



Report No.: BLC1808024E-A

## LM-79-08 Test Report

For

# ASmart LIGHT CO., LTD

(Brand Name: ASmart)

506 N GARFIELD AVE SUITE#210 ALHAMBRA CA 91801

### Replacement Lamps for High Bay Luminaires (UL Type B)

Model name(s): AST-CLW07-080WBCA1-acK

Remark: "a" refers to lamp base, "E" is E39 lamp base, "EX" is EX39 lamp base.

"cK" refers to CCT, can be 30K, 35K, 40K, 50K, 57K.

Representative (Tested) Model: AST-CLW07-080WBCA1-a30K  
AST-CLW07-080WBCA1-a57K

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

Test & Report By:

*Grace Li*

Engineer: Grace Li

Date: September 6, 2018

Review By:

*Tommy Liang*

Manager: Tommy Liang



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### 1.1 Product Information:

Organization Name	ASmart LIGHT CO., LTD	
Brand Name	ASmart	
Model Number	AST-CLW07-080WBCA1-acK	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Replacement Lamps for High Bay Luminaires (UL Type B)	
Rated Voltage / Frequency	100-277Vac, 50/60 Hz	
Nominal Power	80W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K,3500K,4000K,5000K,5700K	
LED Manufacturer	Samsung Electronics Co., LTD.	
LED Model	SPMWH1228xxxxxxxxxx	
Sample Number	BLC1808024E-A1(3000K),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	Aug 29,2018
Date of Test	Aug 31,2018
Test item	<ol style="list-style-type: none"> <li>1. Total Luminous Flux</li> <li>2. Luminous Distribution Intensity</li> <li>3. Luminous Efficacy</li> <li>4. Correlated Color Temperature</li> <li>5. Color Rendering Index</li> <li>6. Chromaticity Coordinate</li> <li>7. Electrical Parameters</li> </ol>
Reference Standard	<ol style="list-style-type: none"> <li>1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products</li> <li>2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products</li> <li>3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources</li> <li>4. CIE 15-2004 Technical Report Colorimetry</li> <li>5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source</li> <li>6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems</li> </ol>
Reference Work Instruction	BL-QP-033

**1.3 Test Methods**

<p><b>1) Photometric and Light Distribution Measurement – Goniophotometer Method:</b> Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at <math>25^{\circ}\text{C} \pm 1^{\circ}\text{C}</math>, 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 <math>1^{\circ}</math> vertical intervals and <math>22.5^{\circ}</math> horizontal intervals.</p>
<p><b>2) Chromaticity Measurement – Sphere-Spectroradiometer Method:</b> Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at <math>25^{\circ}\text{C} \pm 1^{\circ}\text{C}</math>. 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.</p>
<p><b>3) Electrical Measurements:</b> Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at <math>25^{\circ}\text{C} \pm 1^{\circ}\text{C}</math>. 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.</p>

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

<b>Test date</b>	2018-8-31	<b>Test Ambient:</b>	25.2 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	AST-CLW07-080WBCA1-a30K		

**Electrical Measurement in Lithonia THD 400S A15:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC180802	120.0	60	0.679	80.78	0.992	6.5
4E-A1	277.0	60	0.322	78.85	0.883	23.83
<b>DLC Pass Criteria</b>					<b>&gt;= 0.9(-3%)</b>	<b>&lt;= 20(+5)</b>

**Chromaticity Measurement - Sphere-Spectroradiometer Method in Lithonia THD 400S A15:**

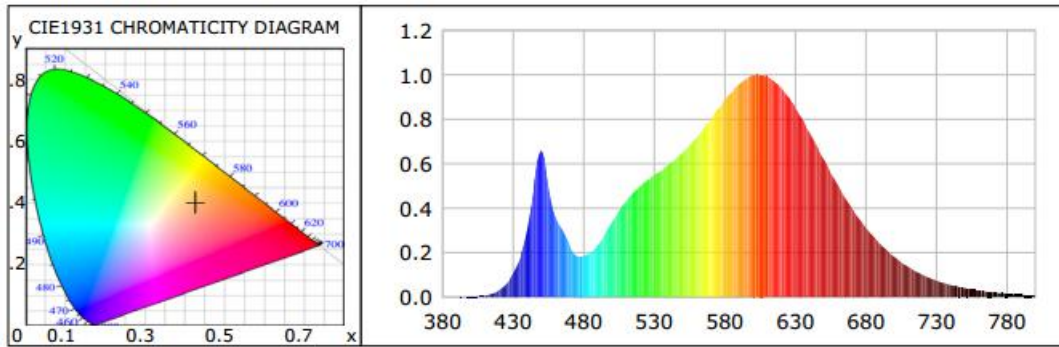
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	82	R9	15
Frequency (Hz)	60	R2	90	R10	78
CCT (K)	3116	R3	96	R11	82
Duv	-0.00097	R4	83	R12	71
Chromaticity (x, y)	x=0.4276 y=0.3983	R5	83	R13	84
Chromaticity (u', v')	u(u')=0.2470 v'(v')=0.5177	R6	88	R14	98
Color Rendering Index (CRI)	83.7	R7	84	R15	76
R9	15	R8	63	--	--

**Photometric Measurement – Goniophotometer Method in Lithonia THD 400S A15:**

Parameter	Result		DLC V4.3 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	9569.20	9433.61	>=10000(-10%)
Luminous Efficacy (lm/W)	118.46	119.64	>= 100(-3%)
Most worst Luminous/Highest Watts	116.78		
Zonal lumens in the 20-50° zone (%)	50.8	--	>= 30(-10)
Beam Angle (°)	125.8	--	--
Center Beam Candle Power (cd)	1963	--	--



**Spectral Power Distribution & Chromaticity Diagram**



**Zonal Lumen Tabulation**

**Zonal Lumen Summary**

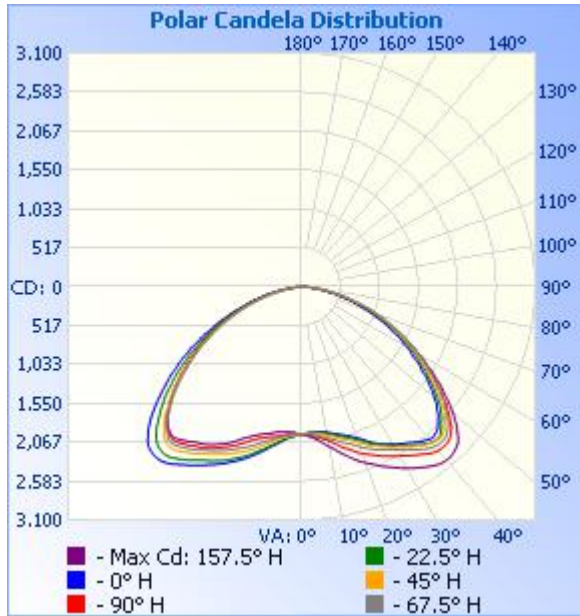
Zone	Lumens	% Lamp	% Luminaire
0-30	1,936.6	20.2%	20.2%
0-40	3,620.3	37.8%	37.8%
0-60	7,487.8	78.2%	78.3%
60-90	2,047.4	21.4%	21.4%
70-100	768.1	8%	8%
90-120	11.7	0.1%	0.1%
0-90	9,535.1	99.6%	99.7%
90-180	33.3	0.3%	0.3%
0-180	9,568.5	100%	100%

**Lumens Per Zone**

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	191.5	2.0%	90-100	4.4	0%
10-20	617.6	6.5%	100-110	3.3	0%
20-30	1,127.5	11.8%	110-120	4.0	0%
30-40	1,683.7	17.6%	120-130	4.4	0%
40-50	2,046.5	21.4%	130-140	4.6	0%
50-60	1,821.0	19.0%	140-150	4.9	0.1%
60-70	1,283.7	13.4%	150-160	4.2	0%
70-80	636.9	6.7%	160-170	2.6	0%
80-90	126.7	1.3%	170-180	0.8	0%



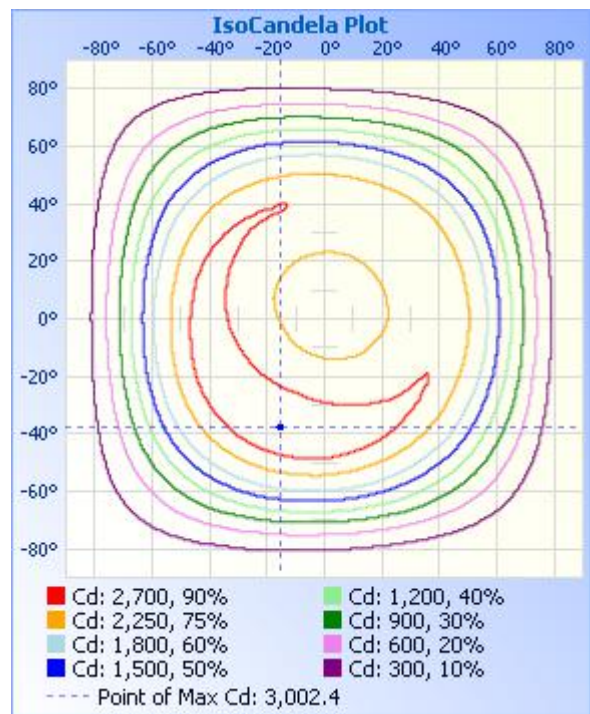
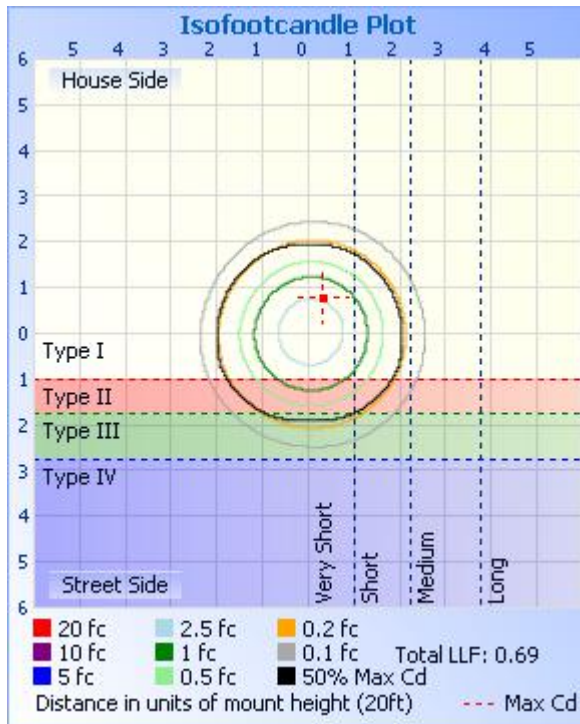
**Photometric Data**



**Illuminance at a Distance**

	Center Beam fc	Beam Width	
17.0ft	6.79 fc	64.1 ft	45.9 ft
34.0ft	1.70 fc	128.2 ft	91.8 ft
51.0ft	0.75 fc	192.3 ft	137.7 ft
68.0ft	0.42 fc	256.3 ft	183.6 ft
85.0ft	0.27 fc	320.4 ft	229.5 ft
102.0ft	0.19 fc	384.5 ft	275.4 ft

■ Vert. Spread: 124.1°  
■ Horiz. Spread: 106.9°





**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	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963	1963
1	1954	1956	1955	1960	1965	1968	1972	1971	1969	1969	1966	1966	1963	1957	1955	1956	1954
2	1947	1952	1951	1962	1970	1976	1980	1980	1979	1978	1971	1969	1967	1956	1951	1948	1947
3	1941	1946	1951	1961	1981	1984	1990	1994	1990	1987	1977	1969	1967	1955	1945	1938	1941
4	1938	1945	1951	1966	1987	1999	2005	2008	2002	1997	1986	1975	1970	1957	1945	1939	1938
5	1935	1945	1950	1973	1999	2014	2024	2027	2018	2011	1997	1983	1971	1960	1946	1940	1935
6	1935	1945	1959	1983	2009	2030	2043	2048	2036	2034	2010	1991	1979	1960	1946	1942	1935
7	1938	1949	1967	1996	2024	2049	2066	2074	2064	2054	2022	2001	1990	1967	1953	1943	1938
8	1946	1958	1977	2014	2043	2070	2090	2100	2090	2075	2041	2017	2000	1974	1960	1949	1946
9	1952	1970	1994	2030	2059	2097	2121	2134	2118	2101	2061	2030	2008	1985	1970	1954	1952
10	1963	1982	2008	2048	2080	2124	2149	2161	2141	2128	2084	2047	2024	1996	1979	1964	1963
11	1977	1997	2026	2065	2104	2149	2177	2188	2169	2150	2106	2073	2033	2004	1989	1978	1977
12	1992	2008	2040	2080	2130	2176	2208	2225	2200	2178	2129	2093	2038	2015	2002	1990	1992
13	2008	2025	2056	2102	2160	2211	2245	2263	2234	2209	2152	2105	2052	2026	2018	2003	2008
14	2021	2042	2073	2123	2193	2248	2283	2294	2265	2237	2178	2126	2067	2039	2026	2014	2021
15	2033	2059	2094	2145	2222	2276	2312	2326	2300	2266	2204	2153	2085	2055	2045	2029	2033
16	2052	2078	2109	2163	2244	2310	2349	2363	2330	2297	2231	2179	2099	2074	2061	2046	2052
17	2068	2094	2127	2186	2272	2339	2381	2397	2362	2330	2259	2205	2123	2093	2077	2063	2068
18	2090	2116	2150	2206	2303	2366	2413	2431	2396	2360	2284	2231	2147	2117	2098	2083	2090
19	2113	2138	2177	2234	2333	2392	2442	2462	2424	2389	2316	2256	2175	2146	2122	2109	2113
20	2136	2162	2200	2262	2359	2418	2471	2489	2453	2416	2339	2278	2205	2176	2152	2133	2136
21	2164	2188	2227	2291	2382	2442	2500	2516	2484	2442	2359	2300	2236	2205	2181	2158	2164
22	2195	2219	2259	2315	2404	2469	2529	2544	2512	2468	2380	2322	2264	2236	2212	2189	2195
23	2231	2256	2288	2339	2427	2504	2560	2578	2542	2499	2408	2350	2292	2268	2246	2226	2231
24	2261	2279	2312	2365	2452	2535	2591	2611	2573	2526	2433	2375	2320	2299	2283	2261	2261
25	2292	2307	2336	2386	2480	2560	2618	2637	2600	2548	2453	2399	2346	2324	2316	2291	2292
26	2318	2332	2359	2406	2504	2590	2651	2666	2628	2569	2472	2422	2373	2351	2343	2322	2318
27	2344	2357	2384	2432	2526	2617	2674	2695	2654	2596	2496	2444	2400	2376	2370	2345	2344
28	2369	2386	2408	2453	2550	2641	2700	2724	2682	2615	2518	2468	2426	2401	2392	2372	2369
29	2396	2417	2434	2475	2574	2665	2725	2755	2709	2639	2542	2488	2454	2427	2419	2402	2396

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30	2419	2439	2459	2498	2596	2691	2752	2782	2738	2661	2563	2511	2477	2450	2446	2425	2419
31	2442	2461	2481	2524	2620	2720	2787	2812	2770	2689	2585	2533	2495	2475	2468	2445	2442
32	2461	2486	2504	2550	2646	2748	2812	2840	2797	2718	2615	2557	2519	2492	2486	2462	2461
33	2484	2516	2534	2579	2673	2773	2837	2865	2824	2747	2640	2584	2532	2507	2504	2481	2484
34	2504	2542	2560	2609	2698	2793	2861	2893	2849	2772	2661	2606	2550	2521	2520	2495	2504
35	2528	2571	2591	2642	2723	2817	2887	2919	2882	2796	2683	2625	2576	2543	2539	2517	2528
36	2555	2597	2617	2672	2748	2848	2918	2945	2915	2823	2708	2645	2597	2564	2561	2541	2555
37	2580	2627	2642	2701	2778	2876	2940	2969	2940	2848	2733	2667	2614	2585	2582	2564	2580
38	2604	2655	2667	2727	2805	2897	2953	2985	2960	2865	2750	2684	2634	2600	2601	2586	2604
39	2626	2680	2687	2752	2825	2908	2963	2998	2974	2875	2759	2700	2650	2620	2620	2605	2626
40	2645	2698	2703	2763	2839	2918	2967	3002	2979	2873	2757	2705	2659	2623	2628	2623	2645
41	2658	2710	2714	2775	2842	2924	2968	3002	2976	2867	2748	2692	2646	2618	2637	2624	2658
42	2642	2710	2722	2779	2842	2927	2959	2993	2970	2853	2711	2658	2631	2597	2610	2614	2642
43	2632	2700	2723	2772	2840	2916	2945	2980	2954	2817	2686	2621	2608	2580	2596	2586	2632
44	2603	2658	2703	2762	2825	2908	2932	2961	2936	2784	2627	2572	2569	2538	2557	2562	2603
45	2564	2629	2676	2734	2800	2878	2907	2937	2893	2730	2593	2531	2529	2500	2519	2513	2564
46	2520	2576	2635	2700	2761	2833	2865	2891	2835	2674	2522	2461	2484	2444	2460	2479	2520
47	2480	2545	2606	2665	2721	2783	2807	2828	2787	2603	2480	2406	2434	2402	2412	2416	2480
48	2416	2484	2552	2609	2648	2729	2753	2775	2718	2539	2385	2339	2380	2348	2349	2374	2416
49	2375	2441	2503	2558	2597	2666	2690	2702	2650	2476	2336	2275	2319	2283	2297	2299	2375
50	2300	2374	2433	2491	2519	2597	2615	2630	2572	2401	2271	2212	2255	2237	2233	2251	2300
51	2250	2315	2378	2443	2473	2525	2540	2548	2494	2337	2199	2136	2186	2146	2161	2172	2250
52	2174	2241	2311	2362	2379	2456	2462	2476	2409	2258	2142	2067	2123	2098	2090	2112	2174
53	2104	2174	2240	2306	2320	2371	2390	2381	2325	2176	2031	1992	2046	2032	2025	2038	2104
54	2052	2108	2168	2224	2226	2305	2314	2305	2242	2104	1973	1917	1977	1949	1958	1971	2052
55	1955	2037	2091	2156	2168	2216	2236	2233	2166	2024	1897	1842	1895	1902	1890	1903	1955
56	1902	1968	2023	2092	2104	2151	2144	2133	2092	1951	1816	1776	1833	1801	1813	1836	1902
57	1842	1894	1958	2007	2009	2072	2076	2066	1990	1869	1759	1700	1760	1748	1744	1763	1842
58	1745	1834	1873	1951	1945	1982	1988	1958	1928	1788	1665	1630	1680	1696	1680	1693	1745
59	1697	1767	1819	1868	1863	1911	1905	1891	1838	1725	1597	1565	1616	1603	1618	1636	1697
60	1632	1701	1755	1797	1782	1815	1827	1813	1747	1633	1536	1481	1540	1548	1554	1561	1632
61	1549	1642	1669	1737	1716	1729	1722	1714	1685	1546	1433	1409	1463	1488	1483	1502	1549

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62	1496	1571	1617	1654	1626	1659	1656	1647	1565	1482	1373	1340	1401	1398	1420	1442	1496
63	1429	1496	1542	1587	1553	1555	1567	1557	1500	1394	1309	1265	1322	1327	1350	1365	1429
64	1337	1426	1463	1516	1485	1482	1475	1465	1426	1320	1220	1196	1241	1276	1275	1298	1337
65	1281	1362	1410	1433	1403	1411	1413	1403	1320	1259	1157	1122	1185	1195	1214	1235	1281
66	1216	1289	1337	1371	1326	1307	1320	1312	1257	1165	1089	1051	1111	1112	1144	1172	1216
67	1139	1210	1260	1288	1248	1241	1237	1224	1178	1086	1010	982	1021	1060	1058	1090	1139
68	1060	1155	1191	1220	1178	1169	1175	1155	1081	1025	938	911	969	986	1004	1023	1060
69	998	1075	1121	1141	1101	1082	1094	1073	1016	937	872	855	901	915	945	962	998
70	936	996	1061	1069	1037	1018	1011	987	941	867	813	779	823	845	863	890	936
71	863	945	992	1013	970	947	942	909	849	804	738	715	755	787	791	820	863
72	799	875	922	934	878	860	853	834	781	727	669	657	707	718	743	756	799
73	743	804	857	855	805	776	767	748	724	652	612	601	633	651	676	706	743
74	683	732	774	787	745	715	708	689	650	597	556	523	550	584	597	641	683
75	606	673	701	716	675	652	658	642	579	544	482	465	500	508	534	561	606
76	543	594	637	640	602	574	577	551	526	474	436	429	444	461	479	504	543
77	483	526	587	587	550	525	522	504	473	416	391	376	386	405	430	457	483
78	437	481	507	544	507	481	479	465	401	367	331	307	326	338	354	400	437
79	376	437	459	466	427	404	404	376	353	305	270	258	280	289	312	339	376
80	316	370	409	410	370	353	342	325	309	248	225	224	236	252	266	289	316
81	272	312	351	368	333	315	305	291	241	204	185	169	191	203	233	251	272
82	239	267	292	316	285	260	254	224	187	168	135	120	131	145	172	209	239
83	193	226	245	254	221	197	176	159	149	116	100	89	99	108	127	149	193
84	137	172	204	208	177	157	146	133	103	69	58	62	76	82	93	113	137
85	103	125	159	178	145	133	125	99	53	38	37	42	56	65	75	88	103
86	81	94	112	122	89	66	52	37	32	26	23	25	37	47	58	70	81
87	63	68	71	72	46	38	32	26	21	18	17	18	23	32	42	52	63
88	43	45	46	43	30	26	22	20	17	14	11	13	16	21	29	38	43
89	28	29	30	30	21	19	17	16	12	9	7	6	8	12	19	25	28
90	19	22	22	23	15	15	13	13	9	6	3	4	3	4	6	15	19
91	11	14	17	18	12	12	10	7	4	4	3	3	2	3	3	6	11
92	5	9	11	13	7	5	3	2	4	3	3	4	2	3	4	4	5
93	4	4	7	7	1	3	2	3	3	3	2	2	2	3	3	4	4

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94	4	3	4	4	1	2	3	3	3	3	3	3	1	2	3	3	4
95	4	3	4	4	1	2	2	3	3	3	3	3	2	3	3	4	4
96	3	3	3	4	1	2	3	4	3	3	2	3	2	2	3	4	3
97	3	3	3	4	1	3	2	3	3	3	2	3	2	2	3	3	3
98	3	3	2	3	1	3	3	4	3	3	2	3	2	3	3	3	3
99	3	3	3	4	1	1	2	3	2	3	3	4	2	3	3	3	3
100	4	3	3	3	0	2	2	3	3	3	3	3	2	3	3	4	4
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156	10	9	10	8	6	7	9	12	14	13	8	8	8	8	8	10	10
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## 2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

<b>Test date</b>	2018-8-31	<b>Test Ambient:</b>	25.2 ° C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	AST-CLW07-080WBCA1-a57K		

### Electrical Measurement in Lithonia THD 400S A15:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC180802	120.0	60	0.676	80.41	0.9914	6.38
4E-A2	277.0	60	0.321	78.63	0.8843	23.59
<b>DLC Pass Criteria</b>					<b>&gt;= 0.9(-3%)</b>	<b>&lt;= 20(+5)</b>

### Chromaticity Measurement - Sphere-Spectroradiometer Method in Lithonia THD 400S A15:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	83	R9	14
Frequency (Hz)	60	R2	88	R10	71
CCT (K)	5934	R3	91	R11	84
Duv	0.00149	R4	85	R12	61
Chromaticity (x, y)	x=0.3232 y=0.3357	R5	84	R13	84
Chromaticity (u', v')	u(u')=0.2026 v'(v')=0.4734	R6	83	R14	95
Color Rendering Index (CRI)	84.0	R7	88	R15	79
R9	14	R8	72	--	--

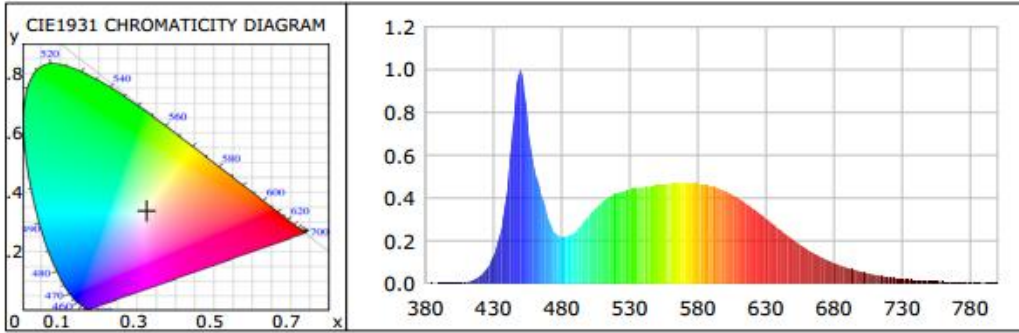
### Photometric Measurement – Sphere-Spectroradiometer Method in Lithonia THD 400S A15:

Parameter	Result		DLC V4.3 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	10081.00	9953.77	>=10000(-10%)
Luminous Efficacy (lm/W)	125.37	126.59	>= 100(-3%)
Most worst Luminous/Highest Watts	123.79		



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**Spectral Power Distribution & Chromaticity Diagram**





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**Calculated Efficacy Data for family models (3500K, 4000K and 5000K):**

Model Number	Luminous Flux (lm)	Power (W)	Efficacy (lm/W)
AST-CLW07-080WBCA1-a30K	9569.2	80.78	118.46
AST-CLW07-080WBCA1-a35K	9671.56	80.60	120.00
AST-CLW07-080WBCA1-a40K	9773.92	80.60	121.27
AST-CLW07-080WBCA1-a50K	9876.28	80.60	122.54
AST-CLW07-080WBCA1-a57K	10081	80.41	125.37





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### 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 \*\*\*\*\*