Certificate#4810.01

LM-79-08 Test Report

For

Shenzhen XinShengYang Opto-Electronics Technology Co., Ltd

(Brand Name:)

10-11/F, No. 2 Building, Hengchangrong High Tech Ind Park,Shangnan East Road,Hongtian, ShajingTown, Bao'an District, SHENZHENGuangdong 518125

High Bay Luminaires for Commercial and Industrial Buildings

Model name(s): XSY-LHB2P105-XXK-HL-HB-EF

Remark: XXK represents CCT, can be 40K for 4000K, 45K=4500K, 50K for 5000K, 57K=5700K. "E" can be "A" or "B", represent for motion sensor, A=without motion sensor, B= with motion sensor."F" can be "A" or "B" or "C", represent for different mounting types.

Representative (Tested) Model:
XSY-LHB2P105-40K-HL-HB-AF
XSY-LHB2P105-57K-HL-HB-AF

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

Test & Report By:

Sherry Yang

Engineer: Sherry Yang

Date: Sept. 10, 2019

Review By:

Jason Luo

Manager: Jason Luo

Revision Summary

Date	Revisor	Item	Description of change
Sept. 10, 2019	Sherry Yang	/	Original Issue
Sept. 25, 2019	Sherry Yang	Tested dates	Added tested data at 277V

1.1 Product Information:

Organization Name	Shenzhen XinShengYang Opto-Electronics Technology Co., Ltd	
Brand Name		
Model Number	XSY-LHB2P105-XXK-HL-HB-EF	
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	
Rated Voltage / Frequency	120-347Vac, 50/60 Hz	
Nominal Power	105W	
Rated Initial Lamp Lumen	--	
Declared CCT	4000K,5000K,5700K	
LED Manufacturer	Seoul Semiconductor Co., LTD	
LED Model	STW8A2PD-XX	
Sample Number	BLC1909006E-G1(4000K),G2(5700K)	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Photo

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1.2 Test Specifications:

Date of Receipt	Sept. 06, 2019
Date of Test	Sept. 09, 2019
Test item	1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate 7. Electrical Parameters
Reference Standard	1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	BL-QP-033

1.3 Test Methods

1) Photometric and Light Distribution Measurement – Goniophotometer Method: Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at 25° C ± 1° 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 or rated 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) Chromaticity Measurement – Sphere-Spectroradiometer Method: Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25º C ± 1º 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 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral power distribution taken at 5 nm intervals over the range of 380 to 780 nm.
3) Electrical Measurements: Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at 25º C ± 1º C. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.

2.1 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2019-09-09	Test Ambient:	25.2 º C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	XSY-LHB2P105-40K-HL-HB-AF		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC1909006E-G1	120.0	60	0.8364	99.67	0.993	11.15
	277.0	60	0.3735	98.92	0.956	10.32
	347.0	60	0.3049	98.59	0.932	9.51
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

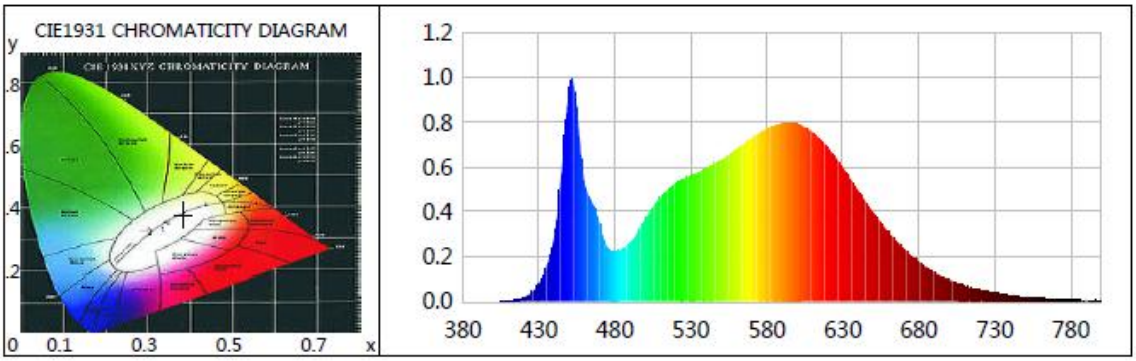
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	3973
Duv	0.00081
Chromaticity (x, y)	x=0.3822 y=0.3796
Chromaticity (u', v')	u(u')=0.2252 v'=0.5031
Color Rendering Index (CRI)	82.6
R9	6

Special Color Rendering Indices			
R1	81	R9	6
R2	89	R10	74
R3	95	R11	80
R4	81	R12	59
R5	81	R13	83
R6	8	R14	97
R7	85	R15	75
R8	63	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result			DLC V4.4 Pass Criteria
Test Voltage (V)	120.0	277.0	347.0	--
Frequency (Hz)	60	60	60	
Total Luminous (lm)	13863.2	13849.3	13831.0	>=10000 lm (-10%)
Luminous Efficacy (lm/W)	139.09	140.0	140.29	Premium: >= 130(-3%)
Most worst Luminous/Highest Watts	138.77			
Zonal lumens in the 20-50° zone (%)	54.4	--	--	>=30(-10)
Beam Angle (°)	102.5	--	--	--
Center Beam Candle Power (cd)	5424	--	--	--

Spectral Power Distribution & Chromaticity Diagram



Zonal Lumen Tabulation

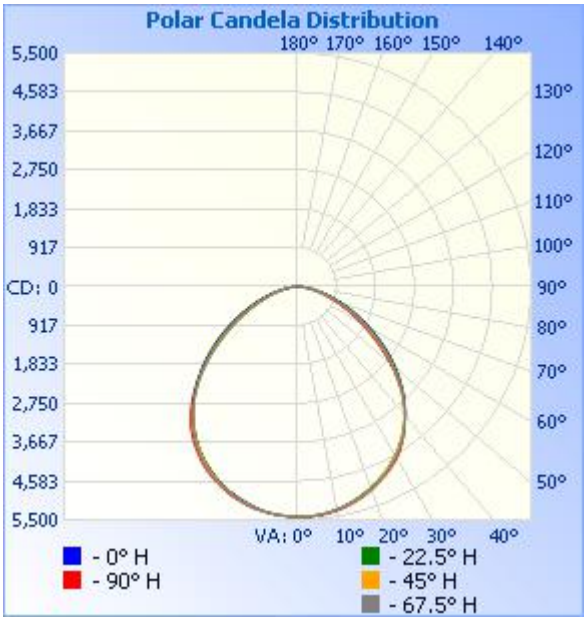
Zonal Lumen Summary

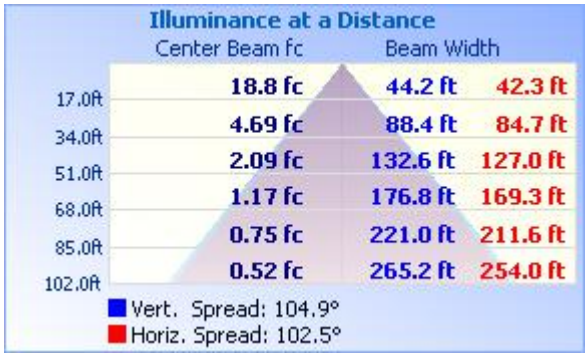
Zone	Lumens	% Lamp	% Luminaire
0-30	4,218.8	30.4%	30.4%
0-40	6,887.7	49.7%	49.7%
0-60	11,621.8	83.8%	83.8%
60-90	2,147.5	15.5%	15.5%
70-100	826.0	6%	6%
90-120	40.5	0.3%	0.3%
0-90	13,769.4	99.3%	99.3%
90-180	92.3	0.7%	0.7%
0-180	13,861.6	100%	100%

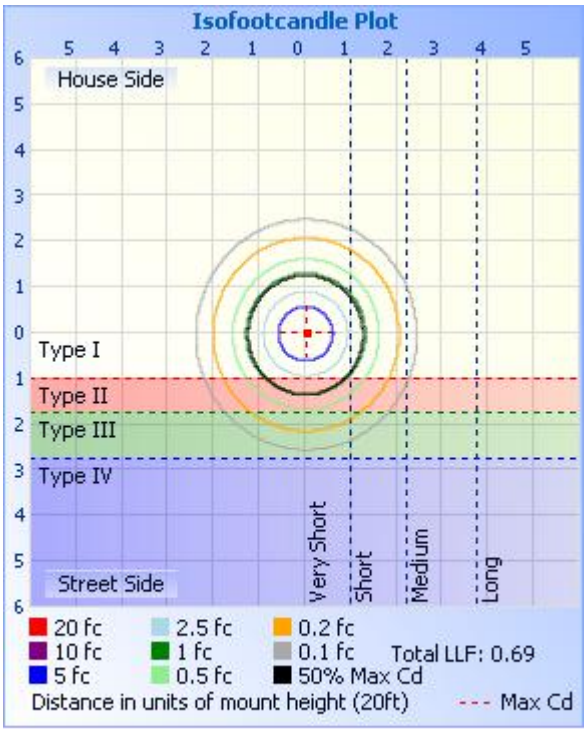
Lumens Per Zone

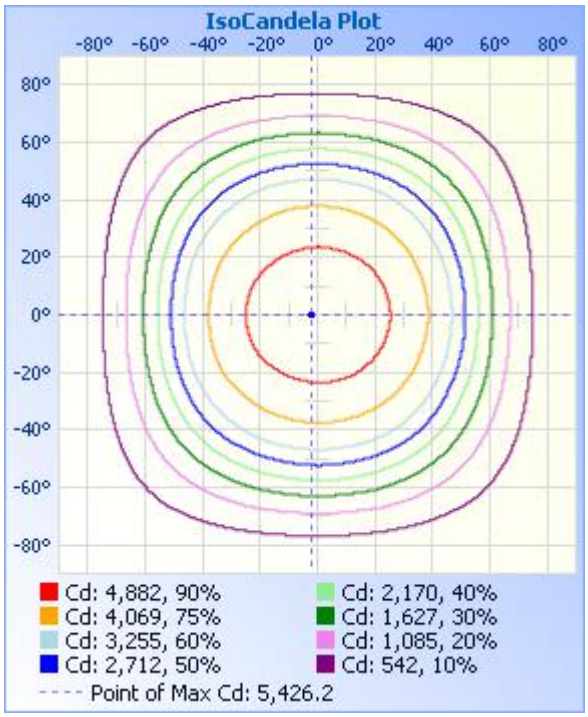
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	513.4	3.7%	90-100	13.9	0.1%
10-20	1,471.9	10.6%	100-110	13.5	0.1%
20-30	2,233.5	16.1%	110-120	13.1	0.1%
30-40	2,668.9	19.3%	120-130	12.4	0.1%
40-50	2,632.8	19.0%	130-140	11.9	0.1%
50-60	2,101.2	15.2%	140-150	11.1	0.1%
60-70	1,335.4	9.6%	150-160	8.8	0.1%
70-80	642.8	4.6%	160-170	5.6	0%
80-90	169.3	1.2%	170-180	1.9	0%

Photometric Data









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	5424	5424	5424	5424	5424	5424	5424	5424	5424	5424	5424	5424	5424	5424	5424	5424	5424
1	5424	5422	5419	5418	5426	5420	5425	5421	5424	5422	5420	5423	5417	5421	5421	5417	5424
2	5420	5417	5417	5420	5424	5422	5419	5416	5421	5418	5415	5416	5412	5419	5420	5417	5420
3	5422	5415	5412	5415	5426	5418	5418	5411	5415	5413	5407	5410	5406	5413	5415	5418	5422
4	5418	5413	5413	5409	5420	5411	5412	5407	5406	5405	5402	5404	5402	5407	5410	5411	5418
5	5407	5403	5403	5402	5419	5403	5407	5398	5399	5397	5395	5399	5394	5398	5403	5403	5407
6	5398	5394	5392	5393	5408	5397	5395	5386	5389	5387	5385	5386	5387	5389	5396	5398	5398
7	5386	5377	5382	5382	5401	5388	5380	5368	5377	5377	5374	5378	5374	5381	5381	5387	5386
8	5369	5361	5371	5369	5387	5374	5365	5353	5359	5360	5360	5363	5364	5367	5369	5371	5369
9	5353	5342	5354	5353	5374	5358	5352	5334	5338	5338	5343	5350	5357	5354	5353	5353	5353
10	5332	5328	5339	5335	5359	5343	5334	5312	5318	5319	5329	5337	5342	5336	5334	5335	5332
11	5310	5308	5317	5313	5340	5324	5317	5294	5291	5295	5308	5314	5329	5320	5316	5317	5310
12	5289	5283	5293	5298	5320	5306	5293	5271	5265	5271	5284	5293	5311	5300	5295	5290	5289
13	5265	5255	5271	5278	5296	5285	5269	5245	5237	5251	5262	5270	5285	5275	5266	5267	5265
14	5240	5232	5246	5258	5274	5256	5239	5213	5209	5224	5235	5243	5261	5252	5237	5239	5240
15	5214	5202	5221	5234	5250	5232	5210	5187	5179	5191	5207	5221	5234	5228	5207	5210	5214
16	5183	5174	5194	5209	5221	5206	5179	5155	5151	5160	5178	5196	5209	5198	5180	5181	5183
17	5155	5143	5166	5180	5193	5181	5150	5120	5122	5132	5149	5167	5178	5173	5150	5146	5155
18	5119	5108	5127	5149	5160	5150	5116	5083	5089	5098	5110	5132	5150	5140	5120	5116	5119
19	5090	5075	5095	5120	5129	5120	5077	5045	5053	5063	5073	5100	5118	5111	5088	5079	5090
20	5055	5033	5061	5090	5091	5084	5038	5008	5016	5023	5037	5066	5078	5077	5057	5041	5055
21	5017	4997	5020	5055	5052	5048	4996	4968	4975	4984	4998	5028	5041	5038	5017	5003	5017
22	4974	4958	4982	5015	5011	5010	4956	4928	4933	4948	4960	4991	5007	5003	4977	4962	4974
23	4937	4924	4940	4977	4975	4968	4912	4886	4892	4898	4913	4951	4969	4959	4938	4916	4937
24	4896	4880	4898	4934	4935	4928	4869	4843	4843	4857	4868	4911	4930	4918	4896	4877	4896
25	4853	4842	4851	4892	4897	4884	4823	4801	4801	4808	4821	4863	4886	4873	4855	4828	4853
26	4811	4791	4804	4847	4854	4838	4772	4750	4752	4757	4774	4813	4842	4827	4803	4783	4811
27	4764	4742	4756	4798	4815	4789	4717	4700	4705	4705	4722	4764	4793	4778	4756	4737	4764
28	4710	4692	4704	4747	4772	4741	4661	4652	4654	4656	4670	4712	4740	4731	4708	4691	4710
29	4660	4645	4652	4698	4723	4687	4610	4600	4594	4599	4608	4657	4687	4678	4653	4638	4660

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30	4606	4593	4598	4645	4670	4632	4553	4542	4540	4541	4550	4594	4626	4620	4602	4588	4606
31	4555	4535	4545	4588	4613	4578	4490	4482	4480	4480	4489	4536	4569	4564	4540	4528	4555
32	4498	4479	4484	4528	4549	4514	4429	4417	4423	4419	4431	4472	4507	4499	4478	4467	4498
33	4431	4419	4424	4461	4480	4452	4362	4355	4358	4354	4363	4405	4444	4435	4414	4410	4431
34	4371	4359	4357	4396	4408	4387	4296	4290	4292	4288	4302	4336	4384	4369	4355	4346	4371
35	4306	4297	4290	4332	4334	4316	4230	4220	4218	4218	4225	4255	4315	4297	4284	4275	4306
36	4237	4231	4219	4261	4259	4248	4154	4147	4151	4141	4152	4183	4245	4224	4212	4210	4237
37	4167	4161	4145	4182	4170	4167	4079	4065	4079	4066	4080	4104	4174	4146	4133	4142	4167
38	4092	4085	4069	4106	4093	4086	4006	3989	4003	3992	4001	4022	4089	4063	4056	4067	4092
39	4016	4006	3997	4022	4009	4007	3926	3911	3919	3913	3912	3940	4007	3976	3979	3989	4016
40	3940	3931	3916	3936	3926	3921	3844	3832	3837	3830	3826	3842	3918	3893	3898	3909	3940
41	3852	3851	3829	3855	3837	3832	3760	3747	3757	3747	3737	3750	3830	3804	3811	3830	3852
42	3775	3768	3738	3756	3739	3731	3666	3655	3671	3651	3649	3655	3731	3711	3714	3743	3775
43	3690	3683	3649	3671	3647	3636	3574	3567	3587	3566	3555	3558	3638	3615	3624	3653	3690
44	3603	3589	3562	3566	3553	3544	3485	3481	3491	3467	3453	3449	3533	3515	3529	3568	3603
45	3506	3497	3461	3473	3452	3438	3378	3385	3398	3374	3357	3343	3421	3412	3430	3474	3506
46	3410	3403	3362	3367	3337	3324	3279	3282	3307	3282	3258	3237	3319	3302	3333	3380	3410
47	3315	3306	3261	3254	3229	3217	3181	3183	3213	3182	3154	3129	3206	3199	3222	3283	3315
48	3220	3218	3160	3147	3118	3106	3075	3088	3115	3086	3049	3019	3079	3088	3124	3186	3220
49	3121	3112	3053	3042	3003	2998	2974	2989	3009	2987	2934	2896	2970	2982	3017	3078	3121
50	3025	3006	2953	2933	2875	2876	2864	2879	2914	2877	2829	2786	2843	2861	2909	2979	3025
51	2928	2905	2848	2810	2757	2763	2757	2778	2813	2774	2722	2671	2725	2751	2798	2879	2928
52	2823	2800	2738	2693	2637	2650	2654	2673	2709	2671	2616	2559	2597	2633	2689	2775	2823
53	2720	2694	2630	2579	2520	2533	2544	2570	2606	2566	2494	2445	2484	2519	2584	2663	2720
54	2613	2590	2515	2462	2400	2420	2438	2468	2496	2466	2387	2321	2364	2404	2467	2565	2613
55	2515	2477	2410	2353	2274	2298	2318	2358	2398	2352	2278	2207	2243	2296	2357	2456	2515
56	2400	2377	2305	2235	2160	2187	2217	2254	2293	2248	2171	2095	2121	2176	2246	2349	2400
57	2304	2267	2192	2120	2050	2077	2110	2151	2193	2147	2056	1979	2011	2062	2145	2253	2304
58	2191	2163	2079	2010	1944	1971	2005	2049	2091	2045	1950	1881	1895	1947	2039	2146	2191
59	2096	2067	1975	1908	1842	1864	1905	1951	1979	1938	1848	1769	1788	1853	1924	2040	2096
60	1996	1957	1880	1801	1740	1757	1794	1849	1881	1838	1743	1667	1690	1745	1827	1943	1996
61	1893	1851	1772	1702	1633	1650	1697	1742	1786	1741	1648	1570	1586	1640	1719	1834	1893

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62	1790	1758	1669	1598	1536	1554	1598	1649	1684	1651	1544	1469	1492	1541	1625	1730	1790
63	1687	1657	1569	1500	1444	1463	1499	1557	1590	1546	1453	1378	1393	1445	1528	1640	1687
64	1599	1562	1476	1406	1349	1370	1404	1466	1500	1453	1365	1294	1299	1345	1434	1539	1599
65	1506	1478	1390	1317	1255	1276	1318	1370	1409	1368	1278	1206	1213	1264	1340	1450	1506
66	1411	1381	1299	1230	1172	1188	1235	1283	1323	1281	1193	1124	1135	1182	1255	1359	1411
67	1328	1302	1219	1150	1088	1108	1148	1201	1231	1197	1104	1038	1044	1098	1172	1274	1328
68	1239	1205	1130	1065	1013	1031	1065	1118	1149	1111	1026	962	967	1016	1090	1181	1239
69	1150	1122	1047	977	933	947	987	1037	1069	1035	952	889	893	940	1011	1098	1150
70	1072	1046	977	910	863	876	914	961	993	950	877	822	822	867	939	1021	1072
71	986	962	904	844	795	809	844	889	911	881	804	748	754	802	863	944	986
72	917	891	828	773	728	744	775	819	839	800	738	686	696	736	798	871	917
73	847	817	761	713	662	674	703	748	770	733	673	629	632	671	724	798	847
74	767	749	691	646	606	618	645	682	708	676	613	572	572	610	659	725	767
75	702	685	628	587	547	561	588	617	637	614	553	511	519	548	600	659	702
76	635	612	571	529	491	505	533	560	571	552	495	461	464	493	536	598	635
77	571	559	511	479	440	456	476	502	518	491	443	409	418	446	493	545	571
78	516	498	459	423	391	397	421	448	460	439	395	365	368	397	433	484	516
79	459	448	405	378	348	357	375	393	410	386	348	330	334	356	385	426	459
80	402	391	357	340	306	319	333	349	354	342	304	286	284	310	338	375	402
81	353	342	320	295	265	276	289	304	314	294	265	248	248	268	295	331	353
82	304	296	269	256	229	239	253	261	266	252	228	213	216	230	251	282	304
83	261	254	238	220	195	202	215	223	227	212	193	180	179	197	218	246	261
84	222	214	197	186	162	170	176	184	189	176	157	143	146	163	182	205	222
85	181	177	160	154	130	135	141	152	151	142	123	112	119	134	151	169	181
86	144	139	127	120	96	104	115	117	117	105	94	89	91	104	117	132	144
87	112	108	102	91	76	76	86	88	86	73	69	64	67	74	88	101	112
88	79	78	71	65	48	54	59	56	59	53	30	38	42	53	60	71	79
89	56	45	43	37	25	32	35	34	32	27	21	23	21	31	41	46	56
90	32	29	23	21	7	12	20	15	22	13	17	11	9	15	24	24	32
91	19	15	18	14	0	8	19	17	16	16	15	13	10	12	18	20	19
92	15	17	11	12	0	0	18	19	22	17	9	12	7	11	13	20	15
93	18	13	13	10	0	10	12	18	15	15	10	11	0	12	19	19	18

94	18	16	13	10	0	0	13	15	18	18	16	10	0	10	17	19	18
95	16	12	14	11	0	8	13	14	17	13	13	12	8	13	19	21	16
96	20	15	9	13	0	9	13	14	16	15	15	13	7	0	18	17	20
97	16	14	15	14	0	12	12	18	18	20	10	7	0	14	17	20	16
98	17	13	10	10	0	7	14	12	18	14	14	8	9	7	17	18	17
99	12	11	12	12	0	7	17	17	11	14	13	11	0	10	15	18	12
100	16	14	13	12	0	13	12	16	20	16	14	7	0	10	15	19	16
101	18	16	15	11	0	11	15	15	17	13	15	8	0	11	13	15	18
102	20	15	12	13	0	10	14	16	13	16	11	8	9	8	15	19	20
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125	21	15	13	18	0	9	16	16	18	18	13	15	7	13	17	21	21

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2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2019-09-09	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	XSY-LHB2P105-57K-HL-HB-AF		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC1909006E-G2	120.0	60	0.8391	99.89	0.992	11.22
	277.0	60	0.3744	99.03	0.955	10.63
	347.0	60	0.3059	98.73	0.93	9.63
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

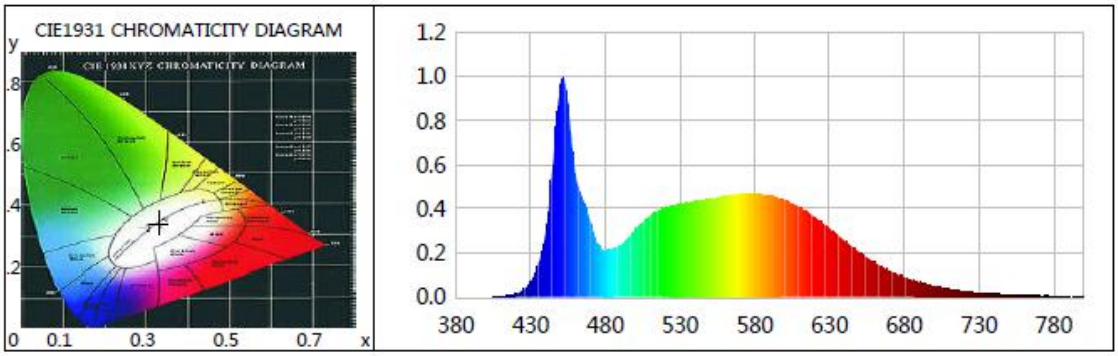
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	5576
Duv	0.00201
Chromaticity (x, y)	x=0.3307 y=0.3435
Chromaticity (u', v')	u(u')=0.2048 v'=0.4785
Color Rendering Index (CRI)	84.1
R9	12

Special Color Rendering Indices			
R1	83	R9	12
R2	90	R10	74
R3	93	R11	83
R4	83	R12	59
R5	83	R13	85
R6	84	R14	96
R7	87	R15	78
R8	69	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result			DLC V4.4 Pass Criteria
Test Voltage (V)	120.0	277.0	347.0	--
Frequency (Hz)	60	60	60	
Total Luminous (lm)	14390.6	14377.4	14360.1	>=10000 lm (-10%)
Luminous Efficacy (lm/W)	144.06	145.18	145.45	Premium: >= 130(-3%)
Most worst Luminous/Highest Watts		143.76		

Spectral Power Distribution & Chromaticity Diagram



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Calculated Efficacy Data for family models (5000K):

Model Number	Luminous Flux (lm)	Power (W)	Efficacy (lm/W)
XSY-LHB2P105-40K-HL-HB-AF	13863.2	99.67	139.09
XSY-LHB2P105-50K-HL-HB-AF	14039.0	99.78	140.70
XSY-LHB2P105-57K-HL-HB-AF	14390.6	99.89	144.06

3. Test Equipment

Equipment Name	Model No.	Serial No.	Next Calibration Date
Goniophotometeric System	GPM-3000	DYHXF120001	2020-01-14
AC Power Source	CHP-500C	N/A	2020-01-13
Total Luminous Flux Standard Lamp	24V/150W	DYJYR040040	2020-01-21
Digital Power Meter	WT500	DYDWQ200006	2020-01-13
Integral Sphere (2M)	2M	DYJCE120067	2020-01-14
Digital Power Meter	WT500	DYDWQ200006	2020-01-13
Optical Color and Electrical Measurement System	CMS-3000S	DYJCE120067	2020-01-14
Expand Uncertainty: Photometric Measurement (Sphere): 2.08%, k=2 Chromaticity Measurement(Sphere):25.6K, k=2 Photometric Measurement(Goniophotometer):2.645%, k=2			

******** END OF REPORT ********