LM-79-08 Test Report

For

Beyond LED Technology

(Brand Name: Beyond)

1939 Parker Court, Stone Mountain, GA 30087

Outdoor Pole/Arm-Mounted Area and Roadway Luminaires

Architectural Flood and Spot Luminaires

Model name(s): BLT-FL21-200WBH6SA1-BR3NP10SPWR50

Remark: "a" can be any two letters for Lamp colors; "b" can be "3RP", "3NP", "5RP", "5NP", "7RP", "7NP" for AC photocontrol provided, "P" for DC photocontrol provided or blank for no photocontrol provided; "c" can be "10SP", "20SP" or blank for Surge protector type provided or not; "d" can be "AM", "YM", "FM" for Bracket type; "W" for wattage adjustable; "f" can be "DM", "DP" or blank for Microware Motion Sensor, PIR Motion Sensor provided or not; "R" for Reflector provided ; "h" can be "30"."35""40""45""50""57" for 3000K,3500K,4000K,4500K,5000K,5700K,or "30/40/50"for 3000K/4000K/5000K.

Representative (Tested) Model:
AST-FL21-200WBH6SA1-abcdWfR30
AST-FL21-200WBH6SA1-abcdWfR57

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

Test & Report By:

Winny Wu

Engineer: Winny Wu

Date: 2023-09-15

Review By:

Jason Luo

Manager: Jason Luo

1.1 Product Information:

Organization Name	Beyond LED Technology	
Brand Name	Beyond LED Technology	
Model Number	BLT-FL21-200WBH6SA1-BR3NP10SPWR50	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Outdoor Pole/Arm-Mounted Area and Roadway Luminaires Architectural Flood and Spot Luminaires	
Rated Voltage / Frequency	120-277Vac, 50/60 Hz	
Nominal Power	200W(Power adjustable)	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K,3500K,4000K,4500K,5000K,5700K	
LED Manufacturer	Lumileds Holding B.V.	
LED Model	L128-3080RC35003P1 L128-5780RC35003P1	
Sample Number	UTC2309010E-AA1-2	
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	2023-09-09
Date of Test	2023-09-11
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.
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 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.
Self-absorption:
AST-FL21-200WBH6SA1-abcdWfR30:1.022
AST-FL21-200WBH6SA1-abcdWfR57:1.024

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	2023-09-11	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	BLT-FL21-200WBH6SA1-BR3NP10SPWR50		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC230901 0E-AA 1	120.0	60	1.637	196.01	0.998	5.09
	277.0	60	0.734	190.77	0.938	8.38
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

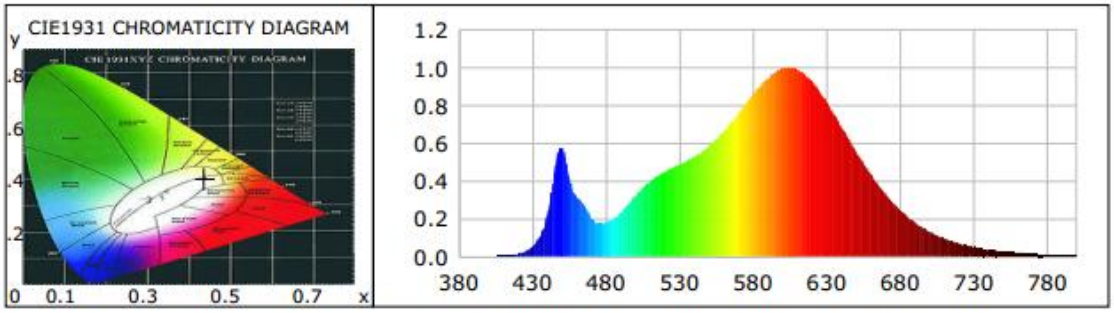
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	2964
Duv	-0.0005
Chromaticity (x, y)	x=0.4388 y=0.4036
Chromaticity (u', v')	u(u')=0.2520 v'=0.5215
Color Rendering Index (CRI)	82
R9	4
Rf	85
Rg	96
Rcs,h1(%)	-12

R1	81	R9	4
R2	91	R10	80
R3	96	R11	80
R4	81	R12	73
R5	82	R13	83
R6	90	R14	98
R7	81	R15	73
R8	57	--	--
--	--	--	--
--	--	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	27296.4	26791.7	>=10000(-10%)
Luminous Efficacy (lm/W)	139.26	140.44	Premium: >= 120(-3%)
Most worst Luminous/Highest	136.69		
Zonal lumens in the 0-90° zone (%)	100	--	Category 1: >=100(-1) Category 2: >=85(-3)
Zonal lumens in the 80-90°zone (%)	0.1	--	<=10(+3)
Beam Angle (°)	81.2	--	--
Center Beam Candle Power (cd)	16788	--	--

Spectral Power Distribution & Chromaticity Diagram

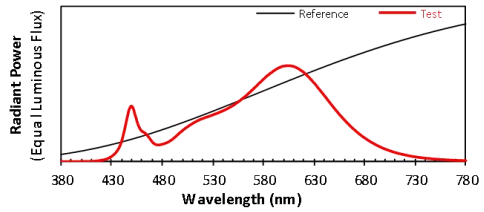


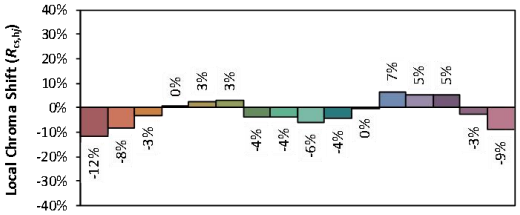
WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0002	0.1696	535	0.4678	394.2280	690	0.3304	278.4355
385	0.0002	0.1708	540	0.4852	408.9337	695	0.2859	240.9354
390	0.0007	0.6231	545	0.5057	426.2236	700	0.2468	207.9680
395	0.0003	0.2368	550	0.5296	446.3035	705	0.2121	178.7774
400	0.0004	0.3360	555	0.5548	467.5731	710	0.1812	152.7425
405	0.0011	0.9171	560	0.5847	492.7360	715	0.1547	130.3531
410	0.0028	2.3283	565	0.6212	523.4835	720	0.1314	110.7693
415	0.0060	5.0838	570	0.6619	557.8570	725	0.1122	94.5348
420	0.0132	11.1103	575	0.7082	596.8759	730	0.0951	80.1734
425	0.0263	22.2019	580	0.7565	637.5429	735	0.0811	68.3723
430	0.0531	44.7598	585	0.8088	681.6357	740	0.0689	58.0391
435	0.1040	87.6564	590	0.8591	724.0452	745	0.0582	49.0267
440	0.2153	181.4168	595	0.9032	761.1994	750	0.0493	41.5594
445	0.4428	373.1377	600	0.9450	796.4381	755	0.0416	35.0233
450	0.5769	486.1642	605	0.9760	822.5120	760	0.0351	29.5599
455	0.4221	355.7140	610	0.9957	839.1270	765	0.0301	25.3675
460	0.3166	266.8343	615	0.9990	841.9215	770	0.0253	21.3328
465	0.2760	232.5852	620	0.9917	835.7717	775	0.0216	18.2060
470	0.2066	174.1102	625	0.9662	814.3129	780	0.0185	15.6126
475	0.1727	145.5080	630	0.9288	782.7858	785	0.0150	12.6795
480	0.1801	151.7922	635	0.8792	740.9891	790	0.0127	10.6639
485	0.1991	167.8309	640	0.8196	690.6971	795	0.0107	8.9939
490	0.2309	194.5594	645	0.7558	636.9484	800	0.0093	7.8593
495	0.2766	233.0686	650	0.6903	581.7330			
500	0.3231	272.2575	655	0.6233	525.3145			
505	0.3617	304.8250	660	0.5568	469.2697			
510	0.3979	335.3043	665	0.4921	414.6886			
515	0.4262	359.1685	670	0.4352	366.7321			
520	0.4482	377.7371	675	0.3791	319.4884			
525	0.4678	394.2280	680	0.3304	278.4355			
530	0.4852	408.9337	685	0.2859	240.9354			

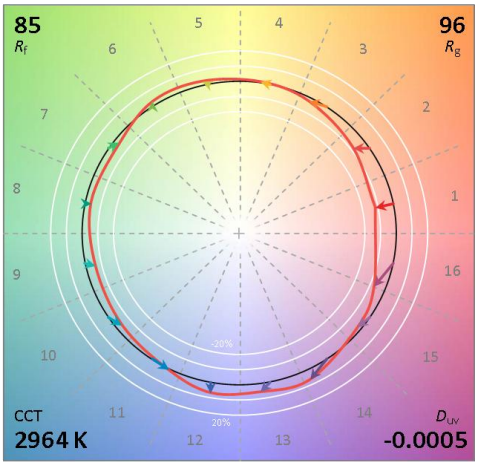
TM30

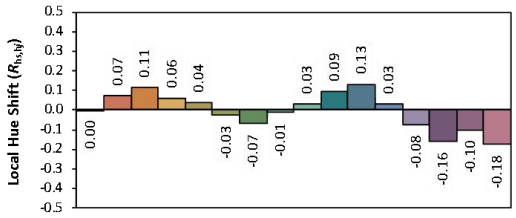
ANSI/IES TM-30-18 Color Rendition Report

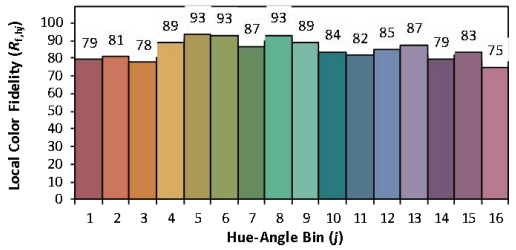
Source:	L128-3080RC35003P1	Manufacturer:	ASMART LIGHT CO., LTD
Date:	2023/9/11	Model:	AST-FL21-200WBH6SA1-abcdWfR30

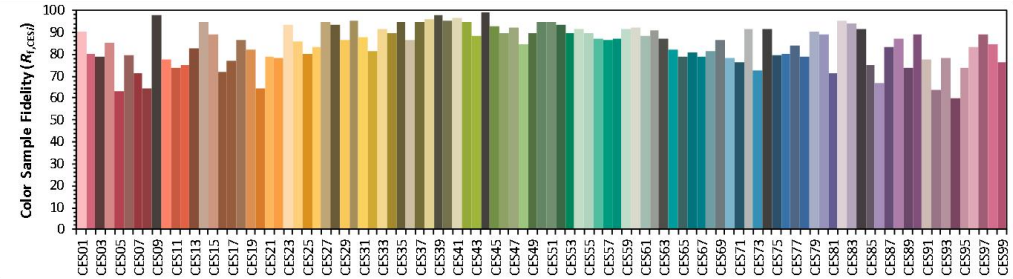












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.4389
y	0.4036
u'	0.2520
v'	0.5215

CIE 13.3-1995 (CRI)

R_a	82
R_9	4

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

Zonal Lumen Tabulation

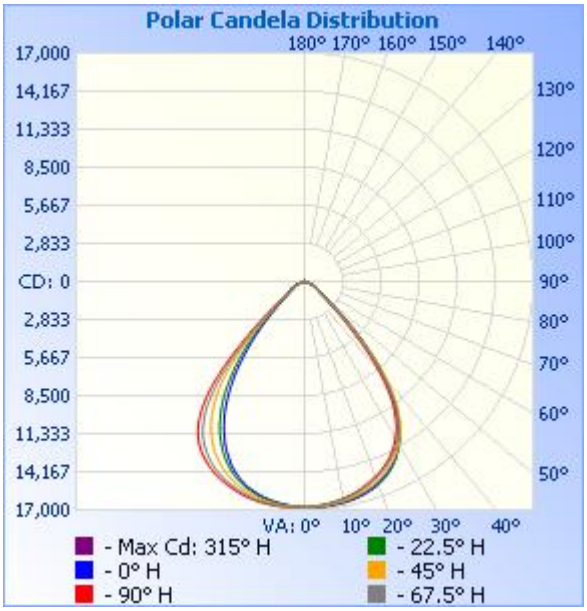
Zonal Lumen Summary

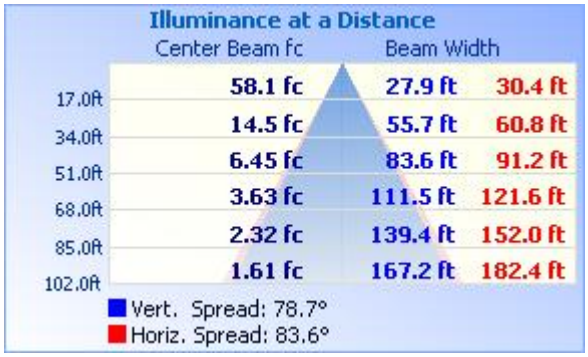
Zone	Lumens	% Lamp	% Luminaire
0-30	13,041.6	47.8%	47.8%
0-40	20,417.9	74.8%	74.8%
0-60	26,062.9	95.5%	95.5%
60-90	1,087.0	4%	4%
70-100	353.6	1.3%	1.3%
90-120	42.2	0.2%	0.2%
0-90	27,149.9	99.5%	99.5%
90-180	142.0	0.5%	0.5%
0-180	27,291.8	100%	100%

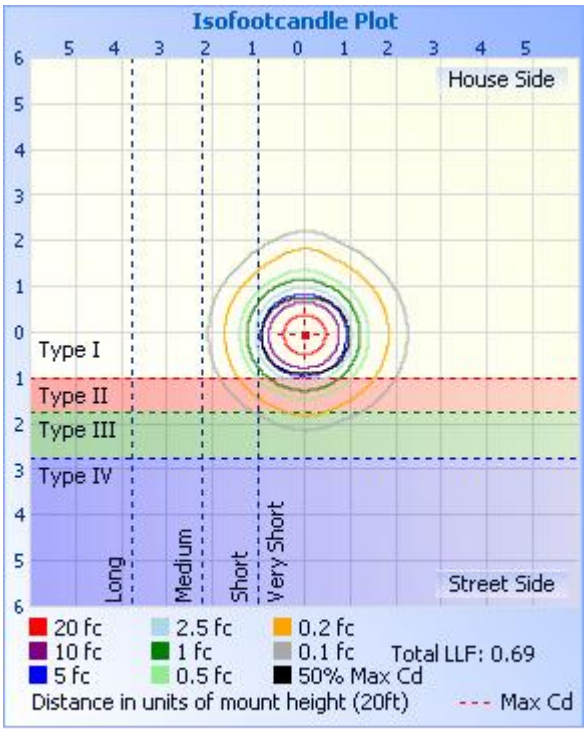
Lumens Per Zone

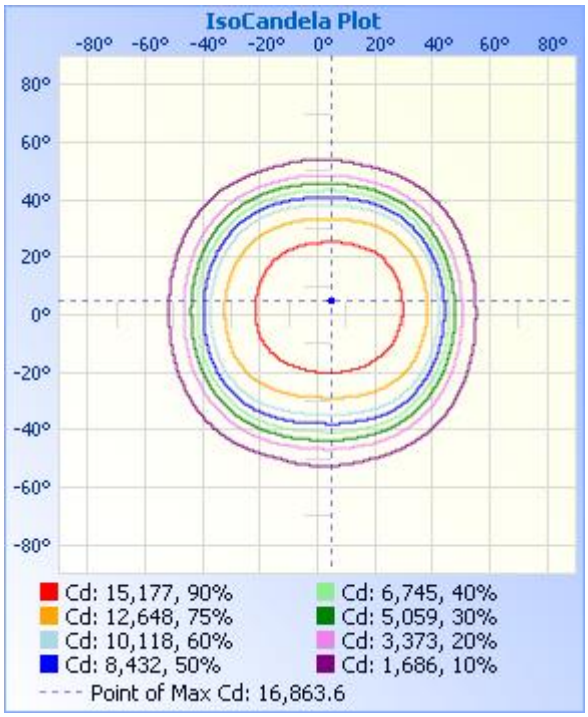
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	1,592.0	5.8%	90-100	14.5	0.1%
10-20	4,584.4	16.8%	100-110	13.9	0.1%
20-30	6,865.2	25.2%	110-120	13.8	0.1%
30-40	7,376.3	27.0%	120-130	15.5	0.1%
40-50	4,280.1	15.7%	130-140	19.6	0.1%
50-60	1,364.9	5.0%	140-150	22.8	0.1%
60-70	747.8	2.7%	150-160	21.4	0.1%
70-80	298.4	1.1%	160-170	15.1	0.1%
80-90	40.8	0.1%	170-180	5.4	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	16788	16788	16788	16788	16788	16788	16788	16788	16788	16788	16788	16788	16788	16788	16788	16788	16788
1	16805	16795	16788	16771	16762	16769	16762	16764	16773	16783	16797	16800	16802	16804	16809	16809	16805
2	16811	16801	16792	16751	16744	16733	16734	16732	16751	16764	16788	16809	16814	16826	16825	16828	16811
3	16815	16794	16767	16723	16716	16708	16691	16699	16723	16744	16779	16807	16822	16841	16838	16845	16815
4	16814	16787	16762	16698	16681	16663	16650	16660	16692	16715	16768	16803	16817	16835	16847	16849	16814
5	16803	16773	16744	16668	16647	16626	16610	16619	16660	16682	16748	16797	16815	16846	16852	16852	16803
6	16791	16760	16713	16631	16610	16572	16561	16569	16611	16654	16725	16783	16823	16846	16858	16850	16791
7	16777	16733	16682	16598	16557	16532	16507	16511	16563	16611	16683	16758	16820	16846	**16864**	16846	16777
8	16761	16706	16647	16546	16510	16481	16439	16451	16504	16560	16650	16747	16815	16836	16861	16833	16761
9	16739	16673	16613	16493	16457	16433	16380	16374	16448	16510	16626	16727	16791	16817	16852	16815	16739
10	16704	16646	16574	16453	16401	16365	16312	16296	16382	16443	16584	16700	16772	16799	16841	16796	16704
11	16675	16608	16522	16406	16327	16303	16238	16213	16306	16383	16535	16661	16750	16781	16824	16770	16675
12	16635	16560	16468	16340	16259	16231	16156	16126	16212	16303	16471	16625	16710	16769	16798	16737	16635
13	16588	16501	16413	16268	16172	16144	16071	16017	16114	16220	16405	16577	16674	16724	16766	16700	16588
14	16535	16439	16342	16186	16087	16071	15973	15919	16012	16128	16329	16525	16629	16687	16738	16651	16535
15	16478	16369	16273	16098	16005	15969	15887	15799	15908	16015	16250	16455	16582	16649	16695	16603	16478
16	16407	16303	16198	16003	15887	15864	15764	15677	15777	15919	16170	16393	16531	16595	16646	16545	16407
17	16333	16220	16105	15931	15777	15744	15643	15534	15619	15779	16073	16318	16469	16539	16588	16474	16333
18	16249	16130	16003	15801	15661	15623	15515	15381	15462	15644	15976	16239	16397	16473	16528	16401	16249
19	16149	16033	15904	15686	15540	15506	15383	15204	15281	15490	15844	16155	16315	16415	16459	16322	16149
20	16039	15938	15788	15564	15431	15377	15225	15024	15088	15326	15717	16063	16238	16329	16384	16232	16039
21	15933	15811	15659	15438	15303	15236	15061	14828	14868	15144	15583	15964	16166	16261	16296	16133	15933
22	15791	15680	15518	15302	15166	15093	14884	14625	14634	14926	15438	15877	16079	16176	16194	16019	15791
23	15650	15547	15374	15151	15018	14919	14698	14395	14350	14705	15280	15754	15987	16092	16087	15897	15650
24	15470	15382	15221	15001	14851	14749	14498	14146	14078	14465	15114	15629	15880	16000	16002	15752	15470
25	15283	15207	15061	14829	14676	14566	14290	13856	13796	14220	14912	15485	15775	15893	15883	15596	15283
26	15074	15024	14882	14646	14486	14350	14041	13578	13488	13931	14716	15345	15648	15783	15751	15417	15074
27	14862	14806	14689	14444	14267	14135	13793	13281	13123	13632	14499	15191	15512	15653	15611	15214	14862

28	14594	14565	14478	14247	14045	13910	13524	12961	12771	13333	14277	15024	15362	15529	15453	14999	14594
29	14321	14313	14256	13997	13770	13649	13233	12611	12400	13003	14030	14815	15207	15366	15282	14762	14321
30	14018	14031	13986	13734	13503	13357	12926	12209	12001	12650	13764	14613	15040	15204	15092	14501	14018
31	13691	13725	13723	13452	13207	13051	12563	11814	11584	12283	13446	14384	14860	15023	14890	14212	13691
32	13294	13395	13426	13131	12885	12674	12194	11404	11146	11854	13137	14151	14655	14844	14660	13900	13294
33	12902	12987	13060	12783	12509	12302	11800	10968	10628	11427	12796	13875	14418	14629	14406	13546	12902
34	12470	12575	12687	12400	12069	11887	11367	10496	10143	10981	12429	13569	14144	14373	14123	13155	12470
35	12015	12147	12284	11989	11623	11428	10901	9947	9638	10496	12032	13184	13842	14097	13808	12745	12015
36	11526	11678	11846	11488	11122	10912	10336	9413	9096	9991	11540	12779	13502	13741	13412	12256	11526
37	11005	11168	11345	10975	10574	10297	9786	8851	8564	9414	11072	12333	13117	13360	13008	11767	11005
38	10431	10545	10779	10397	9898	9685	9189	8312	7946	8849	10549	11828	12655	12954	12537	11224	10431
39	9816	9983	10140	9738	9200	8983	8550	7710	7370	8287	9972	11183	12119	12450	11983	10621	9816
40	9167	9326	9436	9010	8470	8261	7860	7034	6798	7693	9343	10524	11518	11835	11363	9985	9167
41	8526	8660	8788	8266	7665	7459	7135	6393	6209	7070	8661	9780	10842	11167	10685	9333	8526
42	7802	7888	7926	7486	6859	6648	6319	5754	5634	6440	7853	8968	10020	10343	9940	8660	7802
43	7116	7157	7126	6591	6061	5772	5589	5130	5018	5755	7095	8130	9176	9492	9110	7924	7116
44	6413	6399	6302	5774	5228	5022	4886	4467	4486	5143	6333	7177	8254	8559	8216	7156	6413
45	5718	5634	5490	4989	4521	4328	4151	3890	3976	4539	5488	6309	7292	7557	7281	6364	5718
46	5068	4905	4739	4286	3883	3699	3546	3355	3494	3964	4754	5474	6374	6580	6383	5590	5068
47	4464	4249	4013	3679	3324	3113	3030	2885	3017	3393	4089	4715	5528	5693	5444	4808	4464
48	3848	3659	3439	3158	2840	2657	2586	2470	2632	2920	3482	4031	4684	4822	4661	4160	3848
49	3337	3077	2941	2672	2413	2295	2224	2107	2319	2526	2976	3404	4005	4114	3956	3562	3337
50	2876	2618	2512	2334	2107	2002	1915	1843	2062	2203	2513	2919	3398	3490	3350	3025	2876
51	2488	2252	2162	2008	1863	1776	1698	1638	1859	1929	2166	2513	2904	2969	2851	2587	2488
52	2187	1959	1893	1791	1678	1589	1527	1481	1695	1702	1882	2177	2492	2544	2400	2195	2187
53	1951	1730	1667	1620	1526	1461	1397	1364	1575	1530	1649	1890	2147	2191	2064	1908	1951
54	1758	1551	1505	1487	1422	1359	1296	1260	1486	1401	1463	1644	1860	1870	1789	1680	1758
55	1607	1400	1381	1373	1333	1283	1206	1188	1419	1299	1308	1470	1610	1633	1572	1500	1607
56	1487	1286	1276	1284	1268	1212	1144	1124	1354	1210	1187	1330	1433	1445	1399	1362	1487
57	1374	1187	1191	1217	1211	1165	1088	1073	1308	1137	1099	1218	1287	1298	1245	1246	1374
58	1281	1101	1118	1160	1161	1114	1037	1020	1268	1076	1017	1116	1176	1172	1139	1134	1281

59	1200	1014	1060	1110	1117	1075	993	975	1226	1025	946	1042	1085	1085	1049	1047	1200
60	1124	943	1005	1066	1078	1038	949	933	1190	976	884	978	1010	1000	971	964	1124
61	1031	880	955	1025	1046	996	917	899	1149	933	838	923	947	930	905	900	1031
62	964	820	908	981	1003	968	879	856	1100	888	795	874	890	878	846	828	964
63	888	756	862	943	964	925	836	820	1050	848	744	826	837	825	789	759	888
64	810	693	809	899	931	890	800	782	1002	803	706	786	794	776	739	702	810
65	742	634	754	855	889	843	762	735	947	754	667	743	751	735	684	643	742
66	669	582	701	807	848	797	717	694	879	711	624	699	713	690	635	588	669
67	593	526	648	759	798	748	674	647	812	656	586	657	674	644	592	530	593
68	521	466	593	714	749	700	624	594	743	613	544	615	638	606	534	468	521
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74	215	206	273	391	368	387	340	294	355	307	309	373	375	361	266	204	215
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173	44	50	49	55	54	58	61	64	61	68	61	63	51	54	53	55	44
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176	58	53	57	55	50	56	59	62	55	63	69	63	49	56	37	54	58
177	62	45	55	55	57	54	56	64	56	56	61	61	46	52	54	52	62
178	47	48	59	56	55	58	59	59	51	57	55	57	42	56	50	54	47
179	57	63	55	57	52	53	52	49	60	52	61	62	53	57	57	48	57
180	60	59	56	58	55	55	61	55	53	61	59	56	54	61	56	53	60

BUG Rating

Lum. Classification System (LCS)

LCS Zone	Lumens	%Lamp	%Lum
FL (0-30)	6650.3	24.4	24.4
FM (30-60)	7014.8	25.7	25.7
FH (60-80)	499.1	1.8	1.8
FVH (80-90)	17.3	0.1	0.1
BL (0-30)	6391.7	23.4	23.4
BM (30-60)	6010.7	22.0	22.0
BH (60-80)	547.0	2.0	2.0
BVH (80-90)	23.5	0.1	0.1
UL (90-100)	14.5	0.1	0.1
UH (100-180)	127.6	0.5	0.5
Total	27296.5	100.1	100.0
BUG Rating	**B5-U3-G2**		

2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2023-09-11	Test Ambient:	25.2 º C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	AST-FL21-200WBH6SA1-abcdWfR57		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC230901	120.0	60	1.642	196.46	0.997	5.1
0E-AA 2	277.0	60	0.735	190.99	0.938	8.4
				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)	5469
Duv	0.0028
Chromaticity (x, y)	x=0.3332 y=0.3472
Chromaticity (u', v')	u(u')=0.2051v'=0.4807
Color Rendering Index (CRI)	82
R9	-3
Rf	82
Rg	94
Rcs,h1(%)	-14

Special Color Rendering Indices			
R1	80	R9	-3
R2	88	R10	71
R3	93	R11	80
R4	81	R12	57
R5	81	R13	82
R6	83	R14	96
R7	86	R15	74
R8	64	--	--
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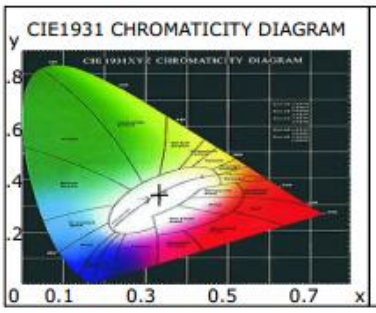
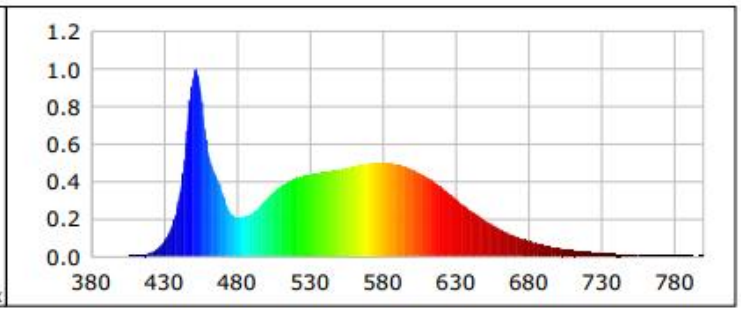
Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	28922.8	28346.7	>=10000(-10%)
Luminous Efficacy (lm/W)	147.22	148.42	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	144.29		

Spectral Power Distribution & Chromaticity Diagram



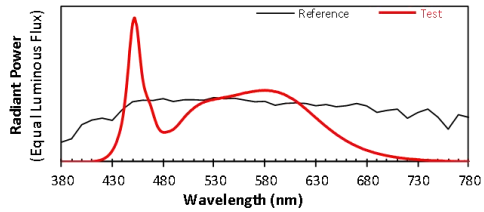


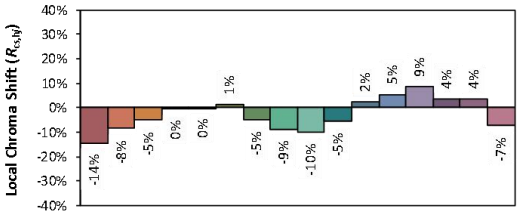
WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0005	0.5913	535	0.4261	556.2938	690	0.1101	143.7458
385	0.0002	0.2655	540	0.4334	565.8202	695	0.0950	123.9842
390	0.0005	0.6608	545	0.4398	574.1629	700	0.0816	106.4785
395	0.0001	0.1929	550	0.4495	586.7412	705	0.0698	91.1043
400	0.0003	0.4197	555	0.4547	593.5981	710	0.0600	78.3900
405	0.0012	1.6241	560	0.4621	603.2712	715	0.0515	67.2479
410	0.0032	4.1997	565	0.4694	612.8258	720	0.0439	57.2829
415	0.0076	9.9609	570	0.4791	625.4631	725	0.0373	48.6475
420	0.0173	22.5612	575	0.4855	633.7472	730	0.0314	40.9285
425	0.0376	49.1392	580	0.4911	641.0258	735	0.0270	35.2534
430	0.0781	102.0058	585	0.4963	647.8889	740	0.0229	29.8328
435	0.1559	203.5583	590	0.4976	649.5875	745	0.0200	26.1694
440	0.2958	386.1167	595	0.4936	644.3177	750	0.0164	21.3439
445	0.5979	780.5527	600	0.4891	638.5141	755	0.0134	17.5067
450	0.9599	1253.0608	605	0.4787	624.8984	760	0.0116	15.1790
455	0.8903	1162.2735	610	0.4644	606.2007	765	0.0104	13.5605
460	0.5714	745.9310	615	0.4453	581.2558	770	0.0077	10.0874
465	0.4406	575.1284	620	0.4246	554.2256	775	0.0066	8.6330
470	0.3385	441.8652	625	0.3979	519.4460	780	0.0066	8.6799
475	0.2396	312.7594	630	0.3697	482.6381	785	0.0056	7.2534
480	0.2062	269.1742	635	0.3380	441.1716	790	0.0038	4.9518
485	0.2114	276.0169	640	0.3060	399.3953	795	0.0035	4.5965
490	0.2260	294.9737	645	0.2766	361.0127	800	0.0028	3.7013
495	0.2606	340.2160	650	0.2470	322.4721			
500	0.3030	395.6008	655	0.2190	285.9021			
505	0.3409	444.9740	660	0.1922	250.9238			
510	0.3736	487.6452	665	0.1687	220.2557			
515	0.3981	519.7326	670	0.1469	191.8186			
520	0.4140	540.4846	675	0.1273	166.2433			
525	0.4261	556.2938	680	0.1101	143.7458			
530	0.4334	565.8202	685	0.0950	123.9842			

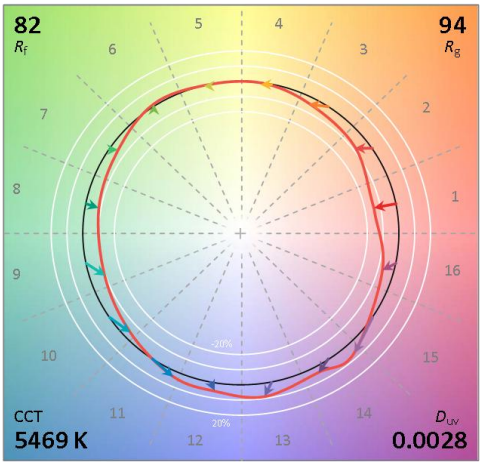
TM30

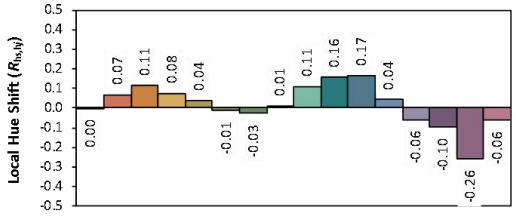
ANSI/IES TM-30-18 Color Rendition Report

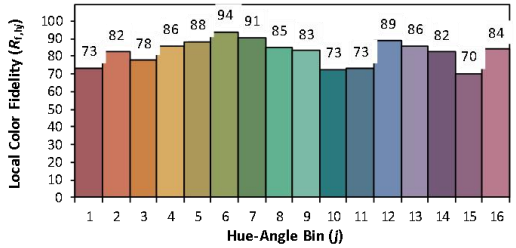
Source:	L128-5780RC35003P1	Manufacturer:	ASMART LIGHT CO., LTD
Date:	2023/9/11	Model:	AST-FL21-200WBH6SA1-abcdWfR57

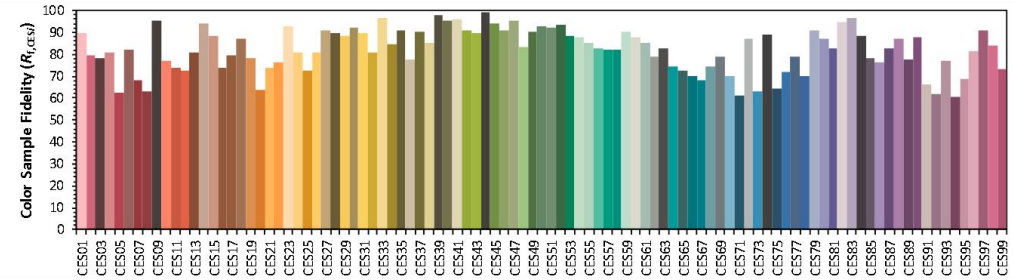












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.3332
y	0.3472
u'	0.2051
v'	0.4807

CIE 13.3-1995 (CRI)

R_a	82
R_9	-3

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-FL21-200WBH6SA1-abcdWfR30	27296.4	196.01	139.26
AST-FL21-200WBH6SA1-abcdWfR35	28109.6	196.24	143.24
AST-FL21-200WBH6SA1-abcdWfR40	28922.8	196.46	147.22
AST-FL21-200WBH6SA1-abcdWfR45	28922.8	196.46	147.22
AST-FL21-200WBH6SA1-abcdWfR50	28922.8	196.46	147.22
AST-FL21-200WBH6SA1-abcdWfR57	28922.8	196.46	147.22

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

28109.6 = (28922.8 + 27296.4) / 2

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

196.235 = (196.46 + 196.01) / 2

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

143.24 = 28109.6 / 196.24

3. Test Equipment

Equipment Name	Model No.	Serial No.	Calibration Date
Goniophotometeric System	GPM-3000	DYHXF120001	2023-01-17
AC Power Source	CHP-500C	DYBWD010159	2023-01-18
Total Luminous Flux Standard Lamp	24V/150W	DYJYR040040	2023-02-01
Digital Power Meter	WT500	DYDWQ20010	2023-01-18
Integral Sphere (2M)	2M	DYJCE120067	2023-01-17
Digital Power Meter	WT500	DYDWQ200006	2023-01-18
Optical Color and Electrical Measurement System	CMS-3000S	DYJCE120067	2023-01-17
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 ********