

LM-79-08 Test Report

For

SHENZHEN SUNPER OPTO CO.,LTD

(Brand Name: SUNPER)

5/F,BLOK C,SANMIN INDUSTRIAL PARK,SHIYAN STREET,
BAO'AN DISTRICT,SHENZHEN 518108,GUANGDONG,CHINA

High-Bay Luminaires for Commercial and Industrial buildings

Model name(s):SP-HB-200WA

Representative (Tested) Model: SP-HB-200WA(4000K)
SP-HB-200WA(5700K)

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

Test & Report By:

Sean Zhuo

Engineer: Sean Zhuo

Date: Dec.17,2014

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

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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	Dec.17,2014
Test Report No.	GZE141129-C
Laboratory Contact Name	Tommy Liang

Product Information:

Organization Name	SHENZHEN SUNPER OPTO CO.,LTD		
Brand Name	SUNPER		
Model Number	SP-HB-200WA(4000K)		
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	

Electrical Measurements:	Integrating Sphere Output	Goniophotometer Output	
--------------------------	---------------------------	------------------------	--

Input Wattage	--	206.7	W
Input Current	--	1.7351	A
Input Voltage (ac)	--	120.1	V
Power Factor	--	0.9919	
Off-State Power	--	0	W

Photometric Characteristics

Total Initial Lumen Output	--	16672	lm
Initial Lumen Efficacy	--	80.66	lm/w
Correlated color temperature / CCT	4234	--	K
Color rendering index / CRI	74.5	--	
R9 Value	0	--	
Duv	-0.0030	--	
Luminous Intensity Distribution			
Center beam candlepower (if applicable)	-----	10120	cd
Beam angle (if applicable)		74.3	°
Zonal lumens in the 0 °-60 °zone		96	%
Zonal lumens in the 60 °-90 °zone		3.8	%
Zonal lumens in the 90 °-120 °zone		0	%
Zonal lumens in the 120 °-180 °zone		0.1	%

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Laboratory Contact Name	Tommy Liang

Product Information:

Organization Name	SHENZHEN SUNPER OPTO CO.,LTD		
Brand Name	SUNPER		
Model Number	SP-HB-200WA(5700K)		
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	

Electrical Measurements:	Integrating Sphere Output	Goniophotometer Output	
--------------------------	---------------------------	------------------------	--

Input Wattage	208.8	--	W
Input Current	1.7535	--	A
Input Voltage (ac)	120.0	--	V
Power Factor	0.9923	--	
Off-State Power	0	--	W

Photometric Characteristics

Total Initial Lumen Output	17263	--	lm
Initial Lumen Efficacy	82.69	--	lm/w
Correlated color temperature / CCT	5760	--	K
Color rendering index / CRI	72.3	--	
R9 Value	0	--	
Duv	0.0022	--	
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	: Dec.08,2014
Date of Test	: Dec.10,2014
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.

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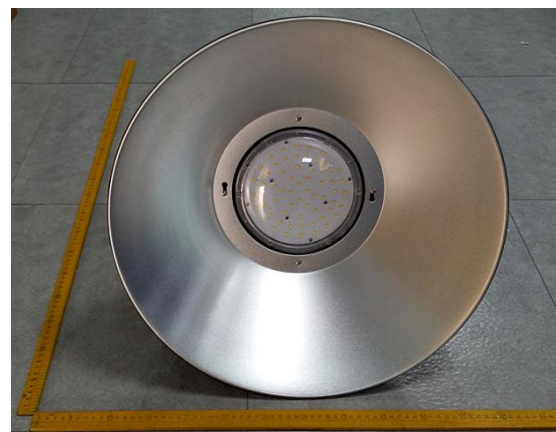
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1. Product Information:

Brand Name	SUNPER
Model Number	SP-HB-200WA
Luminaire Type	High-Bay Luminaires for Commercial and Industrial buildings
Rated Voltage / Frequency	100 ~ 277Vac, 50/60 Hz
Nominal Power	200W
Rated Initial Lamp Lumen	--
Declared CCT	4000K,4500K,5000K,5700K
LED Manufacturer	CREE
LED Model	Xlamp XT-E
Sample Receipt Date	Dec.08,2014
Sample Number	141129-5(4000K),-6(5700K)

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	2014-12-10	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	SP-HB-200WA(4000K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
141129-5	120.1	60	1.7351	206.7	0.9919	6.86
	277.0	60	0.8199	209.8	0.9238	19.24

Sphere-Spectroradiometer Method:

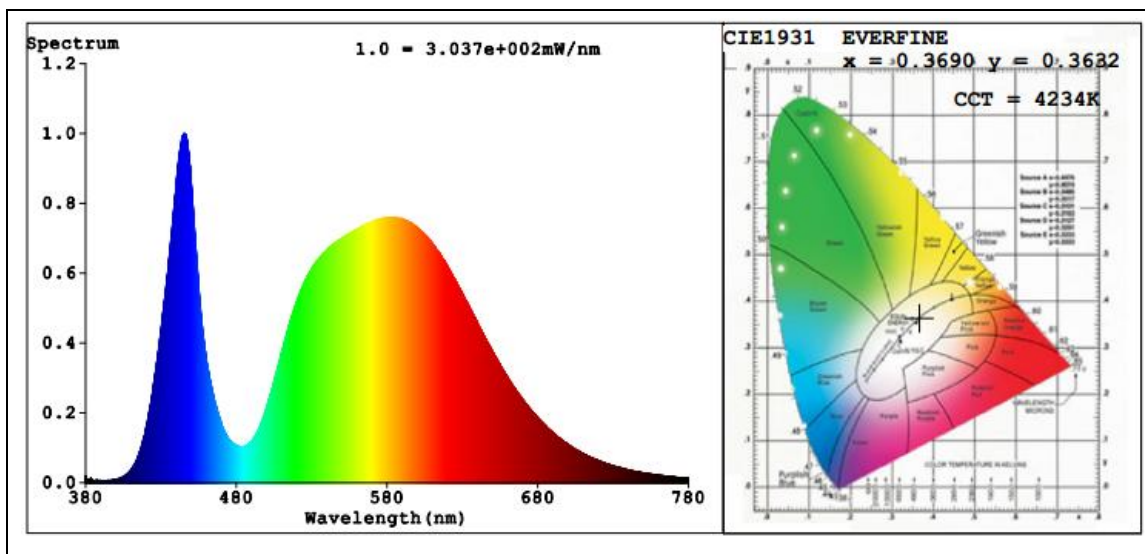
Parameter	Result
Test Voltage (V)	120.1
Frequency (Hz)	60
Color Rendering Index (CRI)	74.5
R9	0
CCT (K)	4234
Chromaticity (x, y)	x=0.3690 y=0.3632
Chromaticity (u', v')	u'=0.2230 v'=0.4937
Duv	-0.0030

Special Color Rendering Indices			
R1	74	R9	0
R2	79	R10	48
R3	80	R11	73
R4	76	R12	47
R5	73	R13	74
R6	70	R14	88
R7	81	R15	71
R8	63	--	--

Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.1
Frequency (Hz)	60
Total Luminous (lm)	16672
Luminous Efficacy (lm/W)	80.66
Beam Angle °	74.3
Center Beam Candle Power (cd)	10120
S/MH(C0/180)	1.05
S/MH(C90/270)	0.96

Spectral Power Distribution Chromaticity Diagram



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Zonal Lumen Tabulation

Zonal Lumen Summary			
Zone	Lumens	% Lamp	% Luminaire
0-30	6,933.8	41.6%	41.6%
0-40	10,357.9	62.1%	62.1%
0-60	16,006.7	96%	96%
60-90	638.8	3.8%	3.8%
70-100	20.0	0.1%	0.1%
90-120	2.0	0%	0%
0-90	16,645.5	99.8%	99.9%
90-180	23.3	0.1%	0.1%
0-180	16,668.8	100%	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	941.3	5.6%	90-100	0.3	0%
10-20	2,570.1	15.4%	100-110	0.3	0%
20-30	3,422.3	20.5%	110-120	1.4	0%
30-40	3,424.1	20.5%	120-130	2.7	0%
40-50	3,164.5	19.0%	130-140	3.8	0%
50-60	2,484.4	14.9%	140-150	4.6	0%
60-70	619.1	3.7%	150-160	4.9	0%
70-80	14.5	0.1%	160-170	3.8	0%
80-90	5.1	0.0%	170-180	1.5	0%

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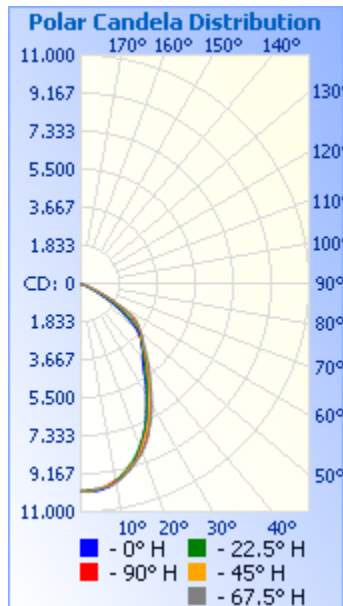
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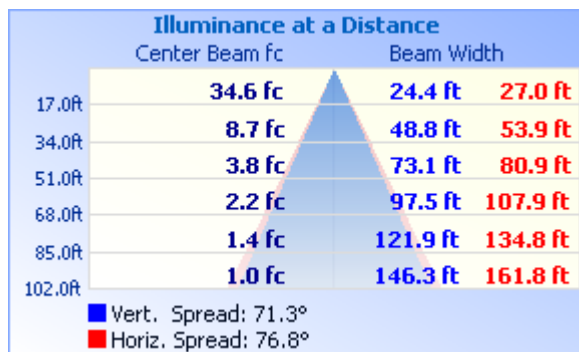
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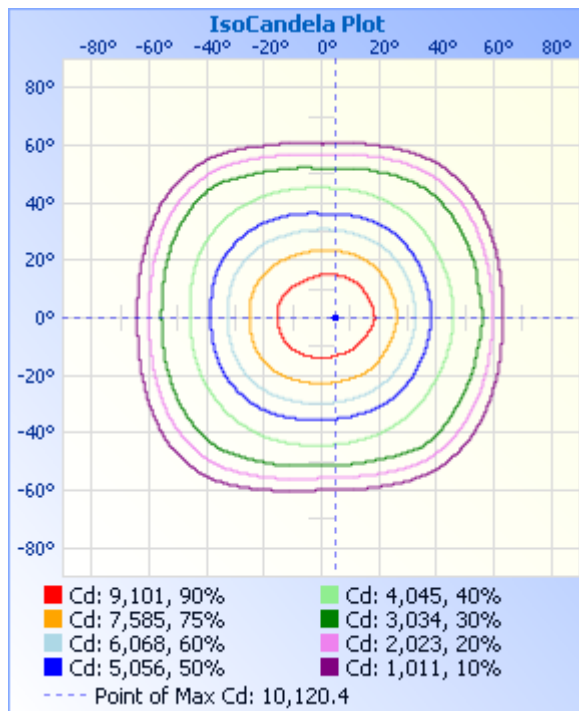
Photometric Data



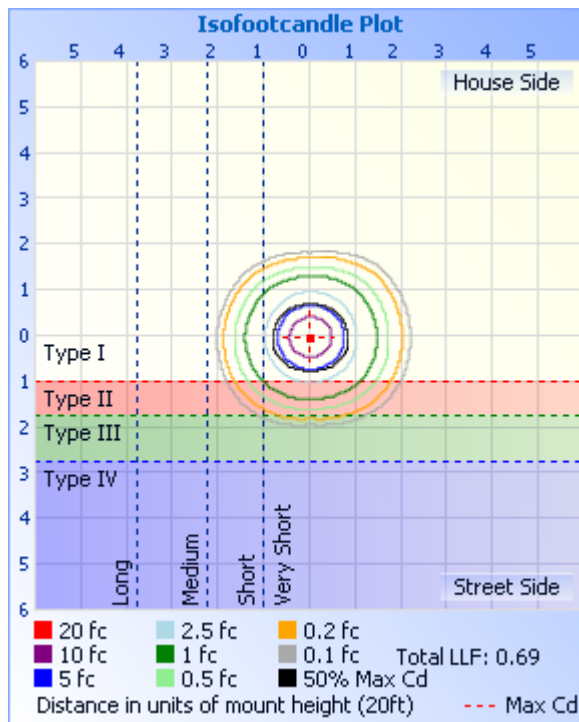
Illuminance Plots



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	10001	10001	10001	10001	10001	10001	10001	10001	10001	10001	10001	10001	10001	10001	10001	10001	10001
1	10009	9998	10025	9993	10014	9961	9982	9975	9990	9986	9981	10012	10003	10028	10009	10014	10009
2	10019	9954	10045	9990	9992	9958	9975	9949	9964	9964	9966	10044	10033	10018	10007	10013	10019
3	10026	9944	9999	9967	9988	9967	9938	9924	9926	9913	9984	10017	10073	10030	10044	10019	10026
4	10003	9923	9966	9932	9971	9922	9892	9893	9930	9894	9982	9993	10120	10046	10061	10017	10003
5	9989	9922	9922	9920	9948	9895	9876	9869	9889	9847	9969	9973	10113	10078	10056	10030	9989
6	9962	9885	9862	9904	9894	9840	9833	9820	9819	9802	9904	9967	10052	10086	10070	10024	9962
7	9905	9851	9804	9869	9823	9784	9757	9728	9724	9763	9859	9939	10015	10026	10054	9985	9905
8	9867	9827	9796	9824	9756	9746	9675	9682	9673	9695	9790	9906	9968	9997	10013	9948	9867
9	9798	9749	9797	9757	9679	9670	9638	9624	9582	9592	9695	9796	9930	9959	9948	9896	9798
10	9723	9633	9711	9698	9627	9615	9563	9537	9509	9482	9579	9732	9889	9888	9864	9814	9723
11	9638	9533	9640	9614	9550	9561	9498	9430	9397	9382	9502	9628	9859	9820	9761	9737	9638
12	9526	9412	9528	9552	9453	9493	9413	9349	9319	9279	9402	9526	9830	9722	9704	9614	9526
13	9417	9296	9396	9438	9364	9371	9303	9213	9204	9159	9280	9431	9739	9659	9615	9494	9417
14	9289	9185	9262	9351	9279	9257	9182	9077	9073	9041	9177	9310	9619	9574	9501	9385	9289
15	9164	9037	9129	9250	9168	9155	9078	8952	8933	8917	9062	9236	9471	9458	9402	9284	9164
16	9060	8928	9031	9126	9055	9033	8944	8790	8792	8791	8947	9122	9366	9348	9280	9148	9060
17	8888	8779	8941	9002	8930	8943	8782	8660	8661	8658	8814	8968	9248	9207	9136	8970	8888
18	8715	8636	8798	8875	8804	8818	8678	8516	8479	8492	8646	8798	9126	9043	8983	8785	8715
19	8518	8483	8624	8761	8689	8699	8532	8352	8267	8303	8465	8666	8979	8902	8806	8622	8518
20	8348	8310	8448	8626	8539	8558	8382	8162	8056	8123	8329	8502	8814	8734	8603	8478	8348
21	8144	8142	8278	8469	8420	8418	8257	7966	7864	7921	8158	8323	8632	8560	8448	8287	8144
22	7962	7958	8112	8310	8269	8250	8063	7783	7647	7713	7984	8140	8450	8395	8270	8118	7962
23	7786	7763	7929	8159	8092	8057	7873	7562	7429	7478	7806	7920	8250	8210	8098	7923	7786
24	7575	7579	7758	7965	7904	7874	7672	7354	7188	7262	7570	7701	8044	7989	7913	7704	7575
25	7365	7384	7596	7745	7685	7665	7452	7152	6974	7031	7321	7461	7815	7786	7683	7471	7365
26	7146	7181	7409	7593	7487	7459	7260	6946	6769	6850	7069	7264	7577	7534	7441	7273	7146
27	6921	6944	7194	7414	7289	7255	7084	6739	6553	6645	6836	7025	7342	7250	7207	7061	6921
28	6717	6724	7006	7215	7094	7055	6865	6521	6323	6380	6590	6787	7087	7016	6971	6825	6717
29	6512	6511	6833	7021	6903	6868	6644	6323	6091	6150	6358	6532	6847	6835	6770	6576	6512

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30	6297	6320	6627	6820	6714	6666	6440	6117	5907	5968	6141	6311	6608	6595	6562	6376	6297
31	6101	6136	6441	6611	6514	6458	6245	5912	5731	5770	5959	6080	6401	6363	6344	6179	6101
32	5912	5972	6260	6400	6294	6236	6048	5700	5536	5609	5774	5880	6172	6141	6157	5968	5912
33	5715	5798	6081	6218	6087	6037	5890	5516	5366	5430	5603	5670	5917	5903	5948	5771	5715
34	5512	5646	5874	6014	5890	5834	5710	5364	5198	5254	5440	5467	5723	5714	5761	5594	5512
35	5315	5460	5702	5834	5712	5622	5512	5206	5033	5080	5278	5313	5536	5557	5574	5432	5315
36	5140	5319	5549	5677	5523	5456	5327	5052	4876	4923	5102	5157	5354	5355	5410	5270	5140
37	4982	5166	5380	5504	5373	5308	5173	4929	4769	4796	4932	5005	5177	5183	5225	5122	4982
38	4840	5021	5238	5357	5215	5184	5003	4811	4637	4684	4760	4853	5037	5032	5081	4963	4840
39	4707	4894	5078	5207	5043	5033	4849	4707	4496	4556	4606	4708	4880	4888	4937	4848	4707
40	4599	4765	4912	5068	4900	4877	4688	4597	4379	4410	4482	4573	4717	4754	4784	4702	4599
41	4532	4629	4772	4898	4728	4698	4585	4488	4314	4322	4354	4428	4592	4612	4644	4574	4532
42	4449	4508	4643	4747	4565	4552	4425	4357	4213	4216	4219	4273	4456	4481	4524	4451	4449
43	4334	4404	4496	4597	4424	4394	4308	4234	4118	4117	4124	4139	4332	4315	4394	4350	4334
44	4221	4296	4366	4470	4293	4237	4176	4121	4024	4007	4002	4033	4224	4172	4255	4256	4221
45	4103	4184	4255	4318	4183	4109	4039	3992	3933	3915	3909	3904	4122	4049	4116	4128	4103
46	4040	4063	4140	4196	4086	4007	3937	3864	3832	3831	3803	3782	4021	3940	3968	4001	4040
47	3958	3978	4042	4094	3975	3910	3855	3776	3746	3729	3712	3662	3893	3874	3854	3905	3958
48	3862	3877	3944	3992	3840	3826	3801	3684	3646	3616	3610	3579	3750	3770	3771	3803	3862
49	3770	3813	3861	3905	3724	3738	3721	3596	3421	3509	3508	3520	3626	3675	3688	3699	3770
50	3559	3735	3791	3796	3630	3684	3621	3496	3209	3375	3445	3456	3514	3580	3611	3598	3559
51	3379	3651	3708	3679	3534	3603	3511	3388	2996	3161	3413	3434	3446	3534	3509	3487	3379
52	3145	3396	3599	3563	3481	3474	3415	3172	2784	2947	3380	3337	3373	3503	3428	3383	3145
53	2892	3248	3480	3460	3471	3357	3327	2957	2563	2734	3216	3167	3321	3391	3359	3202	2892
54	2632	2979	3360	3416	3395	3249	3193	2742	2306	2533	3052	2997	3275	3261	3262	3066	2632
55	2491	2773	3220	3295	3225	3142	3060	2555	2073	2314	2886	2827	3179	3091	3138	2746	2491
56	2241	2540	3181	3204	3056	3033	2926	2335	1847	1980	2643	2647	2822	2773	2855	2555	2241
57	1979	2368	3054	3066	2885	2852	2682	2058	1570	1812	2323	2335	2656	2669	2718	2438	1979
58	1780	2138	2819	2799	2683	2623	2458	1844	1393	1571	2076	2106	2367	2468	2463	2145	1780
59	1508	1909	2467	2612	2339	2359	2183	1590	1111	1314	1790	1871	2099	2213	2225	1884	1508
60	1234	1636	2189	2343	2159	2068	1970	1327	831	1061	1569	1588	1850	1827	1950	1659	1234
61	961	1343	1918	1997	1881	1855	1714	1086	623	841	1224	1300	1550	1580	1552	1350	961

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62	756	1049	1635	1740	1724	1626	1436	840	447	622	976	1086	1248	1337	1317	1039	756
63	498	813	1352	1469	1437	1424	1276	620	306	459	701	790	946	1093	1083	831	498
64	338	643	1069	1197	1172	1119	951	491	163	315	572	553	695	732	889	631	338
65	166	429	830	926	880	870	771	371	66	175	351	348	501	560	551	386	166
66	61	239	652	757	664	638	512	174	54	62	173	199	315	354	391	237	61
67	46	97	421	519	463	422	348	67	42	46	63	64	147	166	207	103	46
68	34	48	290	336	270	261	189	47	35	36	39	37	44	49	60	44	34
69	27	36	109	157	108	96	59	34	31	29	28	24	29	31	35	30	27
70	24	26	43	47	37	40	39	27	30	25	21	17	16	19	22	22	24
71	22	21	29	28	25	26	26	23	28	23	17	13	11	12	15	18	22
72	21	19	19	18	16	17	18	22	26	22	16	12	9	9	12	17	21
73	20	18	14	12	12	12	15	20	25	21	15	11	8	8	11	16	20
74	19	17	13	10	9	10	13	19	23	19	14	10	7	7	10	15	19
75	18	16	12	9	8	9	12	18	22	18	13	9	6	7	9	14	18
76	17	15	11	8	7	8	12	17	21	17	12	8	5	6	8	13	17
77	16	14	10	7	7	8	11	16	20	16	11	7	5	5	7	12	16
78	15	13	9	6	6	7	10	15	19	15	10	6	4	5	7	11	15
79	14	12	8	6	5	6	9	14	17	14	9	6	3	4	6	10	14
80	13	11	8	5	4	5	8	13	17	13	8	5	3	4	6	10	13
81	13	11	7	4	4	5	7	12	16	12	8	4	2	3	5	9	13
82	12	10	6	4	3	4	7	11	15	12	7	4	2	3	5	8	12
83	11	9	6	4	3	4	6	10	14	11	6	3	1	2	4	8	11
84	11	9	5	3	2	3	5	9	13	10	5	3	1	2	3	7	11
85	10	8	5	3	2	3	4	9	11	9	4	2	1	1	3	7	10
86	8	7	4	2	1	2	4	7	9	7	3	1	0	1	2	6	8
87	6	6	3	2	1	2	3	6	6	4	2	0	0	0	2	4	6
88	5	5	3	2	1	1	2	4	4	2	0	0	0	0	1	3	5
89	3	3	3	2	3	2	3	2	0	0	0	0	0	0	0	1	3
90	0	1	3	5	9	5	6	1	0	0	0	0	0	0	0	0	0
91	0	0	2	7	8	5	1	0	0	0	0	0	0	0	0	0	0
92	0	0	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0
93	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0

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94	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
96	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
101	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
102	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
103	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0
104	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0
105	0	0	0	0	1	1	1	0	0	0	1	1	0	0	0	0	0
106	0	0	0	0	1	1	1	0	0	0	1	1	0	0	0	0	0
107	0	0	0	0	1	1	1	1	0	1	1	1	0	0	0	0	0
108	0	0	0	0	1	1	1	1	0	1	1	1	0	0	0	0	0
109	0	0	0	0	1	1	1	1	1	1	1	2	0	0	0	0	0
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114	0	0	0	1	2	2	2	2	2	2	2	3	1	1	1	0	0
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116	0	0	0	1	2	3	2	2	2	2	2	3	1	1	1	1	0
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121	1	1	1	2	3	3	3	3	3	3	3	4	2	2	2	2	1
122	1	1	1	2	3	3	3	3	3	3	3	4	2	2	2	2	1
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124	2	2	2	2	4	4	3	4	4	0	3	4	3	3	2	2	2
125	2	2	2	2	4	4	4	4	4	4	4	4	3	3	2	2	2

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126	2	2	2	2	4	4	4	4	4	4	4	4	3	3	3	2	2
127	3	2	2	3	4	4	4	4	4	4	4	4	3	3	3	3	3
128	3	3	3	3	4	4	4	4	4	5	4	4	4	3	3	3	3
129	3	3	3	3	5	4	4	5	5	5	4	5	4	4	3	3	3
130	3	3	3	3	5	5	4	5	5	5	4	5	4	4	3	3	3
131	4	3	3	3	5	5	5	5	5	5	5	5	4	4	3	4	4
132	4	4	3	3	5	5	5	5	5	6	5	5	4	4	4	4	4
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145	7	6	6	6	9	9	8	9	9	9	9	9	6	6	6	6	7
146	7	6	6	6	9	9	9	9	10	9	9	9	6	6	6	6	7
147	7	7	6	6	10	9	9	10	10	10	9	9	6	6	6	7	7
148	7	7	6	6	10	10	9	10	10	10	10	10	7	7	7	7	7
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152	9	8	8	8	11	11	11	12	12	12	11	11	8	8	8	8	9
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158	11	10	10	10	12	13	14	13	14	14	14	13	8	10	10	10	11
159	11	10	10	10	12	13	14	14	14	14	14	13	9	10	10	10	11
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179	16	15	15	15	14	15	15	16	16	16	16	16	15	15	15	15	16
180	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15

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2.2 Electrical, Photometric and Chromaticity Measurements (Refer to Work Instruction QD25)	IES LM-79 2008
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Test date	2014-12-10	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	SP-HB-200WA(5700K)		

Electrical Measurement:

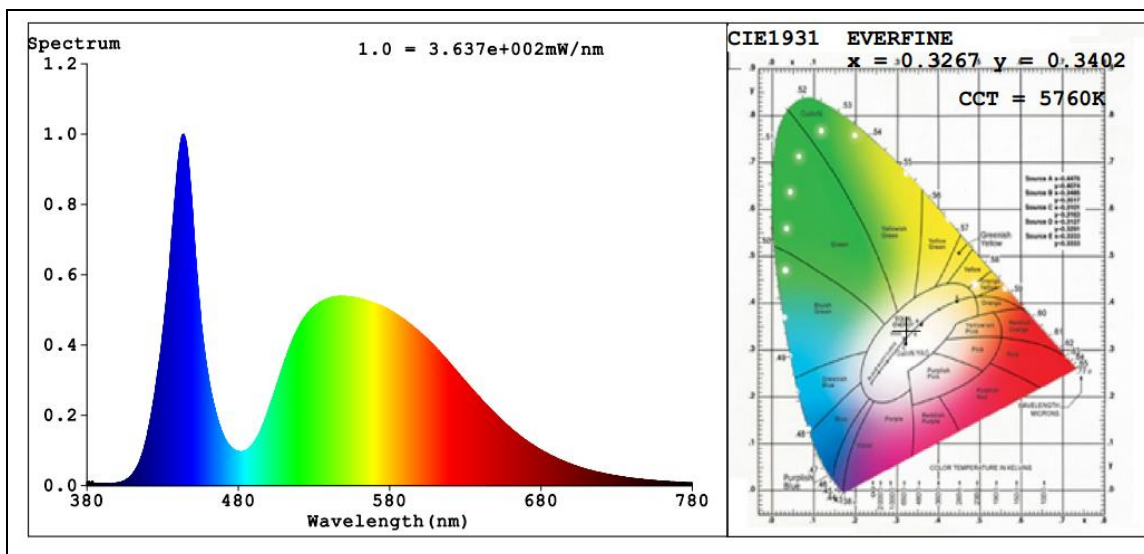
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
141129-6	120.0	60	1.7535	208.8	0.9923	8.06
	277.1	60	0.8210	206.04	0.9057	19.71

Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	72.3
R9	0
CCT (K)	5760
Chromaticity (x, y)	x=0.3267 y=0.3402
Chromaticity (u', v')	u'=0.2032 v'=0.4763
Duv	0.0022
Total Luminous (lm)	17263
Luminous Efficacy (lm/W)	82.69

Special Color Rendering Indices			
R1	72	R9	0
R2	74	R10	38
R3	75	R11	75
R4	74	R12	47
R5	74	R13	71
R6	67	R14	86
R7	78	R15	68
R8	64	--	--

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

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

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