



NVLAP LAB CODE 201011-0

Report No.: GZE150406-K

LM-79-08 Test Report

For

PREMIUM QUALITY LIGHTING

(Brand Name: SUPERIOR LIFE®)

2285 Ward Avenue, Simi Valley, CA 93065

Parking Garage Luminaires

Model name(s): 83522

Representative (Tested) Model: 83521(3000K)
83522 (5000K)

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

Test & Report By:

Sean Zhuo

Engineer: Sean Zhuo

Date: May.20,2015

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 Fax: 8620-32290422 <http://www.standard-tech.com>

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	May.20,2015
Test Report No.	GZE150406-K
Laboratory Contact Name	Tommy Liang

Product Information:

Organization Name	PREMIUM QUALITY LIGHTING	
Brand Name	SUPERIOR LIFE®	
Model Number	83521 (3000K)	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Parking Garage Luminaires	
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

	Integrating Sphere	Goniophotometer	
Input Wattage	--	292.6	W
Input Current	--	2.4446	A
Input Voltage (ac)	--	120.1	V
Power Factor	--	0.9966	
Off-State Power	--	0	W

Photometric Characteristics

Total Initial Lumen Output	--	27360	lm
Initial Lumen Efficacy	--	93.51	lm/w
Correlated color temperature / CCT	3124	--	K
Color rendering index / CRI	74.4	--	
R9 Value	0	--	
Duv	0.0005	--	

Luminous Intensity Distribution

Center beam candlepower (if applicable)	-----	17516	cd
Beam angle (if applicable)		95.4	°
Zonal lumens in the 0°-60° zone		66.9	%
Zonal lumens in the 60°-90° zone		32.4	%
Zonal lumens in the 90°-120° zone		0.3	%
Zonal lumens in the 120°-180° zone		0.4	%

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Laboratory Contact Name	Tommy Liang

Product Information:

Organization Name	PREMIUM QUALITY LIGHTING	
Brand Name	SUPERIOR LIFE®	
Model Number	83522 (5000K)	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Parking Garage Luminaires	
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	293.4	--	W
Input Current	2.4508	--	A
Input Voltage (ac)	120.1	--	V
Power Factor	0.9968	--	
Off-State Power	0	--	W

Photometric Characteristics

Total Initial Lumen Output	29002	--	lm
Initial Lumen Efficacy	98.85	--	lm/w
Correlated color temperature / CCT	5064	--	K
Color rendering index / CRI	71.9	--	
R9 Value	0	--	
Duv	0.0005	--	

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	: Apr.14,2015
Date of Test	: Apr.21,2015
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° vertical intervals and 22.5° 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	83522
Luminaire Type	Parking Garage Luminaires
Rated Voltage / Frequency	110 ~ 240/277Vac, 50/60Hz
Nominal Power	300W
Rated Initial Lamp Lumen	--
Declared CCT	3000K,3500K,4000K,4500K,5000K
LED Manufacturer	SAMSUNG ELECTRONICS Co.,Ltd
LED Model	LH351B
Sample Receipt Date	Apr.14,2015
Sample Number	GZE150406-K1(3000K),K2(5000K)

Photo



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2.1 Electrical, Photometric and Chromaticity Measurements (Refer to Work Instruction QD25)	IES LM-79 2008
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Test date	2015-04-21	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	83521 (3000K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE150406	120.1	60	2.4446	292.6	0.9966	4.92
-K1	277.0	60	1.1050	291.0	0.9507	10.84

Sphere-Spectroradiometer Method:

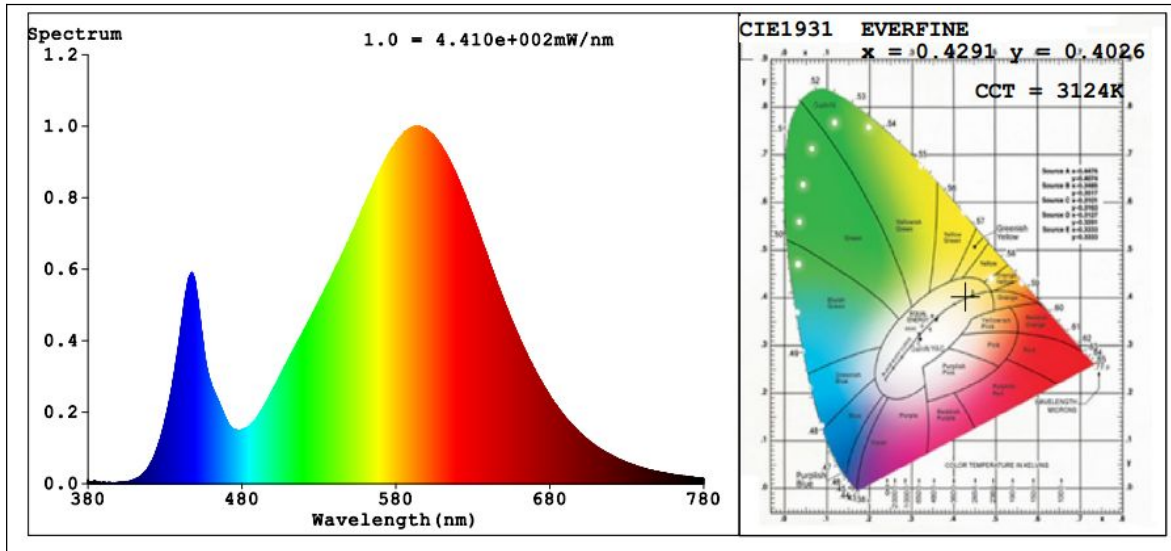
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	74.4
R9	0
CCT (K)	3124
Chromaticity (x, y)	x=0.4291 y=0.4026
Chromaticity (u', v')	u'=0.2462 v'=0.5196
Duv	0.0005

Special Color Rendering Indices			
R1	71	R9	0
R2	83	R10	61
R3	94	R11	66
R4	71	R12	55
R5	70	R13	73
R6	76	R14	96
R7	80	R15	64
R8	50	--	--

Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	27360
Luminous Efficacy (lm/W)	93.51
Beam Angle°	95.4
Center Beam Candle Power (cd)	17516
S/MH(C0/180)	0.90
S/MH(C90/270)	1.59

Spectral Power Distribution & Chromaticity Diagram



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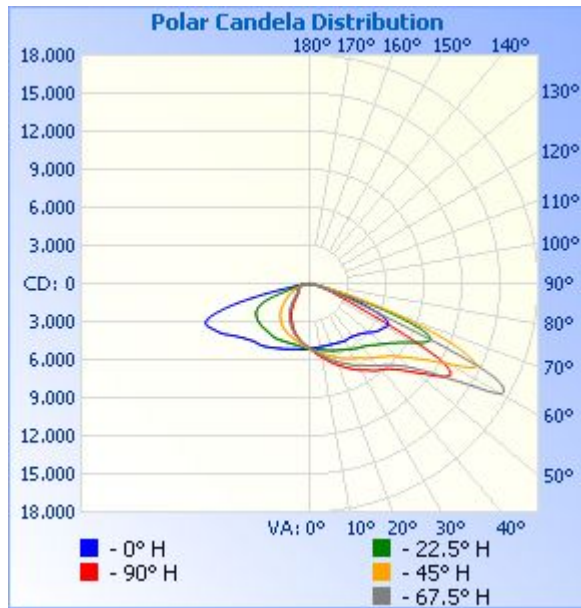
Tel: 8620-3229 0320 Fax: 8620-32290422 <http://www.standard-tech.com>

Zonal Lumen Tabulation

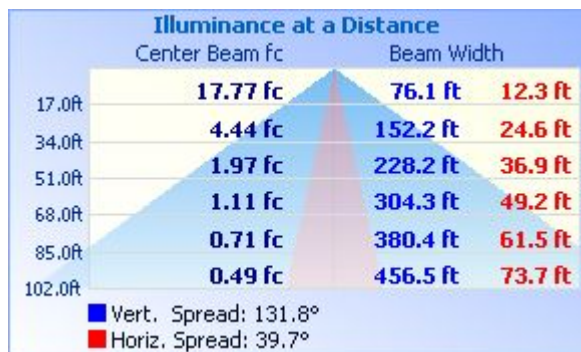
Zonal Lumen Summary			
Zone	Lumens	% Lamp	% Luminaire
0-30	4,454.1	16.3%	16.3%
0-40	7,908.0	28.9%	28.9%
0-60	18,295.4	66.9%	66.9%
60-90	8,869.4	32.4%	32.4%
70-100	2,602.9	9.5%	9.5%
90-120	74.3	0.3%	0.3%
0-90	27,164.7	99.3%	99.3%
90-180	194.1	0.7%	0.7%
0-180	27,358.9	100%	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	490.6	1.8%	90-100	16.5	0.1%
10-20	1,481.0	5.4%	100-110	25.0	0.1%
20-30	2,482.5	9.1%	110-120	32.8	0.1%
30-40	3,453.9	12.6%	120-130	35.1	0.1%
40-50	4,427.7	16.2%	130-140	30.1	0.1%
50-60	5,959.6	21.8%	140-150	23.5	0.1%
60-70	6,282.9	23.0%	150-160	17.6	0.1%
70-80	2,341.4	8.6%	160-170	10.1	0%
80-90	245.0	0.9%	170-180	3.4	0%

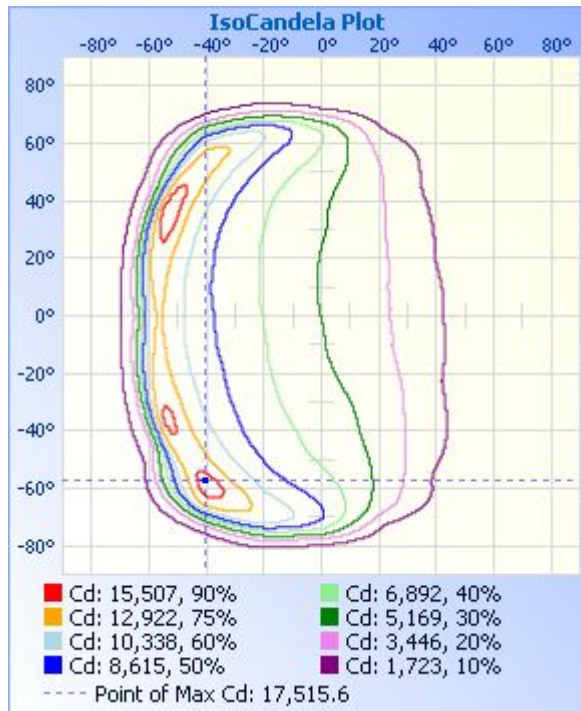
Photometric Data



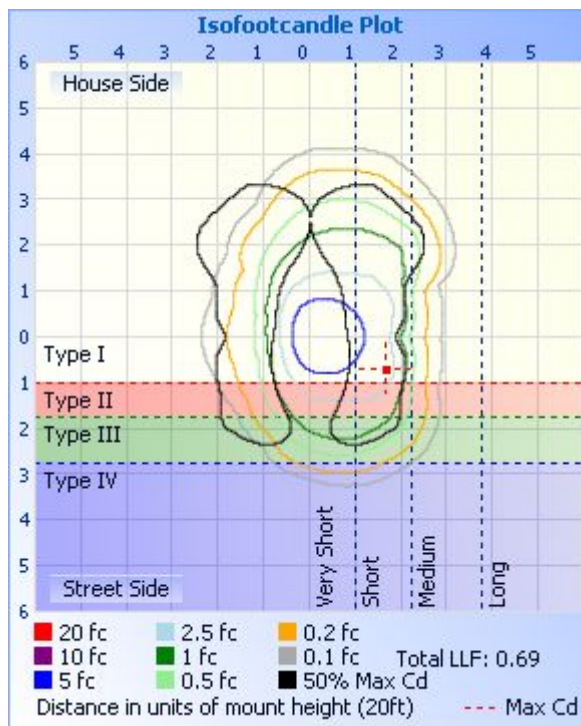
Illuminance Plots



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	5135	5136	5132	5077	5121	5127	5122	5133	5135	5136	5132	5077	5121	5127	5122	5133	5135
1	5120	5150	5167	5136	5189	5195	5178	5173	5149	5121	5091	5023	5054	5061	5063	5095	5120
2	5105	5164	5204	5190	5255	5260	5235	5211	5163	5106	5055	4965	4987	4992	5005	5055	5105
3	5091	5176	5243	5246	5324	5331	5290	5247	5177	5094	5016	4910	4920	4925	4948	5016	5091
4	5078	5189	5286	5310	5402	5404	5350	5284	5190	5080	4977	4854	4857	4859	4888	4977	5078
5	5066	5203	5331	5373	5480	5483	5414	5322	5204	5064	4941	4797	4794	4792	4832	4940	5066
6	5057	5217	5373	5441	5568	5567	5483	5363	5212	5044	4899	4742	4730	4726	4778	4906	5057
7	5052	5236	5422	5518	5659	5658	5548	5403	5220	5027	4855	4685	4665	4660	4730	4878	5052
8	5049	5258	5475	5600	5748	5742	5622	5443	5227	5008	4814	4628	4601	4593	4682	4851	5049
9	5050	5281	5529	5673	5834	5826	5693	5483	5235	4993	4770	4571	4537	4528	4635	4825	5050
10	5049	5308	5582	5750	5916	5910	5762	5524	5245	4977	4729	4514	4472	4465	4588	4803	5049
11	5051	5336	5636	5831	6009	5997	5827	5563	5258	4963	4688	4453	4408	4400	4544	4781	5051
12	5053	5363	5687	5909	6100	6078	5892	5602	5273	4948	4647	4398	4342	4344	4498	4761	5053
13	5054	5390	5745	5982	6191	6162	5959	5640	5291	4939	4611	4338	4272	4284	4457	4742	5054
14	5055	5421	5809	6056	6290	6254	6023	5682	5311	4934	4576	4279	4201	4220	4413	4721	5055
15	5058	5455	5867	6141	6394	6352	6085	5726	5334	4928	4543	4218	4130	4154	4373	4701	5058
16	5059	5487	5924	6229	6486	6446	6150	5770	5359	4925	4513	4154	4057	4088	4328	4683	5059
17	5062	5517	5983	6321	6583	6540	6217	5816	5388	4927	4483	4093	3977	4017	4284	4665	5062
18	5066	5547	6046	6399	6676	6626	6289	5865	5419	4929	4456	4027	3897	3945	4240	4648	5066
19	5074	5576	6113	6480	6767	6716	6363	5918	5447	4937	4427	3959	3814	3874	4194	4632	5074
20	5082	5602	6182	6560	6854	6809	6439	5970	5474	4944	4399	3892	3730	3801	4148	4617	5082
21	5092	5633	6250	6640	6945	6900	6513	6029	5506	4949	4365	3824	3646	3729	4099	4608	5092
22	5106	5664	6323	6719	7044	6992	6590	6080	5537	4957	4335	3756	3563	3656	4050	4595	5106
23	5120	5698	6388	6798	7151	7089	6667	6136	5569	4963	4304	3686	3476	3579	4002	4583	5120
24	5133	5732	6452	6882	7250	7190	6746	6190	5603	4974	4276	3615	3391	3500	3952	4570	5133
25	5146	5762	6515	6987	7355	7288	6836	6251	5637	4984	4244	3540	3305	3419	3898	4558	5146
26	5166	5799	6576	7075	7456	7388	6921	6307	5675	4993	4213	3466	3221	3338	3844	4542	5166
27	5186	5835	6638	7176	7557	7485	7011	6369	5710	5006	4178	3391	3136	3256	3789	4528	5186
28	5209	5876	6700	7265	7662	7586	7092	6428	5748	5017	4147	3314	3050	3172	3734	4509	5209
29	5233	5921	6757	7354	7767	7687	7180	6487	5785	5029	4111	3235	2963	3084	3675	4491	5233

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30	5255	5972	6808	7430	7860	7784	7271	6547	5824	5038	4071	3155	2879	2999	3615	4470	5255
31	5276	6029	6862	7505	7940	7876	7358	6607	5867	5047	4033	3073	2792	2905	3549	4445	5276
32	5294	6083	6911	7583	8028	7955	7432	6666	5909	5057	3989	2992	2705	2810	3481	4417	5294
33	5302	6137	6988	7667	8120	8022	7500	6726	5957	5063	3945	2910	2612	2717	3407	4388	5302
34	5297	6188	7061	7759	8224	8100	7564	6791	6004	5064	3898	2826	2516	2625	3331	4357	5297
35	5290	6237	7161	7864	8340	8191	7629	6861	6050	5063	3848	2738	2419	2528	3255	4328	5290
36	5291	6296	7272	7980	8459	8303	7696	6930	6095	5060	3794	2651	2318	2434	3185	4299	5291
37	5308	6362	7365	8098	8569	8440	7781	6997	6139	5051	3742	2565	2215	2338	3114	4274	5308
38	5328	6408	7461	8214	8671	8596	7889	7063	6176	5042	3685	2471	2109	2237	3042	4251	5328
39	5352	6439	7553	8324	8757	8734	8022	7133	6206	5031	3630	2377	2008	2135	2963	4223	5352
40	5383	6481	7648	8427	8840	8867	8154	7212	6235	5022	3574	2280	1911	2034	2881	4202	5383
41	5419	6539	7731	8540	8942	8991	8273	7300	6238	5019	3514	2181	1812	1931	2793	4179	5419
42	5458	6611	7821	8650	9063	9100	8380	7396	6255	5017	3455	2081	1710	1830	2700	4156	5458
43	5505	6688	7919	8769	9190	9219	8485	7484	6283	5016	3391	1979	1614	1731	2607	4135	5505
44	5556	6772	8025	8901	9358	9357	8584	7553	6326	5015	3324	1877	1523	1638	2509	4113	5556
45	5609	6864	8133	9061	9548	9505	8680	7603	6373	5018	3249	1778	1440	1551	2409	4088	5609
46	5670	6964	8254	9244	9752	9680	8779	7655	6426	5019	3175	1684	1376	1468	2312	4060	5670
47	5736	7066	8381	9450	9998	9857	8907	7716	6487	5032	3092	1594	1312	1386	2219	4035	5736
48	5808	7172	8537	9684	10273	10054	9042	7795	6551	5030	3009	1511	1261	1322	2130	4006	5808
49	5891	7284	8709	9940	10562	10286	9194	7884	6621	5037	2910	1439	1217	1265	2049	3973	5891
50	5987	7395	8912	10252	10889	10572	9362	7988	6703	5036	2812	1374	1183	1214	1966	3933	5987
51	6094	7521	9134	10613	11219	10890	9534	8099	6786	5036	2715	1316	1154	1170	1887	3891	6094
52	6204	7656	9372	11029	11563	11267	9735	8213	6875	5032	2618	1264	1130	1130	1816	3841	6204
53	6319	7794	9651	11510	11950	11709	9973	8344	6974	5027	2525	1217	1110	1097	1747	3795	6319
54	6422	7951	9962	12069	12379	12197	10247	8483	7077	5018	2434	1173	1091	1068	1678	3744	6422
55	6513	8126	10288	12713	12780	12721	10538	8642	7189	5004	2347	1133	1088	1046	1603	3684	6513
56	6586	8318	10629	13463	13090	13278	10865	8802	7307	4986	2263	1098	1122	1041	1534	3606	6586
57	6649	8519	11040	14278	13225	13899	11238	8971	7445	4964	2179	1071	1153	1078	1459	3519	6649
58	6714	8759	11513	15281	13085	14566	11671	9174	7591	4930	2093	1072	1125	1092	1378	3419	6714
59	6787	9029	12058	16524	12565	15382	12143	9392	7742	4901	2001	1090	1098	1051	1297	3310	6787
60	6866	9311	12672	17403	11650	16125	12704	9627	7886	4868	1910	1085	1082	1015	1254	3185	6866
61	6941	9605	13325	17516	10142	16395	13364	9868	8015	4825	1816	1043	1065	984	1236	3041	6941

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62	6985	9897	14013	17244	8068	16178	14112	10132	8118	4767	1709	1013	1050	960	1254	2838	6985
63	6955	10167	14593	16493	6127	15406	14983	10447	8219	4686	1591	990	1035	943	1188	2633	6955
64	6831	10391	14554	14726	4632	13820	16015	10790	8323	4587	1479	964	1022	929	1114	2341	6831
65	6589	10489	14139	11355	3703	10825	16952	11150	8441	4468	1382	956	1015	918	1059	2110	6589
66	6217	10396	13359	7936	3158	7761	17406	11470	8562	4330	1370	953	1017	893	933	1967	6217
67	5718	10024	12319	5662	2614	5509	17301	11773	8671	4162	1425	930	1018	859	859	1700	5718
68	5090	9307	11081	4216	2250	4004	16836	12024	8749	3932	1355	887	1009	825	820	1457	5090
69	4405	8240	9770	3358	1989	3072	16163	12216	8781	3624	1228	843	990	790	780	1288	4405
70	3645	6939	8342	2502	1758	2477	15243	12312	8697	3204	1115	800	972	756	733	1145	3645
71	2810	5566	6806	2028	1541	2099	14102	12152	8460	2737	978	760	958	724	684	950	2810
72	1973	4351	5328	1690	1347	1825	12558	11632	8062	2272	887	725	945	699	634	688	1973
73	1458	3425	4051	1429	1181	1611	10455	10714	7499	1843	832	694	932	675	587	550	1458
74	948	2499	2978	1226	1032	1434	8064	9522	6749	1498	760	665	921	643	548	482	948
75	713	1897	1952	1063	911	1282	5971	8106	5833	1243	698	636	911	601	512	429	713
76	564	1441	1377	931	809	1154	4399	6593	4741	988	635	602	871	560	461	377	564
77	450	1096	804	818	704	1046	3284	5217	3596	831	575	559	827	517	403	323	450
78	351	776	601	716	603	951	2171	4019	2452	720	529	517	801	475	350	277	351
79	262	508	474	621	518	860	1413	3058	1662	613	488	473	791	430	308	238	262
80	192	339	378	529	430	762	967	2254	1181	511	448	430	778	387	265	198	192
81	136	241	299	426	346	660	733	1646	867	428	399	385	751	345	217	164	136
82	97	184	230	329	282	508	584	1209	654	362	349	344	708	296	177	136	97
83	71	146	167	261	228	379	469	774	495	308	302	303	652	235	131	109	71
84	52	116	120	204	161	313	375	504	368	260	259	251	555	175	86	78	52
85	35	84	72	123	63	250	297	335	263	214	221	192	447	123	51	49	35
86	18	50	30	46	18	156	225	254	189	170	188	139	319	80	25	25	18
87	9	22	13	16	10	54	166	207	137	136	149	95	239	31	12	12	9
88	9	11	5	11	8	13	112	167	100	113	110	58	104	9	9	11	9
89	10	11	5	4	5	9	68	122	73	90	74	24	11	7	10	12	10
90	11	10	4	4	5	7	31	79	53	68	46	18	7	5	11	13	11
91	12	10	4	4	5	6	15	45	35	43	29	18	5	5	12	15	12
92	13	10	4	4	5	6	7	21	23	28	23	19	3	5	14	17	13
93	14	11	5	4	5	5	7	11	17	26	24	20	3	6	16	18	14

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94	15	11	5	4	5	5	7	11	17	26	25	22	3	7	18	21	15
95	16	12	5	4	5	5	7	11	18	27	27	24	4	8	20	22	16
96	17	13	5	4	5	6	7	11	19	28	28	26	4	10	22	24	17
97	19	14	5	4	6	6	7	11	20	29	29	27	5	12	24	26	19
98	20	15	5	4	6	6	7	12	20	31	31	29	6	14	27	28	20
99	21	16	5	4	6	6	7	12	21	32	32	31	7	17	29	30	21
100	23	17	6	5	6	6	7	13	21	33	34	32	9	19	31	32	23
101	24	17	6	5	6	6	8	14	22	35	35	34	11	22	33	34	24
102	26	18	7	5	6	6	8	14	23	36	37	35	13	24	35	35	26
103	27	19	7	5	7	6	8	15	23	38	38	37	15	27	37	37	27
104	28	20	7	5	7	7	8	16	24	39	40	38	17	29	38	38	28
105	29	20	8	6	7	7	9	16	25	41	41	40	20	31	40	40	29
106	30	21	8	6	7	7	9	16	26	42	43	42	22	33	41	41	30
107	31	22	9	6	8	8	10	17	27	44	45	43	25	35	43	42	31
108	33	23	9	6	8	8	10	17	28	45	46	45	27	37	44	43	33
109	34	24	10	7	8	8	10	18	29	46	48	47	30	39	45	44	34
110	35	25	11	7	9	8	11	19	30	47	49	49	32	41	46	46	35
111	36	25	11	7	9	9	11	20	30	48	50	50	35	43	47	47	36
112	37	26	12	7	9	9	12	20	31	49	51	52	37	44	48	48	37
113	38	27	12	8	10	9	12	21	32	49	52	53	39	45	49	49	38
114	39	27	13	8	10	10	13	22	33	50	53	54	41	46	50	50	39
115	40	28	13	8	10	10	13	23	33	51	54	55	43	47	51	51	40
116	40	29	14	9	11	11	14	23	34	51	55	56	45	48	52	52	40
117	41	30	14	9	11	11	14	24	35	52	56	56	46	49	53	53	41
118	42	31	15	10	12	12	15	24	36	53	57	57	48	50	54	54	42
119	43	32	15	10	13	12	15	25	36	53	58	58	49	51	54	55	43
120	43	33	16	10	14	13	16	25	37	54	58	59	51	52	55	56	43
121	44	33	16	11	15	13	16	26	38	55	59	59	53	53	56	57	44
122	44	34	16	11	15	14	16	26	38	56	60	61	55	53	56	57	44
123	45	34	17	11	15	14	17	27	39	56	61	61	57	54	56	57	45
124	45	34	17	12	15	14	17	27	39	56	61	62	58	55	56	57	45
125	45	34	18	12	15	15	18	28	39	56	61	63	57	55	56	57	45

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126	45	35	18	12	16	15	18	28	39	56	61	63	57	56	56	57	45
127	45	35	19	12	17	15	19	29	40	57	61	63	58	56	56	57	45
128	45	35	19	13	17	16	19	29	40	57	60	63	59	56	56	57	45
129	45	35	19	13	17	16	19	30	40	57	59	62	61	56	56	57	45
130	45	35	20	13	17	16	20	30	39	56	58	61	62	55	56	57	45
131	45	35	20	13	16	16	20	30	39	56	57	60	61	54	57	58	45
132	44	34	20	14	16	17	20	31	39	55	56	59	60	54	57	58	44
133	44	34	21	14	16	17	21	31	39	54	55	58	58	53	57	58	44
134	44	34	21	14	17	17	21	31	39	53	53	57	58	53	57	58	44
135	43	33	22	14	17	18	21	31	38	52	52	56	57	53	56	57	43
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137	42	33	23	15	18	18	22	30	38	48	50	53	56	52	56	56	42
138	42	33	24	15	18	19	23	30	37	47	49	52	55	52	55	56	42
139	41	32	25	16	18	19	23	30	37	46	48	51	55	52	54	55	41
140	41	32	26	16	19	19	24	30	37	46	48	50	54	52	54	54	41
141	41	32	27	17	19	20	24	30	36	45	47	49	53	52	53	53	41
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148	40	33	27	21	23	24	29	30	35	41	50	44	51	51	55	48	40
149	40	33	28	22	24	25	29	30	35	41	49	44	51	51	55	47	40
150	40	36	28	23	25	26	28	30	35	40	49	44	51	51	55	47	40
151	39	38	28	24	27	27	28	30	35	40	48	45	51	52	55	46	39
152	39	38	28	25	28	28	28	30	34	39	47	47	51	53	55	46	39
153	38	38	28	25	28	28	28	30	34	39	46	48	52	55	53	45	38
154	38	38	28	25	29	28	29	30	34	38	44	48	53	56	52	45	38
155	38	39	28	25	29	28	28	30	34	38	42	48	55	57	51	44	38
156	37	42	28	25	29	28	29	33	33	37	42	47	55	56	49	43	37
157	37	41	28	25	29	28	29	35	33	37	41	46	55	55	48	43	37

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158	37	40	28	26	28	28	29	35	33	37	41	44	54	52	47	43	37
159	37	38	29	26	27	28	29	36	33	37	40	42	52	49	46	43	37
160	37	38	29	26	27	28	29	38	33	37	38	40	51	48	46	42	37
161	37	37	29	26	28	28	29	39	32	37	38	39	48	46	45	42	37
162	37	36	29	26	28	27	29	37	32	38	38	39	44	45	44	42	37
163	37	36	29	26	28	27	29	35	32	37	37	38	42	45	43	42	37
164	37	35	35	26	28	28	30	34	32	37	37	37	42	44	43	42	37
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166	36	35	35	27	29	29	35	33	32	36	37	36	42	43	41	41	36
167	36	35	39	27	29	29	36	33	33	36	36	36	41	43	41	40	36
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174	35	35	31	30	33	32	34	36	35	34	35	34	38	38	38	36	35
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176	35	35	33	29	33	33	36	36	35	34	34	33	36	37	36	35	35
177	35	34	33	31	35	36	36	36	35	34	34	32	35	36	36	36	35
178	35	35	34	32	37	36	36	36	35	35	34	32	35	36	36	36	35
179	36	34	33	33	37	36	36	36	35	35	34	33	35	36	36	36	36
180	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36

Test Voltage:277V

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE150406 -K1	277.0	60	1.1050	291.0	0.9507	10.84

Goniophotometer Method:

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	27354
Luminous Efficacy (lm/W)	94.00
Beam Angle°	95.4
Center Beam Candle Power (cd)	17512
S/MH(C0/180)	0.90
S/MH(C90/270)	1.59

2.2 Electrical, Photometric and Chromaticity Measurements (Refer to Work Instruction QD25)	IES LM-79 2008
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Test date	2015-04-21	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	83522 (5000K)		

Electrical Measurement:

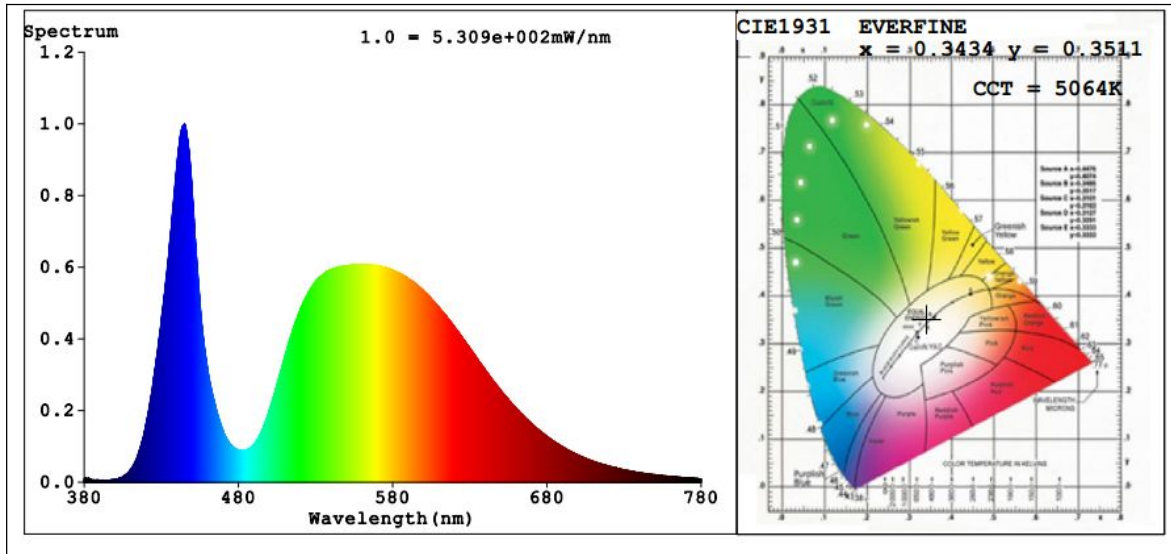
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE150406	120.1	60	2.4508	293.4	0.9968	4.85
-K2	277.0	60	1.1280	291.9	0.9342	10.36

Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	71.9
R9	0
CCT (K)	5064
Chromaticity (x, y)	x=0.3434 y=0.3511
Chromaticity (u', v')	u'=0.2104 v'=0.4842
Duv	0.0005
Total Luminous (lm)	29002
Luminous Efficacy (lm/W)	98.85

Special Color Rendering Indices			
R1	72	R9	0
R2	75	R10	39
R3	76	R11	73
R4	74	R12	45
R5	73	R13	71
R6	66	R14	86
R7	78	R15	67
R8	62	--	--

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	2014-07-01	2015-06-30
ST-R-331	Spectral analysis system HAAS-2000	2014-07-01	2015-06-30
D204	Standard Lamp	2014-07-01	2015-06-30
PF2010	Power Meter for Integrating Sphere	2014-07-01	2015-06-30
EE-09	Goniophotometer system	2014-07-01	2015-06-30
D908S	Standard Lamp	2014-07-01	2015-06-30
PF210	Power Meter for Goniophotometer	2014-07-01	2015-06-30
ST-R-181A	Temperature Tester	2014-07-01	2015-06-30
Uncertainty Photometric Measurement (Sphere):1.74% Chromaticity Measurement(Sphere):14.3K Photometric Measurement(Goniophotometer):1.62%			

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