

## LM-79-08 Test Report

For

### Beyond LED Technology

(Brand Name: Beyond)

1939 Parker Court, Stone Mountain, GA 30087

### Replacement Lamps for Outdoor Pole/Arm-Mounted Area and Roadway Luminaires (UL Type B)

Model name(s): BLT-CLH01B-115WJ3A1-E57K

Remark: a= the lamp base type, the “a” represent the lamp base type, can be “E” for E39, “EX” for EX39.

cK= represents CCT, can be two digital.

Representative (Tested) Model:  
AST-CLH01B-115WB3A1-a30K  
AST-CLH01B-115WB3A1-a65K

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

Test & Report By:



Engineer: Winnie Wu

Date:2022-09-23

Review By:



Manager: Jason Luo

### 1.1 Product Information:

Organization Name	Beyond LED Technology	
Brand Name	Beyond LED Technology	
Model Number	BLT-CLH01B-115WJ3A1-E57K	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Replacement Lamps for Outdoor Pole/Arm-Mounted Area and Roadway Luminaires (UL Type B)	
Rated Voltage / Frequency	120-277Vac, 50/60 Hz	
Nominal Power	115W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K,3500K,4000K,4500K,5000K,5700K,6500 K	
LED Manufacturer	Lumileds Holding B.V.	
LED Model	L128-XX80RC35003P1	
Sample Number	BLC2209016E-G1(3000K),G2(6500K)	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s
<b>Photo</b>		
		

## 1.2 Test Specifications:

Date of Receipt	2022-09-13
Date of Test	2022-09-15
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

### 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  $1^{\circ}$  vertical intervals and  $22.5^{\circ}$  horizontal intervals. Goniophotometer far field detector  $f1'=1.42\%$ , Test distance: 14.14m

### 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.

Self-absorption:

AST-CLH01B-115WB3A1-a30K:1.0367

AST-CLH01B-115WB3A1-a65K:1.0384

### 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	2022-09-15	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	AST-CLH01B-115WB3A1-a30K		

### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC220901	120.0	60	1.025	119.95	0.975	19.46
6E-G1	277.0	60	0.456	120.03	0.951	10.46
DLC Pass Criteria					$\geq 0.9(-3\%)$	$\leq 20(+5)$

### Chromaticity Measurement - Sphere-Spectroradiometer Method in QSSI

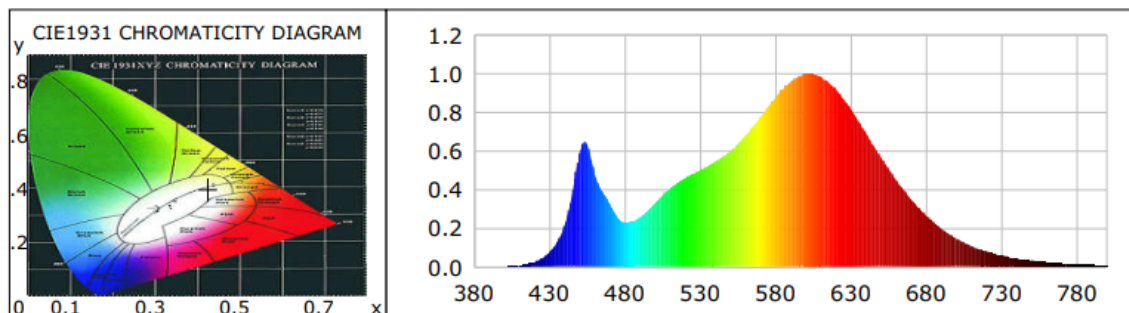
#### FL70F:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	82	R9	9
Frequency (Hz)	60	R2	93	R10	84
CCT (K)	3085	R3	94	R11	80
Duv	-0.0032	R4	80	R12	74
Chromaticity (x, y)	x=0.4266 y=0.3925	R5	83	R13	85
Chromaticity (u', v')	u(u')=0.2489 v'=0.5152	R6	92	R14	98
Color Rendering Index (CRI)	83	R7	80	R15	75
R9	9	R8	59	--	--
Rf	84	--	--	--	--
Rg	96	--	--	--	--
Rcs,h1(%)	-11	--	--	--	--

### Photometric Measurement – Goniophotometer Method in QSSI FL70F:

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	12681.2	12612.8	>=1000(-10%)
Luminous Efficacy (lm/W)	105.72	105.08	Standard: >= 105(-3%)
Most worst Luminous/Highest	105.08		
Zonal lumens in the 0-90° (%)	100	--	>=100(-1%)
Zonal lumens in the 80-90 °zone (%)	0.1		<=10(+3)
Beam Angle ( °)	109.6	--	--
Center Beam Candle Power (cd)	3688	--	--

## Spectral Power Distribution & Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0003	0.0941	535	0.4805	152.4607	690	0.3472	110.1719
385	0.0007	0.2081	540	0.4991	158.3818	695	0.3039	96.4476
390	0.0003	0.0994	545	0.5207	165.2197	700	0.2644	83.8958
395	0.0004	0.1281	550	0.5458	173.2023	705	0.2298	72.9251
400	0.0009	0.2947	555	0.5691	180.5726	710	0.1988	63.0939
405	0.0025	0.8018	560	0.6009	190.6851	715	0.1709	54.2331
410	0.0058	1.8306	565	0.6374	202.2492	720	0.1465	46.4798
415	0.0116	3.6710	570	0.6806	215.9714	725	0.1253	39.7739
420	0.0236	7.4872	575	0.7261	230.4015	730	0.1075	34.0971
425	0.0423	13.4230	580	0.7745	245.7619	735	0.0920	29.1843
430	0.0737	23.3972	585	0.8283	262.8246	740	0.0787	24.9616
435	0.1253	39.7471	590	0.8781	278.6343	745	0.0670	21.2444
440	0.2098	66.5882	595	0.9201	291.9584	750	0.0581	18.4405
445	0.3679	116.7349	600	0.9575	303.8309	755	0.0490	15.5454
450	0.5887	186.8049	605	0.9854	312.6770	760	0.0426	13.5271
455	0.6379	202.4104	610	1.0000	317.3163	765	0.0368	11.6620
460	0.4862	154.2775	615	0.9983	316.7819	770	0.0310	9.8273
465	0.3919	124.3465	620	0.9862	312.9344	775	0.0261	8.2882
470	0.3272	103.8341	625	0.9599	304.6008	780	0.0234	7.4155
475	0.2591	82.2152	630	0.9195	291.7826	785	0.0189	5.9934
480	0.2289	72.6256	635	0.8707	276.2794	790	0.0164	5.2013
485	0.2351	74.5855	640	0.8166	259.1316	795	0.0142	4.5036
490	0.2548	80.8531	645	0.7571	240.2370	800	0.0120	3.8006
495	0.2885	91.5352	650	0.6935	220.0662			
500	0.3301	104.7470	655	0.6286	199.4714			
505	0.3688	117.0144	660	0.5682	180.3059			
510	0.4059	128.8021	665	0.5062	160.6322			
515	0.4352	138.1108	670	0.4493	142.5769			
520	0.4581	145.3581	675	0.3961	125.6940			
525	0.4805	152.4607	680	0.3472	110.1719			
530	0.4991	158.3818	685	0.3039	96.4476			

**TM30**

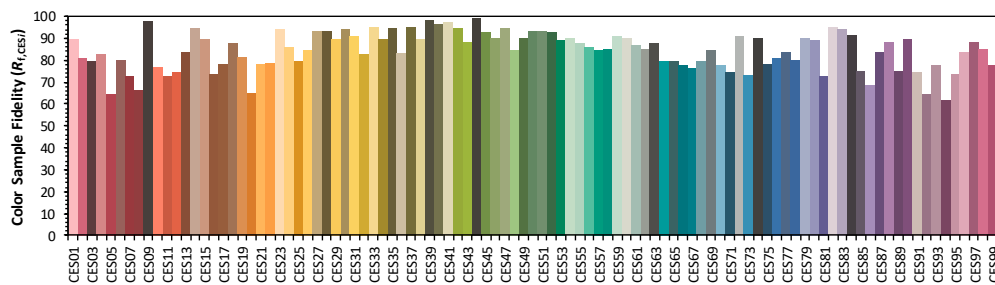
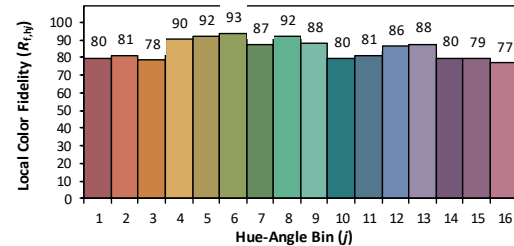
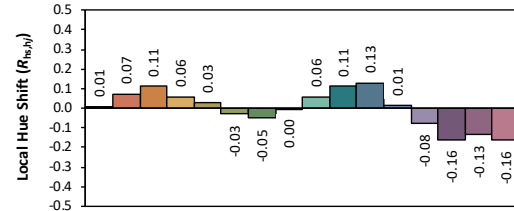
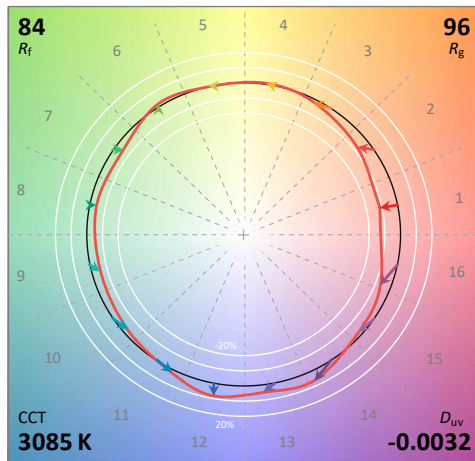
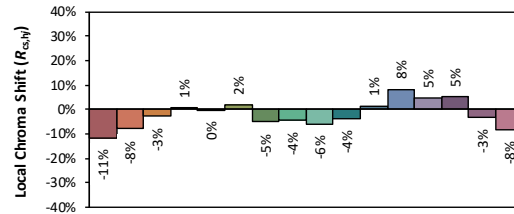
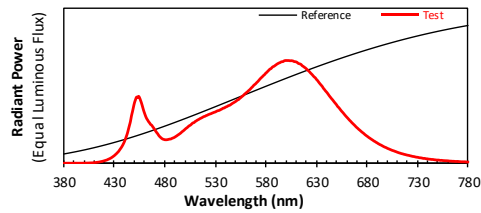
**ANSI/IES TM-30-18 Color Rendition Report**

**Source:** L128-XX80RC35003P1

**Manufacturer:** ASmart LIGHT CO., LTD

**Date:** 2022/9/15

**Model:** AST-CLH01B-115WB3A1-a30K



**Notes:** This is a recommended method for displaying ANSI/IES TM-30-18 information.

$x$  0.4266  
 $y$  0.3925  
 $u'$  0.2489  
 $v'$  0.5152

CIE 13.3-1995  
(CRI)

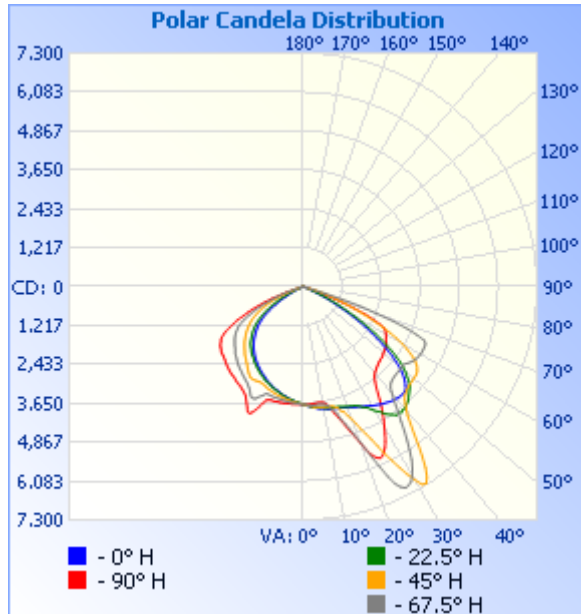
$R_a$  83  
 $R_9$  9

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.

## Zonal Lumen Tabulation

Zonal Lumen Summary				Lumens Per Zone					
Zone	Lumens	% Lamp	% Luminaire	Zone	Lumens	% Total	Zone	Lumens	% Total
0-30	3,384.9	26.7%	26.7%	0-10	351.0	2.8%	90-100	0	0%
0-40	5,860.4	46.2%	46.2%	10-20	1,068.4	8.4%	100-110	0	0%
0-60	10,992.7	86.7%	86.7%	20-30	1,965.5	15.5%	110-120	0	0%
60-90	1,687.1	13.3%	13.3%	30-40	2,475.5	19.5%	120-130	0	0%
70-100	195.3	1.5%	1.5%	40-50	2,635.4	20.8%	130-140	0	0%
90-120	0	0%	0%	50-60	2,496.9	19.7%	140-150	0	0%
0-90	12,679.8	100%	100%	60-70	1,491.8	11.8%	150-160	0	0%
90-180	0	0%	0%	70-80	179.3	1.4%	160-170	0	0%
0-180	12,679.8	100%	100%	80-90	16.0	0.1%	170-180	0	0%

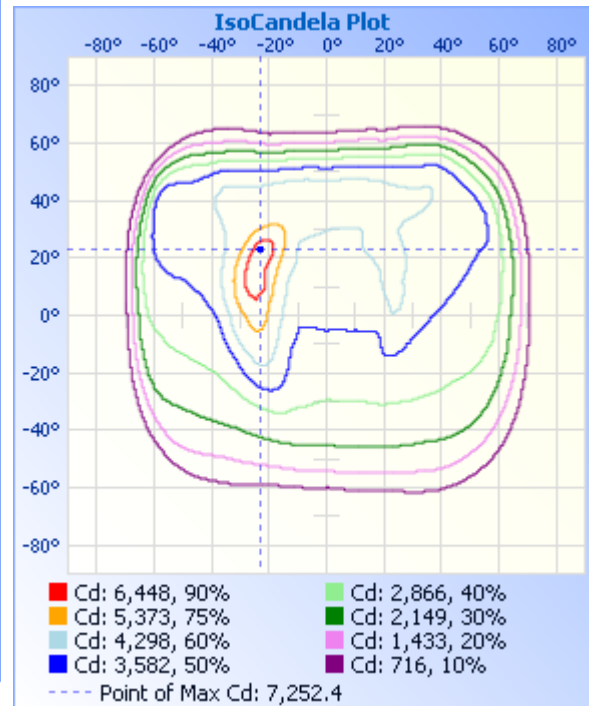
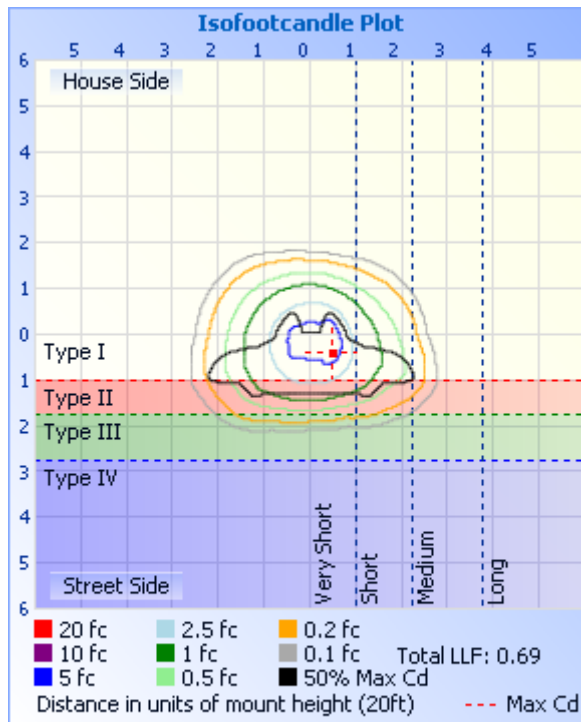
## Photometric Data



**Illuminance at a Distance**

Center Beam fc	Beam Width	Beam Width
12.76 fc	26.7 ft	51.2 ft
3.19 fc	53.4 ft	102.3 ft
1.42 fc	80.0 ft	153.5 ft
0.80 fc	106.7 ft	204.6 ft
0.51 fc	133.4 ft	255.8 ft
0.35 fc	160.1 ft	306.9 ft

■ Vert. Spread: 76.2°  
■ Horiz. Spread: 112.8°



**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	3688	3688	3688	3688	3688	3688	3688	3688	3688	3688	3688	3688	3688	3688	3688	3688	3688
1	3709	3709	3706	3697	3689	3677	3675	3670	3674	3658	3669	3678	3682	3701	3704	3707	3709
2	3728	3716	3713	3698	3684	3664	3655	3648	3647	3632	3648	3665	3681	3702	3714	3720	3728
3	3748	3743	3735	3710	3686	3660	3639	3628	3623	3612	3637	3654	3685	3708	3728	3738	3748
4	3771	3764	3751	3726	3683	3638	3624	3606	3600	3601	3627	3650	3690	3724	3748	3746	3771
5	3783	3777	3774	3724	3669	3621	3601	3582	3580	3575	3615	3642	3686	3735	3767	3767	3783
6	3812	3789	3777	3725	3663	3603	3574	3560	3561	3554	3599	3639	3686	3745	3772	3787	3812
7	3839	3813	3786	3721	3661	3603	3558	3539	3533	3539	3570	3638	3691	3758	3786	3809	3839
8	3848	3830	3802	3726	3663	3589	3543	3516	3504	3521	3561	3618	3684	3756	3802	3818	3848
9	3861	3833	3807	3732	3670	3580	3520	3490	3477	3490	3550	3614	3691	3756	3819	3833	3861
10	3875	3856	3816	3745	3683	3568	3507	3468	3456	3469	3537	3602	3689	3785	3837	3848	3875
11	3893	3872	3821	3767	3731	3582	3485	3442	3430	3438	3513	3593	3697	3795	3845	3860	3893
12	3911	3888	3831	3810	3803	3632	3472	3407	3399	3421	3502	3589	3685	3791	3847	3860	3911
13	3906	3888	3843	3932	3957	3663	3447	3377	3372	3383	3494	3578	3694	3808	3868	3867	3906
14	3915	3892	3852	3988	4092	3756	3439	3358	3339	3359	3467	3578	3694	3796	3880	3882	3915
15	3932	3901	3912	4115	4230	3873	3455	3332	3317	3339	3456	3571	3687	3799	3884	3885	3932
16	3948	3911	3940	4329	4377	3938	3469	3301	3289	3310	3427	3560	3686	3809	3895	3895	3948
17	3965	3925	4070	4479	4566	4055	3500	3272	3265	3288	3409	3545	3701	3804	3889	3908	3965
18	3971	3952	4107	4662	4752	4202	3507	3248	3230	3258	3391	3538	3737	3832	3891	3928	3971
19	3997	3971	4268	4896	4952	4348	3588	3222	3191	3226	3374	3535	3845	3909	3901	3957	3997
20	4015	3985	4393	5142	5177	4475	3607	3196	3167	3198	3353	3601	3991	4044	3915	3972	4015
21	4042	4009	4585	5454	5441	4595	3673	3166	3140	3178	3319	3658	4117	4270	3933	3986	4042
22	4070	4034	4802	5770	5663	4719	3749	3140	3103	3154	3302	3723	4238	4471	3959	4006	4070
23	4091	4050	5001	6121	5799	4872	3786	3117	3061	3123	3284	3800	4302	4699	4000	4040	4091
24	4115	4079	5210	6506	5873	4971	3829	3076	3031	3080	3274	3828	4272	4818	4160	4057	4115
25	4139	4118	5505	6807	5849	4960	3903	3063	3001	3059	3273	3819	4142	4820	4343	4078	4139
26	4177	4184	5820	6979	5762	4914	3948	3048	2967	3032	3279	3757	4032	4714	4587	4100	4177
27	4204	4238	6105	7059	5631	4815	4012	3004	2935	2992	3293	3662	3930	4531	4833	4130	4204
28	4228	4289	6411	7029	5471	4670	4033	3013	2895	2965	3297	3591	3842	4367	5044	4158	4228

**Laboratory: UTEST TECHNICAL LABORATORY CO.LTD A2LA Certificate# 4810.01**

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29	4259	4385	6709	6959	5268	4524	4028	2986	2865	2932	3291	3538	3791	4212	5146	4182	4259
30	4292	4478	6975	6800	5072	4345	3978	2947	2827	2895	3282	3481	3753	4119	5156	4206	4292
31	4328	4547	7223	6623	4887	4186	3911	2968	2793	2859	3240	3449	3720	4053	5040	4238	4328
32	4357	4645	7252	6398	4692	4028	3784	2912	2747	2828	3193	3419	3680	4008	4865	4265	4357
33	4392	4753	7103	6100	4490	3873	3658	2923	2706	2799	3146	3379	3659	3971	4702	4311	4392
34	4423	4819	6831	5809	4283	3722	3540	2868	2669	2756	3092	3351	3643	3940	4548	4342	4423
35	4446	4884	6487	5505	4066	3575	3406	2857	2634	2710	3044	3313	3620	3937	4411	4370	4446
36	4470	4968	6123	5202	3884	3423	3270	2798	2586	2687	2983	3284	3596	3921	4333	4404	4470
37	4504	4937	5750	4943	3740	3273	3124	2781	2541	2651	2942	3251	3564	3907	4287	4450	4504
38	4522	4990	5448	4693	3620	3165	3007	2718	2499	2615	2894	3230	3549	3903	4273	4476	4522
39	4541	4948	5174	4476	3547	3081	2899	2663	2442	2575	2861	3195	3536	3893	4263	4539	4541
40	4560	4962	5003	4289	3490	3012	2798	2605	2398	2527	2819	3164	3515	3876	4264	4582	4560
41	4572	4902	4870	4156	3460	2952	2706	2531	2351	2487	2778	3125	3500	3874	4261	4617	4572
42	4574	4871	4737	4091	3421	2901	2621	2466	2298	2447	2725	3091	3466	3868	4259	4627	4574
43	4572	4816	4661	4045	3398	2864	2526	2389	2241	2405	2678	3052	3447	3857	4274	4627	4572
44	4559	4750	4608	4025	3369	2808	2451	2316	2186	2348	2635	3019	3426	3862	4293	4630	4559
45	4526	4685	4568	4001	3346	2763	2380	2232	2126	2291	2587	2994	3396	3849	4308	4596	4526
46	4439	4616	4545	3995	3328	2724	2310	2147	2056	2233	2543	2946	3376	3842	4326	4580	4439
47	4346	4562	4522	3989	3311	2669	2244	2070	2001	2175	2497	2901	3344	3842	4346	4548	4346
48	4234	4458	4507	3982	3310	2630	2179	1981	1933	2122	2444	2861	3324	3828	4351	4490	4234
49	4081	4306	4505	3981	3290	2578	2117	1899	1864	2053	2397	2825	3296	3821	4360	4389	4081
50	3938	4179	4490	3970	3252	2522	2045	1826	1785	1984	2345	2788	3292	3799	4377	4288	3938
51	3733	4030	4485	3967	3246	2465	1983	1735	1706	1917	2291	2747	3280	3798	4387	4171	3733
52	3542	3864	4475	3972	3228	2421	1924	1656	1617	1844	2232	2712	3247	3783	4402	4028	3542
53	3304	3644	4451	4001	3215	2376	1858	1576	1520	1748	2154	2675	3212	3769	4381	3861	3304
54	3072	3419	4400	4062	3198	2335	1785	1472	1413	1641	2112	2625	3191	3761	4358	3660	3072
55	2813	3175	4340	4107	3177	2286	1711	1365	1299	1561	2042	2577	3157	3762	4345	3474	2813
56	2572	2932	4237	4140	3136	2244	1623	1272	1177	1459	1983	2526	3096	3755	4275	3252	2572
57	2324	2680	4115	4179	3079	2198	1543	1152	1046	1341	1902	2454	3061	3765	4202	3015	2324
58	2069	2407	3957	4203	3045	2154	1454	1017	911	1227	1824	2394	3003	3799	4125	2791	2069
59	1817	2138	3776	4218	3020	2090	1375	896	781	1121	1743	2328	2888	3859	4010	2543	1817

60	1572	1883	3581	4226	2984	2025	1277	763	655	1006	1651	2184	2789	3903	3905	2262	1572
61	1318	1610	3334	4240	2955	1965	1177	639	540	881	1556	2091	2618	3731	3722	1998	1318
62	1102	1381	3067	4233	2896	1884	1084	527	449	754	1449	1917	2451	3658	3552	1761	1102
63	894	1157	2799	4230	2829	1792	974	444	373	627	1335	1814	2311	3429	3349	1537	894
64	706	957	2487	4232	2638	1684	876	368	308	518	1206	1662	2077	3308	3109	1278	706
65	520	767	2230	4212	2386	1505	755	305	246	414	1074	1502	1893	3047	2867	1054	520
66	376	600	1955	4149	2106	1297	651	245	197	335	939	1306	1725	2784	2575	837	376
67	256	447	1668	3857	1698	1089	549	198	148	260	811	1157	1496	2564	2234	641	256
68	152	317	1432	3515	1346	853	463	160	111	196	659	999	1284	2248	1851	462	152
69	93	224	1203	3013	1034	648	370	116	77	137	523	832	1025	1960	1492	299	93
70	56	154	991	2418	660	453	281	87	51	99	406	662	785	1650	1203	187	56
71	38	101	813	1921	300	291	206	64	26	69	313	510	552	1351	909	97	38
72	38	73	608	1260	206	163	144	49	32	44	215	354	343	1014	655	63	38
73	37	53	414	665	187	125	86	37	27	40	141	213	178	706	468	36	37
74	25	48	248	168	156	108	57	25	31	36	78	94	150	393	310	36	25
75	25	37	138	115	129	89	36	29	29	37	51	67	123	113	188	27	25
76	25	32	62	100	108	73	37	24	27	25	38	60	94	75	107	32	25
77	22	27	43	83	84	66	34	25	23	25	31	46	73	65	65	21	22
78	20	31	43	64	65	49	29	22	22	25	28	37	54	58	38	28	20
79	16	27	37	47	48	43	16	20	21	25	25	30	41	46	27	23	16
80	16	21	28	45	37	36	24	19	18	23	22	24	32	31	26	19	16
81	16	18	33	35	31	28	28	16	15	21	19	20	27	34	19	17	16
82	15	20	24	25	24	27	19	14	13	15	22	17	23	29	21	15	15
83	10	17	27	32	19	21	17	9	11	18	19	15	20	24	23	14	10
84	8	15	18	24	20	21	17	8	9	15	18	15	18	21	13	15	8
85	10	15	18	20	15	18	11	11	10	15	14	14	18	15	15	0	10
86	0	15	17	17	14	13	11	11	10	11	13	8	12	16	12	11	0
87	0	12	11	17	16	13	9	0	9	12	13	15	14	16	11	12	0
88	11	12	9	10	15	16	12	0	11	11	0	11	15	11	11	10	11
89	8	10	0	14	11	14	0	0	0	9	8	11	11	14	10	10	8
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
94	0	0	0	0	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
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107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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111	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
112	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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119	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
121	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

122	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
124	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
128	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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138	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
146	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
149	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

153	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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163	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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168	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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171	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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179	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

## BUG

### Lum. Classification System (LCS)

LCS Zone	Lumens	%Lamp	%Lum
FL (0-30)	1855.6	14.6	14.6
FM (30-60)	4731.0	37.3	37.3
FH (60-80)	1140.6	9.0	9.0
FVH(80-90)	8.5	0.1	0.1
BL (0-30)	1529.0	12.1	12.1
BM (30-60)	2878.3	22.7	22.7
BH (60-80)	530.7	4.2	4.2
BVH(80-90)	7.5	0.1	0.1
UL (90-100)	0.0	0.0	0.0
UH (100-180)	0.0	0.0	0.0
Total	12681.2	100.1	100.0
<b>BUG Rating</b>	<b>B3-U0-G2</b>		

## 2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2022-09-15	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	AST-CLH01B-115WB3A1-a65K		

### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC220901 6E-G2	120.0	60	1.018	119.14	0.975	19.44
	277.0	60	0.453	119.29	0.95	10.38
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

### Chromaticity Measurement - Sphere-Spectroradiometer Method in QSSI

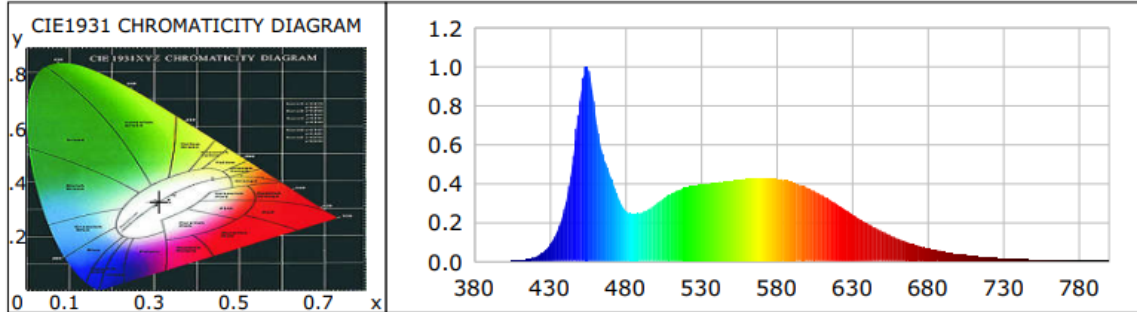
#### FL70F:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	82	R9	4
Frequency (Hz)	60	R2	91	R10	77
CCT (K)	6656	R3	93	R11	79
Duv	0.0035	R4	80	R12	56
Chromaticity (x, y)	x=0.3102 y=0.3271	R5	81	R13	85
Chromaticity (u', v')	u(u')=0.1968 v'=0.4669	R6	85	R14	97
Color Rendering Index (CRI)	83	R7	86	R15	77
R9	4	R8	67	--	--
Rf	82	--	--	--	--
Rg	91	--	--	--	--
Rcs,h1(%)	-14	--	--	--	--

### Photometric Measurement – Sphere-Spectroradiometer Method in QSSI FL70F:

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	13431.8	13323.5	>= 1000(-10%)
Luminous Efficacy (lm/W)	112.74	111.69	Standard: >= 105(-3%)
Most worst Luminous/Highest	111.69		

## Spectral Power Distribution & Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0005	0.2903	535	0.3886	235.3631	690	0.0889	53.8190
385	0.0003	0.1861	540	0.3933	238.1710	695	0.0764	46.2677
390	0.0008	0.4570	545	0.3996	241.9981	700	0.0662	40.1191
395	0.0008	0.5059	550	0.4053	245.4516	705	0.0573	34.7248
400	0.0007	0.4494	555	0.4078	246.9935	710	0.0493	29.8731
405	0.0019	1.1556	560	0.4121	249.5890	715	0.0421	25.4962
410	0.0038	2.2954	565	0.4169	252.4631	720	0.0360	21.8122
415	0.0094	5.6630	570	0.4230	256.1802	725	0.0312	18.9184
420	0.0208	12.6207	575	0.4246	257.1522	730	0.0262	15.8852
425	0.0424	25.6728	580	0.4260	257.9740	735	0.0222	13.4661
430	0.0816	49.4093	585	0.4261	258.0602	740	0.0197	11.9591
435	0.1534	92.9302	590	0.4238	256.6561	745	0.0167	10.0958
440	0.2745	166.2168	595	0.4165	252.2350	750	0.0146	8.8704
445	0.4909	297.2977	600	0.4078	246.9778	755	0.0117	7.1062
450	0.8294	502.3170	605	0.3952	239.3602	760	0.0108	6.5569
455	0.9989	604.9565	610	0.3807	230.5341	765	0.0085	5.1636
460	0.7732	468.2283	615	0.3610	218.6466	770	0.0074	4.4520
465	0.5525	334.5752	620	0.3392	205.3936	775	0.0072	4.3545
470	0.4422	267.8070	625	0.3174	192.1921	780	0.0053	3.2342
475	0.3356	203.2203	630	0.2933	177.6009	785	0.0040	2.4525
480	0.2614	158.3203	635	0.2674	161.9233	790	0.0037	2.2299
485	0.2446	148.1528	640	0.2421	146.6458	795	0.0045	2.7334
490	0.2487	150.5912	645	0.2171	131.5026	800	0.0019	1.1254
495	0.2655	160.7618	650	0.1946	117.8236			
500	0.2932	177.5796	655	0.1723	104.3475			
505	0.3205	194.0775	660	0.1529	92.5985			
510	0.3474	210.3669	665	0.1343	81.3504			
515	0.3649	220.9989	670	0.1173	71.0199			
520	0.3777	228.7657	675	0.1020	61.8020			
525	0.3886	235.3631	680	0.0889	53.8190			
530	0.3933	238.1710	685	0.0764	46.2677			

**TM-30**

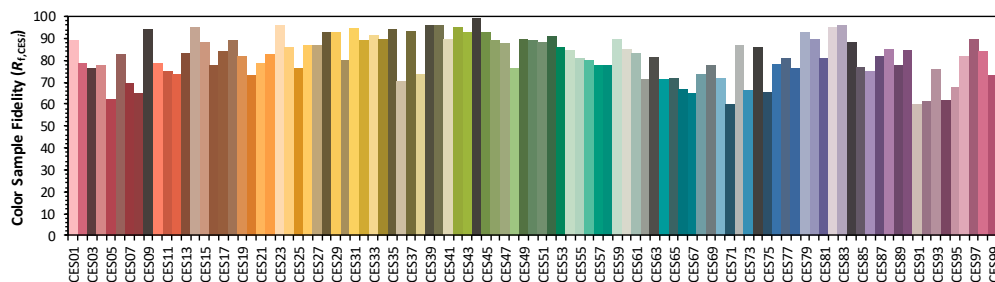
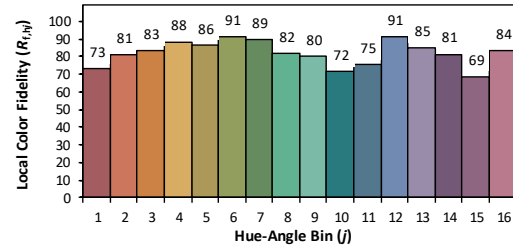
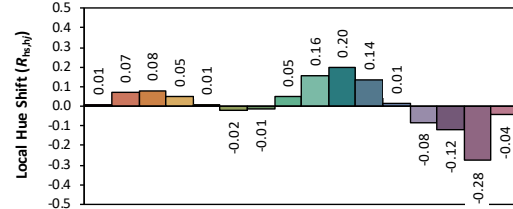
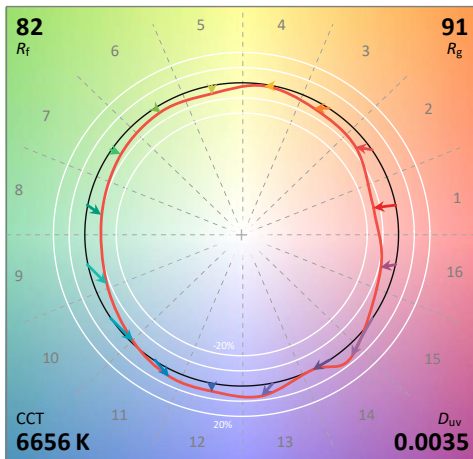
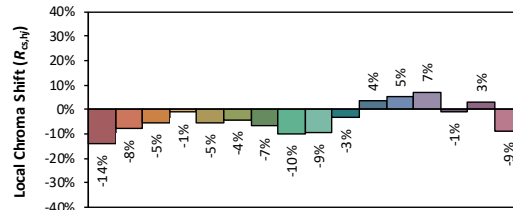
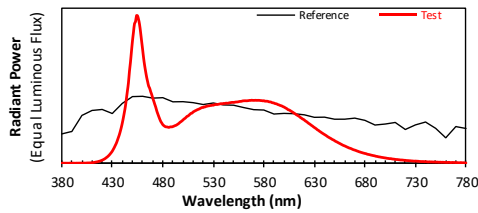
**ANSI/IES TM-30-18 Color Rendition Report**

**Source:** L128-XX80RC35003P1

**Manufacturer:** ASMAIT LIGHT CO., LTD

**Date:** 2022/9/15

**Model:** AST-CLH01B-115WB3A1-a65K



**Notes:** This is a recommended method for displaying ANSI/IES TM-30-18 information.

$x$  0.3102  
 $y$  0.3271  
 $u'$  0.1968  
 $v'$  0.4669

CIE 13.3-1995  
(CRI)

$R_a$  83  
 $R_9$  4

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.

**Calculated Efficacy Data for family models:**

Model Number	Luminous Flux (lm)	Power (W)	Efficacy (lm/W)
AST-CLH01B-115WB3A1-a30K	12681.2	119.95	105.72
AST-CLH01B-115WB3A1-a35K	12806.3	119.55	107.13
AST-CLH01B-115WB3A1-a40K	12931.4	119.55	108.17
AST-CLH01B-115WB3A1-a45K	13056.5	119.55	109.22
AST-CLH01B-115WB3A1-a50K	13181.6	119.55	110.26
AST-CLH01B-115WB3A1-a57K	13306.7	119.55	111.31
AST-CLH01B-115WB3A1-a65K	13431.8	119.14	112.74

\*1: This value is calculated and the calculation formula is as below:

$$\begin{aligned}
 12806.3 &= (13431.8 - 12681.2) / 6 + 12681.2 \\
 12931.4 &= (13431.8 - 12681.2) / 6 + 12806.3 \\
 13056.5 &= (13431.8 - 12681.2) / 6 + 12931.4 \\
 13181.6 &= (13431.8 - 12681.2) / 6 + 13056.5 \\
 13306.7 &= (13431.8 - 12681.2) / 6 + 13181.6
 \end{aligned}$$

\*2: This value is calculated and the calculation formula is as below:

$$119.55 = (119.14 + 119.95) / 2$$

\*3: This value is calculated and the calculation formula is as below:

$$\begin{aligned}
 107.13 &= 12806.3 / 119.55 \\
 108.17 &= 12931.4 / 119.55 \\
 109.22 &= 13056.5 / 119.55 \\
 110.26 &= 13181.6 / 119.55 \\
 111.31 &= 13306.7 / 119.55
 \end{aligned}$$

### 3. Test Equipment

Equipment Name	Model No.	Serial No.	Calibration Date
Goniophotometric System	GPM-3000	DYHXF120001	2022-01-18
AC Power Source	CHP-500C	DYBWD010159	2022-01-25
Total Luminous Flux Standard Lamp	24V/150W	DYJYR040040	2022-01-25
Digital Power Meter	WT500	DYDWQ20010	2022-01-25
Integral Sphere (2M)	2M	DYJCE120067	2022-01-18
Digital Power Meter	WT500	DYDWQ20006	2022-01-25
Optical Color and Electrical Measurement System	CMS-3000S	DYJCE120067	2022-01-18
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 \*\*\*\*\*