



Report No.: BLC2007001E-B-R

LM-79-08 Test Report

For

ASmart LIGHT CO., LTD

(Brand Name: ASmart)

506 N GARFIELD AVE SUITE#210 ALHAMBRA CA 91801

Outdoor Non-Cutoff and Semi-Cutoff Wall-Mounted Area Luminaires

Model name(s): AST-MWP03C-20D4BYFDA1-abeg

Remark: The letter "a" can be 2 letters represent lamp colors, "BH = Black, WH=White, BR=Brown or Customized". The letter "b" can be "P=Photocontrol" or "blank". The letter "e" can be two digits to represent CCT, 30=3000K, 40=4000K, 50=5000K. The letter "g" can be "A" for Auxiliary output 12V or empty for no Auxiliary output 12V.

Representative (Tested) Model:

AST-MWP03C-20D4BYFDA1-ab30g(Tested at 0% CCT Setting)

AST-MWP03C-20D4BYFDA1-ab40g(Tested at 50% CCT Setting)

AST-MWP03C-20D4BYFDA1-ab50g(Tested at 100% CCT Setting)

Model Different: N/A

Test & Report By:

Grace Li

Engineer: Grace Li

Date: July 6, 2020

Update: July 21, 2020(Added Reported Rcs,h1 (%) data)

Update: July 24, 2020(Added Reported Rcs,h1 (%) data for 4000K & 5000K CCT setting)

Update: Aug 7, 2020(Updated the TM-30 screenshot to DLC required format)

Review By:

Jason Luo

Manager: Jason Luo

Laboratory: Belling Test Laboratory Co., LTD A2LA Certificate# 4810.01
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Report Format Number BL-FM-SA-012



Report No.: BLC2007001E-B-R

1.1 Product Information:

Organization Name	ASmart LIGHT CO., LTD	
Brand Name	ASmart	
Model Number	AST-MWP03C-20D4BYFDA1-abeg	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Outdoor Non-Cutoff and Semi-Cutoff Wall-Mounted Area Luminaires	
Rated Voltage / Frequency	120-277Vac, 50/60 Hz	
Nominal Power	20W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K,4000K,5000K(Color tunable)	
LED Manufacturer	Lumileds Holding B.V.	
LED Model	L128-3080RA35003H1 L128-5080RA35000H1	
Sample Number	BLC2007001E-B1	
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 1, 2020
Date of Test	July 2, 2020
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 $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$, 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 $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$. 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 $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$. 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	2020-07-02	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	AST-MWP03C-20D4BYFDA1-ab30g(Tested at 0% CCT Setting)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC200700	120.0	60	0.1621	19.30	0.992	7.14
1E-B1	277.0	60	0.0786	19.69	0.904	14.01
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

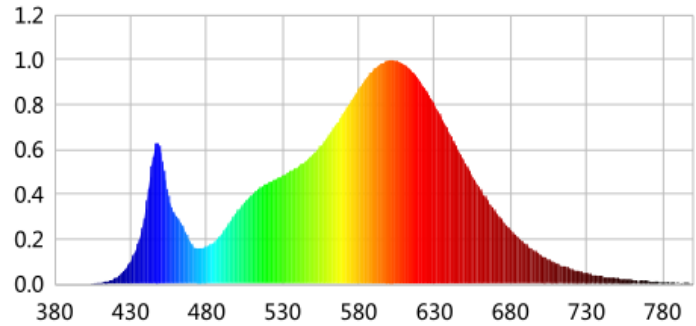
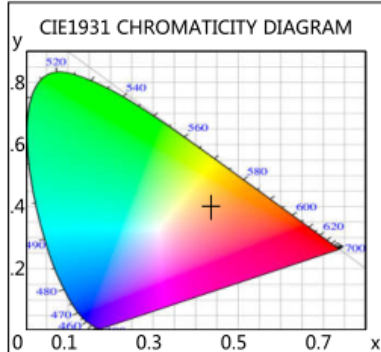
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	80	R9	0
Frequency (Hz)	60	R2	90	R10	79
CCT (K)	2994	R3	96	R11	80
Duv	-0.00251	R4	80	R12	75
Chromaticity (x, y)	x=0.4337 y=0.3968	R5	81	R13	82
Chromaticity (u', v')	u(u')=0.2517 v'(v')=0.5180	R6	89	R14	98
Color Rendering Index (CRI)	81	R7	80	R15	72
R9	0	R8	55	--	--
Rf	83	--	--	--	--
Rg	98	--	--	--	--
Rcs,h1 (%)	-12	--	--	--	--

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)	2599.9	2608.9	300-5000(-10%)
0-90 °Total Luminous (lm)	2345.3	2349.5	
Luminous Efficacy (lm/W)	134.71	132.50	Premium: >= 120(-3%)
0-90 °Luminous Efficacy (lm/W)	121.52	119.32	
Most worst Luminous/Highest	132.04		
Zonal lumens in the 80-90 °0-90 °zone (%)	5.38		<=10(+3)
Beam Angle (°)	92.1	--	--
Center Beam Candle Power (cd)	859	--	--



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	0.0130	525	0.4665	26.7326	670	0.3220	18.4548
385	0.0005	0.0315	530	0.4843	27.7575	675	0.2809	16.1003
390	0.0010	0.0557	535	0.5031	28.8337	680	0.2413	13.8284
395	0.0010	0.0591	540	0.5233	29.9929	685	0.2068	11.8506
400	0.0011	0.0612	545	0.5478	31.3965	690	0.1782	10.2112
405	0.0020	0.1149	550	0.5786	33.1573	695	0.1508	8.6428
410	0.0047	0.2711	555	0.6155	35.2747	700	0.1282	7.3484
415	0.0116	0.6643	560	0.6594	37.7928	705	0.1098	6.2931
420	0.0271	1.5551	565	0.7079	40.5681	710	0.0928	5.3178
425	0.0543	3.1111	570	0.7600	43.5546	715	0.0788	4.5142
430	0.1010	5.7909	575	0.8153	46.7261	720	0.0671	3.8446
435	0.1800	10.3140	580	0.8705	49.8856	725	0.0576	3.2991
440	0.3332	19.0985	585	0.9175	52.5798	730	0.0482	2.7642
445	0.5700	32.6671	590	0.9583	54.9221	735	0.0382	2.1892
450	0.5922	33.9369	595	0.9842	56.4053	740	0.0360	2.0637
455	0.3908	22.3956	600	0.9984	57.2173	745	0.0313	1.7945
460	0.3053	17.4957	605	0.9972	57.1512	750	0.0257	1.4722
465	0.2495	14.2980	610	0.9810	56.2216	755	0.0231	1.3262
470	0.1791	10.2650	615	0.9492	54.4008	760	0.0196	1.1255
475	0.1577	9.0401	620	0.9095	52.1218	765	0.0158	0.9068
480	0.1665	9.5423	625	0.8586	49.2048	770	0.0146	0.8372
485	0.1868	10.7047	630	0.8001	45.8561	775	0.0106	0.6075
490	0.2245	12.8674	635	0.7356	42.1593	780	0.0079	0.4543
495	0.2740	15.7026	640	0.6717	38.4979	785	0.0051	0.2922
500	0.3226	18.4877	645	0.6054	34.6957	790	0.0089	0.5096
505	0.3642	20.8697	650	0.5422	31.0755	795	0.0054	0.3072
510	0.3988	22.8575	655	0.4805	27.5391	800	0.0030	0.1721
515	0.4279	24.5213	660	0.4227	24.2222			
520	0.4484	25.6983	665	0.3716	21.2989			



TM30

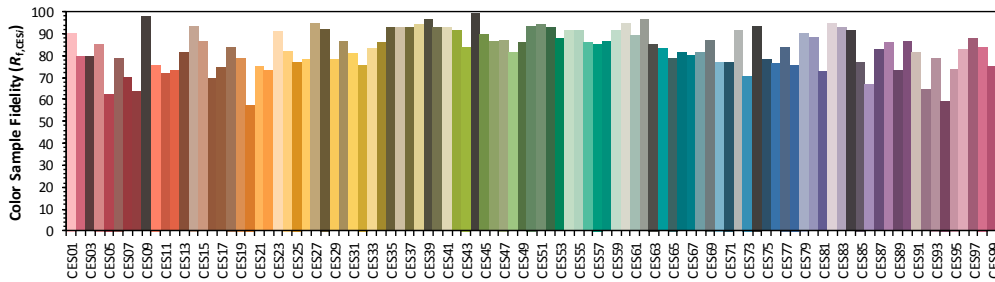
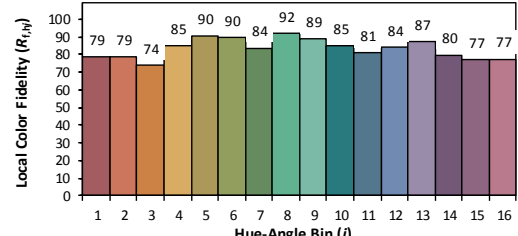
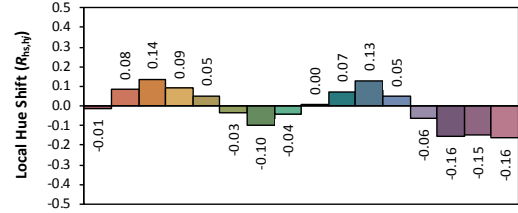
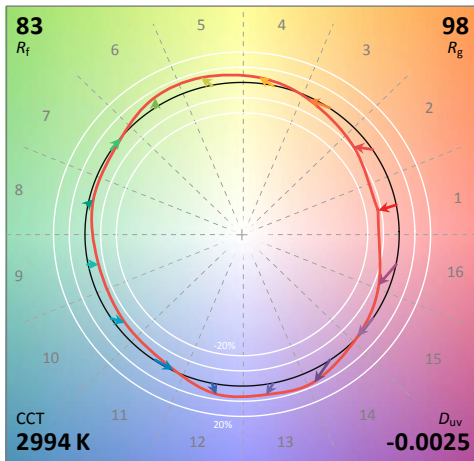
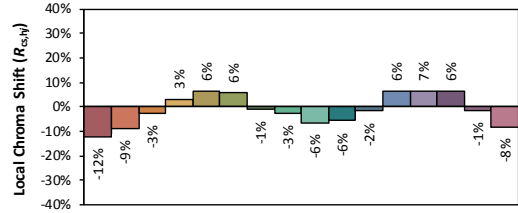
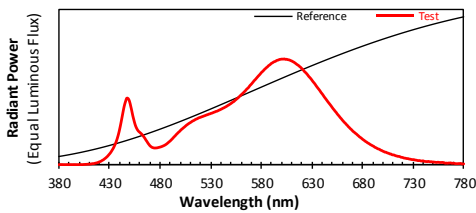
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-3080RA35003H1
L128-5080RA35000H1

Date: 2020/7/2

Manufacturer: Organization Name ASMA
LIGHT CO., LTD

Model: AST-MWP03C-20D4BYFDA1-
ab30g (Tested at 0% CCT Setting)



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

x 0.4337
 y 0.3968
 u' 0.2517
 v' 0.5180

CIE 13.3-1995 (CRI)
 R_a 81
 R_9 0

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



Rcs,h1 (%)

HUE-ANGLE BIN	LOCAL CHROMA SHIFT	LOCAL HUE SHIFT	LOCAL COLOR FIDELITY
j	$R_{cs,hj}$	$R_{hs,hj}$	$R_{ct,hj}$
1	-12%	-0.01	79
2	-9%	0.08	79
3	-3%	0.14	74
4	3%	0.09	85
5	6%	0.05	90
6	6%	-0.03	90
7	-1%	-0.10	84
8	-3%	-0.04	92
9	-6%	0.00	89
10	-6%	0.07	85
11	-2%	0.13	81
12	6%	0.05	84
13	7%	-0.06	87
14	6%	-0.16	80
15	-1%	-0.15	77
16	-8%	-0.16	77



Zonal Lumen Tabulation

Zonal Lumen Summary

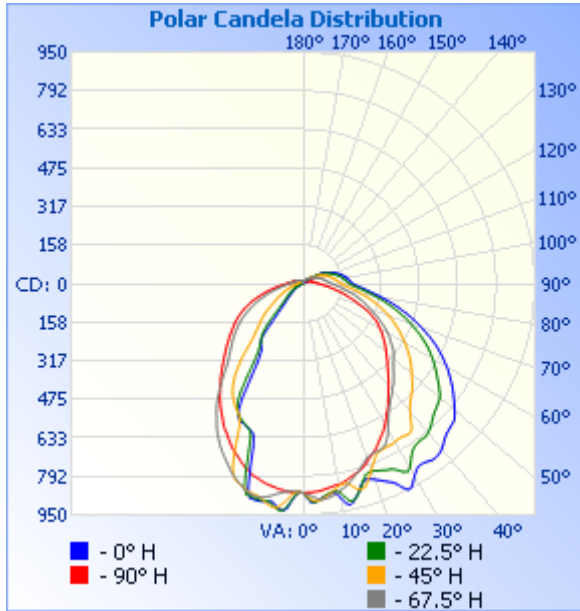
Zone	Lumens	% Lamp	% Luminaire
0-30	661.7	25.5%	25.5%
0-40	1,039.4	40%	40%
0-60	1,734.3	66.7%	66.7%
60-90	610.9	23.5%	23.5%
70-100	415.8	16%	16%
90-120	199.8	7.7%	7.7%
0-90	2,345.3	90.2%	90.2%
90-180	254.5	9.8%	9.8%
0-180	2,599.8	100%	100%

Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	84.3	3.2%	90-100	87.0	3.3%
10-20	239.3	9.2%	100-110	67.1	2.6%
20-30	338.1	13.0%	110-120	45.7	1.8%
30-40	377.6	14.5%	120-130	26.0	1%
40-50	359.9	13.8%	130-140	14.6	0.6%
50-60	335.1	12.9%	140-150	8.1	0.3%
60-70	282.2	10.9%	150-160	4.1	0.2%
70-80	202.5	7.8%	160-170	1.6	0.1%
80-90	126.2	4.9%	170-180	0.4	0%



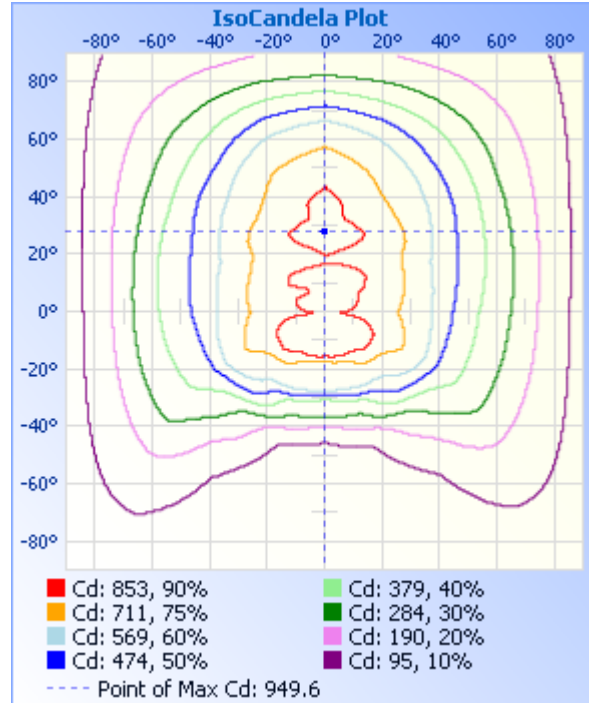
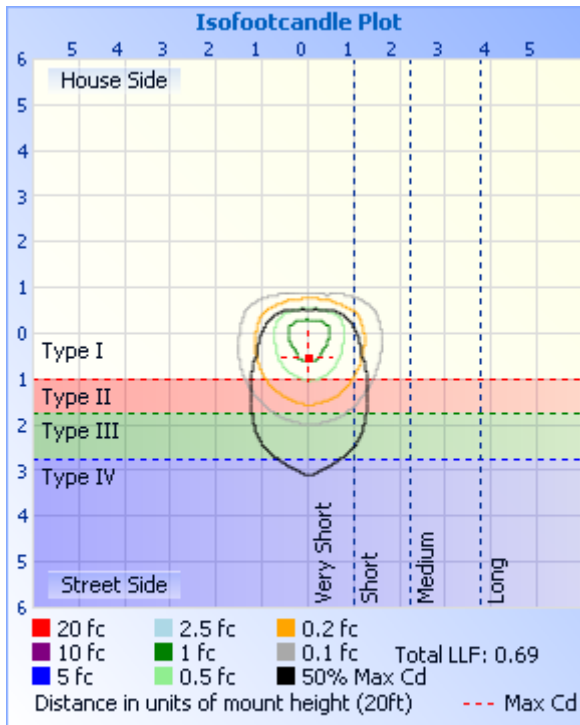
Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width	
17.0ft	2.97 fc	41.1 ft	35.3 ft
34.0ft	0.74 fc	82.1 ft	70.6 ft
51.0ft	0.33 fc	123.2 ft	105.9 ft
68.0ft	0.19 fc	164.2 ft	141.2 ft
85.0ft	0.12 fc	205.3 ft	176.5 ft
102.0ft	0.08 fc	246.3 ft	211.8 ft

■ Vert. Spread: 100.7°
■ Horiz. Spread: 92.1°





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	859	859	859	859	859	859	859	859	859	859	859	859	859	859	859	859	859
1	878	875	871	865	857	854	852	854	855	855	853	856	859	868	874	877	878
2	897	893	886	871	858	853	854	863	868	866	857	852	860	875	889	896	897
3	900	899	894	878	856	852	864	884	892	889	866	852	858	881	899	901	900
4	893	893	894	886	855	853	880	911	922	914	884	855	856	885	900	898	893
5	883	884	888	890	852	857	900	930	936	933	902	857	853	890	896	889	883
6	878	874	880	889	849	862	920	933	932	936	917	863	850	892	887	877	878
7	871	868	871	885	845	868	928	922	919	927	927	868	849	889	879	873	871
8	867	862	862	879	842	874	927	908	904	914	925	876	843	886	873	867	867
9	874	861	851	871	838	885	918	898	905	905	919	883	840	881	867	865	874
10	893	871	842	864	838	893	906	897	908	905	908	888	837	872	860	874	893
11	918	891	838	857	833	900	893	903	910	904	899	894	832	866	855	893	918
12	929	910	839	849	829	903	884	905	910	903	891	893	828	861	855	916	929
13	919	916	846	839	822	904	881	904	908	902	888	893	820	852	858	923	919
14	901	905	861	828	816	900	880	902	906	898	885	890	817	843	868	916	901
15	885	884	873	817	810	893	881	898	871	897	879	885	811	835	880	899	885
16	862	866	878	806	806	885	880	868	787	871	872	878	800	825	888	881	862
17	848	844	871	796	800	873	874	794	699	805	867	865	793	818	887	863	848
18	843	826	854	783	793	861	868	709	656	722	860	857	786	805	875	844	843
19	848	820	834	773	784	849	859	655	643	661	853	847	776	798	857	835	848
20	855	820	816	762	772	835	843	636	638	640	837	836	765	787	838	831	855
21	864	821	798	757	764	822	811	631	634	631	804	825	756	778	821	833	864
22	873	827	781	753	755	809	756	629	628	626	755	811	746	772	801	836	873
23	883	832	764	753	746	796	688	626	622	621	695	799	737	765	783	842	883
24	892	838	758	752	737	785	641	622	622	614	643	786	726	762	768	847	892
25	907	842	753	752	725	776	611	617	618	608	616	774	714	757	762	852	907
26	931	848	753	748	714	766	597	614	604	600	600	761	702	752	756	858	931
27	950	860	752	741	703	754	592	608	585	591	590	747	689	747	753	868	950
28	947	876	752	728	693	741	589	593	533	576	582	733	680	735	751	882	947
29	930	882	752	714	683	729	588	562	440	554	574	718	669	725	750	893	930



Certificate#4810.01

30	912	874	751	695	670	717	584	518	376	513	565	703	656	711	749	886	912
31	898	856	748	677	656	704	579	448	343	447	555	687	642	696	749	866	898
32	887	837	747	660	643	688	568	377	323	386	543	668	630	681	748	846	887
33	885	822	747	643	630	672	553	341	315	347	531	651	618	664	749	828	885
34	886	812	752	630	619	654	537	322	309	323	515	636	606	648	752	816	886
35	891	806	754	616	606	637	519	310	303	308	499	619	593	633	757	804	891
36	896	804	751	606	591	621	497	303	295	296	479	601	580	617	757	797	896
37	898	803	739	595	579	603	476	294	283	285	459	580	566	603	748	795	898
38	895	803	717	586	567	583	448	282	258	275	432	558	553	591	734	792	895
39	891	803	698	578	555	559	419	267	208	263	407	536	540	580	715	787	891
40	885	798	681	569	544	531	385	249	170	247	378	517	527	570	698	783	885
41	876	791	667	560	533	508	348	227	144	228	346	496	515	559	682	775	876
42	864	783	656	552	522	489	319	200	126	201	320	477	502	549	668	768	864
43	856	774	646	543	511	470	298	163	114	173	299	458	490	541	654	758	856
44	849	765	638	534	501	454	285	139	105	150	283	444	478	532	642	747	849
45	846	757	629	524	490	441	274	123	97	133	269	432	465	523	631	735	846
46	842	751	623	514	481	431	264	111	90	120	258	420	453	517	622	728	842
47	839	747	612	505	472	422	256	102	84	110	248	409	443	508	614	720	839
48	834	742	603	497	463	412	248	95	77	102	237	399	431	499	606	715	834
49	823	737	590	489	453	403	239	88	72	94	228	390	422	490	594	709	823
50	811	731	581	484	444	395	230	83	67	88	219	381	412	481	587	703	811
51	798	721	572	477	437	388	220	78	62	82	208	372	402	473	575	693	798
52	785	708	562	471	429	380	211	73	58	77	198	363	392	464	565	683	785
53	772	697	554	464	421	374	199	68	54	72	187	353	383	456	556	671	772
54	761	684	544	456	413	365	188	64	50	67	176	345	374	446	545	661	761
55	748	671	534	445	404	358	176	59	47	63	166	335	364	437	535	647	748
56	734	660	524	435	396	350	163	56	44	59	156	326	356	427	525	635	734
57	721	648	512	426	388	343	151	52	41	55	146	317	347	418	513	622	721
58	706	635	502	419	380	335	141	49	37	51	137	309	338	408	503	611	706
59	694	624	490	408	371	327	134	46	34	48	130	299	331	399	492	599	694
60	679	612	480	399	362	317	127	43	32	44	122	289	322	391	480	588	679
61	663	599	469	388	354	309	121	40	29	41	117	279	315	383	468	576	663

Laboratory: Belling Test Laboratory Co., LTD A2LA Certificate# 4810.01
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62	650	585	458	377	345	299	114	37	27	38	110	269	306	373	456	564	650
63	633	572	448	365	335	288	109	35	24	36	104	259	298	363	446	551	633
64	618	558	437	353	324	278	104	32	22	33	99	249	289	352	434	536	618
65	601	543	426	342	312	267	99	29	21	30	94	238	280	341	424	522	601
66	584	529	414	332	298	255	94	28	18	28	88	228	271	330	413	508	584
67	566	512	404	320	285	243	89	25	17	26	84	217	262	317	403	493	566
68	547	496	392	308	270	232	85	23	15	24	79	207	250	305	391	478	547
69	528	481	380	299	257	221	80	21	14	22	75	196	240	294	379	462	528
70	512	464	370	288	243	210	77	20	12	20	71	186	229	283	367	446	512
71	493	449	357	278	230	197	72	18	11	19	67	177	219	273	356	432	493
72	476	433	345	269	217	186	68	17	10	17	63	167	209	263	342	416	476
73	457	415	333	260	204	176	64	15	9	16	59	158	198	253	330	401	457
74	438	398	320	251	192	166	60	14	7	15	56	149	188	244	318	384	438
75	420	383	307	240	181	155	57	13	7	13	52	141	178	235	304	368	420
76	402	367	294	230	170	146	55	12	6	12	50	132	168	225	292	354	402
77	384	349	282	222	160	137	52	11	5	11	47	125	160	216	279	339	384
78	366	335	271	212	149	127	49	10	5	10	44	116	150	207	267	324	366
79	348	318	258	203	139	120	46	9	4	9	42	109	141	198	255	311	348
80	329	301	246	193	130	111	44	9	4	9	40	102	132	188	243	295	329
81	312	288	235	184	121	104	42	8	3	8	38	96	123	179	232	281	312
82	296	273	224	175	113	97	40	7	3	8	36	90	116	171	221	267	296
83	280	259	213	167	105	90	38	7	3	7	34	84	108	163	211	255	280
84	266	246	203	158	98	84	36	7	2	7	33	79	102	156	201	242	266
85	253	234	194	151	91	78	35	7	3	6	31	74	95	148	191	231	253
86	240	223	184	143	85	73	34	6	2	7	30	69	89	140	182	221	240
87	229	212	176	136	79	69	32	7	2	7	29	65	83	134	174	211	229
88	218	204	169	130	74	64	31	6	3	7	28	62	77	128	167	202	218
89	211	196	163	124	69	60	30	7	3	6	28	58	72	121	161	196	211
90	205	190	157	119	65	57	29	6	3	6	27	56	69	117	156	191	205
91	200	187	153	114	62	54	28	6	3	6	26	53	65	112	151	185	200
92	197	182	148	110	59	51	28	6	2	6	25	51	61	109	147	182	197
93	193	179	145	106	56	49	27	6	2	6	25	48	58	105	144	179	193



Certificate#4810.01

94	191	176	142	104	53	46	26	6	2	6	24	46	56	102	141	176	191
95	189	174	139	101	50	44	25	5	2	6	23	44	54	99	138	173	189
96	186	171	137	98	49	42	25	6	2	5	23	43	51	97	136	170	186
97	183	168	134	96	47	41	24	6	3	6	22	41	49	94	133	168	183
98	180	165	131	93	45	40	24	6	3	6	22	40	48	92	130	165	180
99	177	161	128	91	43	39	23	6	2	5	22	39	46	89	128	162	177
100	173	158	125	89	42	37	23	6	3	5	21	38	44	87	125	158	173
101	169	155	123	87	41	36	22	6	3	6	21	36	44	85	123	155	169
102	166	151	121	85	40	35	22	5	3	6	21	36	42	83	120	151	166
103	161	148	118	83	39	35	22	5	3	6	20	35	42	82	118	149	161
104	157	144	115	81	38	34	21	5	3	6	20	34	40	80	115	145	157
105	154	140	112	79	37	33	21	5	3	6	20	34	39	78	112	141	154
106	149	136	110	77	36	33	21	5	2	6	19	33	39	75	110	137	149
107	145	133	107	75	35	32	21	6	3	6	19	33	38	73	107	133	145
108	141	129	104	73	34	32	20	5	3	6	19	32	37	72	104	129	141
109	137	125	101	71	34	31	20	5	2	5	19	32	36	70	101	125	137
110	132	121	99	69	32	31	20	5	3	6	18	31	36	68	98	121	132
111	128	117	96	67	29	30	19	5	3	5	18	31	32	66	95	116	128
112	124	113	92	64	25	30	19	5	3	5	18	30	28	64	92	112	124
113	120	108	89	63	21	29	19	4	3	5	17	30	22	61	89	108	120
114	115	104	86	60	18	29	19	5	3	5	17	29	17	59	86	104	115
115	111	100	83	59	17	29	19	5	3	5	17	29	14	58	82	99	111
116	106	95	79	57	16	29	18	4	3	5	17	29	13	57	78	95	106
117	101	90	75	55	16	28	18	5	3	5	16	28	13	54	75	91	101
118	96	86	72	54	16	27	18	5	3	5	16	28	13	53	71	86	96
119	91	81	68	52	15	27	18	5	3	5	16	28	12	52	68	81	91
120	86	76	65	51	15	27	17	5	3	5	16	27	12	50	64	76	86
121	79	71	62	49	15	26	17	5	3	5	16	27	13	48	61	71	79
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123	57	61	55	46	14	25	16	5	3	4	15	26	12	45	56	61	57
124	49	57	53	44	13	25	16	4	3	5	15	25	12	44	53	57	49
125	43	52	51	43	14	24	16	4	3	5	15	25	12	43	51	52	43



Report No.: BLC2007001E-B-R

126	38	48	48	42	13	24	15	5	3	5	14	25	12	42	48	48	38
127	35	44	46	40	13	23	15	5	3	5	14	24	11	40	46	45	35
128	32	40	44	39	13	23	14	4	3	5	14	24	12	39	44	42	32
129	30	38	42	38	12	22	14	4	3	5	14	23	11	38	42	38	30
130	28	35	40	37	12	22	14	4	3	5	13	23	11	37	40	36	28
131	25	33	39	36	12	21	14	4	3	4	13	23	11	36	39	34	25
132	24	31	37	35	11	20	13	4	3	5	13	22	11	35	37	32	24
133	22	30	35	34	11	20	13	3	3	4	12	22	11	34	35	30	22
134	22	28	34	32	11	20	13	4	3	4	12	21	10	33	34	29	22
135	20	27	33	31	11	19	13	4	3	5	12	20	10	32	32	28	20
136	20	26	31	30	10	19	12	4	3	5	12	20	10	31	31	26	20
137	18	24	29	29	10	18	12	5	4	4	12	19	10	30	29	25	18
138	18	23	28	28	10	18	12	4	3	4	11	19	10	29	28	24	18
139	16	21	27	27	10	17	11	4	4	4	11	19	9	28	26	22	16
140	15	21	25	27	9	17	11	4	4	4	11	18	9	27	25	21	15
141	14	20	24	26	9	16	10	4	3	4	11	18	9	26	24	20	14
142	13	18	23	25	8	16	10	4	4	3	10	17	8	26	23	18	13
143	12	18	22	24	9	15	9	4	4	5	10	17	8	25	21	17	12
144	11	17	22	23	9	15	9	4	4	5	10	16	8	24	21	16	11
145	10	15	21	21	8	14	9	4	4	4	10	16	7	24	20	15	10
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147	8	14	20	18	8	13	9	4	4	5	10	15	8	22	19	14	8
148	7	13	19	17	8	13	9	4	4	4	9	15	7	21	19	13	7
149	7	13	19	16	8	12	8	4	3	4	9	14	7	20	18	12	7
150	6	13	18	15	7	11	8	4	3	4	9	14	7	19	17	12	6
151	6	12	18	14	8	12	8	4	4	4	9	13	6	18	17	11	6
152	5	12	17	13	8	11	7	5	3	5	8	13	6	17	16	11	5
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154	5	11	15	11	7	10	6	4	4	4	8	12	6	15	15	10	5
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156	5	11	15	10	6	9	7	4	4	5	7	11	6	13	13	9	5
157	3	10	13	9	6	8	6	3	4	5	7	11	6	12	13	8	3

Laboratory: Belling Test Laboratory Co., LTD A2LA Certificate# 4810.01
Unit 401, No. 309 Xinxin Seven Road, Zengcheng District,
Guangzhou, People's Republic of China. info@bellingtest.com

Report Format Number BL-FM-SA-012



Report No.: BLC2007001E-B-R

Certificate#4810.01

158	4	10	12	8	6	8	6	4	4	3	7	10	6	11	12	8	4
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179	4	4	5	4	3	3	4	3	4	4	4	3	3	4	4	3	4
180	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3



Report No.: BLC2007001E-B-R

BUG

Lum. Classification System (LCS)

<u>LCS Zone</u>	<u>Lumens</u>	<u>%Lamp</u>	<u>%Lum</u>
FL (0-30)	345.9	13.3	13.3
FM (30-60)	724.2	27.9	27.9
FH (60-80)	377.0	14.5	14.5
FVH (80-90)	103.4	4.0	4.0
BL (0-30)	315.9	12.1	12.1
BM (30-60)	348.6	13.4	13.4
BH (60-80)	107.7	4.1	4.1
BVH(80-90)	22.8	0.9	0.9
UL (90-100)	87.0	3.3	3.3
UH (100-180)	167.5	6.4	6.4
Total	2600.0	99.9	100.0
BUG Rating	B1-U3-G2		

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

Test date	2020-07-02	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	AST-MWP03C-20D4BYFDA1-ab40g(Tested at 50% CCT Setting)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC200700	120.0	60	0.1672	19.88	0.991	7.32
1E-B1	277.0	60	0.0813	20.28	0.901	14.28
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

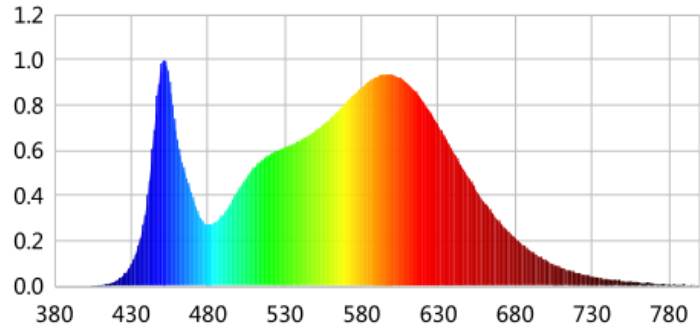
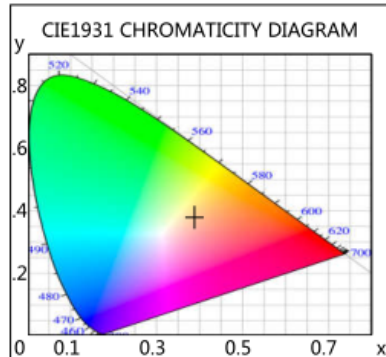
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	83	R9	11
Frequency (Hz)	60	R2	92	R10	80
CCT (K)	3838	R3	96	R11	83
Duv	-0.00191	R4	83	R12	66
Chromaticity (x, y)	x=0.3863 y=0.3762	R5	84	R13	86
Chromaticity (u', v')	u(u')=0.2292 v'=0.5022	R6	89	R14	98
Color Rendering Index (CRI)	84	R7	84	R15	77
R9	11	R8	64	--	--
Rf	85	--	--	--	--
Rg	96	--	--	--	--
Rcs,h1 (%)	-12	--	--	--	--

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)	2920.8	2930.9	300-5000(-10%)
Luminous Efficacy (lm/W)	146.92	144.51	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	144.01		



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	0.0278	525	0.5981	33.4203	670	0.2821	15.7647
385	0.0011	0.0600	530	0.6139	34.3037	675	0.2444	13.6561
390	0.0011	0.0612	535	0.6282	35.1057	680	0.2110	11.7919
395	0.0008	0.0431	540	0.6458	36.0859	685	0.1810	10.1167
400	0.0012	0.0660	545	0.6643	37.1213	690	0.1554	8.6832
405	0.0019	0.1057	550	0.6873	38.4035	695	0.1333	7.4460
410	0.0032	0.1765	555	0.7148	39.9450	700	0.1125	6.2863
415	0.0092	0.5147	560	0.7437	41.5577	705	0.0953	5.3254
420	0.0228	1.2725	565	0.7772	43.4298	710	0.0815	4.5522
425	0.0482	2.6956	570	0.8105	45.2925	715	0.0695	3.8812
430	0.0966	5.3988	575	0.8467	47.3122	720	0.0573	3.2030
435	0.1861	10.3969	580	0.8788	49.1068	725	0.0504	2.8145
440	0.3567	19.9321	585	0.9060	50.6286	730	0.0428	2.3895
445	0.6866	38.3644	590	0.9268	51.7877	735	0.0328	1.8312
450	0.9865	55.1247	595	0.9366	52.3390	740	0.0313	1.7506
455	0.9090	50.7933	600	0.9352	52.2590	745	0.0288	1.6089
460	0.6515	36.4043	605	0.9216	51.4962	750	0.0216	1.2093
465	0.5030	28.1063	610	0.8964	50.0915	755	0.0204	1.1426
470	0.3927	21.9433	615	0.8600	48.0585	760	0.0183	1.0229
475	0.3031	16.9367	620	0.8168	45.6402	765	0.0138	0.7735
480	0.2716	15.1761	625	0.7661	42.8089	770	0.0124	0.6944
485	0.2840	15.8681	630	0.7102	39.6836	775	0.0086	0.4790
490	0.3165	17.6848	635	0.6498	36.3104	780	0.0067	0.3749
495	0.3697	20.6560	640	0.5903	32.9874	785	0.0044	0.2463
500	0.4281	23.9248	645	0.5312	29.6860	790	0.0098	0.5463
505	0.4807	26.8632	650	0.4728	26.4203	795	0.0047	0.2607
510	0.5247	29.3219	655	0.4192	23.4249	800	0.0054	0.2994
515	0.5577	31.1649	660	0.3689	20.6153			
520	0.5789	32.3475	665	0.3231	18.0553			



TM-30

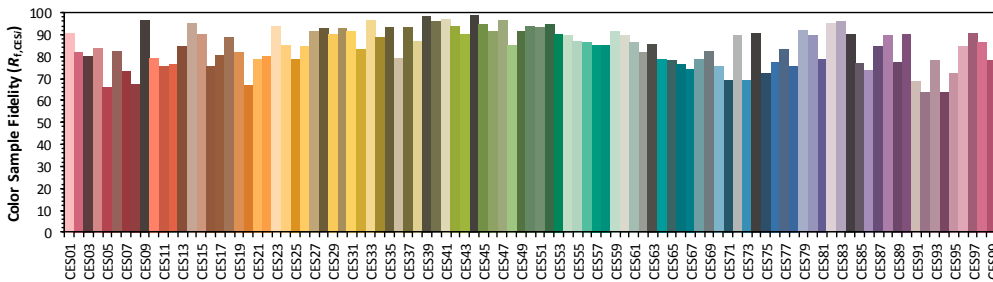
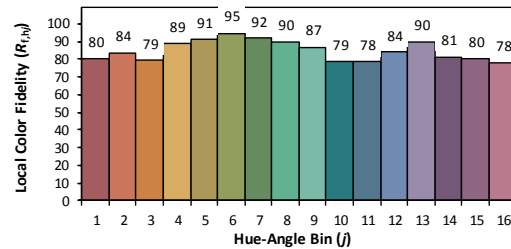
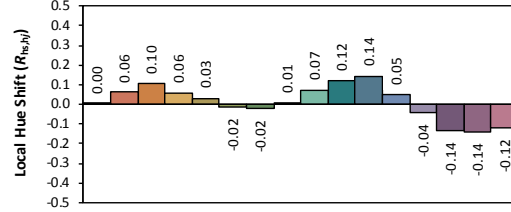
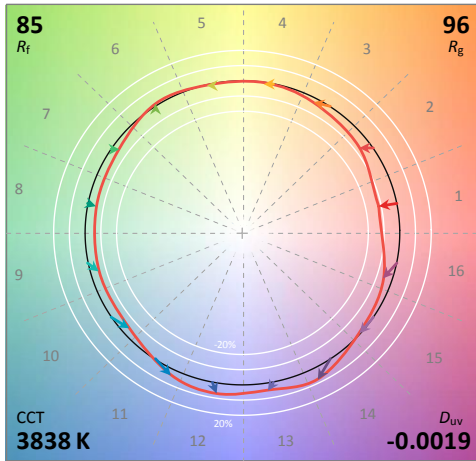
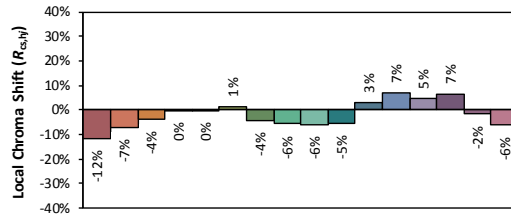
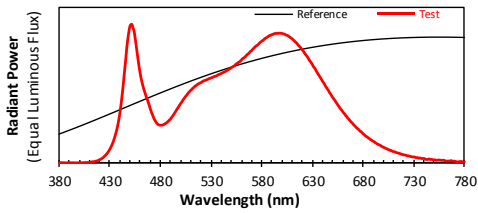
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-3080RA35003H1
L128-5080RA35000H1

Date: 2020/7/2

Manufacturer: Organization Name AS MART
LIGHT CO., LTD

Model: AST-MWP03C-20D4BYFDA1-
ab40g (Tested at 50% CCT Setting)



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

x 0.3863
 y 0.3762
 u' 0.2292
 v' 0.5022

CIE 13.3-1995
(CRI)
 R_a 84
 R_9 11

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



Rcs,h1 (%)

HUE-ANGLE BIN	LOCAL CHROMA SHIFT	LOCAL HUE SHIFT	LOCAL COLOR FIDELITY
j	$R_{cs,hj}$	$R_{hs,hj}$	$R_{ct,hj}$
1	-12%	0.00	80
2	-7%	0.06	84
3	-4%	0.10	79
4	0%	0.06	89
5	0%	0.03	91
6	1%	-0.02	95
7	-4%	-0.02	92
8	-6%	0.01	90
9	-6%	0.07	87
10	-5%	0.12	79
11	3%	0.14	78
12	7%	0.05	84
13	5%	-0.04	90
14	7%	-0.14	81
15	-2%	-0.14	80
16	-6%	-0.12	78

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

Test date	2020-07-02	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	AST-MWP03C-20D4BYFDA1-ab50g(Tested at 100% CCT Setting)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC200700	120.0	60	0.1655	19.70	0.992	7.05
1E-B1	277.0	60	0.0801	20.10	0.906	13.95
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

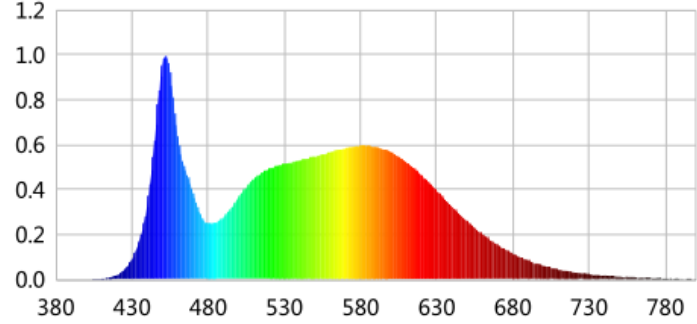
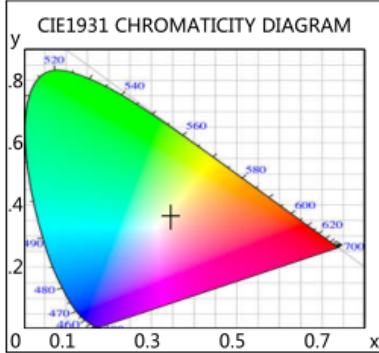
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	80	R9	1
Frequency (Hz)	60	R2	89	R10	73
CCT (K)	5087	R3	94	R11	81
Duv	0.00418	R4	81	R12	60
Chromaticity (x, y)	x=0.3434 y=0.3586	R5	81	R13	83
Chromaticity (u', v')	u(u')=0.2076 v'(v')=0.4878	R6	84	R14	97
Color Rendering Index (CRI)	82	R7	86	R15	74
R9	1	R8	65	--	--
Rf	83	--	--	--	--
Rg	94	--	--	--	--
Rcs,h1 (%)	-13	--	--	--	--

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)	2703.4	2712.8	300-5000(-10%)
Luminous Efficacy (lm/W)	137.23	134.98	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	134.51		



Spectral Power Distribution & Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0001	0.0081	525	0.5061	38.6907	670	0.1545	11.8094
385	0.0006	0.0439	530	0.5138	39.2730	675	0.1340	10.2463
390	0.0011	0.0855	535	0.5228	39.9626	680	0.1147	8.7661
395	0.0004	0.0325	540	0.5309	40.5836	685	0.0990	7.5699
400	0.0010	0.0802	545	0.5368	41.0309	690	0.0851	6.5078
405	0.0015	0.1167	550	0.5467	41.7938	695	0.0718	5.4851
410	0.0032	0.2415	555	0.5568	42.5602	700	0.0608	4.6508
415	0.0086	0.6559	560	0.5667	43.3222	705	0.0528	4.0344
420	0.0197	1.5027	565	0.5773	44.1332	710	0.0434	3.3207
425	0.0432	3.3044	570	0.5835	44.6000	715	0.0367	2.8091
430	0.0897	6.8574	575	0.5907	45.1514	720	0.0317	2.4212
435	0.1741	13.3067	580	0.5961	45.5703	725	0.0283	2.1645
440	0.3288	25.1377	585	0.5954	45.5099	730	0.0231	1.7675
445	0.6250	47.7775	590	0.5916	45.2259	735	0.0195	1.4936
450	0.9582	73.2487	595	0.5810	44.4123	740	0.0185	1.4179
455	0.9233	70.5759	600	0.5677	43.3990	745	0.0166	1.2665
460	0.6408	48.9839	605	0.5473	41.8377	750	0.0126	0.9658
465	0.4907	37.5064	610	0.5223	39.9268	755	0.0112	0.8562
470	0.3865	29.5421	615	0.4965	37.9518	760	0.0101	0.7713
475	0.2892	22.1050	620	0.4633	35.4179	765	0.0068	0.5222
480	0.2489	19.0233	625	0.4294	32.8245	770	0.0090	0.6850
485	0.2531	19.3460	630	0.3947	30.1686	775	0.0057	0.4331
490	0.2767	21.1550	635	0.3591	27.4523	780	0.0036	0.2776
495	0.3181	24.3196	640	0.3246	24.8098	785	0.0015	0.1162
500	0.3687	28.1841	645	0.2906	22.2150	790	0.0056	0.4249
505	0.4110	31.4154	650	0.2588	19.7867	795	0.0037	0.2793
510	0.4483	34.2680	655	0.2284	17.4561	800	0.0025	0.1895
515	0.4739	36.2229	660	0.2017	15.4171			
520	0.4934	37.7127	665	0.1754	13.4078			



TM30

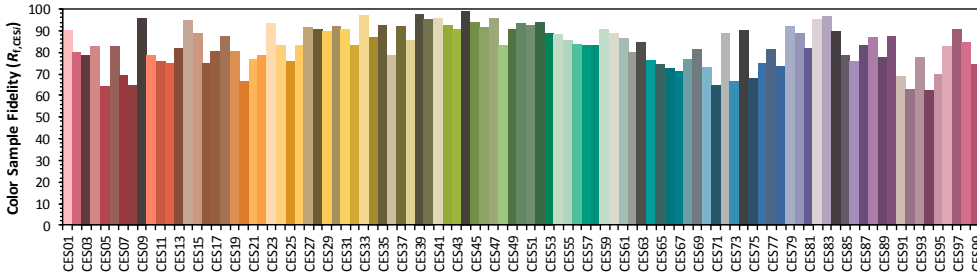
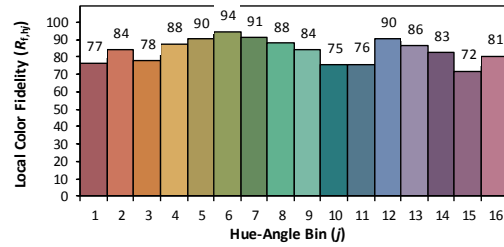
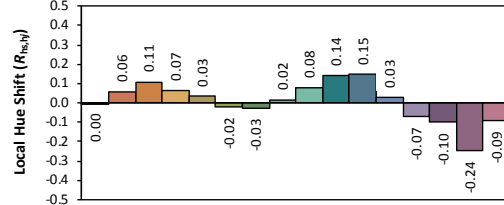
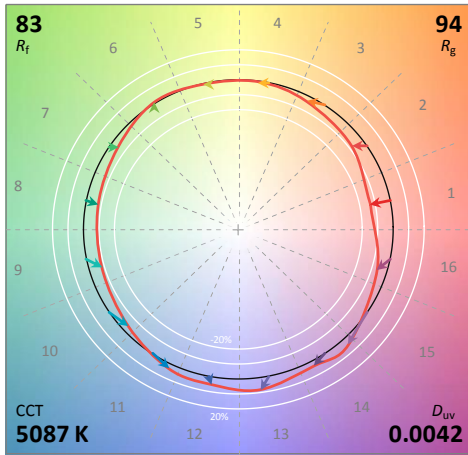
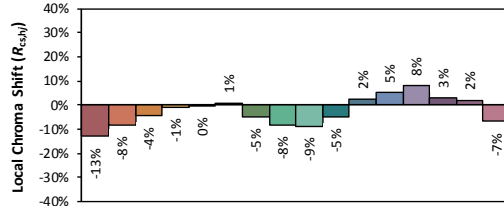
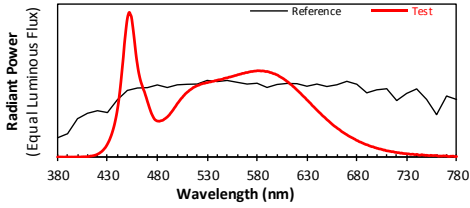
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-3080RA35003H1
L128-5080RA35000H1

Date: 2020/7/2

Manufacturer: Organization Name ASmart
LIGHT CO., LTD

Model: AST-MWP03C-20D4BYFDA1-
ab50g (Tested at 100% CCT
Setting)



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

x 0.3434
 y 0.3586
 u' 0.2076
 v' 0.4878

CIE 13.3-1995 (CRI)	
R _a	82
R ₉	1

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



Rcs,h1 (%)

HUE-ANGLE BIN	LOCAL CHROMA SHIFT	LOCAL HUE SHIFT	LOCAL COLOR FIDELITY
j	$R_{cs,hj}$	$R_{hs,hj}$	$R_{ct,hj}$
1	-13%	0.00	77
2	-8%	0.06	84
3	-4%	0.11	78
4	-1%	0.07	88
5	0%	0.03	90
6	1%	-0.02	94
7	-5%	-0.03	91
8	-8%	0.02	88
9	-9%	0.08	84
10	-5%	0.14	75
11	2%	0.15	76
12	5%	0.03	90
13	8%	-0.07	86
14	3%	-0.10	83
15	2%	-0.24	72
16	-7%	-0.09	81



3. Test Equipment

Equipment Name	Model No.	Serial No.	Next Calibration Date
Goniophotometric System	GPM-3000	DYHXF120001	2021-01-13
AC Power Source	CHP-500C	N/A	2021-01-12
Total Luminous Flux Standard Lamp	24V/150W	DYJYR040040	2021-01-20
Digital Power Meter	WT500	DYDWQ200006	2021-01-12
Integral Sphere (2M)	2M	DYJCE120067	2021-01-13
Digital Power Meter	WT500	DYDWQ200006	2021-01-12
Optical Color and Electrical Measurement System	CMS-3000S	DYJCE120067	2021-01-13

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 *******