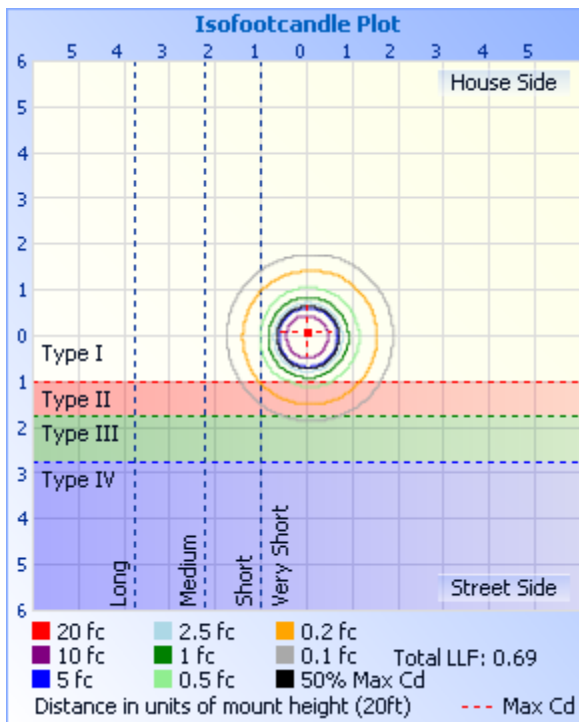
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### ISOCANDELA DIAGRAM



### ISOLUX DIAGRAM



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**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	8478	8478	8478	8478	8478	8478	8478	8478	8478	8478	8478	8478	8478	8478	8478	8478	8478
1	8452	8446	8443	8451	8477	8490	8505	8517	8519	8524	8520	8514	8514	8503	8482	8461	8452
2	8443	8435	8428	8433	8473	8507	8536	8558	8571	8576	8566	8547	8520	8503	8485	8464	8443
3	8460	8447	8438	8452	8503	8537	8575	8607	8627	8639	8628	8601	8565	8530	8507	8488	8460
4	8481	8467	8452	8455	8507	8540	8581	8624	8654	8675	8667	8644	8606	8568	8531	8508	8481
5	8465	8446	8425	8421	8478	8511	8559	8610	8654	8677	8666	8647	8603	8567	8525	8497	8465
6	8431	8408	8382	8380	8434	8471	8527	8586	8636	8663	8658	8637	8588	8545	8501	8463	8431
7	8385	8355	8329	8329	8381	8415	8483	8546	8598	8624	8620	8606	8555	8507	8458	8420	8385
8	8328	8296	8271	8265	8317	8354	8430	8502	8552	8571	8567	8557	8508	8450	8399	8359	8328
9	8266	8233	8205	8191	8240	8277	8357	8437	8487	8501	8496	8492	8439	8383	8329	8294	8266
10	8184	8149	8129	8109	8155	8190	8277	8359	8407	8412	8409	8411	8356	8290	8240	8210	8184
11	8093	8064	8044	8018	8058	8093	8182	8271	8318	8313	8316	8318	8262	8193	8143	8120	8093
12	7996	7969	7951	7921	7957	7993	8087	8181	8227	8212	8209	8214	8154	8080	8035	8020	7996
13	7905	7881	7869	7831	7863	7894	7996	8094	8138	8112	8109	8113	8049	7969	7927	7924	7905
14	7819	7793	7781	7738	7765	7801	7907	8005	8046	8015	8010	8013	7945	7864	7824	7832	7819
15	7736	7708	7695	7642	7667	7707	7816	7912	7953	7920	7918	7918	7846	7758	7720	7734	7736
16	7644	7619	7599	7535	7563	7604	7719	7819	7850	7822	7824	7816	7733	7644	7608	7635	7644
17	7549	7533	7509	7438	7467	7520	7656	7748	7771	7753	7763	7747	7641	7541	7504	7535	7549
18	7489	7476	7457	7374	7414	7483	7650	7737	7749	7739	7767	7748	7608	7483	7448	7477	7489
19	7503	7478	7457	7359	7416	7505	7699	7789	7792	7800	7849	7830	7654	7495	7471	7494	7503
20	7570	7520	7479	7381	7458	7567	7763	7853	7859	7910	7976	7951	7748	7571	7557	7572	7570
21	7645	7576	7505	7408	7509	7637	7815	7892	7906	8024	8103	8076	7844	7690	7678	7669	7645
22	7691	7612	7514	7420	7544	7683	7836	7893	7920	8098	8197	8164	7915	7788	7787	7747	7691
23	7699	7609	7495	7399	7544	7685	7816	7845	7889	8109	8233	8200	7940	7841	7861	7790	7699
24	7659	7554	7435	7345	7499	7636	7744	7743	7803	8046	8191	8167	7907	7825	7879	7780	7659
25	7565	7444	7329	7251	7406	7534	7627	7599	7658	7907	8075	8062	7800	7736	7828	7714	7565
26	7426	7286	7183	7127	7266	7387	7471	7413	7454	7695	7893	7895	7628	7585	7715	7597	7426
27	7233	7092	7004	6965	7096	7195	7271	7190	7207	7422	7653	7669	7397	7369	7545	7430	7233
28	6993	6865	6797	6770	6891	6962	7028	6931	6909	7094	7365	7387	7105	7095	7322	7219	6993
29	6704	6594	6535	6511	6628	6665	6713	6596	6548	6714	7013	7049	6762	6776	7040	6936	6704

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30	6335	6249	6198	6171	6283	6289	6309	6193	6118	6258	6580	6642	6359	6390	6680	6570	6335
31	5911	5833	5787	5762	5868	5842	5839	5734	5636	5758	6073	6165	5896	5939	6238	6137	5911
32	5432	5363	5316	5297	5392	5340	5317	5233	5143	5231	5510	5624	5356	5420	5729	5647	5432
33	4930	4844	4805	4789	4871	4791	4768	4695	4597	4678	4919	5021	4790	4869	5188	5127	4930
34	4408	4303	4252	4251	4321	4224	4190	4128	4073	4126	4303	4402	4218	4305	4617	4575	4408
35	3855	3735	3685	3702	3790	3689	3654	3589	3568	3597	3716	3799	3631	3725	4018	3991	3855
36	3312	3192	3141	3187	3259	3154	3118	3050	3062	3068	3129	3195	3088	3181	3420	3402	3312
37	2804	2715	2659	2718	2731	2622	2586	2515	2560	2543	2547	2596	2598	2679	2873	2840	2804
38	2370	2303	2248	2313	2330	2220	2195	2126	2192	2159	2129	2160	2185	2260	2398	2360	2370
39	2012	1966	1900	1967	1996	1886	1874	1801	1871	1840	1798	1806	1851	1907	2013	1961	2012
40	1773	1745	1673	1739	1723	1616	1612	1544	1614	1581	1534	1528	1631	1682	1768	1707	1773
41	1535	1523	1447	1511	1503	1400	1401	1336	1395	1374	1328	1311	1412	1458	1524	1454	1535
42	1296	1302	1221	1284	1334	1235	1235	1178	1230	1211	1165	1139	1192	1233	1279	1201	1296
43	1152	1164	1086	1154	1209	1118	1120	1070	1112	1096	1045	1013	1055	1093	1134	1054	1152
44	1060	1078	1005	1079	1138	1061	1066	1025	1055	1042	987	939	968	1002	1042	958	1060
45	1023	1044	975	1049	1103	1033	1035	998	1016	1008	961	910	934	965	1005	923	1023
46	991	1012	951	1022	1068	1006	1006	971	979	971	935	882	905	935	973	897	991
47	956	979	928	994	1034	978	976	943	941	929	904	854	875	904	940	873	956
48	920	946	905	966	1001	950	946	914	905	889	871	826	845	870	906	848	920
49	887	916	883	938	970	925	919	886	867	853	838	799	817	836	872	824	887
50	856	887	861	910	936	899	894	858	832	820	808	772	791	803	840	801	856
51	824	857	836	880	898	870	865	828	796	785	778	745	762	769	807	775	824
52	789	823	808	845	857	835	829	795	757	747	744	715	730	734	770	748	789
53	750	784	774	807	814	798	792	760	715	705	708	681	695	695	730	718	750
54	709	743	739	765	770	762	752	726	673	663	669	647	658	654	686	684	709
55	669	705	707	725	731	730	716	694	636	626	632	614	623	615	644	652	669
56	636	674	681	691	699	703	687	667	607	596	600	587	592	583	608	622	636
57	611	649	660	663	672	678	662	645	583	573	576	567	568	559	580	598	611
58	588	625	639	636	646	654	636	621	560	551	555	549	546	537	557	576	588
59	566	602	618	610	621	627	610	597	539	530	533	531	524	516	534	555	566
60	544	579	595	584	595	601	585	573	518	510	512	512	501	496	512	533	544
61	524	556	573	559	568	575	560	549	499	491	491	494	480	476	491	511	524

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62	503	535	550	535	541	551	536	527	480	473	471	476	460	458	472	492	503
63	485	514	530	512	518	528	514	506	463	456	452	460	440	441	454	472	485
64	468	495	511	490	498	508	496	488	446	441	436	443	423	424	437	453	468
65	451	477	492	471	479	488	478	469	431	426	422	428	406	408	421	435	451
66	434	459	474	453	460	468	461	451	415	412	407	413	392	393	406	418	434
67	419	442	456	437	443	450	444	434	400	397	393	398	379	379	392	401	419
68	404	425	439	421	426	433	428	419	386	384	380	384	367	366	379	386	404
69	390	410	423	408	411	418	414	406	375	371	368	371	355	354	367	373	390
70	376	396	408	397	398	405	403	394	364	360	358	360	344	343	354	360	376
71	364	384	395	386	386	393	391	382	353	348	347	349	332	333	343	349	364
72	352	372	382	376	373	380	380	371	342	336	336	338	321	322	332	338	352
73	340	360	370	365	360	368	369	360	331	324	326	327	310	311	321	327	340
74	328	348	360	354	349	357	360	349	322	313	317	316	299	300	310	317	328
75	317	337	351	346	339	346	351	340	314	303	309	306	290	291	300	308	317
76	308	328	343	338	328	337	343	331	307	294	302	296	282	282	292	300	308
77	298	321	336	331	319	330	336	322	302	285	295	288	275	274	284	293	298
78	290	314	330	325	312	324	331	315	297	278	289	280	269	267	277	286	290
79	282	308	324	319	306	319	326	309	293	272	284	275	264	261	271	280	282
80	276	303	319	314	301	315	323	305	289	268	280	270	260	257	265	274	276
81	271	299	315	311	297	312	321	301	287	265	277	267	258	254	262	270	271
82	267	296	312	309	295	310	321	299	285	263	275	265	257	252	258	267	267
83	265	293	310	308	295	310	321	300	286	263	275	266	257	251	256	264	265
84	263	291	309	308	297	313	324	301	286	264	276	267	257	250	254	262	263
85	263	291	313	312	303	317	329	304	288	267	279	270	259	250	253	262	263
86	264	292	317	318	309	322	333	307	291	270	283	276	263	254	255	264	264
87	265	294	321	324	315	325	335	307	293	272	286	279	268	257	256	266	265
88	266	295	321	326	318	325	334	306	294	272	285	279	270	259	257	269	266
89	265	292	317	317	305	313	328	296	293	266	279	268	259	251	252	267	265
90	260	280	308	303	287	292	295	246	259	235	251	242	232	225	231	248	260
91	210	221	263	271	259	262	254	167	194	168	216	219	211	202	199	192	210
92	139	139	220	243	233	233	197	79	108	88	167	191	187	177	157	112	139
93	70	65	161	204	200	192	131	42	54	46	113	156	156	144	111	55	70

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94	42	43	101	159	160	143	73	81	63	66	64	115	120	109	68	50	42
95	77	99	59	112	116	95	45	159	125	137	41	75	85	74	44	114	77
96	149	181	45	71	76	61	39	209	197	190	36	50	58	50	37	179	149
97	191	206	46	51	54	47	52	210	213	192	49	42	44	41	45	190	191
98	194	205	64	47	50	44	76	204	211	188	70	42	42	40	64	187	194
99	192	197	87	47	53	47	101	193	203	178	91	53	61	49	80	178	192
100	183	184	104	57	79	57	113	180	191	166	95	65	90	57	87	167	183
101	172	170	103	69	107	67	107	166	178	151	85	83	116	72	81	155	172
102	158	153	89	86	136	82	90	148	162	134	72	103	144	90	71	140	158
103	143	135	75	105	162	97	75	128	144	115	60	122	168	107	61	124	143
104	126	115	63	121	178	108	61	105	123	96	50	131	182	116	52	107	126
105	108	96	53	125	180	114	51	83	101	77	43	132	175	119	45	89	108
106	89	77	46	123	166	115	44	64	79	61	38	129	160	118	40	72	89
107	71	62	41	119	147	112	40	50	62	49	36	122	143	115	37	58	71
108	58	51	39	113	130	105	37	42	50	42	35	112	127	109	35	48	58
109	48	44	38	104	113	98	35	37	42	38	36	102	111	102	35	42	48
110	42	38	37	95	101	91	34	33	37	35	36	91	99	94	34	36	42
111	37	35	37	89	92	85	33	30	33	32	36	83	90	88	34	33	37
112	33	32	37	83	86	81	33	28	30	30	36	78	84	83	34	31	33
113	29	30	37	78	80	76	33	26	27	28	36	74	78	79	34	28	29
114	27	28	37	74	76	73	33	24	25	26	37	71	74	75	34	26	27
115	25	24	37	70	72	69	33	21	23	22	37	68	70	72	34	23	25
116	22	20	38	66	67	66	34	18	20	19	38	64	67	69	35	19	22
117	19	19	38	63	63	62	34	18	18	19	38	61	63	65	35	18	19
118	16	19	38	60	59	59	34	19	16	19	38	58	59	61	36	18	16
119	16	20	38	57	55	55	33	20	17	20	38	54	56	58	36	19	16
120	17	20	38	54	51	52	33	19	18	20	37	51	52	54	36	20	17
121	18	20	38	50	48	48	33	19	18	19	37	48	49	50	36	20	18
122	19	20	37	47	46	45	33	18	18	19	35	44	46	46	36	19	19
123	19	19	37	44	43	43	32	18	18	19	34	41	43	43	35	18	19
124	19	18	36	41	41	39	32	18	18	18	32	37	40	40	34	18	19
125	19	18	34	39	39	37	31	18	18	18	31	35	38	37	34	17	19

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126	18	18	33	37	37	35	30	18	17	18	30	33	36	35	32	17	18
127	17	18	32	35	36	34	30	18	16	18	29	32	35	33	31	17	17
128	16	18	31	35	36	33	29	19	16	18	29	31	34	32	30	17	16
129	16	18	31	34	35	33	29	20	17	19	28	31	33	31	29	18	16
130	16	19	31	34	34	33	29	20	17	19	28	31	32	31	28	18	16
131	17	20	31	34	34	33	29	21	17	19	27	31	31	31	28	18	17
132	17	20	30	34	34	33	29	21	18	20	27	31	31	30	27	19	17
133	17	21	30	34	34	33	29	22	18	21	27	31	30	30	27	20	17
134	18	22	30	34	34	33	29	22	18	21	27	30	30	30	27	20	18
135	18	23	30	33	34	33	29	23	19	22	26	29	29	30	27	21	18
136	19	23	29	33	34	32	29	23	19	23	26	28	29	29	26	21	19
137	19	23	29	33	34	32	29	24	19	24	24	28	28	28	26	22	19
138	19	23	29	33	34	32	29	24	19	24	22	27	28	28	25	22	19
139	19	23	29	33	34	32	28	25	19	24	22	26	28	27	24	23	19
140	18	24	29	32	33	31	27	26	19	25	21	25	28	26	23	23	18
141	18	25	28	32	34	31	27	26	19	25	21	25	28	25	22	24	18
142	18	25	27	32	33	31	27	26	20	25	20	25	27	25	21	24	18
143	19	25	26	31	33	31	27	27	21	25	21	25	27	24	21	25	19
144	23	25	27	31	33	30	27	27	24	25	22	25	27	24	21	25	23
145	24	25	27	31	33	30	27	27	25	26	24	25	27	24	22	25	24
146	24	25	27	30	32	30	27	27	25	26	25	25	27	24	23	25	24
147	24	25	28	30	32	30	28	28	26	27	26	24	27	24	24	25	24
148	25	25	28	29	32	29	28	28	26	28	28	23	27	23	25	25	25
149	26	25	29	28	31	28	28	28	27	28	29	23	26	23	26	26	26
150	27	26	29	27	30	28	29	28	27	28	30	23	26	23	27	26	27
151	27	26	30	27	29	28	29	28	27	28	30	24	25	23	29	27	27
152	28	27	31	27	29	28	30	28	28	29	30	25	25	24	30	27	28
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154	29	27	32	28	29	30	32	27	29	30	29	28	25	26	31	28	29
155	29	28	32	29	29	30	33	27	29	30	29	29	25	27	32	28	29
156	29	28	32	30	29	31	34	27	29	30	29	31	25	28	32	29	29
157	28	29	32	31	30	32	35	27	29	30	30	31	25	29	33	29	28

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158	28	29	32	32	31	33	35	29	28	29	30	32	27	31	33	30	28
159	27	28	32	33	32	34	35	31	26	26	31	32	28	32	33	29	27
160	26	27	33	34	34	34	35	32	26	26	32	32	30	32	33	27	26
161	25	29	33	34	34	34	35	32	29	29	32	33	31	33	34	29	25
162	28	33	33	34	34	34	35	33	33	32	33	33	32	33	34	32	28
163	31	34	33	34	34	34	34	34	34	33	34	34	33	33	34	34	31
164	33	35	33	34	35	34	34	35	35	33	35	34	34	34	34	34	33
165	33	35	34	34	35	34	34	36	36	34	35	34	34	32	35	35	33
166	34	36	34	34	35	34	35	36	36	35	36	34	34	34	35	36	34
167	35	36	35	35	34	34	35	36	37	35	37	34	34	34	36	36	35
168	36	39	36	35	34	34	35	36	38	37	37	34	34	34	36	36	36
169	36	39	36	35	34	33	35	35	38	37	38	34	34	35	36	37	36
170	36	37	37	35	33	33	35	35	38	38	38	34	34	35	36	37	36
171	37	37	37	35	33	33	35	35	37	38	38	34	33	35	36	36	37
172	37	36	37	35	32	32	35	35	35	37	37	34	32	35	36	36	37
173	36	35	36	35	31	31	33	34	34	36	36	34	31	34	35	36	36
174	35	34	35	34	30	30	32	33	33	34	34	33	30	33	34	34	35
175	34	34	34	34	30	30	32	32	33	34	34	33	29	33	34	34	34
176	35	34	35	34	32	32	32	32	33	34	34	32	31	34	34	34	35
177	35	35	36	35	33	33	32	31	32	33	34	32	32	35	35	34	35
178	33	34	36	34	34	33	32	31	31	31	33	32	33	35	35	34	33
179	32	34	34	33	33	33	31	31	30	30	32	32	33	33	34	33	32
180	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31



<b>2.2 Electrical, Photometric and Chromaticity Measurements</b> <i>(Refer to Work Instruction QD25)</i>	<b>IES LM-79 2008</b>
-------------------------------------------------------------------------------------------------------------	-----------------------

<b>Test date</b>	2015-10-10	<b>Test Ambient:</b>	25.2 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	90414		

**Electrical Measurement :**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE150956	120.0	60	0.8034	95.57	0.9913	6.03
-F2	277.0	60	0.3603	94.41	0.9459	11.84

**Color Data :**

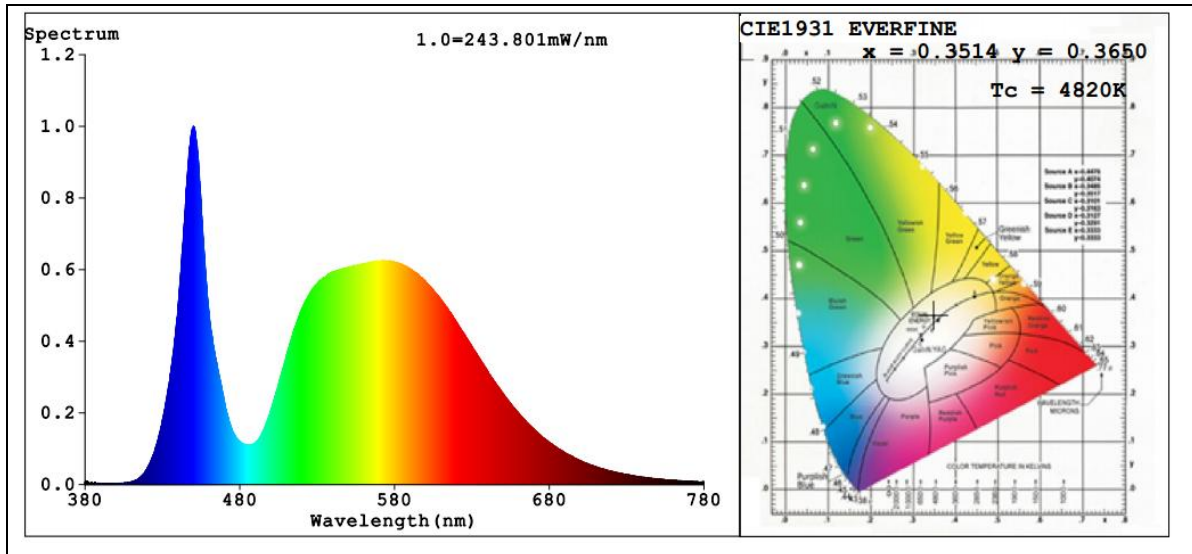
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	73.8
R9	0
CCT (K)	4820
Chromaticity (x, y)	x=0.3514 y=0.3650
Chromaticity (u', v')	u'=0.2105 v'=0.4920
Duv	0.0041
Total Luminous (lm)	12041
Luminous Efficacy (lm/W)	125.99

Special Color Rendering Indices			
R1	71	R9	0
R2	78	R10	47
R3	83	R11	70
R4	74	R12	38
R5	71	R13	72
R6	69	R14	90
R7	84	R15	66
R8	60	--	--

**Sphere-Spectroradiometer Method (277V):**

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Initial Lumen Output(lm)	12025
Initial Lumen Efficacy(lm/w)	127.37

**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 \*\*\*\*\***