

LM-79-08 Test Report

High-Bay Luminaires for Commercial and Industrial buildings

Item No. LHB-100CW

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,PD=Pendant; "ZZ" stand for housing color by use 2 digits to indicate all of color.

Test & Report By:

Dendi Lin

Engineer: Dendi Lin

Date: July.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	July.20,2015
Test Report No.	GZE150320-O
Laboratory Contact Name	Tommy Liang

Product Information:

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

	Integrating Sphere	Goniophotometer	
Input Wattage	--	97.28	W
Input Current	--	0.8304	A
Input Voltage (ac)	--	120.1	V
Power Factor	--	0.9751	
Off-State Power	--	0	W

Photometric Characteristics

	Integrating Sphere	Goniophotometer	
Total Initial Lumen Output	--	9476.8	lm
Initial Lumen Efficacy	--	97.42	lm/w
Correlated color temperature / CCT	3098	--	K
Color rendering index / CRI	83.3	--	
R9 Value	7	--	
Duv	0.0031	--	

Luminous Intensity Distribution

	Integrating Sphere	Goniophotometer	
Center beam candlepower (if applicable)		7685	cd
Beam angle (if applicable)		69.3	°
Zonal lumens in the 0°-60° zone	-----	91.1	%
Zonal lumens in the 60°-90° zone		6.5	%
Zonal lumens in the 90°-120° zone		1.4	%
Zonal lumens in the 120°-180° zone		1	%

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Product Information:

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	

Electrical Measurements:	Integrating Sphere	Goniophotometer	
	Output	Output	
Input Wattage	98.31	--	W
Input Current	0.8363	--	A
Input Voltage (ac)	120.0	--	V
Power Factor	0.9796	--	
Off-State Power	0	--	W

Photometric Characteristics

Total Initial Lumen Output	9950	--	lm
Initial Lumen Efficacy	101.21	--	lm/w
Correlated color temperature / CCT	5673	--	K
Color rendering index / CRI	83.8	--	
R9 Value	18	--	
Duv	0.0034	--	
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	: July.06,2015
Date of Test	: July.12,2015
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 $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$, 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 ° 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 $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$. 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:

Luminaire Type	High-Bay Luminaires for Commercial and Industrial buildings
Rated Voltage / Frequency	100~ 277Vac, 50/60Hz
Nominal Power	100W
Rated Initial Lamp Lumen	--
Declared CCT	3000K,,4000K, 5000K,,5700K
LED Manufacturer	Philips Lumileds
LED Model	LUXEON 3030 2D
Sample Receipt Date	July.06,2015
Sample Number	GZE150320-O1(3000K),O2(5700K)

Photo



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2.1 Electrical, Photometric and Chromaticity Measurements <i>(Refer to Work Instruction QD25)</i>	IES LM-79 2008
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Test date	2015-07-12	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	0.8304	97.28	0.9751	16.23
-O1	277.1	60	0.3727	96.05	0.9301	18.57

Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.1	R1	81	R9	7
Frequency (Hz)	60	R2	90	R10	79
Color Rendering Index (CRI)	83.3	R3	98	R11	81
R9	7	R4	82	R12	69
CCT (K)	3098	R5	81	R13	83
Chromaticity (x, y)	x=0.4345 y=0.4111	R6	89	R14	99
Chromaticity (u', v')	u'=0.2460 v'=-0.5238	R7	85	R15	73
Duv	0.0031	R8	60	--	--

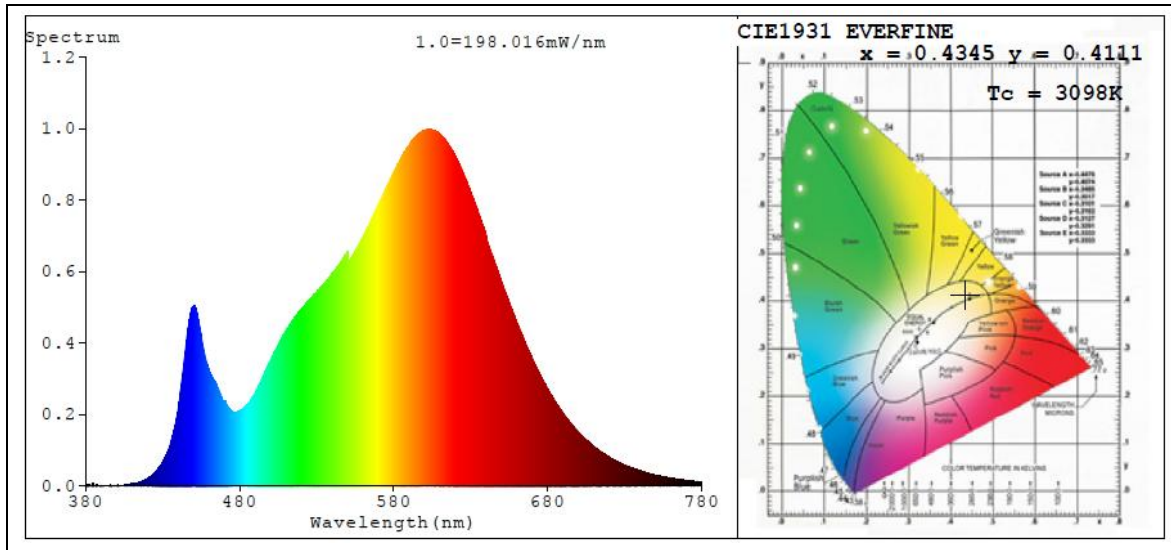
Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.1
Frequency (Hz)	60
Total Luminous (lm)	9476.8
Luminous Efficacy (lm/W)	97.42
Beam Angle °	69.3
Center Beam Candle Power (cd)	7685

Goniophotometer Method:

Parameter	Result
Test Voltage (V)	277.1
Frequency (Hz)	60
Total Luminous (lm)	9276.9
Luminous Efficacy (lm/W)	96.59

Spectral Power Distribution & Chromaticity Diagram



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Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	5,702.9	60.2%
0-40	7,767.8	82%
0-60	8,632.6	91.1%
60-90	614.3	6.5%
70-100	368.7	3.9%
90-120	132.2	1.4%
0-90	9,246.9	97.6%
90-180	228.2	2.4%
0-180	9,475.1	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	631.0	6.7%	90-100	71.7	0.8%
10-20	1,809.9	19.1%	100-110	39.1	0.4%
20-30	3,262.0	34.4%	110-120	21.4	0.2%
30-40	2,064.9	21.8%	120-130	20.0	0.2%
40-50	506.4	5.3%	130-140	23.2	0.2%
50-60	358.4	3.8%	140-150	20.7	0.2%
60-70	317.3	3.3%	150-160	17.0	0.2%
70-80	172.5	1.8%	160-170	11.4	0.1%
80-90	124.5	1.3%	170-180	3.7	0%

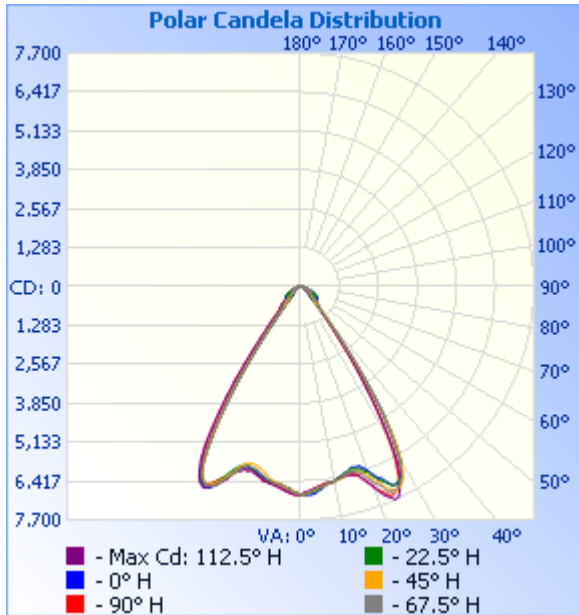
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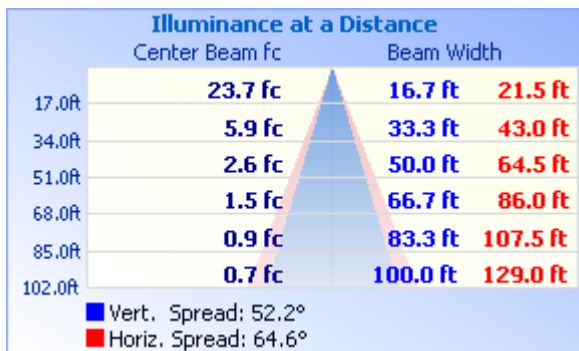
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Photometric Data



Illuminance Plots



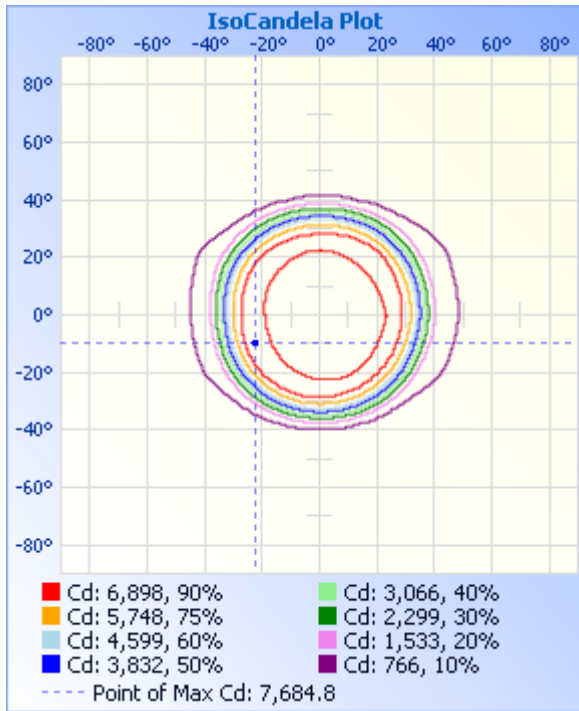
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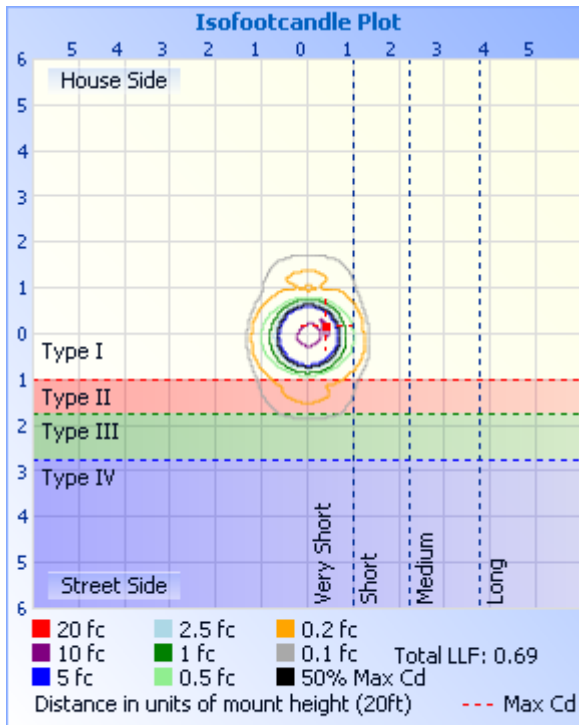
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ISOCANDELA DIAGRAM



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	6849	6849	6849	6849	6849	6849	6849	6849	6849	6849	6849	6849	6849	6849	6849	6849	6849
1	6870	6873	6861	6856	6806	6804	6796	6808	6814	6803	6815	6836	6869	6874	6871	6878	6870
2	6873	6832	6810	6809	6780	6754	6762	6745	6758	6766	6754	6794	6832	6869	6853	6869	6873
3	6865	6799	6783	6758	6746	6713	6709	6672	6670	6694	6692	6720	6808	6803	6852	6865	6865
4	6844	6752	6719	6694	6679	6659	6633	6641	6637	6654	6642	6691	6727	6783	6835	6855	6844
5	6752	6739	6675	6650	6622	6637	6621	6611	6601	6579	6582	6626	6710	6726	6753	6744	6752
6	6702	6667	6648	6654	6581	6595	6591	6600	6548	6539	6528	6568	6648	6680	6707	6718	6702
7	6620	6602	6611	6602	6529	6582	6620	6591	6542	6551	6513	6553	6595	6633	6642	6643	6620
8	6564	6530	6572	6558	6534	6560	6594	6586	6519	6514	6469	6531	6583	6590	6581	6585	6564
9	6557	6544	6575	6559	6523	6513	6562	6566	6490	6499	6423	6462	6558	6578	6552	6538	6557
10	6516	6518	6526	6517	6520	6503	6566	6537	6475	6445	6334	6444	6515	6534	6548	6498	6516
11	6474	6448	6497	6475	6426	6450	6486	6483	6411	6372	6236	6363	6532	6498	6512	6457	6474
12	6407	6433	6477	6448	6385	6425	6413	6459	6373	6315	6162	6316	6413	6429	6458	6421	6407
13	6314	6344	6389	6401	6426	6429	6406	6448	6312	6252	6112	6237	6344	6392	6406	6353	6314
14	6310	6304	6344	6359	6401	6386	6351	6421	6252	6216	6078	6195	6314	6346	6360	6342	6310
15	6228	6237	6314	6326	6420	6420	6389	6383	6217	6216	6057	6178	6212	6278	6289	6285	6228
16	6190	6239	6330	6343	6451	6462	6373	6338	6214	6138	6053	6166	6259	6333	6271	6232	6190
17	6233	6279	6412	6429	6526	6473	6448	6361	6228	6145	6123	6241	6253	6308	6304	6251	6233
18	6217	6314	6449	6466	6702	6670	6510	6412	6303	6192	6207	6351	6310	6392	6331	6256	6217
19	6334	6462	6515	6670	6827	6837	6662	6593	6410	6291	6350	6456	6386	6439	6388	6374	6334
20	6453	6500	6679	6817	7015	7032	6899	6664	6543	6404	6549	6611	6552	6574	6619	6494	6453
21	6645	6714	6936	6975	7188	7255	7081	6874	6778	6582	6691	6769	6734	6804	6780	6722	6645
22	6792	6876	6939	7065	7319	7433	7304	7119	6940	6785	6866	6915	6791	6938	6945	6866	6792
23	6887	6967	7225	7334	7478	7540	7501	7295	7050	6958	7005	7096	6910	7095	7119	7039	6887
24	7076	7115	7316	7382	7509	7685	7594	7465	7244	7137	7127	7221	7080	7184	7302	7192	7076
25	7225	7257	7457	7399	7452	7647	7597	7522	7328	7241	7212	7225	7179	7304	7485	7325	7225
26	7236	7208	7384	7363	7353	7470	7485	7505	7321	7242	7196	7217	7218	7353	7519	7294	7236
27	7171	7157	7323	7251	7164	7202	7277	7336	7230	7168	7089	7133	7101	7275	7418	7289	7171
28	7085	7096	7193	7093	6770	6955	7040	7109	7080	6960	6893	6943	6982	7142	7366	7237	7085
29	6847	6865	6936	6810	6396	6547	6608	6675	6641	6562	6559	6645	6758	6882	7136	7049	6847

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30	6583	6593	6572	6434	5831	5979	6033	6083	6075	6039	6064	6137	6476	6589	6863	6781	6583
31	6149	6087	6177	5941	5238	5356	5359	5489	5488	5454	5469	5499	6029	6157	6402	6312	6149
32	5590	5596	5627	5403	4632	4651	4694	4790	4774	4773	4814	4882	5461	5583	5845	5734	5590
33	5063	4914	4925	4768	4008	4001	4021	4057	4048	4075	4144	4207	4883	4954	5168	5113	5063
34	4404	4247	4219	4148	3443	3417	3349	3324	3323	3378	3475	3592	4265	4367	4514	4456	4404
35	3729	3596	3579	3536	2879	2834	2677	2593	2598	2681	2807	2978	3661	3796	3864	3836	3729
36	3082	2957	2966	2934	2317	2253	2157	1998	1960	2074	2228	2367	3087	3183	3263	3204	3082
37	2442	2390	2423	2422	1900	1820	1678	1527	1407	1542	1738	1910	2557	2625	2700	2601	2442
38	1919	1884	1966	1990	1586	1479	1299	1169	1057	1121	1325	1545	2089	2142	2199	2049	1919
39	1555	1548	1640	1629	1320	1197	1027	871	783	837	999	1247	1688	1775	1757	1614	1555
40	1192	1213	1315	1384	1076	992	830	663	564	656	789	1035	1467	1536	1471	1279	1192
41	829	879	990	1139	930	863	717	549	458	556	700	928	1251	1298	1185	944	829
42	620	672	794	971	883	838	680	491	394	498	657	888	1089	1060	899	731	620
43	539	603	723	900	852	808	641	442	344	444	612	855	996	966	800	649	539
44	461	540	678	868	815	775	605	402	312	401	568	818	963	935	752	582	461
45	402	485	636	834	776	737	571	375	308	373	530	777	925	902	708	523	402
46	368	447	599	797	734	700	541	361	331	359	498	738	879	861	665	480	368
47	366	423	566	759	686	659	512	358	369	358	469	693	830	818	627	453	366
48	392	410	540	720	623	612	486	366	417	369	440	641	776	775	595	439	392
49	435	410	515	677	548	559	464	383	468	390	411	578	697	721	567	439	435
50	488	423	490	624	462	494	435	409	515	421	378	508	603	654	537	452	488
51	544	448	459	567	374	423	407	440	557	456	350	432	507	581	504	477	544
52	595	481	431	499	292	343	382	475	589	494	328	352	401	498	469	510	595
53	641	516	403	419	218	269	361	502	609	525	313	276	300	408	439	547	641
54	676	551	377	333	167	207	344	526	607	549	301	217	223	318	414	579	676
55	690	579	352	256	150	167	330	540	593	562	293	179	172	246	392	603	690
56	680	599	331	196	170	144	319	546	571	565	286	160	163	197	371	619	680
57	659	608	315	161	209	140	306	543	546	554	279	161	198	172	356	623	659
58	630	606	305	147	257	156	294	531	522	533	269	182	249	166	343	614	630
59	600	596	295	154	314	190	273	509	497	508	251	220	308	183	326	598	600
60	570	575	281	182	368	235	243	488	474	484	225	262	369	219	307	571	570

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61	539	549	259	229	408	285	207	467	453	458	190	307	421	270	276	540	539
62	512	524	227	290	418	327	168	443	429	432	156	342	451	321	242	514	512
63	488	498	190	346	402	355	141	421	405	406	131	361	445	360	204	488	488
64	462	471	155	387	381	363	133	397	379	381	126	359	423	381	170	466	462
65	435	446	134	403	359	353	144	371	354	355	139	340	397	383	152	439	435
66	411	419	135	395	336	335	167	346	325	328	157	317	371	371	157	415	411
67	383	391	156	376	315	315	193	319	285	301	179	294	345	351	177	391	383
68	356	361	182	352	293	293	220	287	240	273	200	270	320	328	200	361	356
69	323	328	210	329	275	274	240	248	151	233	213	248	295	305	226	330	323
70	278	297	232	307	259	254	241	177	64	171	208	226	272	284	249	296	278
71	176	254	242	285	242	236	229	81	46	80	195	203	249	261	257	248	176
72	70	188	234	264	225	218	214	44	47	41	179	183	227	239	243	161	70
73	44	92	221	243	209	202	199	44	73	40	163	166	206	217	226	65	44
74	44	41	205	223	194	188	187	68	133	56	150	152	186	198	208	37	44
75	85	38	191	206	183	176	177	127	147	113	140	141	170	181	194	43	85
76	153	59	182	195	177	168	169	151	150	140	133	135	158	170	185	86	153
77	169	119	171	188	173	165	165	156	149	144	130	131	150	163	177	153	169
78	174	153	170	186	169	161	160	152	145	142	128	129	148	160	175	174	174
79	174	164	169	185	164	157	154	147	139	141	125	125	147	161	173	178	174
80	170	162	165	179	161	152	147	141	133	136	123	121	144	158	168	171	170
81	164	157	162	172	154	144	140	132	124	127	118	117	139	152	161	164	164
82	156	149	155	164	142	134	131	123	116	117	110	110	132	145	153	156	156
83	145	139	146	152	130	125	124	116	108	111	102	104	124	136	143	145	145
84	132	128	133	140	122	118	118	109	102	104	97	98	115	125	132	132	132
85	122	119	124	129	114	109	108	101	95	97	89	91	106	118	122	121	122
86	116	113	118	122	106	102	101	95	90	92	84	86	100	112	116	115	116
87	110	107	112	114	99	96	96	90	85	87	79	81	94	106	110	110	110
88	104	102	105	107	93	90	91	85	81	82	75	77	90	101	104	104	104
89	98	96	100	102	86	84	86	82	76	77	71	73	85	95	98	98	98
90	91	91	95	95	82	80	83	78	73	72	67	68	79	87	92	91	91
91	85	86	90	90	80	78	81	77	71	70	64	65	74	81	85	85	85

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

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92	81	82	86	90	78	74	75	68	62	62	60	63	71	77	81	80	81
93	76	79	84	88	76	72	71	63	58	57	57	61	69	73	77	75	76
94	68	73	81	85	72	68	67	60	54	53	52	57	67	70	73	69	68
95	65	68	76	80	69	65	64	60	53	52	48	53	64	67	69	66	65
96	62	65	71	75	69	64	61	65	56	60	45	50	61	63	64	63	62
97	60	63	70	73	66	62	57	63	61	61	43	45	58	59	61	62	60
98	61	64	66	71	63	57	54	59	57	58	42	42	55	56	58	62	61
99	60	62	62	67	56	50	51	56	55	55	40	40	50	53	56	60	60
100	57	59	58	58	49	46	47	53	54	54	39	38	47	49	53	58	57
101	54	56	55	53	46	43	45	52	53	51	37	36	43	46	51	54	54
102	51	54	52	48	44	42	44	52	49	47	35	34	40	42	48	50	51
103	48	51	49	44	42	40	42	50	43	43	33	32	38	39	44	47	48
104	46	47	46	41	40	37	40	44	38	38	30	30	36	36	41	45	46
105	43	44	43	39	37	34	37	39	26	34	28	28	34	34	38	42	43
106	37	40	39	36	35	31	33	35	17	30	27	26	32	32	36	39	37
107	20	36	35	33	33	30	31	33	16	28	26	25	29	29	33	36	20
108	15	32	32	31	32	29	30	30	20	26	25	25	27	28	31	32	15
109	18	29	31	29	30	29	30	27	21	24	24	24	27	26	29	28	18
110	21	26	29	28	30	29	30	25	20	22	23	24	26	26	27	25	21
111	20	25	28	27	29	28	29	22	19	20	22	24	25	25	26	22	20
112	20	23	27	27	27	28	28	20	18	18	22	24	25	25	25	21	20
113	19	21	26	26	26	28	28	19	17	17	21	24	25	24	25	19	19
114	18	19	25	26	26	26	26	16	15	16	21	24	25	24	24	18	18
115	17	18	24	25	26	26	24	15	11	15	21	23	25	24	23	16	17
116	17	17	24	25	26	25	23	14	10	14	21	23	25	24	23	15	17
117	16	16	24	25	26	26	23	13	9	13	21	23	24	23	22	14	16
118	12	15	23	25	25	25	23	13	9	13	21	23	24	23	22	13	12
119	11	14	23	25	25	25	23	14	10	14	21	23	24	23	22	13	11
120	10	14	23	26	25	25	23	16	11	15	21	23	24	23	21	13	10
121	10	15	23	26	26	25	23	17	13	15	21	23	24	23	21	15	10
122	13	16	23	26	26	26	23	17	14	16	22	23	24	23	21	16	13

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Report Format Number STD/QR4909-A/2

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123	14	16	23	26	26	26	23	17	14	16	22	24	25	23	21	16	14
124	14	16	24	27	26	26	23	17	14	16	22	25	25	23	21	16	14
125	15	16	25	29	27	26	23	18	15	17	24	25	26	24	21	17	15
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127	15	17	27	29	29	27	24	21	15	21	27	28	28	25	23	18	15
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129	15	20	28	31	31	30	25	24	19	23	28	32	32	30	25	20	15
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142	26	29	30	35	39	36	32	29	26	28	30	39	39	37	29	28	26
143	26	29	31	35	38	37	32	30	26	28	31	39	38	38	30	28	26
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145	26	30	33	37	40	39	35	30	25	29	33	39	39	39	33	31	26
146	26	30	34	38	41	41	36	29	25	28	33	39	39	39	33	31	26
147	25	30	34	39	42	39	37	29	24	28	34	39	40	38	34	31	25
148	25	30	35	39	42	40	38	30	22	28	35	39	40	38	34	30	25
149	25	29	35	39	42	41	38	31	22	28	35	39	40	38	34	29	25
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151	23	28	36	39	43	41	39	35	26	30	36	39	40	38	35	28	23
152	23	30	36	39	43	42	40	36	29	32	36	39	40	38	35	29	23
153	24	32	36	39	43	42	40	37	32	32	37	39	39	38	36	31	24

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

Report Format Number STD/QR4909-A/2

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154	28	33	37	39	43	42	41	37	33	33	37	39	39	38	36	33	28
155	30	34	37	39	43	42	41	37	34	34	37	40	39	38	36	33	30
156	32	34	38	39	43	42	42	38	35	35	36	40	38	38	37	33	32
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159	34	36	38	41	42	44	44	39	37	36	36	41	37	39	38	35	34
160	35	36	39	41	43	44	44	40	37	36	36	41	38	39	38	36	35
161	36	37	39	42	43	45	45	40	38	36	37	41	39	40	38	37	36
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174	37	38	39	39	37	37	38	37	37	38	39	37	39	39	38	37	37
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179	38	39	38	36	38	38	36	36	37	37	39	37	37	37	37	38	38
180	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38

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

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BUG Rating: B3-U2-G0

IESNA Luminaire Flux Distribution Table:

Zone	Lumens	Luminaire %
FL - Front-Low(0-30)	2444.6	24.9
FM - Front-Medium(30-60)	2530.7	25.8
FH - Front-High(60-80)	106.48	1.1
FVH - Front-Very High(80-90)	8.6957	0.1
Total Forward Light	5095.4	51.9

BL - Back-Low(0-30)	2398.5	24.4
BM - Back-Medium(30-60)	2236.7	22.8
BH - Back-High(60-80)	76.804	0.8
BVH - Back-Very High(80-90)	4.3261	0.0
Total Back Light	4725.1	48.1

UL - Uplight-Low(90-100)	0.0069764	0.0
UH - Uplight-High(100-180)	13.649	0.1
Total Up Light	13.656	0.1

BUG(Back,Up,Glare) Rating	B3-U2-G0
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Zone	Downward Lumens	Upward Lumens	Total Lumens
House Side	5090.5	4.8845	5095.4
Street Side	4716.3	8.7715	4725.1

2.2 Electrical, Photometric and Chromaticity Measurements <i>(Refer to Work Instruction QD25)</i>	IES LM-79 2008
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Test date	2015-07-12	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	0.8363	98.31	0.9796	16.12
-O2	277.0	60	0.3820	98.12	0.9272	18.79

Sphere-Spectroradiometer Method:

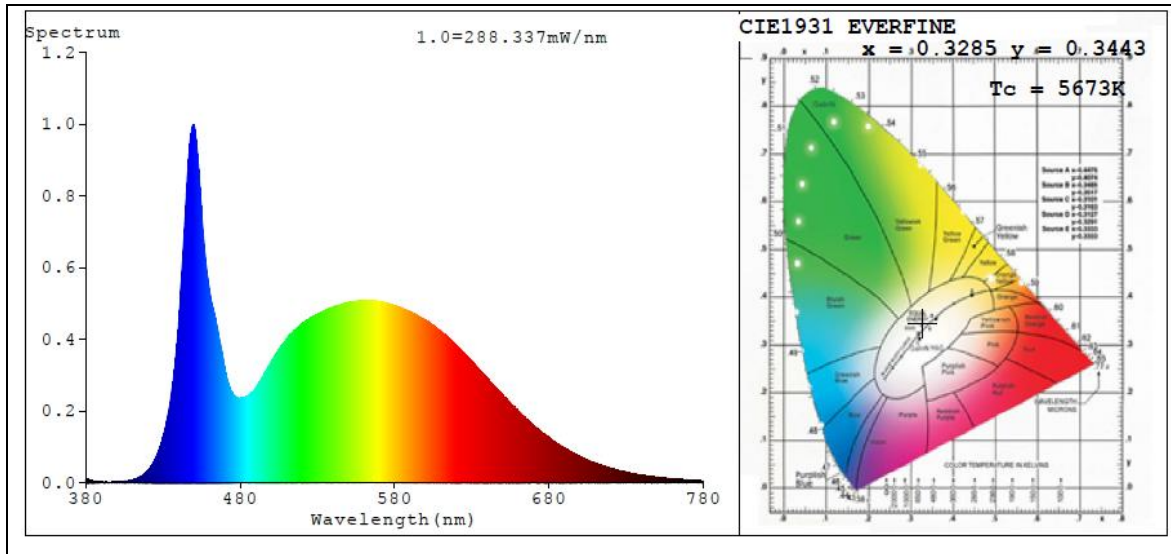
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	83.8
R9	18
CCT (K)	5673
Chromaticity (x, y)	x=0.3285 y=0.3443
Chromaticity (u', v')	u'=0.2029 v'=-0.4786
Duv	0.0034
Total Luminous (lm)	9950
Luminous Efficacy (lm/W)	101.21

Special Color Rendering Indices			
R1	82	R9	18
R2	87	R10	70
R3	91	R11	83
R4	84	R12	60
R5	83	R13	83
R6	82	R14	95
R7	89	R15	78
R8	73	--	

Sphere-Spectroradiometer Method for Bare Lamp(277V):

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Initial Lumen Output(lm)	9826
Initial Lumen Efficacy(lm/w)	100.14

Spectral Power Distribution & Chromaticity Diagram



Laboratory: Standard-Tech Co. Ltd Testing Center
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Report Format Number STD/QR4909-A/2

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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 *******