



Report No.: BLC1807011E-A

LM-79-08 Test Report

For

Beyond LED Technology

(Brand Name: Beyond LED Technology)

1939 Parker Ct, Stone Mountain, GA 30087, USA

Fuel Pump Canopy Luminaires

Model name(s): BLT-CP3B-150WSASA1-ab
Remark: Where "b" refers to CCT, can be 40K, 45K, 50K, 57K.

Representative (Tested) Model: BLT-CP3B-150WSASA1-a40
BLT-CP3B-150WSASA1-a57

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

Test & Report By:

Grace Li

Engineer: Grace Li

Date: July 17, 2018

Review By:

Tommy Liang

Manager: Tommy Liang

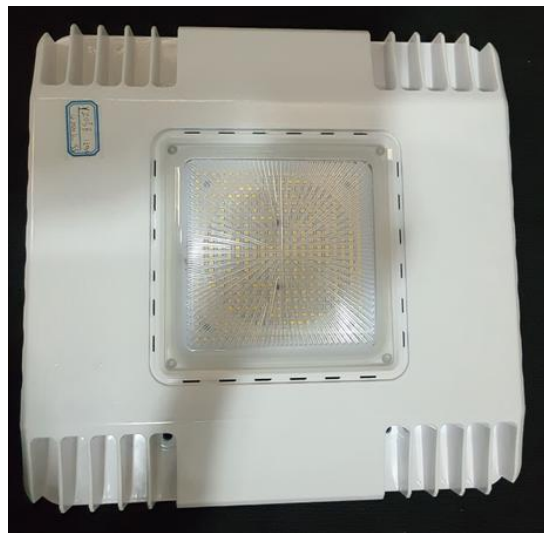


Report No.: BLC1807011E-A

1.1 Product Information:

Organization Name	ASmart LIGHT CO., LTD	
Brand Name	ASmart	
Model Number	AST-CP3B-150WSASA1-ab	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Fuel Pump Canopy Luminaires	
Rated Voltage / Frequency	100-277Vac, 50/60 Hz	
Nominal Power	150W	
Rated Initial Lamp Lumen	--	
Declared CCT	4000K,4500K,5000K,5700K	
LED Manufacturer	Hongli Zhihui Group Co., Ltd.	
LED Model	HL-AS-PU2835DW-S1-08-PCT-HR3	
Sample Number	BLC1807011E-A1(4000K),A2(5700K)	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Photo





1.2 Test Specifications:

Date of Receipt	July 13, 2018
Date of Test	July 15, 2018
Test item	<ol style="list-style-type: none">1. Total Luminous Flux2. Luminous Distribution Intensity3. Luminous Efficacy4. Correlated Color Temperature5. Color Rendering Index6. Chromaticity Coordinate7. Electrical Parameters
Reference Standard	<ol style="list-style-type: none">1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources4. CIE 15-2004 Technical Report Colorimetry5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source6. 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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, 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 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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. 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 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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. 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	2018-7-15	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	AST-CP3B-150WSASA1-a40		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC180701	120.0	60	1.2570	150.39	0.997	5.54
1E-A1	277.0	60	0.5683	145.92	0.927	14.35
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

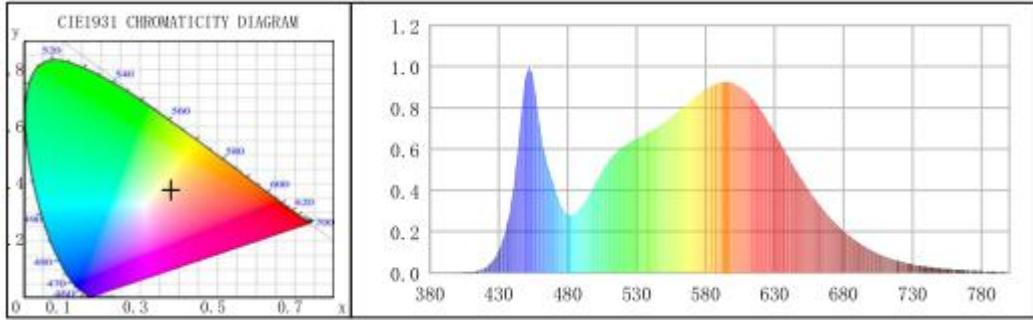
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	81	R9	5
Frequency (Hz)	60	R2	90	R10	75
CCT (K)	4027	R3	96	R11	80
Duv	0.00091	R4	81	R12	61
Chromaticity (x, y)	x=0.3799 y=0.3784	R5	81	R13	83
Chromaticity (u', v')	u(u')=0.2241 v'(v')=0.5022	R6	86	R14	98
Color Rendering Index (CRI)	82.7	R7	85	R15	74
R9	5	R8	63	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result		DLC V4.3 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	19727.5	19314.1	>=10000(-10%)
Luminous Efficacy (lm/W)	131.18	132.36	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	128.43		
Zonal lumens in the 0-40° zone (%)	41.8	--	>=40(-3)
Zonal lumens in the 40-70° zone (%)	46.2	--	>=40(-3)
Beam Angle (°)	117.6	--	--
Center Beam Candle Power (cd)	6413	--	--



Spectral Power Distribution & Chromaticity Diagram

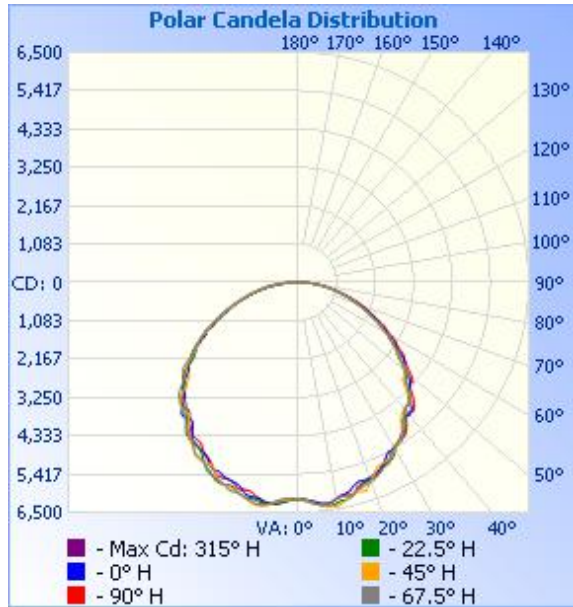


Zonal Lumen Tabulation

Zonal Lumen Summary				Lumens Per Zone					
Zone	Lumens	% Lamp	% Luminaire	Zone	Lumens	% Total	Zone	Lumens	% Total
0-30	5,003.1	25.4%	25.4%	0-10	600.1	3.0%	90-100	119.4	0.6%
0-40	8,255.2	41.8%	41.8%	10-20	1,738.6	8.8%	100-110	25.7	0.1%
0-60	14,925.4	75.7%	75.7%	20-30	2,664.5	13.5%	110-120	21.0	0.1%
60-90	4,561.9	23.1%	23.1%	30-40	3,252.1	16.5%	120-130	18.7	0.1%
70-100	2,245.1	11.4%	11.4%	40-50	3,477.0	17.6%	130-140	17.0	0.1%
90-120	166.1	0.8%	0.8%	50-60	3,193.2	16.2%	140-150	15.0	0.1%
0-90	19,487.3	98.8%	98.8%	60-70	2,436.2	12.4%	150-160	11.7	0.1%
90-180	238.6	1.2%	1.2%	70-80	1,499.8	7.6%	160-170	7.5	0%
0-180	19,725.9	100%	100%	80-90	625.9	3.2%	170-180	2.6	0%

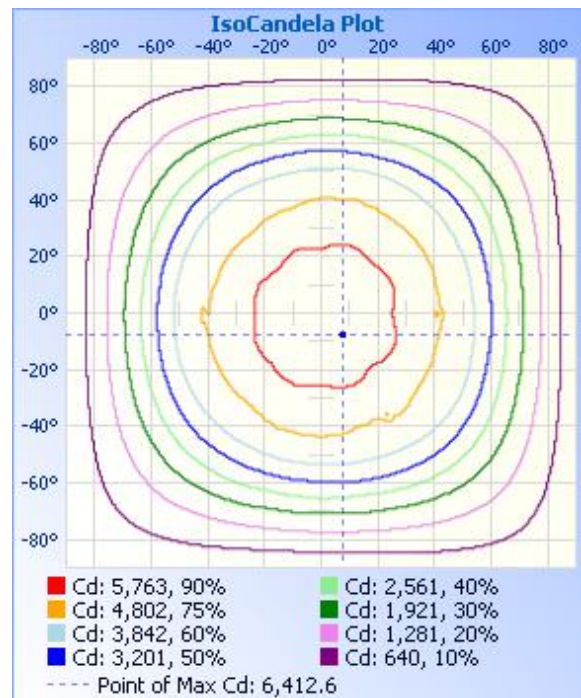
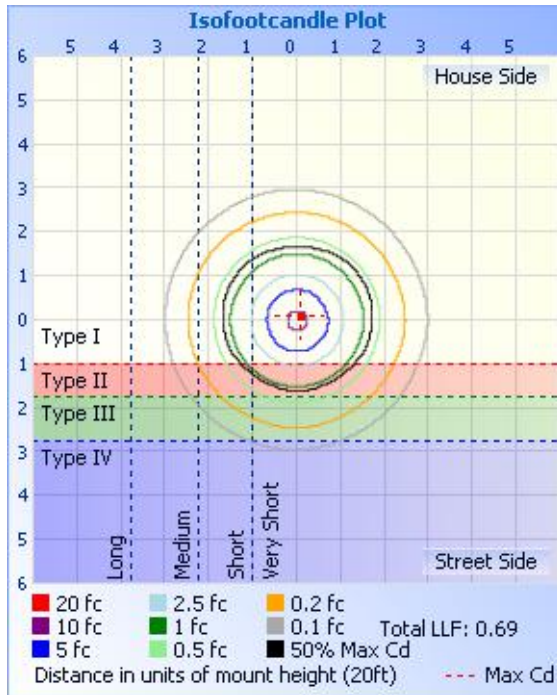


Photometric Data



	Center Beam fc	Beam Width	
17.0ft	21.2 fc	55.2 ft	56.1 ft
34.0ft	5.29 fc	110.5 ft	112.2 ft
51.0ft	2.35 fc	165.7 ft	168.3 ft
68.0ft	1.32 fc	220.9 ft	224.4 ft
85.0ft	0.85 fc	276.2 ft	280.5 ft
102.0ft	0.59 fc	331.4 ft	336.6 ft

■ Vert. Spread: 116.8°
■ Horiz. Spread: 117.6°





Report No.: BLC1807011E-A

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	6118	6118	6118	6118	6118	6118	6118	6118	6118	6118	6118	6118	6118	6118	6118	6118	6118
1	6133	6130	6130	6146	6120	6129	6119	6121	6122	6122	6119	6118	6119	6113	6116	6122	6133
2	6144	6152	6162	6188	6144	6155	6148	6146	6146	6148	6134	6122	6124	6105	6111	6132	6144
3	6171	6188	6200	6231	6190	6213	6204	6193	6185	6181	6159	6126	6128	6121	6122	6153	6171
4	6200	6234	6254	6269	6247	6265	6264	6248	6227	6214	6170	6135	6161	6152	6171	6196	6200
5	6244	6291	6302	6296	6286	6311	6314	6303	6269	6243	6201	6171	6211	6203	6220	6240	6244
6	6278	6338	6341	6317	6316	6351	6361	6348	6299	6275	6245	6217	6256	6262	6273	6280	6278
7	6295	6367	6380	6321	6326	6370	6395	6364	6315	6298	6310	6270	6281	6309	6321	6298	6295
8	6284	6384	6395	6291	6314	6374	6412	6360	6295	6312	6363	6321	6291	6340	6370	6299	6284
9	6252	6361	6407	6244	6263	6365	6411	6343	6262	6316	6398	6354	6273	6346	6400	6286	6252
10	6202	6328	6403	6188	6203	6348	6394	6310	6211	6300	6411	6372	6231	6344	6413	6245	6202
11	6178	6286	6377	6167	6132	6313	6362	6285	6197	6262	6398	6366	6178	6332	6390	6208	6178
12	6152	6287	6319	6175	6119	6269	6325	6274	6199	6252	6372	6331	6106	6302	6351	6193	6152
13	6103	6268	6249	6187	6115	6261	6264	6272	6189	6256	6325	6291	6053	6253	6302	6178	6103
14	6049	6239	6195	6234	6173	6248	6228	6239	6167	6254	6279	6243	6039	6213	6250	6112	6049
15	5964	6174	6163	6149	6150	6271	6187	6207	6087	6229	6230	6209	6048	6197	6223	6071	5964
16	5906	6083	6138	6072	6015	6290	6166	6144	6003	6164	6191	6193	6082	6184	6168	5995	5906
17	5876	6020	6172	6075	5975	6189	6144	6085	5949	6111	6153	6182	6028	6205	6124	5952	5876
18	5886	5959	6200	6031	5937	6113	6137	6061	5930	6050	6126	6200	5942	6187	6035	5952	5886
19	5893	5946	6071	6012	5910	6090	6070	6072	5912	6055	6086	6164	5919	6094	5994	5988	5893
20	5875	5939	5965	5994	5912	6022	6055	6081	5900	6080	6090	6078	5902	6046	5924	6015	5875
21	5846	5926	5876	5956	5902	5979	5984	6082	5878	6087	6054	6052	5922	6003	5881	6040	5846
22	5803	5901	5771	5915	5864	5938	5877	6052	5827	6083	6044	6011	5927	5961	5847	6020	5803
23	5778	5851	5679	5854	5794	5888	5793	5994	5794	6048	5956	6005	5921	5940	5847	5974	5778
24	5760	5788	5635	5781	5711	5839	5774	5917	5803	5980	5808	5984	5858	5914	5810	5917	5760
25	5685	5737	5632	5744	5674	5789	5758	5882	5776	5904	5731	5952	5739	5898	5732	5882	5685
26	5576	5711	5623	5725	5670	5736	5726	5831	5731	5858	5711	5912	5652	5849	5697	5804	5576
27	5483	5671	5608	5679	5633	5681	5697	5752	5623	5794	5696	5811	5582	5752	5675	5697	5483
28	5420	5633	5568	5547	5527	5690	5657	5622	5531	5715	5722	5733	5584	5678	5641	5577	5420
29	5418	5562	5508	5461	5443	5675	5593	5493	5508	5601	5745	5684	5514	5591	5617	5482	5418

Laboratory: Shenzhen Belling Test Laboratory A2LA Certificate# 4810.01
 Building No3 3rd floor, room 303, No 2-10 south Jinlong avenue, Sand Lake community, Biling street, Pingshan district, Shenzhen, Guangdong,CN. Website: <http://www.blst.com>

Report Format Number BL-FM-SA-012



Report No.: BLC1807011E-A

30	5406	5452	5430	5411	5372	5535	5552	5449	5478	5508	5717	5674	5419	5576	5621	5435	5406
31	5388	5363	5387	5356	5339	5389	5517	5444	5456	5453	5674	5653	5332	5519	5596	5418	5388
32	5349	5295	5356	5310	5318	5270	5411	5437	5410	5443	5575	5563	5292	5381	5531	5387	5349
33	5322	5253	5307	5254	5280	5157	5310	5419	5380	5436	5492	5469	5288	5260	5431	5341	5322
34	5274	5201	5196	5181	5263	5126	5199	5384	5363	5421	5439	5366	5272	5151	5285	5306	5274
35	5139	5160	5080	5140	5251	5111	5134	5389	5252	5381	5358	5318	5223	5094	5158	5274	5139
36	4979	5116	4949	5086	5176	5097	5098	5333	5092	5347	5295	5264	5160	5114	5081	5178	4979
37	4876	5029	4815	4984	5074	5097	5048	5189	4969	5281	5211	5201	5100	5141	5032	5009	4876
38	4840	4887	4728	4867	4942	5059	4951	5010	4917	5157	5052	5133	5008	5129	5002	4872	4840
39	4852	4757	4685	4752	4844	4981	4859	4878	4910	5008	4913	5062	4890	5079	4935	4814	4852
40	4874	4684	4667	4656	4798	4869	4785	4821	4956	4860	4830	4972	4793	4989	4847	4818	4874
41	4849	4635	4664	4630	4840	4729	4771	4833	4994	4764	4807	4877	4766	4851	4775	4834	4849
42	4766	4607	4640	4659	4860	4652	4751	4862	4939	4747	4832	4748	4797	4698	4718	4811	4766
43	4635	4570	4585	4639	4798	4663	4644	4817	4800	4789	4838	4659	4830	4616	4636	4731	4635
44	4492	4497	4493	4562	4688	4710	4498	4705	4630	4797	4806	4633	4755	4610	4522	4605	4492
45	4388	4407	4321	4457	4568	4663	4387	4531	4530	4731	4731	4672	4617	4643	4421	4458	4388
46	4338	4292	4153	4320	4410	4535	4289	4380	4491	4584	4600	4699	4497	4630	4327	4333	4338
47	4293	4171	4031	4137	4296	4374	4260	4305	4449	4419	4423	4630	4372	4492	4287	4237	4293
48	4240	4096	3987	4059	4255	4229	4271	4249	4391	4326	4253	4495	4280	4326	4244	4159	4240
49	4155	4007	3970	4089	4274	4070	4195	4214	4305	4264	4093	4337	4239	4165	4196	4108	4155
50	4000	3908	3926	4068	4178	3956	4055	4159	4154	4227	4031	4203	4239	4034	4087	4080	4000
51	3867	3812	3854	3930	4056	3887	3904	4025	4017	4175	4045	4131	4165	3918	3945	4003	3867
52	3799	3698	3756	3749	3903	3850	3787	3873	3924	4077	4052	4129	4029	3844	3791	3869	3799
53	3759	3558	3622	3611	3782	3778	3691	3758	3891	3876	3973	4113	3887	3816	3676	3736	3759
54	3676	3448	3479	3535	3694	3690	3611	3716	3854	3715	3830	3958	3749	3758	3609	3643	3676
55	3526	3400	3342	3453	3651	3560	3567	3691	3693	3581	3714	3787	3694	3667	3543	3581	3526
56	3368	3348	3246	3308	3518	3428	3495	3558	3519	3550	3578	3625	3655	3520	3482	3463	3368
57	3287	3199	3174	3169	3353	3350	3346	3346	3429	3546	3458	3506	3543	3382	3373	3271	3287
58	3223	3036	3115	3061	3243	3218	3162	3224	3406	3429	3368	3446	3360	3332	3196	3150	3223
59	3048	2962	2971	2983	3175	3061	3067	3147	3269	3290	3316	3345	3234	3232	3052	3078	3048
60	2913	2898	2804	2894	3041	2941	3013	3059	3080	3181	3245	3213	3175	3057	2982	2999	2913
61	2853	2721	2710	2749	2875	2852	2942	2915	2993	3095	3102	3083	3091	2933	2931	2824	2853

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62	2726	2587	2641	2632	2784	2776	2783	2794	2944	2922	2903	3012	2908	2845	2843	2725	2726
63	2594	2537	2541	2550	2724	2660	2613	2727	2734	2753	2796	2943	2780	2755	2656	2682	2594
64	2518	2421	2370	2384	2543	2529	2535	2555	2625	2665	2747	2781	2721	2639	2520	2536	2518
65	2375	2275	2280	2262	2430	2383	2451	2437	2578	2561	2662	2625	2573	2496	2453	2424	2375
66	2270	2203	2197	2188	2352	2298	2310	2385	2388	2429	2487	2545	2445	2397	2360	2312	2270
67	2169	2054	2059	2060	2208	2174	2188	2190	2343	2373	2351	2404	2388	2289	2222	2155	2169
68	2057	1975	1938	1991	2125	2082	2106	2136	2165	2201	2303	2288	2226	2172	2132	2081	2057
69	1948	1875	1862	1871	2000	1966	1982	2008	2117	2084	2155	2208	2157	2085	2025	1962	1948
70	1850	1773	1751	1752	1918	1863	1884	1947	1966	2002	2017	2078	2017	1946	1907	1883	1850
71	1738	1655	1649	1666	1808	1762	1757	1786	1893	1909	1948	1990	1940	1856	1810	1758	1738
72	1640	1563	1565	1570	1700	1680	1688	1702	1783	1788	1815	1868	1820	1766	1712	1655	1640
73	1536	1468	1459	1472	1591	1558	1566	1620	1669	1696	1744	1768	1713	1656	1610	1566	1536
74	1439	1388	1379	1387	1494	1480	1481	1512	1569	1593	1621	1683	1621	1567	1511	1481	1439
75	1341	1296	1291	1282	1391	1375	1392	1410	1466	1499	1536	1580	1498	1471	1416	1377	1341
76	1241	1183	1199	1184	1302	1289	1307	1324	1379	1403	1445	1482	1409	1369	1325	1277	1241
77	1138	1097	1106	1088	1186	1197	1204	1230	1283	1310	1351	1385	1314	1278	1241	1190	1138
78	1053	1010	1019	1012	1104	1102	1126	1145	1186	1213	1261	1283	1212	1186	1149	1101	1053
79	961	934	936	936	1024	1020	1039	1042	1084	1119	1174	1195	1128	1100	1058	1010	961
80	874	842	859	862	946	950	945	958	991	1037	1086	1098	1041	1013	981	926	874
81	789	770	781	781	862	875	865	873	911	940	1000	1019	943	932	896	837	789
82	703	685	702	693	773	794	780	790	821	867	918	938	861	851	814	759	703
83	625	619	626	614	688	708	709	700	723	772	839	864	763	772	735	677	625
84	558	552	559	536	600	628	634	618	636	691	743	771	667	682	653	608	558
85	477	487	486	453	522	556	558	550	563	625	674	677	577	605	577	541	477
86	420	422	429	399	424	477	480	471	476	551	600	600	476	519	506	473	420
87	356	367	370	334	356	403	423	406	404	470	518	515	396	440	444	403	356
88	309	317	320	283	309	348	371	347	337	401	447	437	332	380	383	353	309
89	267	274	275	242	255	302	315	301	285	352	386	358	263	315	322	310	267
90	218	243	244	206	215	257	273	267	255	296	335	302	223	268	279	250	218
91	197	210	205	175	193	223	237	229	225	253	285	255	185	222	246	220	197
92	163	178	172	143	167	186	204	203	194	228	245	217	164	194	208	185	163
93	134	141	137	87	140	153	173	176	171	197	209	178	119	155	175	148	134

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94	100	103	101	63	107	115	133	143	134	168	172	143	83	119	132	110	100
95	62	61	81	38	76	63	94	113	89	127	144	95	58	77	98	81	62
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Laboratory: Shenzhen Belling Test Laboratory A2LA Certificate# 4810.01
Building No3 3rd floor, room 303, No 2-10 south Jinlong avenue, Sand Lake community, Biling street, Pingshan district, Shenzhen, Guangdong,CN. Website: <http://www.blst.com>

Report Format Number BL-FM-SA-012



Report No.: BLC1807011E-A

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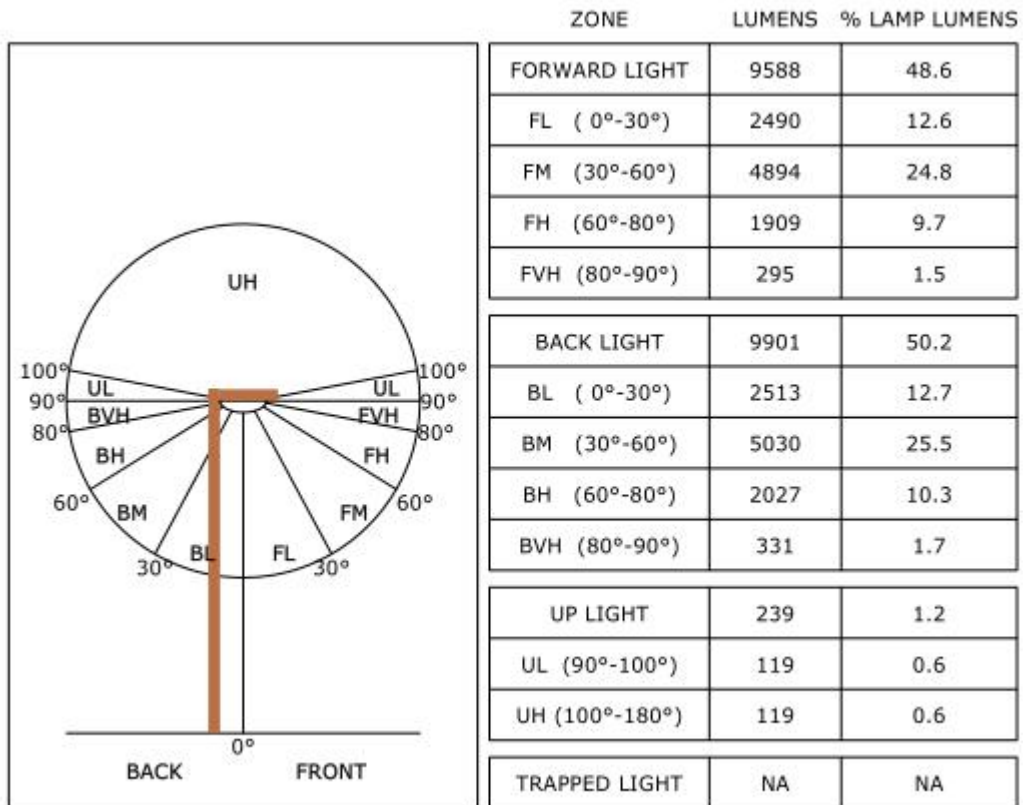
Laboratory: Shenzhen Belling Test Laboratory A2LA Certificate# 4810.01
Building No3 3rd floor, room 303, No 2-10 south Jinlong avenue, Sand Lake community, Biling street, Pingshan district, Shenzhen, Guangdong,CN. Website: <http://www.blst.com>

Report Format Number BL-FM-SA-012



Report No.: BLC1807011E-A

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**2.2 Electrical, Photometric and Chromaticity Measurements***(Refer to Work Instruction BL-QP-033)*

Test date	2018-6-3	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	AST-CP3B-150WSASA1-a57		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC180701	120.0	60	1.2505	149.72	0.9977	5.39
1E-A2	277.0	60	0.5656	145.38	0.928	14.61
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	82	R9	5
Frequency (Hz)	60	R2	91	R10	78
CCT (K)	5527	R3	94	R11	79
Duv	0.00251	R4	80	R12	59
Chromaticity (x, y)	x=0.3308 y=0.3446	R5	82	R13	85
Chromaticity (u', v')	u(u')=0.2044 v'(v')=0.4791	R6	86	R14	98
Color Rendering Index (CRI)	83.3	R7	85	R15	57
R9	5	R8	66	--	--

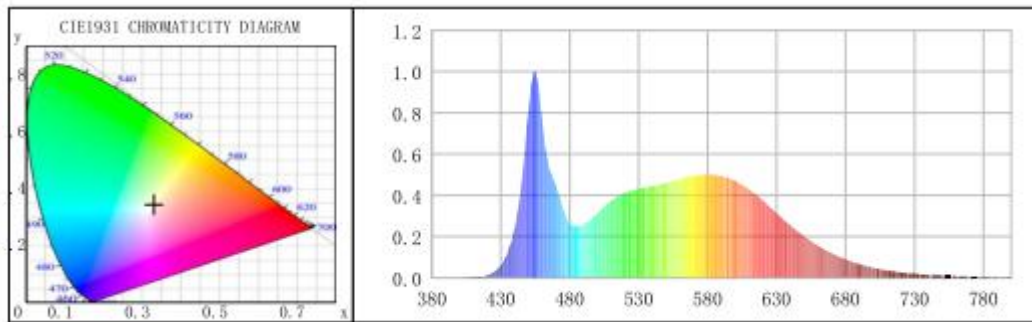
Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result		DLC V4.3 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	20221.18	19856.00	>=10000(-10%)
Luminous Efficacy (lm/W)	135.06	136.58	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	132.62		



Report No.: BLC1807011E-A

Spectral Power Distribution & Chromaticity Diagram





Report No.: BLC1807011E-A

Calculated Efficacy Data for family models (4500K and 5000K):

Model Number	Luminous Flux (lm)	Power (W)	Efficacy (lm/W)
AST-CP3B-150WSASA1-a40	19727.5	150.39	131.18
AST-CP3B-150WSASA1-a45	19850.92	150.06	132.29
AST-CP3B-150WSASA1-a50	19974.34	150.06	133.11
AST-CP3B-150WSASA1-a57	20221.18	149.72	135.06



Report No.: BLC1807011E-A

3. Test Equipment

Equipment Name	Model No.	Serial No.	Next Calibration Date
Goniophotometric System	GPM-3000	DYHXF120001	2019-01-15
AC Power Source	CHP-500C	N/A	2019-01-14
Total Luminous Flux Standard Lamp	24V/150W	DYJYR040040	2019-01-22
Digital Power Meter	WT500	DYDWQ200006	2019-01-14
Integral Sphere (2M)	2M	DYJCE120067	2019-01-15
Digital Power Meter	WT500	DYDWQ200006	2019-01-14
Optical Color and Electrical Measurement System	CMS-3000S	DYJCE120067	2019-01-15

Expand Uncertainty:
Photometric Measurement (Sphere): 2.04%, k=2
Chromaticity Measurement(Sphere):28.8K, k=2
Photometric Measurement(Goniophotometer):2.7%, k=2

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