

LM-79-08 Test Report

Architectural Flood and Spot Luminaires

Model name(s): **LF3-300W**

Remark: The letter "X" in the model name stand for CCT as bellow :3=3000K, 4=4000K, 5=5000K, 6=5700K; "YY" stand for different mounting option as bellow

YK=Yoke, TR=Trunnion, MA=Arm, SF=Slipfitter, PD=Pendant; "ZZ" stand for housing color by use 2 digits to indicate all of color.

Representative (Tested) Model: **LF3-300W**

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

Test & Report By:

Johnson Sun

Engineer: Johnson Sun

Date: Jun.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 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	Jun.26,2015
Test Report No.	GZE150320-I
Laboratory Contact Name	Tommy Liang

Product Information:

Model Number	LF3-300W	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Architectural Flood and Spot 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	--	304.2	W
Input Current	--	2.540	A
Input Voltage (ac)	--	120.1	V
Power Factor	--	0.9971	
Off-State Power	--	0	W

Photometric Characteristics

Total Initial Lumen Output	--	30857	lm
Initial Lumen Efficacy	--	101.45	lm/w
Correlated color temperature / CCT	3056	--	K
Color rendering index / CRI	83.5	--	
R9 Value	10	--	
Duv	0.0006	--	
Luminous Intensity Distribution			
Center beam candlepower (if applicable)	-----	9689	cd
Beam angle (if applicable)		113.6	°
Zonal lumens in the 0 °-60 °zone		77	%
Zonal lumens in the 60 °-90 °zone		22.9	%
Zonal lumens in the 90 °-120 °zone		0	%
Zonal lumens in the 120 °-180 °zone		0.2	%

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	Jun.26,2015
Test Report No.	GZE150320-I
Laboratory Contact Name	Tommy Liang

Product Information:

Model Number	LF3-300W	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Architectural Flood and Spot 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	303.8	--	W
Input Current	2.5362	--	A
Input Voltage (ac)	120.0	--	V
Power Factor	0.9982	--	
Off-State Power	0	--	W

Photometric Characteristics

Total Initial Lumen Output	34017	--	lm
Initial Lumen Efficacy	111.97	--	lm/w
Correlated color temperature / CCT	5467	--	K
Color rendering index / CRI	83.7	--	
R9 Value	28	--	
Duv	0.0053	--	
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			%

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>

Test Specifications:	
Date of Receipt	: Jun.24,2014
Date of Test	: Jun.25,2014
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.

1. Product Information:

Model Number	LF3-300W
Luminaire Type	Architectural Flood and Spot Luminaires
Rated Voltage / Frequency	120~ 277Vac, 50/60Hz
Nominal Power	300W
Rated Initial Lamp Lumen	--
Declared CCT	3000K, 4000K, 5000K,5700K
LED Manufacturer	Philips Lumileds
LED Model	LUXEON 3030 2D
Sample Receipt Date	Jun.24,2015
Sample Number	GZE150320-I1(3000K),I2(5700K)

Photo



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>

2.1 Electrical, Photometric and Chromaticity Measurements (Refer to Work Instruction QD25)	IES LM-79 2008
--	-----------------------

Test date	2015-06-25	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE150320	120.1	60	2.540	304.2	0.9971	4.38
-I1	277.1	60	1.128	295.9	0.9470	7.88

Sphere-Spectroradiometer Method:

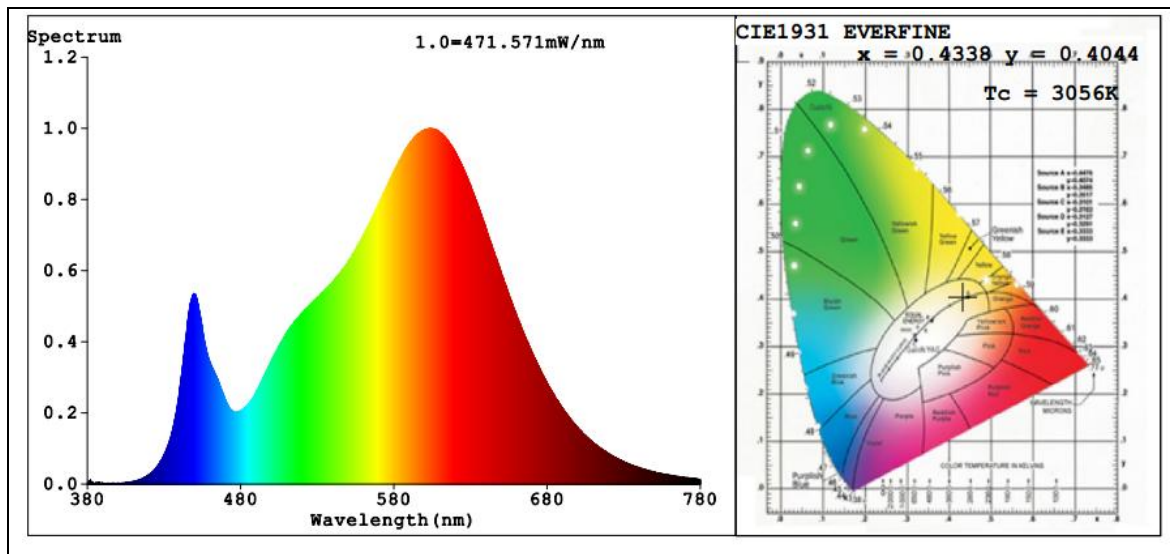
Parameter	Result
Test Voltage (V)	120.1
Frequency (Hz)	60
Color Rendering Index (CRI)	83.5
R9	10
CCT (K)	3056
Chromaticity (x, y)	x=0.4338 y=0.4044
Chromaticity (u', v')	u'=0.2484 v'=0.5210
Duv	0.0006

Special Color Rendering Indices			
R1	82	R9	10
R2	91	R10	80
R3	97	R11	81
R4	82	R12	73
R5	82	R13	84
R6	89	R14	99
R7	84	R15	74
R8	61	--	--

Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.1
Frequency (Hz)	60
Total Luminous (lm)	30857
Luminous Efficacy (lm/W)	101.45
Beam Angle °	113.6
Center Beam Candle Power (cd)	9689
S/MH(C0/180)	1.31
S/MH(C90/270)	1.21

Spectral Power Distribution & Chromaticity Diagram



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>

Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	7,358.0	23.8%
0-40	12,465.5	40.4%
0-60	23,747.3	77%
60-90	7,051.3	22.9%
70-100	2,720.0	8.8%
90-120	14.3	0%
0-90	30,798.6	99.8%
90-180	54.2	0.2%
0-180	30,852.8	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	905.9	2.9%	90-100	3.1	0%
10-20	2,548.5	8.3%	100-110	4.6	0%
20-30	3,903.5	12.7%	110-120	6.6	0%
30-40	5,107.5	16.6%	120-130	8.4	0%
40-50	5,736.9	18.6%	130-140	9.5	0%
50-60	5,544.9	18.0%	140-150	8.6	0%
60-70	4,334.4	14.0%	150-160	7.0	0%
70-80	2,174.6	7.0%	160-170	4.7	0%
80-90	542.2	1.8%	170-180	1.7	0%

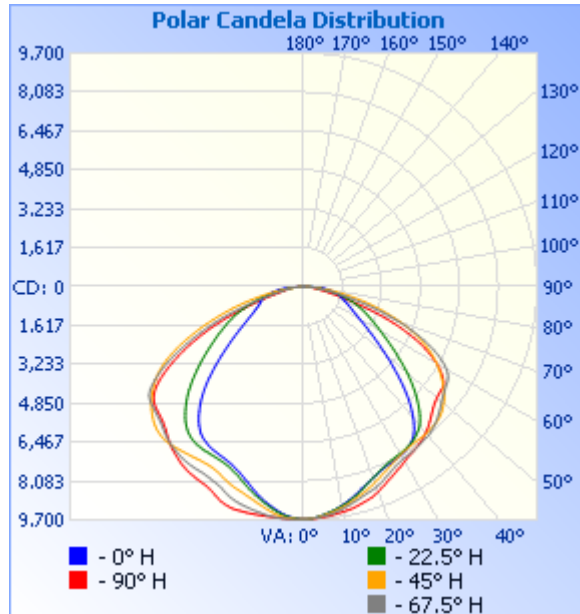
Laboratory: Standard-Tech Co. Ltd Testing Center
NVLAP CODE: 201011-0

Report Format Number STD/QR4909-A/2

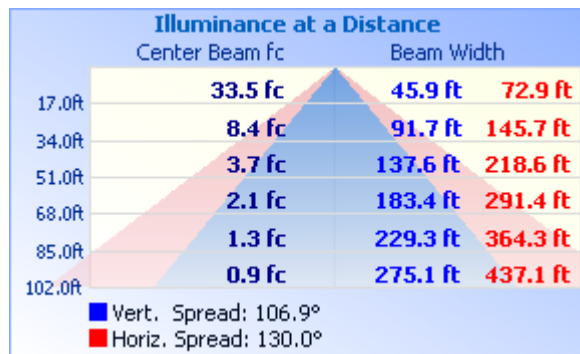
Address: 8th floor, Block B, No. 11 Caipin Road, Guangzhou Science City, Tianhe, Guangzhou 510663, China

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

Photometric Data



Illuminance Plots



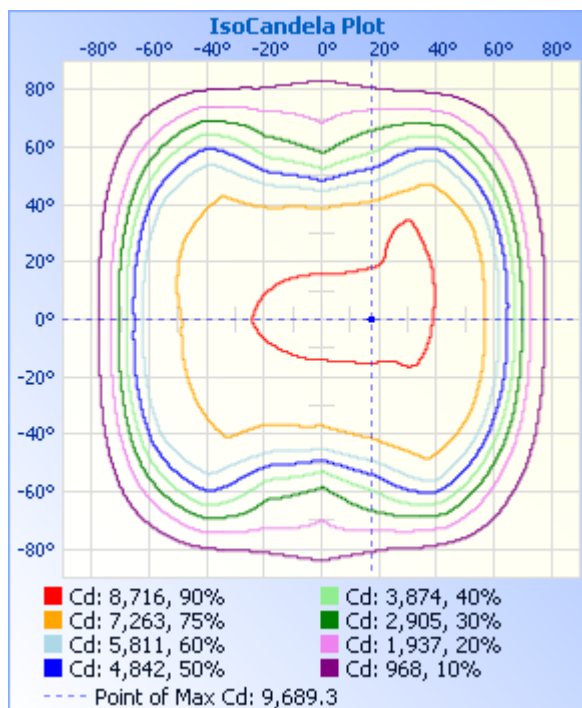
Laboratory: Standard-Tech Co. Ltd Testing Center
NVLAP CODE: 201011-0

Report Format Number STD/QR4909-A/2

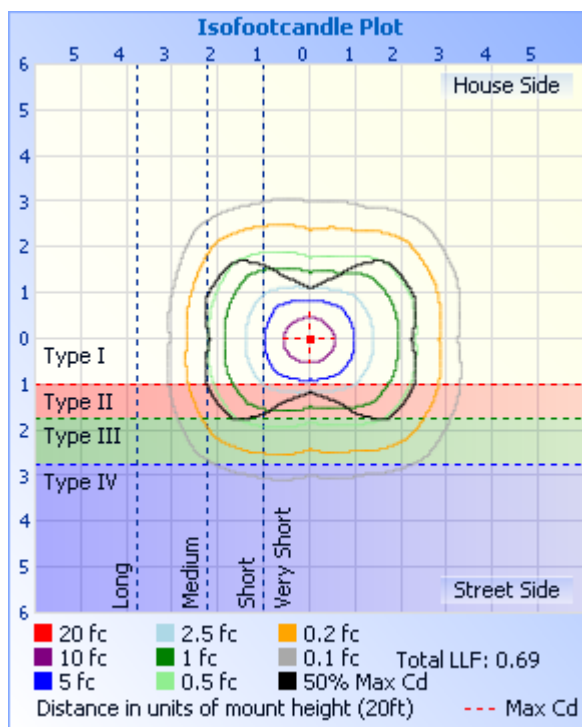
Address: 8th floor, Block B, No. 11 Caipin Road, Guangzhou Science City, Tianhe, Guangzhou 510663, China

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

ISOCANDELA DIAGRAM



ISOLUX DIAGRAM



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>

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	9672	9672	9672	9672	9672	9672	9672	9672	9672	9672	9672	9672	9672	9672	9672	9672	9672
1	9663	9661	9662	9662	9670	9666	9661	9661	9660	9662	9671	9674	9673	9675	9672	9666	9663
2	9638	9635	9640	9648	9658	9652	9646	9638	9636	9642	9660	9672	9669	9674	9660	9648	9638
3	9609	9604	9615	9630	9642	9631	9621	9605	9603	9619	9648	9673	9665	9664	9639	9622	9609
4	9572	9569	9583	9599	9628	9608	9586	9559	9561	9581	9633	9674	9662	9655	9616	9585	9572
5	9527	9522	9547	9573	9611	9587	9540	9507	9500	9530	9608	9670	9661	9644	9589	9542	9527
6	9471	9470	9507	9548	9595	9559	9487	9442	9427	9468	9571	9666	9658	9628	9552	9492	9471
7	9420	9414	9464	9525	9572	9520	9433	9365	9341	9400	9528	9657	9658	9609	9507	9434	9420
8	9360	9360	9416	9482	9545	9476	9372	9284	9257	9321	9466	9640	9660	9585	9458	9378	9360
9	9293	9300	9362	9431	9520	9431	9303	9200	9175	9238	9401	9622	9665	9557	9410	9316	9293
10	9222	9242	9305	9376	9497	9376	9227	9116	9085	9155	9332	9594	9666	9530	9360	9255	9222
11	9150	9181	9249	9319	9475	9320	9147	9030	8987	9069	9261	9566	9671	9498	9311	9197	9150
12	9077	9111	9190	9267	9449	9257	9064	8940	8887	8981	9195	9537	9674	9464	9257	9135	9077
13	8994	9037	9127	9206	9412	9186	8984	8846	8783	8893	9128	9508	9680	9424	9200	9067	8994
14	8911	8956	9055	9152	9373	9110	8894	8745	8671	8802	9066	9475	9683	9386	9151	8984	8911
15	8821	8874	8987	9099	9330	9041	8805	8641	8562	8709	9013	9448	9682	9351	9106	8912	8821
16	8731	8782	8923	9044	9290	8974	8719	8535	8452	8615	8956	9416	9684	9320	9062	8838	8731
17	8654	8693	8865	8992	9250	8908	8629	8429	8350	8519	8905	9378	9689	9298	9023	8767	8654
18	8580	8603	8800	8951	9202	8846	8538	8325	8259	8425	8866	9334	9680	9274	8982	8696	8580
19	8516	8526	8734	8908	9139	8786	8449	8234	8178	8335	8824	9282	9654	9246	8939	8628	8516
20	8446	8453	8661	8854	9064	8720	8363	8153	8107	8261	8775	9213	9614	9216	8897	8565	8446
21	8384	8385	8592	8797	8987	8651	8282	8073	8038	8191	8720	9135	9561	9179	8857	8514	8384
22	8334	8316	8517	8730	8914	8576	8209	8004	7978	8135	8665	9055	9493	9142	8820	8464	8334
23	8284	8256	8445	8655	8841	8497	8134	7942	7927	8087	8601	8992	9410	9102	8784	8414	8284
24	8245	8201	8385	8582	8765	8418	8065	7894	7890	8045	8537	8943	9334	9062	8746	8380	8245
25	8207	8156	8321	8511	8699	8350	8005	7854	7859	8019	8482	8907	9266	9023	8724	8345	8207
26	8184	8116	8259	8447	8632	8287	7945	7824	7828	8001	8443	8869	9223	8999	8705	8321	8184
27	8163	8081	8202	8392	8569	8234	7889	7791	7803	7985	8416	8839	9192	8990	8693	8306	8163
28	8142	8049	8154	8341	8512	8186	7842	7760	7781	7974	8400	8815	9163	8985	8682	8288	8142

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>

29	8116	8027	8111	8300	8454	8150	7800	7734	7757	7965	8396	8801	9138	8981	8679	8274	8116
30	8091	8008	8071	8274	8391	8121	7766	7711	7720	7960	8400	8800	9112	8985	8684	8256	8091
31	8064	7988	8036	8249	8334	8095	7740	7689	7680	7958	8407	8795	9086	8996	8703	8240	8064
32	8019	7966	8007	8230	8287	8069	7725	7656	7634	7951	8420	8787	9055	9000	8721	8221	8019
33	7968	7935	7984	8215	8244	8040	7714	7620	7588	7934	8433	8772	9019	9002	8746	8197	7968
34	7916	7902	7968	8202	8207	8016	7711	7573	7523	7917	8451	8757	8971	8993	8765	8160	7916
35	7834	7859	7956	8181	8164	7997	7716	7514	7443	7890	8472	8735	8920	8982	8785	8127	7834
36	7742	7810	7949	8151	8121	7976	7724	7459	7337	7856	8495	8713	8862	8958	8805	8077	7742
37	7611	7753	7946	8124	8076	7949	7721	7390	7216	7811	8514	8678	8799	8935	8829	8013	7611
38	7463	7680	7955	8101	8028	7928	7721	7312	7080	7752	8537	8647	8737	8905	8847	7941	7463
39	7286	7606	7953	8086	7972	7895	7727	7205	6923	7675	8559	8610	8677	8871	8864	7867	7286
40	7078	7499	7944	8073	7908	7856	7730	7086	6746	7580	8578	8573	8599	8827	8870	7752	7078
41	6858	7372	7935	8032	7839	7811	7729	6953	6569	7474	8589	8527	8520	8773	8870	7629	6858
42	6627	7219	7923	7987	7763	7762	7721	6805	6375	7353	8593	8471	8427	8708	8856	7478	6627
43	6388	7055	7912	7941	7684	7702	7705	6644	6163	7212	8585	8412	8344	8644	8831	7318	6388
44	6122	6874	7896	7883	7598	7641	7685	6484	5943	7065	8567	8347	8254	8567	8794	7145	6122
45	5859	6688	7872	7827	7517	7584	7656	6312	5704	6912	8542	8283	8185	8494	8744	6969	5859
46	5582	6492	7838	7758	7438	7521	7616	6141	5463	6754	8501	8218	8119	8406	8685	6783	5582
47	5312	6288	7791	7692	7367	7452	7565	5951	5206	6583	8451	8169	8069	8329	8614	6586	5312
48	5041	6084	7732	7619	7306	7389	7504	5762	4955	6403	8387	8127	8029	8253	8517	6388	5041
49	4787	5863	7666	7544	7259	7332	7430	5559	4707	6207	8307	8086	7993	8181	8415	6178	4787
50	4541	5650	7590	7475	7220	7280	7347	5357	4462	6020	8223	8054	7957	8120	8304	5968	4541
51	4297	5426	7508	7413	7188	7230	7261	5144	4225	5825	8133	8024	7923	8058	8189	5756	4297
52	4065	5208	7412	7354	7164	7186	7154	4933	3998	5623	8036	7997	7873	8005	8066	5538	4065
53	3846	4989	7310	7305	7152	7148	7046	4724	3786	5430	7928	7962	7802	7955	7933	5332	3846
54	3646	4783	7198	7257	7134	7120	6931	4515	3584	5240	7810	7918	7699	7910	7799	5122	3646
55	3454	4575	7074	7216	7091	7095	6813	4317	3404	5044	7676	7838	7554	7852	7656	4925	3454
56	3274	4383	6944	7185	7009	7072	6697	4132	3225	4853	7542	7705	7371	7774	7517	4732	3274
57	3112	4193	6810	7142	6892	7044	6575	3947	3047	4673	7401	7510	7153	7641	7366	4553	3112
58	2961	4019	6678	7080	6747	6994	6454	3772	2894	4500	7249	7279	6884	7469	7204	4375	2961
59	2816	3847	6528	6983	6577	6901	6330	3607	2756	4328	7077	7018	6594	7242	7032	4211	2816

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>

60	2690	3687	6389	6848	6394	6769	6201	3461	2633	4170	6886	6737	6286	6981	6850	4070	2690
61	2576	3541	6229	6688	6176	6605	6065	3315	2519	4014	6668	6416	5972	6683	6650	3929	2576
62	2470	3401	6064	6491	5935	6412	5918	3170	2414	3859	6427	6083	5640	6367	6419	3788	2470
63	2377	3271	5880	6282	5667	6201	5756	3051	2323	3708	6162	5739	5306	6033	6166	3654	2377
64	2285	3144	5690	6031	5386	5968	5569	2941	2242	3569	5877	5388	4942	5684	5902	3517	2285
65	2206	3026	5481	5769	5082	5707	5367	2832	2171	3422	5577	5046	4585	5339	5623	3388	2206
66	2128	2913	5258	5480	4750	5425	5146	2729	2105	3275	5272	4688	4205	4968	5331	3262	2128
67	2057	2802	5025	5172	4400	5118	4916	2633	2050	3128	4955	4328	3827	4606	5034	3123	2057
68	1988	2693	4787	4845	4025	4799	4672	2532	1997	2977	4639	3965	3424	4221	4727	2975	1988
69	1923	2576	4532	4513	3635	4464	4412	2435	1951	2821	4322	3586	3030	3851	4417	2825	1923
70	1860	2461	4271	4164	3246	4119	4140	2333	1914	2663	4002	3207	2649	3483	4104	2683	1860
71	1803	2346	3992	3804	2856	3756	3865	2230	1877	2500	3693	2828	2284	3114	3791	2526	1803
72	1752	2223	3726	3452	2480	3394	3580	2124	1843	2333	3389	2477	1964	2761	3479	2370	1752
73	1701	2102	3445	3085	2122	3032	3295	2014	1806	2162	3086	2138	1724	2415	3173	2213	1701
74	1651	1974	3170	2734	1798	2670	3010	1902	1762	1999	2783	1837	1485	2102	2871	2051	1651
75	1598	1844	2890	2393	1514	2323	2727	1784	1703	1835	2496	1571	1246	1816	2579	1887	1598
76	1546	1719	2621	2070	1276	2000	2455	1646	1602	1671	2222	1346	1087	1603	2295	1736	1546
77	1490	1594	2348	1772	1080	1705	2186	1473	1519	1471	1953	1161	963	1390	2028	1588	1490
78	1421	1468	2087	1526	911	1432	1925	1332	1465	1299	1697	1006	865	1177	1770	1441	1421
79	1317	1328	1836	1281	767	1206	1666	1222	1398	1168	1457	883	785	1023	1545	1270	1317
80	1249	1158	1610	1074	650	1004	1382	1102	1283	1034	1202	782	732	895	1322	1097	1249
81	1195	1028	1384	906	564	837	1144	971	1212	879	971	698	699	789	1117	978	1195
82	1109	922	1158	760	498	696	947	873	1087	776	789	632	663	703	916	865	1109
83	1039	784	895	643	433	578	756	763	1018	648	615	580	614	636	736	736	1039
84	946	683	720	544	369	475	599	701	950	579	475	537	549	585	583	628	946
85	882	566	536	463	298	379	470	606	762	483	355	469	473	540	451	540	882
86	791	500	384	394	202	285	371	445	549	323	266	395	383	456	335	476	791
87	517	373	278	308	98	164	205	251	244	162	115	209	239	365	252	336	517
88	247	225	166	196	26	35	35	14	11	11	15	12	80	177	127	184	247
89	24	43	44	54	4	5	6	4	4	5	6	4	4	10	18	19	24
90	3	4	3	4	4	5	5	4	4	4	5	4	2	2	3	3	3

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>

91	2	2	2	2	3	4	5	4	4	4	5	4	1	2	2	2	2
92	2	2	2	1	3	4	5	4	3	4	5	4	1	2	2	2	2
93	2	2	2	1	3	4	5	4	3	4	5	4	1	1	2	2	2
94	2	1	2	1	3	4	5	4	3	4	5	4	1	1	2	1	2
95	2	1	2	1	3	4	5	4	3	4	5	4	1	1	2	1	2
96	2	1	2	1	3	4	5	4	3	4	5	4	1	1	2	1	2
97	1	1	2	0	3	4	5	4	3	4	5	4	1	1	2	1	1
98	1	1	2	0	3	5	5	4	3	4	5	5	1	2	2	1	1
99	1	1	2	1	4	5	5	4	3	4	5	5	1	2	2	1	1
100	1	2	2	2	4	5	4	4	3	4	6	5	2	2	2	1	1
101	2	2	3	2	4	5	4	4	3	4	6	6	2	2	3	2	2
102	2	2	3	2	5	5	6	4	4	4	6	6	2	3	3	2	2
103	2	2	3	2	5	6	6	4	4	4	6	6	2	3	3	2	2
104	2	2	3	3	5	6	6	4	4	5	7	7	3	3	3	2	2
105	2	2	3	3	6	6	7	5	4	5	7	7	3	4	4	2	2
106	3	3	4	4	6	6	7	5	4	5	7	7	4	4	4	3	3
107	3	3	4	4	6	6	7	5	4	5	7	8	4	4	4	3	3
108	3	3	5	4	7	7	7	5	4	5	7	8	4	5	5	3	3
109	3	3	5	5	7	7	7	5	4	5	7	8	5	5	5	3	3
110	3	4	5	5	8	8	8	5	4	5	8	9	5	6	5	3	3
111	4	4	5	5	8	8	8	5	4	5	8	9	6	6	5	4	4
112	4	4	5	6	8	9	8	6	4	6	8	9	6	6	6	4	4
113	4	4	6	6	8	9	8	6	5	6	8	9	6	7	6	4	4
114	5	4	6	6	8	9	8	6	5	6	8	9	7	7	6	4	5
115	5	5	6	7	8	9	8	6	5	6	8	9	7	7	6	5	5
116	6	5	6	7	9	9	8	6	5	6	8	9	7	7	6	5	6
117	6	5	6	7	9	10	8	6	5	6	8	9	7	7	7	5	6
118	7	6	7	7	9	10	9	6	6	7	8	9	7	8	7	5	7
119	8	6	7	8	10	10	9	7	6	7	8	9	7	8	7	5	8
120	8	6	7	8	10	10	9	7	6	7	8	9	7	8	7	6	8
121	9	6	7	8	11	10	9	7	7	7	9	9	8	8	7	6	9

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>

122	14	7	8	9	11	10	9	7	7	7	9	10	8	8	7	6	14
123	15	7	8	9	11	11	9	8	8	8	9	10	8	8	7	6	15
124	17	7	8	9	11	11	9	8	9	8	9	10	8	8	7	7	17
125	22	7	8	9	11	11	9	8	10	8	9	10	8	8	7	6	22
126	24	7	8	9	11	11	10	8	10	8	9	10	8	9	7	7	24
127	18	7	8	10	12	11	10	9	11	9	9	10	9	9	7	7	18
128	19	8	8	10	12	11	10	9	12	9	9	11	9	9	8	7	19
129	23	8	9	10	12	11	10	10	13	10	10	11	9	9	8	8	23
130	24	8	9	10	12	11	11	10	18	10	10	11	9	9	8	8	24
131	29	9	9	10	12	11	11	10	14	10	10	11	9	9	8	8	29
132	30	9	9	10	13	12	11	11	15	11	11	11	9	9	8	8	30
133	30	9	9	10	13	12	11	11	16	11	11	12	9	9	8	9	30
134	26	9	9	10	13	12	11	12	16	12	11	12	9	9	8	9	26
135	26	10	9	10	13	13	12	12	22	12	11	12	9	9	8	9	26
136	30	10	9	10	13	13	12	13	24	12	11	12	9	9	8	9	30
137	31	10	9	10	13	13	12	13	24	13	12	12	9	9	8	9	31
138	31	10	9	10	14	13	12	13	24	13	12	12	9	9	8	9	31
139	30	11	9	10	14	14	12	13	24	13	12	13	10	9	8	10	30
140	26	11	9	10	14	14	12	14	25	13	12	13	10	9	8	10	26
141	23	11	10	10	14	14	13	14	24	13	12	13	10	9	9	10	23
142	22	12	10	10	15	14	13	14	24	14	13	13	10	9	9	10	22
143	27	12	10	10	15	15	13	14	23	14	13	14	10	9	9	11	27
144	27	12	10	10	15	15	14	14	20	14	13	14	10	10	9	11	27
145	26	12	10	11	16	15	14	15	20	15	14	14	10	10	10	11	26
146	26	12	11	11	16	15	14	15	20	15	14	14	10	10	10	11	26
147	25	12	11	11	16	15	14	15	20	15	14	14	10	10	10	11	25
148	23	12	11	11	16	15	14	15	20	16	14	14	11	10	10	12	23
149	23	13	12	11	16	16	15	16	20	16	15	15	11	10	11	12	23
150	22	13	12	12	16	16	15	16	20	16	15	15	11	10	11	12	22
151	22	14	12	12	16	16	15	16	20	16	16	15	11	11	11	13	22
152	22	14	12	12	16	16	16	16	18	16	16	15	11	11	12	13	22

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>

153	20	14	13	12	16	16	16	16	17	16	16	16	11	11	12	13	20
154	19	14	13	12	16	17	16	17	17	17	17	16	11	12	12	13	19
155	19	14	13	12	16	17	17	17	18	17	17	17	11	12	12	13	19
156	18	14	14	13	16	17	17	17	18	18	17	17	11	12	13	14	18
157	18	14	14	13	16	17	17	17	20	19	17	17	11	13	13	14	18
158	17	14	14	14	16	17	17	17	19	20	17	17	12	13	13	14	17
159	17	14	14	14	16	17	17	18	19	20	18	17	12	13	13	14	17
160	17	15	14	14	16	17	18	18	19	20	18	18	13	13	13	14	17
161	17	15	14	14	16	17	18	18	19	19	18	18	13	13	13	14	17
162	16	15	14	14	17	17	18	18	19	19	18	18	13	14	14	15	16
163	16	15	14	14	18	17	18	18	19	19	19	18	13	14	14	15	16
164	16	15	14	14	18	17	18	18	19	19	19	18	14	14	14	15	16
165	16	15	14	15	18	17	18	18	19	19	19	18	14	14	14	15	16
166	16	15	15	15	18	17	18	18	19	19	19	18	14	14	14	15	16
167	16	15	15	15	18	18	18	18	19	19	19	18	15	14	15	16	16
168	16	16	15	16	18	18	18	18	19	19	19	18	15	15	15	16	16
169	17	16	15	16	18	18	18	18	19	19	20	18	15	15	15	16	17
170	17	16	16	16	18	18	18	18	19	19	20	18	15	15	16	17	17
171	17	16	16	16	18	18	18	18	19	19	20	18	15	15	16	17	17
172	17	16	16	16	18	18	18	18	19	19	20	18	16	16	16	17	17
173	17	16	16	16	18	18	18	18	19	19	20	18	16	16	16	17	17
174	17	16	16	16	18	18	18	18	19	19	20	18	16	16	16	17	17
175	17	17	16	17	18	18	18	18	18	19	19	18	16	16	16	17	17
176	18	17	17	17	18	18	18	18	18	19	19	18	16	17	17	17	18
177	18	18	17	17	18	18	17	17	18	18	19	18	16	17	17	17	18
178	18	18	17	17	18	18	17	17	17	18	18	18	16	17	17	17	18
179	18	18	17	17	17	17	17	17	17	17	18	17	16	17	17	17	18
180	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18

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>

BUG Rating: B4-U3-G4

IESNA Luminaire Flux Distribution Table:

Zone	Lumens	Luminaire %
FL - Front-Low (0-30)	3727.1	12.1
FM - Front-Medium (30-60)	8330.7	27.0
FH - Front-High (60-80)	3273.8	10.6
FVH - Front-Very High (80-90)	296.07	1.0
Total Forward Light	15651	50.7

BL - Back-Low (0-30)	3631.3	11.8
BM - Back-Medium (30-60)	8062.7	26.1
BH - Back-High (60-80)	3235	10.5
BVH - Back-Very High (80-90)	246.03	0.8
Total Back Light	15206	49.3

UL - Uplight-Low (90-100)	3.2551	0.0
UH - Uplight-High (100-180)	51.132	0.2
Total Up Light	54.387	0.2

BUG (Back, Up, Glare) Rating	B4-U3-G4
------------------------------	----------

Zone	Downward Lumens	Upward Lumens	Total Lumens
House Side	15628	23.839	15651
Street Side	15175	30.549	15206

Test Voltage:277V

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE150320 -I1	277.1	60	1.128	295.9	0.9470	7.88

Goniophotometer Method:

Parameter	Result
Test Voltage (V)	277.1
Frequency (Hz)	60
Total Luminous (lm)	30121
Luminous Efficacy (lm/W)	101.78
Beam Angle °	113.4
Center Beam Candle Power (cd)	9491
S/MH(C0/180)	1.31
S/MH(C90/270)	1.20

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>

2.2 Electrical, Photometric and Chromaticity Measurements (Refer to Work Instruction QD25)	IES LM-79 2008
---	----------------

Test date	2015-06-25	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90

Electrical Measurement:

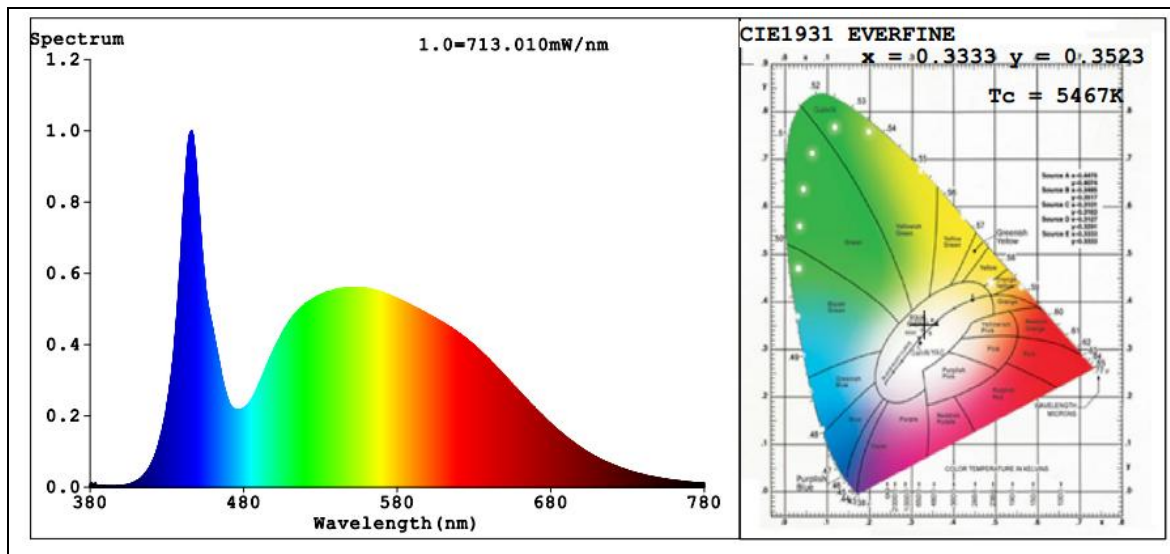
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE150320	120.0	60	2.5362	303.8	0.9982	4.29
-I2	277.0	60	1.1405	296.9	0.9398	7.68

Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	83.7
R9	28
CCT (K)	5467
Chromaticity (x, y)	x=0.3333 y=0.3523
Chromaticity (u', v')	u'=0.2032 v'=0.4833
Duv	0.0053
Total Luminous (lm)	34017
Luminous Efficacy (lm/W)	111.97

Special Color Rendering Indices			
R1	82	R9	28
R2	85	R10	6
R3	87	R11	85
R4	85	R12	65
R5	83	R13	82
R6	81	R14	93
R7	88	R15	79
R8	76	--	--

Spectral Power Distribution & Chromaticity Diagram



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>

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 *******

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>