



Report No.: BLC2008030E-A

LM-79-08 Test Report

For

Beyond LED Technology

(Brand Name: Beyond)

1939 Parker Court, Stone Mountain, GA 30087

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

Model name(s): BLT-MWP09-20WBMSA1-BRP50

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

Representative (Tested) Model:

AST-MWP03C-20D4BYFSA1-ab30g
AST-MWP03C-20D4BYFSA1-ab40g
AST-MWP03C-20D4BYFSA1-ab50g
AST-MWP03C-20D4BYFSA1-ab65g

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

Test & Report By:

Grace Li

Engineer: Grace Li

Date: Aug 27, 2020

Review By:

Jason Luo

Manager: Jason Luo



Report No.: BLC2008030E-A

1.1 Product Information:

Organization Name	Beyond LED Technology	
Brand Name	Beyond LED Technology	
Model Number	BLT-MWP09-20WBMSA1-BRP50	
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,3500K,4000K,4500K,5000K,5700K,6500K	
LED Manufacturer	Lumileds Holding B.V.	
LED Model	L128-XX80RA35003H1 L128-XX80RA35000H1	
Sample Number	BLC2008030E-A1(3000K), A2(4000K) , A3(5000K), A4(6500K)	
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 26, 2020
Date of Test	Aug 26, 2020
Test item	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$, 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	2020-08-26	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	BLT-MWP09-20WBMSA1-BRP50		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC200803	120.0	60	0.1631	19.45	0.994	6.98
0E-A1	277.0	60	0.0770	19.76	0.927	11.86
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method**(Self-absorption factor: 1.157):**

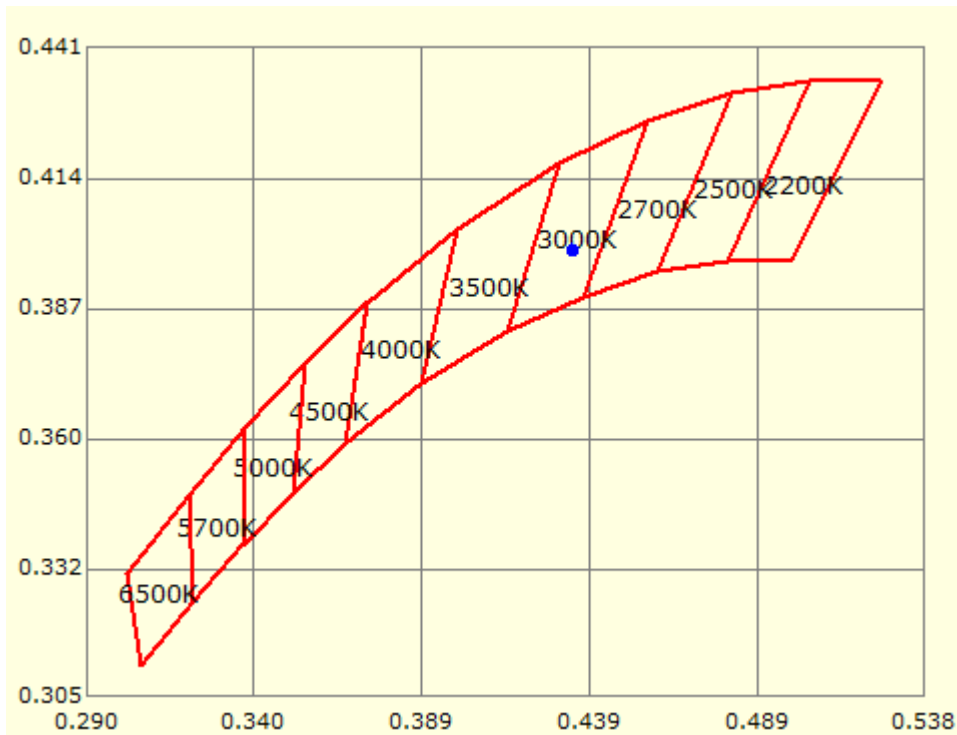
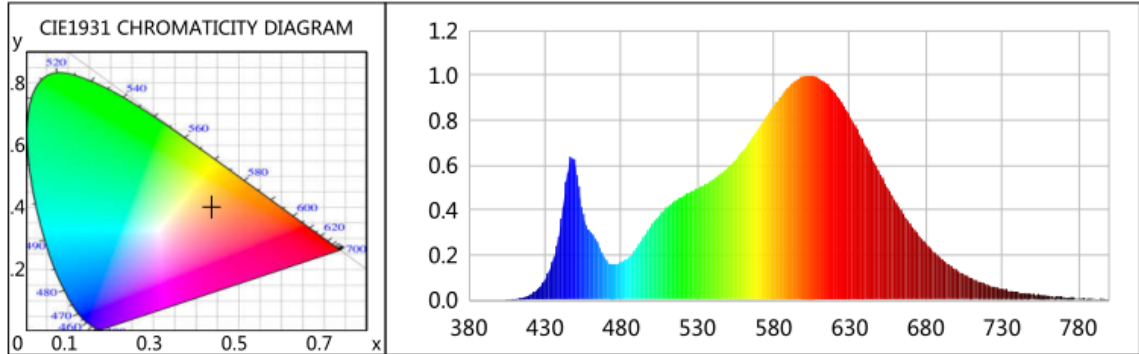
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	81	R9	5
Frequency (Hz)	60	R2	91	R10	80
CCT (K)	3002	R3	96	R11	82
Duv	-0.0018	R4	81	R12	75
Chromaticity (x, y)	x=0.4342 y=0.3988	R5	82	R13	83
Chromaticity (u', v')	u(u')=0.2511 v'=0.5189	R6	90	R14	99
Color Rendering Index (CRI)	83	R7	81	R15	73
R9	5	R8	58	--	--
Rf	84	--	--	--	--
Rg	98	--	--	--	--
Rcs,h1 (%)	-11	--	--	--	--

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)	2614.2	2620.9	300-5000(-10%)
0-90 °Total Luminous (lm)	2372.4	2378.1	
Luminous Efficacy (lm/W)	134.40	132.64	Premium: >= 120(-3%)
0-90 °Luminous Efficacy (lm/W)	121.97	120.35	
Most worst Luminous/Highest	132.30		
Zonal lumens in the 80-90 °0-90 °zone (%)	5.41		<=10(+3)
Beam Angle (°)	92.2	--	--
Center Beam Candle Power (cd)	946	--	--



Spectral Power Distribution & Chromaticity Diagram





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WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0001	0.0034	525	0.4788	21.0555	670	0.3347	14.7194
385	0.0005	0.0207	530	0.4961	21.8143	675	0.2901	12.7573
390	0.0008	0.0343	535	0.5139	22.5978	680	0.2515	11.0592
395	0.0004	0.0187	540	0.5347	23.5141	685	0.2143	9.4212
400	0.0007	0.0302	545	0.5596	24.6056	690	0.1836	8.0715
405	0.0019	0.0830	550	0.5900	25.9427	695	0.1568	6.8958
410	0.0030	0.1327	555	0.6243	27.4533	700	0.1328	5.8384
415	0.0096	0.4235	560	0.6648	29.2326	705	0.1139	5.0079
420	0.0222	0.9756	565	0.7120	31.3095	710	0.0958	4.2136
425	0.0455	2.0011	570	0.7605	33.4418	715	0.0807	3.5478
430	0.0899	3.9548	575	0.8131	35.7524	720	0.0688	3.0239
435	0.1672	7.3512	580	0.8630	37.9498	725	0.0577	2.5381
440	0.3212	14.1245	585	0.9079	39.9243	730	0.0493	2.1674
445	0.5710	25.1091	590	0.9496	41.7555	735	0.0388	1.7052
450	0.5982	26.3031	595	0.9793	43.0618	740	0.0358	1.5747
455	0.3813	16.7674	600	0.9948	43.7451	745	0.0332	1.4604
460	0.3027	13.3112	605	0.9997	43.9575	750	0.0262	1.1536
465	0.2498	10.9863	610	0.9870	43.4024	755	0.0228	1.0036
470	0.1771	7.7878	615	0.9629	42.3396	760	0.0191	0.8401
475	0.1572	6.9108	620	0.9264	40.7338	765	0.0143	0.6304
480	0.1684	7.4070	625	0.8747	38.4639	770	0.0130	0.5709
485	0.1896	8.3387	630	0.8193	36.0271	775	0.0112	0.4944
490	0.2306	10.1413	635	0.7604	33.4369	780	0.0081	0.3546
495	0.2826	12.4244	640	0.6916	30.4106			
500	0.3326	14.6255	645	0.6245	27.4590			
505	0.3754	16.5064	650	0.5603	24.6395			
510	0.4127	18.1458	655	0.4979	21.8920			
515	0.4387	19.2890	660	0.4385	19.2804			
520	0.4604	20.2458	665	0.3857	16.9587			

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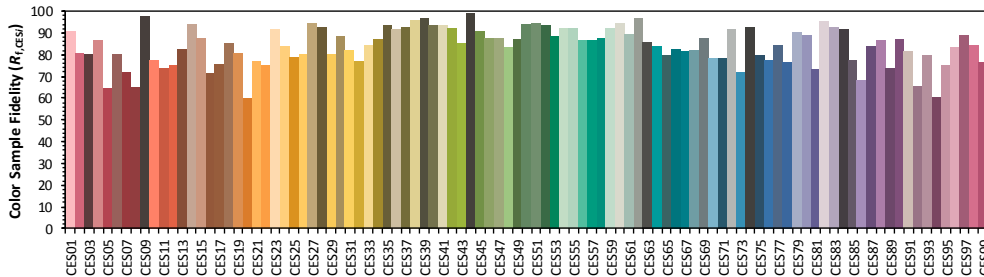
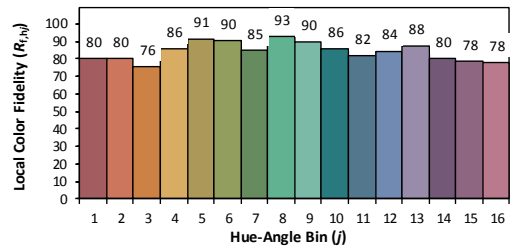
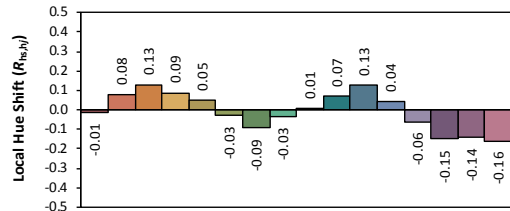
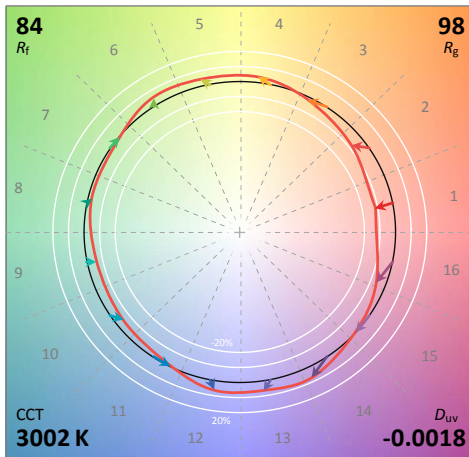
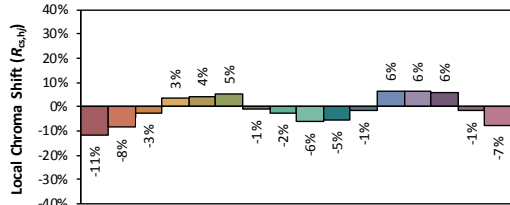
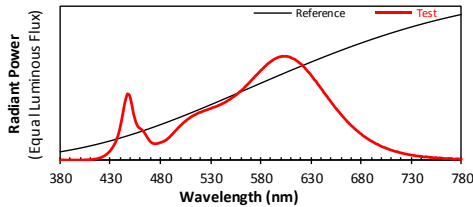


TM30

ANSI/IES TM-30-18 Color Rendition Report

Source: L128-XX80RA35000H1
Date: 2020/8/26

Manufacturer: AS MART LIGHT CO., LTD
Model: AST-MWP03C-20D4BYFSA1-ab30g



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

x 0.4342
y 0.3988
u' 0.2511
v' 0.5189

CIE 13.3-1995 (CRI)	
R _a	83
R ₉	5

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



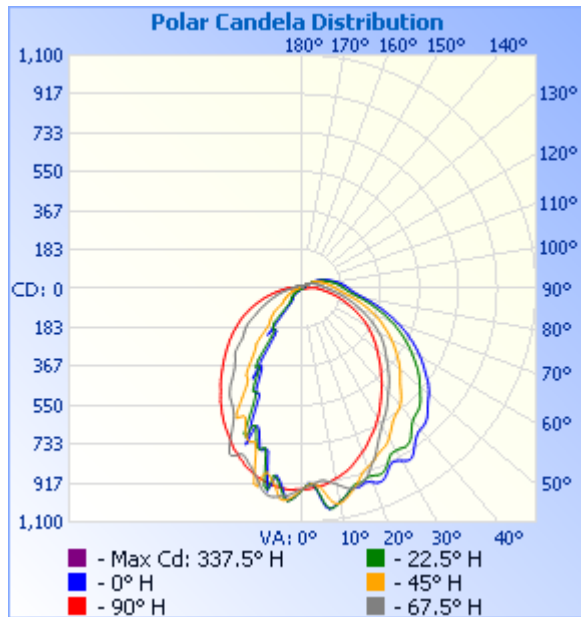
Zonal Lumen Tabulation

Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0-30	696.6	26.6%	26.7%
0-40	1,073.8	41.1%	41.1%
0-60	1,767.8	67.6%	67.6%
60-90	604.6	23.1%	23.1%
70-100	414.8	15.9%	15.9%
90-120	188.1	7.2%	7.2%
0-90	2,372.4	90.7%	90.8%
90-180	241.7	9.2%	9.2%
0-180	2,614.0	100%	100%

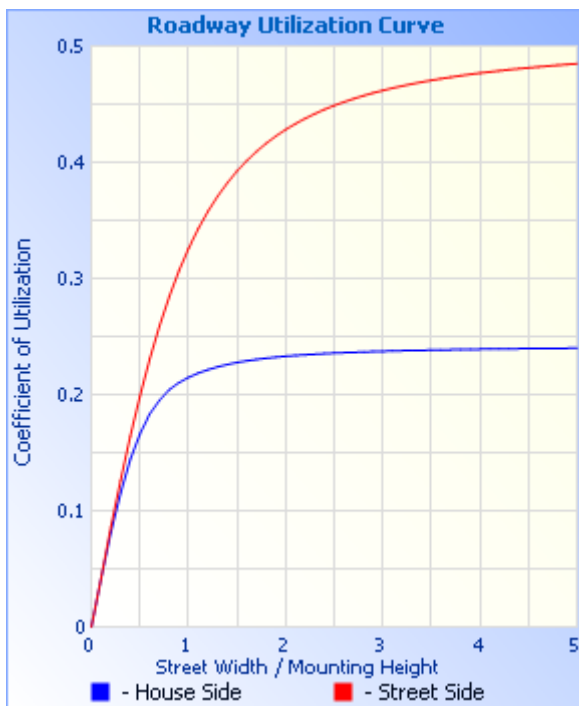
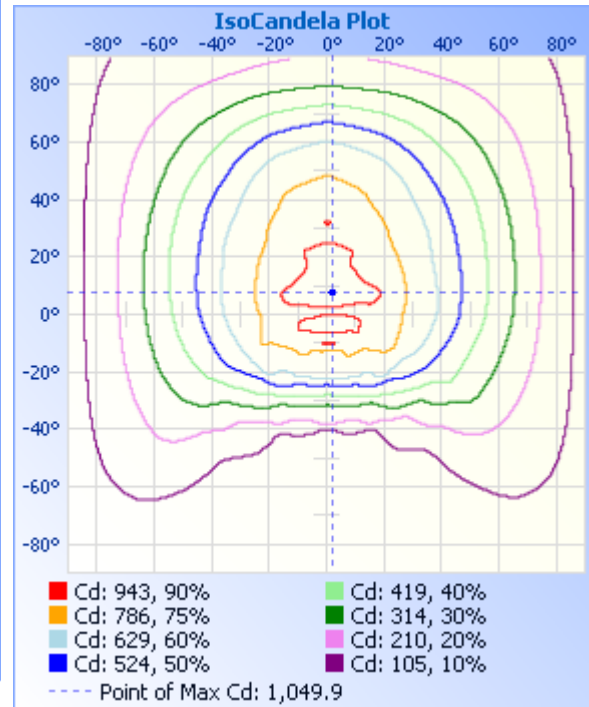
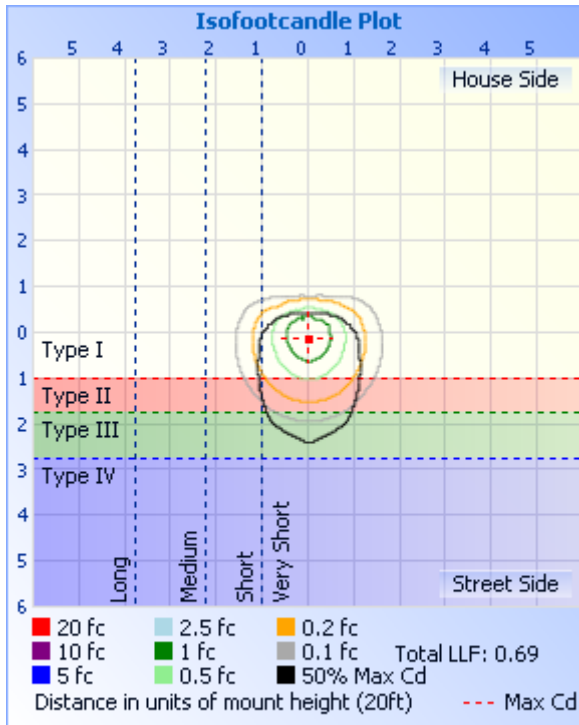
Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	91.7	3.5%	90-100	86.9	3.3%
10-20	252.0	9.6%	100-110	59.7	2.3%
20-30	353.0	13.5%	110-120	41.5	1.6%
30-40	377.2	14.4%	120-130	24.7	0.9%
40-50	361.5	13.8%	130-140	14.1	0.5%
50-60	332.5	12.7%	140-150	8.2	0.3%
60-70	276.6	10.6%	150-160	4.4	0.2%
70-80	199.7	7.6%	160-170	1.8	0.1%
80-90	128.3	4.9%	170-180	0.4	0%





Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width	
17.0ft	3.27 fc	35.0 ft	35.3 ft
34.0ft	0.82 fc	69.9 ft	70.7 ft
51.0ft	0.36 fc	104.9 ft	106.0 ft
68.0ft	0.20 fc	139.8 ft	141.3 ft
85.0ft	0.13 fc	174.8 ft	176.7 ft
102.0ft	0.09 fc	209.8 ft	212.0 ft

■ Vert. Spread: 91.6°
 ■ Horiz. Spread: 92.2°



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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	946	946	946	946	946	946	946	946	946	946	946	946	946	946	946	946	946
1	930	931	934	937	946	951	957	959	962	964	959	950	946	940	934	929	930
2	918	921	926	931	944	958	969	976	979	981	972	957	946	934	923	917	918
3	923	922	920	925	941	961	979	988	995	995	986	967	949	932	917	917	923
4	951	947	924	917	935	962	985	996	1002	1003	995	977	951	928	920	935	951
5	993	983	937	910	931	963	987	983	977	991	1001	981	948	921	931	971	993
6	1032	1023	962	908	931	968	982	944	935	956	997	983	943	913	954	1015	1032
7	1046	1043	990	913	927	971	965	914	905	922	970	988	941	910	980	1043	1046
8	1040	1044	1016	921	921	973	938	891	887	896	937	991	940	911	1009	1050	1040
9	1029	1033	1026	928	913	971	915	880	934	893	915	990	936	914	1029	1039	1029
10	1018	1018	1027	937	907	966	892	936	968	963	897	985	932	922	1038	1026	1018
11	1008	1006	1018	947	902	959	872	944	865	948	881	973	926	929	1035	1014	1008
12	996	994	1007	957	895	951	867	852	781	848	898	954	921	936	1022	1001	996
13	979	980	994	968	887	933	902	774	773	773	957	932	915	944	1009	987	979
14	971	964	979	971	882	916	937	760	786	775	948	910	910	955	994	971	971
15	971	955	963	969	872	896	890	766	778	785	873	893	901	964	981	961	971
16	972	954	948	963	862	880	820	764	738	778	796	876	892	968	966	959	972
17	966	954	930	956	851	862	757	737	700	744	759	864	885	967	950	960	966
18	960	948	912	947	841	839	739	702	682	704	757	849	878	966	931	955	960
19	963	942	902	935	830	823	739	679	691	683	764	838	863	960	915	948	963
20	971	939	895	919	820	811	738	668	781	686	759	831	854	949	903	942	971
21	980	943	889	899	811	802	730	701	668	748	742	837	844	932	896	942	980
22	983	948	879	882	801	794	711	729	543	735	716	849	832	917	893	946	983
23	978	949	873	868	788	792	677	625	533	597	686	856	823	898	887	949	978
24	966	943	860	848	776	795	655	534	545	533	664	849	812	882	875	947	966
25	949	931	853	828	764	793	644	518	514	536	662	818	796	863	861	938	949
26	933	915	847	809	755	788	641	519	461	534	672	768	784	844	849	922	933
27	922	898	841	792	745	772	635	501	424	499	685	723	771	826	840	902	922
28	922	884	836	776	732	746	637	462	412	451	662	691	759	808	830	891	922
29	927	881	826	760	719	708	625	428	484	421	587	670	750	794	825	876	927

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31	947	881	799	734	695	639	514	396	254	430	501	642	725	758	810	872	947
32	951	886	787	722	682	617	479	399	233	394	493	632	710	739	799	877	951
33	948	889	772	713	668	600	467	324	232	275	487	623	698	721	785	881	948
34	935	886	760	702	655	586	459	251	232	236	467	612	683	706	770	883	935
35	918	881	749	690	642	571	445	234	233	233	436	598	669	692	753	878	918
36	901	868	742	678	630	561	422	231	240	235	405	581	659	680	740	867	901
37	887	851	735	664	617	552	393	228	272	233	380	562	642	669	730	852	887
38	876	834	730	652	604	539	364	219	160	225	362	539	627	658	722	833	876
39	868	819	724	640	592	523	345	207	91	215	350	519	613	645	716	815	868
40	864	809	716	629	581	509	330	196	81	210	339	501	602	632	709	801	864
41	863	802	706	619	567	493	318	184	77	141	308	486	589	618	701	791	863
42	860	798	694	608	553	475	302	126	74	93	261	477	577	606	693	784	860
43	853	793	680	598	541	460	272	97	72	84	233	465	562	594	683	780	853
44	845	788	666	587	531	445	242	88	69	80	224	457	548	583	672	775	845
45	832	781	651	575	518	432	225	84	67	78	218	450	536	572	657	769	832
46	819	770	639	562	508	419	217	81	65	76	211	443	523	563	642	760	819
47	807	759	628	551	495	408	210	78	64	73	204	433	511	554	629	749	807
48	795	746	618	539	483	400	202	75	62	71	196	414	499	545	616	736	795
49	785	735	609	528	471	392	194	73	61	68	186	395	486	535	604	723	785
50	777	721	601	517	460	385	188	70	59	66	178	374	473	524	596	710	777
51	766	710	589	507	450	377	180	68	56	64	169	363	463	513	586	700	766
52	754	699	578	496	440	367	172	65	52	62	151	353	451	502	577	690	754
53	742	688	566	488	430	355	161	63	49	59	128	345	439	491	567	679	742
54	726	675	555	479	419	339	147	60	46	57	117	338	428	479	556	667	726
55	710	663	543	469	407	327	135	58	42	54	113	329	419	468	544	653	710
56	696	647	531	459	397	316	125	55	40	51	109	320	406	458	534	640	696
57	682	632	520	450	387	306	119	52	37	48	106	310	395	448	522	626	682
58	669	618	509	439	376	298	114	49	35	45	102	297	384	438	511	612	669
59	654	604	497	428	365	290	109	46	31	42	99	283	373	429	501	598	654
60	640	591	485	416	354	281	106	43	29	39	95	269	362	419	489	586	640
61	625	578	473	404	343	273	101	41	26	37	92	255	351	410	478	572	625

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62	610	562	461	392	332	264	98	39	24	35	89	244	340	400	465	558	610
63	593	548	448	380	319	255	94	36	22	32	85	235	330	388	453	544	593
64	579	533	436	368	308	246	91	34	20	30	82	225	319	379	441	529	579
65	562	519	425	355	296	236	87	32	19	28	79	215	309	368	431	515	562
66	545	503	412	342	285	226	83	29	17	26	75	204	297	357	420	501	545
67	531	488	401	330	273	215	80	27	16	24	72	194	286	346	408	486	531
68	513	472	388	317	261	205	76	26	14	23	69	185	275	333	395	471	513
69	497	457	375	304	250	196	72	24	13	21	66	175	264	320	384	456	497
70	480	439	363	293	238	186	69	22	12	19	63	166	252	306	372	440	480
71	463	426	351	282	228	175	66	20	10	18	59	159	241	293	360	426	463
72	446	409	338	271	217	166	63	19	10	16	57	152	230	282	347	410	446
73	429	394	325	260	207	157	60	18	8	15	54	144	219	272	335	396	429
74	412	377	312	250	197	148	56	16	8	15	51	137	208	260	321	380	412
75	396	362	299	239	187	139	53	16	7	13	48	131	197	250	310	365	396
76	379	347	286	230	178	131	51	14	7	12	46	124	187	240	297	349	379
77	362	332	274	220	168	123	48	13	6	11	44	118	177	230	285	336	362
78	345	318	262	210	159	116	46	13	5	11	42	111	166	220	274	321	345
79	331	302	250	200	150	109	44	11	4	10	40	105	158	211	261	307	331
80	315	288	238	191	141	102	41	11	4	9	38	100	148	201	249	292	315
81	300	275	228	182	132	96	40	10	4	9	36	93	140	191	238	279	300
82	287	262	217	173	124	90	38	9	4	8	34	88	131	182	227	266	287
83	274	250	208	164	117	85	36	9	3	7	33	82	123	174	217	254	274
84	262	241	198	157	110	79	35	8	2	7	32	78	116	166	207	243	262
85	253	230	190	150	102	75	33	8	0	7	30	74	109	158	197	233	253
86	243	222	182	143	96	71	32	7	3	6	29	69	101	150	189	224	243
87	235	214	175	136	90	67	31	7	3	6	27	65	94	143	181	216	235
88	229	208	170	131	84	63	30	7	3	6	26	62	89	136	175	209	229
89	224	203	164	125	80	60	29	8	3	6	25	59	83	130	169	204	224
90	219	198	160	120	75	57	28	7	3	6	25	55	78	124	163	199	219
91	214	194	156	117	72	54	27	7	2	5	24	53	74	120	159	194	214
92	210	190	152	112	68	52	26	7	3	6	24	50	69	115	154	190	210
93	206	185	147	108	61	49	25	7	3	6	23	48	66	111	151	186	206

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.: BLC2008030E-A

Certificate#4810.01

94	201	181	143	105	48	47	24	7	3	6	22	46	59	107	146	182	201
95	196	177	140	102	35	45	24	7	3	6	22	43	47	103	143	177	196
96	190	172	136	98	25	44	24	6	2	6	21	42	36	100	139	172	190
97	186	167	133	96	16	42	22	6	3	4	21	41	28	97	135	168	186
98	181	163	129	93	9	40	23	7	3	6	20	39	20	94	132	163	181
99	175	158	125	91	3	39	22	6	3	6	20	38	13	92	128	159	175
100	170	154	122	88	2	38	21	6	3	5	19	37	8	88	124	154	170
101	164	149	118	85	2	38	21	6	3	5	18	36	4	86	121	150	164
102	159	145	115	83	2	37	21	6	3	5	18	35	3	84	118	145	159
103	155	140	112	80	2	36	20	6	3	6	18	34	2	81	115	141	155
104	149	135	109	79	2	35	20	6	3	6	17	33	2	79	112	136	149
105	144	131	106	76	2	34	19	6	3	4	17	33	2	77	109	132	144
106	139	127	102	74	3	33	19	6	3	6	17	32	2	75	106	127	139
107	134	122	99	72	6	33	18	6	3	5	17	31	2	73	102	124	134
108	129	118	97	70	8	33	18	6	3	5	16	31	3	71	99	119	129
109	125	114	93	68	9	32	18	6	2	5	16	31	4	69	97	115	125
110	120	110	91	66	12	32	18	6	3	5	16	30	6	66	94	110	120
111	115	106	88	64	14	31	18	6	3	4	16	30	6	64	91	106	115
112	111	101	85	62	14	31	17	5	4	5	15	29	7	62	88	102	111
113	106	97	82	60	14	31	17	6	3	5	15	29	9	60	85	98	106
114	101	92	80	58	14	31	17	6	3	5	15	29	9	58	82	93	101
115	97	88	76	56	14	30	17	4	3	5	15	28	9	56	79	88	97
116	92	84	74	54	14	29	16	5	3	5	15	28	9	55	76	85	92
117	87	80	71	52	14	29	16	5	3	5	14	28	9	53	73	80	87
118	82	75	68	51	13	29	16	5	3	5	14	27	9	51	70	75	82
119	78	71	65	49	13	29	16	6	3	5	14	27	9	49	67	72	78
120	73	67	61	47	13	28	15	6	3	5	14	27	9	48	64	68	73
121	69	63	58	46	12	28	15	5	3	5	14	26	9	46	61	64	69
122	65	59	55	45	12	27	15	5	3	5	14	26	10	45	58	60	65
123	60	56	52	43	13	27	15	5	3	5	14	26	9	43	55	57	60
124	51	52	49	42	12	26	15	5	3	5	14	25	9	42	51	53	51
125	44	48	47	41	12	26	15	5	3	5	13	25	9	41	49	49	44

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126	39	44	44	40	12	26	14	5	4	4	13	25	9	40	47	46	39
127	35	41	42	39	11	25	14	5	3	4	13	24	9	39	44	42	35
128	31	37	41	38	11	25	14	5	3	5	13	24	9	38	42	39	31
129	28	34	39	37	11	24	14	5	4	5	12	23	9	37	41	36	28
130	26	32	37	36	10	24	14	5	3	5	12	23	9	36	39	34	26
131	24	30	36	35	10	23	13	4	4	4	12	22	8	35	37	32	24
132	22	28	34	34	10	23	13	5	3	4	12	22	9	34	36	30	22
133	21	27	32	33	10	22	13	4	4	5	12	21	8	33	34	29	21
134	20	26	31	32	10	22	13	5	3	4	12	21	8	32	32	27	20
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136	18	23	28	30	10	21	12	5	3	4	11	20	7	31	29	25	18
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138	17	21	26	29	9	19	11	5	4	5	11	20	8	29	26	22	17
139	15	19	25	28	8	19	11	5	3	5	11	19	8	28	26	21	15
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142	13	17	22	26	8	17	10	5	4	4	11	18	7	27	22	17	13
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144	11	15	21	24	8	17	10	5	4	4	10	17	6	24	21	15	11
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146	10	14	21	22	8	15	9	5	3	4	10	16	7	23	19	14	10
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156	8	11	15	13	5	9	7	4	5	5	8	11	6	14	14	9	8
157	7	11	14	11	5	9	7	5	4	5	8	10	6	14	13	9	7

Laboratory: Belling Test Laboratory Co., LTD A2LA Certificate# 4810.01
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Guangzhou, People's Republic of China. info@bellingtest.com

Report Format Number BL-FM-SA-012



Report No.: BLC2008030E-A

Certificate#4810.01

158	6	10	14	11	5	8	6	5	5	5	7	9	5	13	13	9	6
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179	5	4	4	5	3	3	4	3	4	4	4	5	3	3	4	4	5
180	5	4	4	5	3	4	4	4	4	5	4	4	3	4	4	4	5



Report No.: BLC2008030E-A

BUG

Lum. Classification System (LCS)

<u>LCS Zone</u>	<u>Lumens</u>	<u>%Lamp</u>	<u>%Lum</u>
FL (0-30)	382.5	N.A.	14.6
FM (30-60)	750.3	N.A.	28.7
FH (60-80)	374.6	N.A.	14.3
FVH (80-90)	105.0	N.A.	4.0
BL (0-30)	314.2	N.A.	12.0
BM (30-60)	321.0	N.A.	12.3
BH (60-80)	101.6	N.A.	3.9
BVH(80-90)	23.2	N.A.	0.9
UL (90-100)	86.9	N.A.	3.3
UH (100-180)	154.8	N.A.	5.9
Total	2614.1	N.A.	100.0
BUG Rating	B1-U3-G2		

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

Test date	2020-08-26	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	AST-MWP03C-20D4BYFSA1-ab40g		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC200803	120.0	60	0.1626	19.37	0.993	7.41
0E-A2	277.0	60	0.0767	19.64	0.925	12.32
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method**(Self-absorption factor: 1.157):**

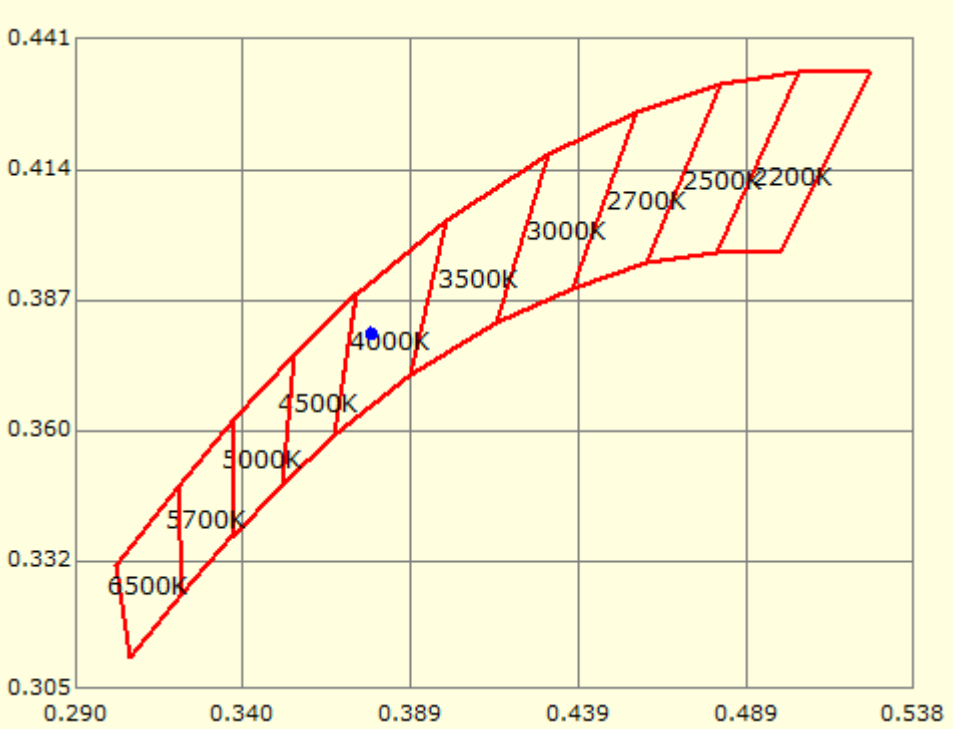
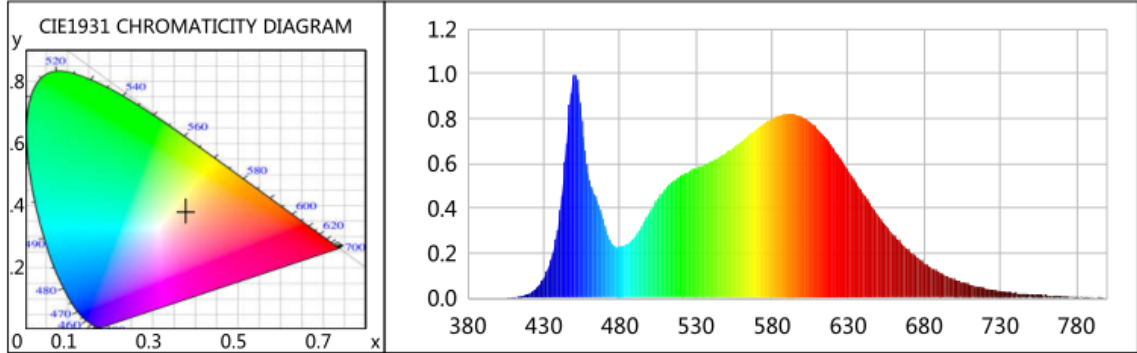
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	78	R9	-6
Frequency (Hz)	60	R2	88	R10	71
CCT (K)	4086	R3	95	R11	78
Duv	0.0020	R4	79	R12	58
Chromaticity (x, y)	x=0.3780 y=0.3796	R5	79	R13	80
Chromaticity (u', v')	u(u')=0.2224 v'=0.5025	R6	83	R14	97
Color Rendering Index (CRI)	81	R7	84	R15	71
R9	-6	R8	59	--	--
Rf	82	--	--	--	--
Rg	94	--	--	--	--
Rcs,h1 (%)	-14	--	--	--	--

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)	2794.4	2783.8	300-5000(-10%)
0-90 °Total Luminous (lm)	2536.1	2526	
Luminous Efficacy (lm/W)	144.27	141.74	Premium: >= 120(-3%)
0-90 °Luminous Efficacy (lm/W)	130.93	128.62	
Most worst Luminous/Highest	141.74		
Zonal lumens in the 80-90 °0-90 °zone (%)	5.42		<=10(+3)
Beam Angle (°)	95.5	--	--
Center Beam Candle Power (cd)	1021	--	--



Spectral Power Distribution & Chromaticity Diagram





Report No.: BLC2008030E-A

Certificate#4810.01

WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0000	0.0019	525	0.5633	33.5668	670	0.2126	12.6671
385	0.0006	0.0346	530	0.5789	34.4973	675	0.1827	10.8879
390	0.0010	0.0591	535	0.5914	35.2446	680	0.1563	9.3137
395	0.0006	0.0339	540	0.6108	36.3985	685	0.1341	7.9921
400	0.0007	0.0442	545	0.6267	37.3459	690	0.1149	6.8499
405	0.0012	0.0707	550	0.6494	38.6994	695	0.0977	5.8194
410	0.0030	0.1775	555	0.6727	40.0881	700	0.0817	4.8693
415	0.0079	0.4723	560	0.6993	41.6743	705	0.0698	4.1597
420	0.0196	1.1688	565	0.7270	43.3261	710	0.0591	3.5237
425	0.0424	2.5282	570	0.7529	44.8670	715	0.0500	2.9802
430	0.0884	5.2697	575	0.7798	46.4729	720	0.0431	2.5660
435	0.1756	10.4621	580	0.8004	47.6969	725	0.0363	2.1616
440	0.3452	20.5713	585	0.8142	48.5220	730	0.0311	1.8544
445	0.6948	41.4031	590	0.8218	48.9725	735	0.0248	1.4758
450	1.0000	59.5931	595	0.8203	48.8866	740	0.0234	1.3931
455	0.7978	47.5439	600	0.8071	48.0998	745	0.0209	1.2455
460	0.5267	31.3889	605	0.7856	46.8146	750	0.0171	1.0217
465	0.4359	25.9763	610	0.7534	44.8987	755	0.0154	0.9179
470	0.3251	19.3728	615	0.7149	42.6046	760	0.0129	0.7704
475	0.2412	14.3741	620	0.6713	40.0034	765	0.0092	0.5503
480	0.2281	13.5952	625	0.6212	37.0214	770	0.0099	0.5910
485	0.2429	14.4780	630	0.5692	33.9212	775	0.0074	0.4439
490	0.2737	16.3083	635	0.5169	30.8027	780	0.0052	0.3103
495	0.3282	19.5584	640	0.4640	27.6517			
500	0.3889	23.1729	645	0.4135	24.6398			
505	0.4420	26.3377	650	0.3661	21.8189			
510	0.4883	29.0990	655	0.3220	19.1910			
515	0.5200	30.9904	660	0.2806	16.7218			
520	0.5458	32.5283	665	0.2454	14.6231			



TM30

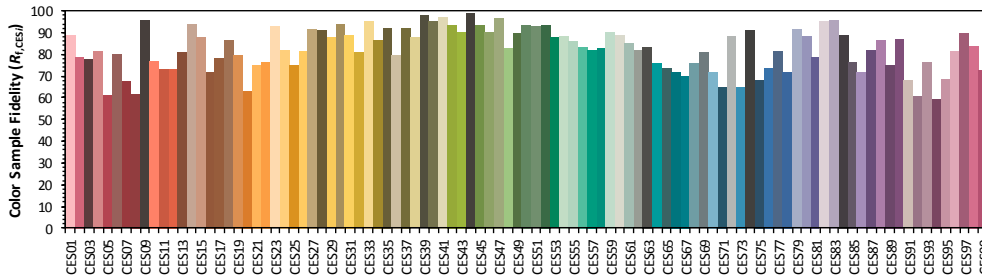
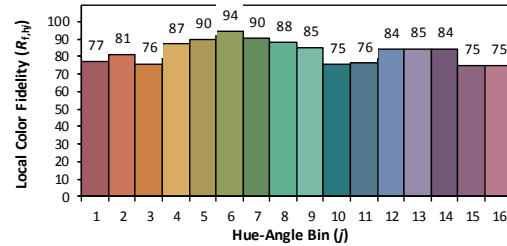
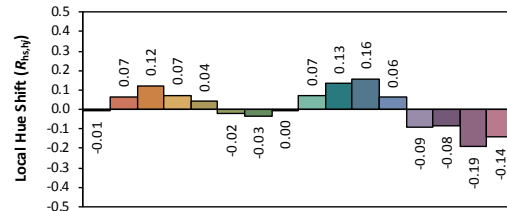
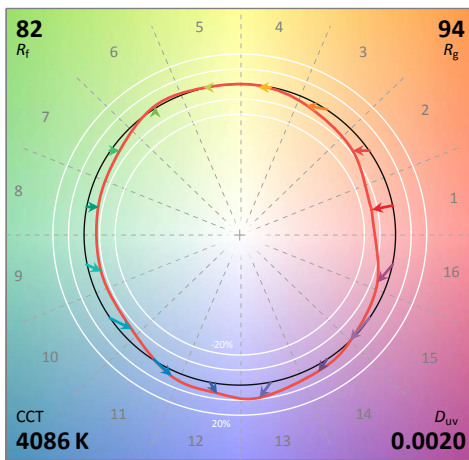
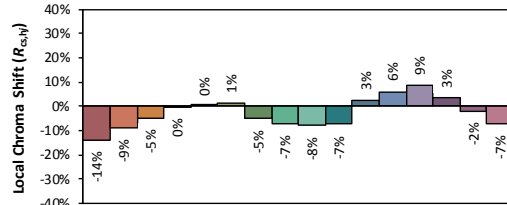
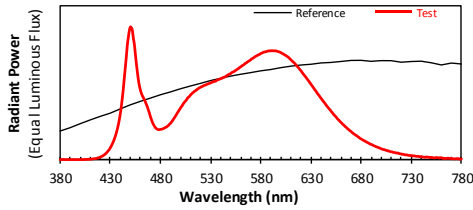
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-XX80RA35000H1

Manufacturer: AS MART LIGHT CO., LTD

Date: 2020/8/26

Model: AST-MWP03C-20D4BYFSA1-ab40g



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

x **0.3780**
 y **0.3796**
 u' **0.2224**
 v' **0.5025**

CIE 13.3-1995 (CRI)	
R_a	81
R_9	-6

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



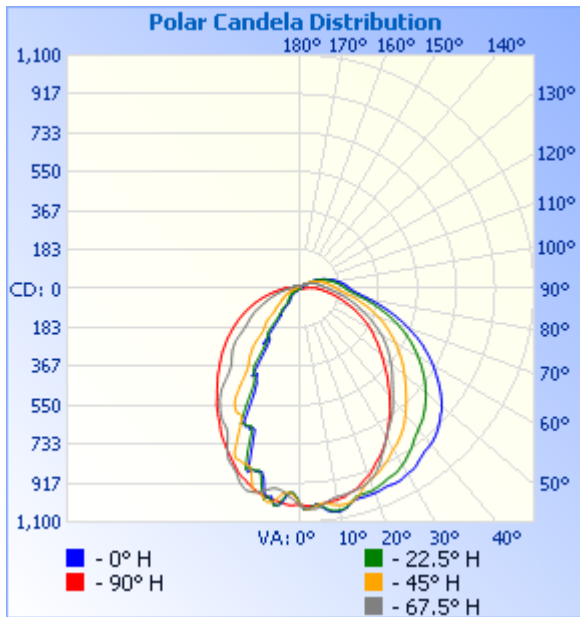
Zonal Lumen Tabulation

Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0-30	743.8	26.6%	26.6%
0-40	1,147.7	41.1%	41.1%
0-60	1,888.1	67.6%	67.6%
60-90	648.0	23.2%	23.2%
70-100	444.8	15.9%	15.9%
90-120	201.7	7.2%	7.2%
0-90	2,536.1	90.8%	90.8%
90-180	258.1	9.2%	9.2%
0-180	2,794.2	100%	100%

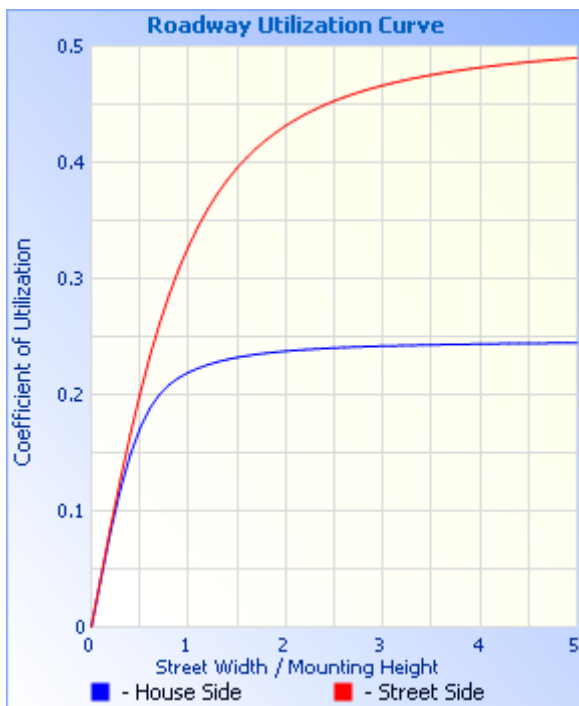
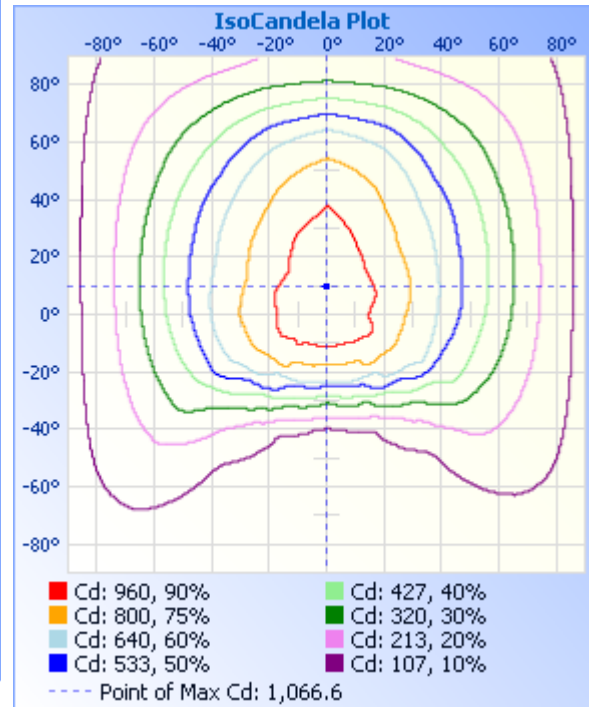
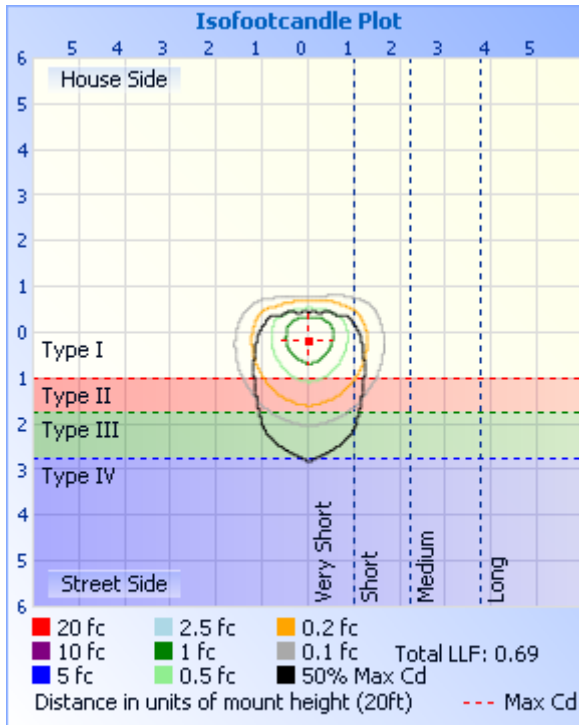
Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	96.5	3.5%	90-100	92.7	3.3%
10-20	270.2	9.7%	100-110	64.5	2.3%
20-30	377.1	13.5%	110-120	44.5	1.6%
30-40	403.9	14.5%	120-130	25.6	0.9%
40-50	385.8	13.8%	130-140	14.9	0.5%
50-60	354.6	12.7%	140-150	8.9	0.3%
60-70	295.9	10.6%	150-160	4.7	0.2%
70-80	214.7	7.7%	160-170	1.9	0.1%
80-90	137.4	4.9%	170-180	0.4	0%





Photometric Data



Illuminance at a Distance

Height	Center Beam fc	Beam Width	Beam Width
17.0ft	3.53 fc	37.0 ft	37.4 ft
34.0ft	0.88 fc	73.9 ft	74.9 ft
51.0ft	0.39 fc	110.9 ft	112.3 ft
68.0ft	0.22 fc	147.9 ft	149.7 ft
85.0ft	0.14 fc	184.9 ft	187.2 ft
102.0ft	0.10 fc	221.8 ft	224.6 ft

■ Vert. Spread: 94.8°
■ Horiz. Spread: 95.5°



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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	1021	1021	1021	1021	1021	1021	1021	1021	1021	1021	1021	1021	1021	1021	1021	1021	1021
1	1041	1039	1036	1034	1022	1011	998	991	987	988	994	1008	1018	1032	1042	1043	1041
2	1041	1041	1041	1038	1024	999	976	970	964	964	974	994	1022	1043	1048	1046	1041
3	1029	1030	1035	1040	1027	986	968	967	963	961	963	982	1021	1048	1048	1033	1029
4	1020	1022	1028	1040	1023	976	967	980	984	976	963	968	1018	1047	1039	1026	1020
5	1025	1023	1021	1032	1022	966	972	1004	1012	1002	971	958	1012	1044	1030	1027	1025
6	1040	1035	1016	1024	1018	957	987	1026	1029	1026	988	952	1008	1037	1023	1037	1040
7	1054	1047	1018	1013	1016	954	1005	1033	1024	1030	1007	948	1003	1027	1021	1052	1054
8	1062	1056	1027	1005	1011	949	1013	1012	989	1007	1016	950	1001	1021	1025	1060	1062
9	1066	1060	1031	998	1012	952	1018	989	996	988	1018	957	995	1012	1031	1063	1066
10	1067	1060	1036	995	1009	958	1012	1000	980	1007	1003	963	989	1004	1037	1065	1067
11	1062	1058	1037	994	1005	963	988	976	910	964	978	972	986	999	1041	1062	1062
12	1054	1051	1037	993	1003	968	971	910	881	899	975	982	980	995	1042	1056	1054
13	1040	1039	1035	990	994	972	976	877	886	877	986	983	971	988	1039	1045	1040
14	1030	1024	1031	988	987	975	978	882	885	885	947	984	961	983	1035	1030	1030
15	1026	1014	1021	984	983	976	932	887	882	880	896	985	951	979	1027	1017	1026
16	1025	1011	1008	982	975	976	890	873	900	877	871	975	940	972	1018	1008	1025
17	1026	1011	992	980	965	974	860	886	791	889	866	963	932	968	1004	1007	1026
18	1026	1011	978	973	953	963	853	846	700	806	866	947	922	961	988	1005	1026
19	1025	1010	965	968	945	944	854	736	693	702	861	923	910	955	971	1003	1025
20	1025	1008	957	960	938	932	851	683	704	686	857	909	895	951	956	1000	1025
21	1023	1004	952	951	927	914	848	683	692	693	856	895	879	942	946	997	1023
22	1021	999	946	940	913	896	845	688	699	692	833	885	867	932	939	994	1021
23	1018	994	941	927	899	881	828	683	681	689	756	872	855	919	928	988	1018
24	1016	989	932	911	887	867	765	684	537	695	689	849	841	907	920	980	1016
25	1018	984	922	894	877	854	696	667	487	606	660	819	828	893	912	973	1018
26	1020	982	915	873	865	842	654	551	478	504	655	784	813	883	904	965	1020
27	1019	979	905	860	852	819	641	483	449	475	657	759	801	865	894	958	1019
28	1017	974	894	842	839	792	637	468	462	465	651	745	789	851	890	954	1017
29	1012	967	884	825	824	767	630	460	470	452	637	734	774	836	876	949	1012

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30	1008	959	873	808	809	739	622	440	328	440	621	728	757	820	862	943	1008
31	1005	951	867	794	793	718	604	430	283	423	594	721	741	802	848	937	1005
32	1002	942	859	780	777	701	586	395	275	325	537	705	726	782	833	927	1002
33	997	932	849	768	761	687	558	313	277	281	470	694	714	764	820	918	997
34	988	923	840	757	747	673	499	286	316	276	440	678	700	748	809	910	988
35	980	914	829	745	731	658	449	275	226	267	425	662	687	733	800	902	980
36	974	901	819	734	719	647	424	263	158	263	412	648	673	718	794	893	974
37	966	890	808	720	700	633	408	256	149	251	395	627	656	704	786	886	966
38	962	879	796	707	683	625	393	237	158	179	376	607	639	690	777	875	962
39	959	873	782	691	666	612	377	179	133	150	361	574	627	675	763	865	959
40	955	864	769	677	651	596	361	152	89	141	329	535	612	660	749	857	955
41	951	856	756	663	636	578	344	141	79	134	283	508	599	647	734	849	951
42	944	850	742	650	619	561	321	134	76	118	260	490	585	634	720	844	944
43	937	843	729	637	604	543	289	121	74	92	250	477	574	623	707	836	937
44	928	833	716	625	591	521	264	99	72	84	240	468	561	610	697	828	928
45	919	824	703	612	577	495	251	89	71	80	231	460	546	599	684	820	919
46	909	814	689	601	560	473	240	85	69	78	223	450	532	586	672	812	909
47	899	803	677	590	544	454	229	81	67	76	207	441	522	576	661	802	899
48	887	793	665	580	530	439	219	79	66	74	179	431	509	563	649	792	887
49	881	782	653	568	517	427	209	76	64	71	164	419	497	552	635	782	881
50	869	771	641	558	503	415	195	74	62	68	157	407	486	540	624	772	869
51	856	757	627	547	490	405	179	71	58	67	150	394	474	528	612	762	856
52	842	747	617	535	477	397	167	69	55	64	144	377	460	518	601	751	842
53	828	734	605	524	464	387	158	66	52	62	135	355	448	508	590	738	828
54	813	721	594	513	453	378	152	64	49	58	125	337	437	500	578	727	813
55	798	709	580	501	440	367	145	61	45	56	118	320	425	490	567	713	798
56	782	694	568	490	426	357	139	58	41	53	113	308	413	479	556	700	782
57	767	682	555	478	415	346	131	55	39	50	109	298	401	469	544	685	767
58	750	667	543	466	404	335	124	53	36	47	105	288	389	457	532	672	750
59	736	653	530	455	391	321	118	49	33	44	101	280	376	446	520	657	736
60	721	638	518	443	381	308	113	46	31	41	98	271	366	434	508	645	721
61	705	625	505	429	368	295	109	43	28	38	95	262	355	423	496	630	705

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62	688	609	492	416	357	283	105	41	25	36	91	254	343	411	485	617	688
63	670	595	479	403	344	271	101	39	23	34	87	243	332	399	472	601	670
64	652	580	466	389	332	260	97	36	22	31	84	232	320	388	462	586	652
65	637	565	455	377	319	249	93	34	20	29	80	219	308	376	450	571	637
66	617	548	442	365	307	240	89	32	18	27	77	209	297	363	438	556	617
67	599	534	430	351	295	230	85	29	17	24	73	199	286	352	428	539	599
68	578	518	417	337	281	220	82	27	15	23	70	189	275	337	414	523	578
69	559	501	404	325	270	211	78	25	13	21	66	180	264	325	401	505	559
70	540	484	391	313	258	201	74	23	12	19	64	171	252	311	390	489	540
71	521	468	377	301	247	192	71	22	11	18	60	164	241	300	378	472	521
72	503	451	364	291	234	181	68	20	10	17	57	156	230	289	364	455	503
73	482	434	351	280	223	172	64	19	9	15	54	147	220	278	351	438	482
74	463	416	337	269	212	163	61	17	8	15	51	140	209	267	337	421	463
75	444	399	323	259	202	155	58	16	8	13	49	132	199	257	324	402	444
76	424	383	311	248	191	146	55	15	7	12	46	125	189	247	312	385	424
77	406	366	297	238	181	138	52	14	6	11	44	118	179	236	299	370	406
78	387	351	286	227	171	129	50	13	5	11	42	111	169	227	286	353	387
79	370	334	273	217	161	122	47	12	5	10	39	105	159	217	273	338	370
80	351	319	261	207	153	114	45	12	4	9	38	99	149	206	261	321	351
81	334	305	249	197	143	108	43	10	4	9	36	92	140	197	249	306	334
82	318	291	237	188	135	101	41	10	4	8	34	88	131	188	238	290	318
83	303	277	227	180	127	95	39	10	3	7	33	83	123	179	227	278	303
84	289	265	216	171	119	89	38	9	2	7	31	78	115	170	217	265	289
85	276	253	207	162	112	84	36	9	3	6	30	74	109	162	208	253	276
86	264	243	198	156	105	79	34	8	3	6	29	70	101	154	199	243	264
87	254	233	190	148	99	74	33	8	3	6	28	65	95	147	190	232	254
88	246	225	182	142	93	70	32	8	3	6	27	62	89	140	183	224	246
89	239	219	177	136	88	66	31	8	3	6	26	59	84	135	177	217	239
90	234	213	172	131	82	63	30	8	3	6	25	56	79	129	171	212	234
91	229	209	167	126	78	60	29	7	3	5	25	53	75	124	167	207	229
92	224	205	162	121	74	57	28	7	3	6	23	51	71	119	162	203	224
93	220	200	158	117	65	55	28	7	3	5	23	49	67	115	158	198	220

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94	216	196	154	113	48	52	27	7	3	6	23	47	60	111	154	194	216
95	211	192	151	110	35	51	26	7	3	5	22	45	48	107	150	190	211
96	206	187	146	106	24	48	25	7	3	5	21	43	38	105	146	185	206
97	201	183	143	103	15	46	25	7	3	6	21	41	28	101	143	181	201
98	196	178	139	101	8	45	25	7	3	5	21	40	21	98	138	176	196
99	190	173	136	98	4	43	24	7	3	5	20	39	14	95	135	171	190
100	185	168	132	95	2	41	23	7	3	5	19	38	9	93	132	167	185
101	179	164	129	93	2	41	23	6	3	5	19	37	5	90	128	162	179
102	174	159	125	90	2	40	22	6	3	6	18	36	3	87	125	158	174
103	169	154	122	88	2	39	22	6	3	5	19	36	2	85	122	153	169
104	164	149	119	85	2	38	21	7	3	5	18	35	2	83	119	148	164
105	158	144	116	83	3	37	21	6	3	5	17	34	2	80	115	143	158
106	152	140	112	81	5	37	21	7	3	5	17	34	2	78	112	139	152
107	147	135	109	78	7	36	21	6	3	5	17	33	2	76	109	134	147
108	142	130	106	76	9	36	20	6	3	4	17	32	3	74	106	130	142
109	137	126	103	74	11	35	20	6	4	5	17	32	4	71	103	125	137
110	131	121	99	72	13	35	19	6	3	5	16	31	5	69	100	120	131
111	127	116	96	69	14	34	20	6	3	5	16	31	6	67	96	115	127
112	121	111	94	67	14	34	19	6	4	5	16	30	7	65	93	110	121
113	116	106	90	65	14	33	19	6	3	5	16	30	8	63	89	105	116
114	111	102	87	63	14	32	19	6	3	4	15	30	9	62	86	101	111
115	106	97	84	61	13	32	19	6	3	5	15	29	10	60	82	95	106
116	100	92	80	60	13	32	17	6	3	5	15	29	11	58	78	91	100
117	95	86	75	58	14	32	18	6	3	5	15	29	11	57	74	85	95
118	89	82	71	56	13	32	18	6	3	5	14	28	12	55	70	81	89
119	84	77	68	55	13	31	17	5	3	4	15	28	12	54	67	76	84
120	79	72	64	53	13	30	17	6	3	4	15	28	12	52	63	71	79
121	73	67	61	51	13	30	17	6	4	5	14	27	12	51	61	66	73
122	68	62	58	48	13	30	17	5	4	5	14	27	12	50	58	60	68
123	60	57	55	45	13	29	17	6	3	5	14	26	12	48	55	55	60
124	51	52	52	41	12	29	16	6	4	5	14	26	12	47	52	51	51
125	43	47	49	39	12	28	17	6	3	5	14	25	12	46	50	47	43

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126	37	43	47	37	11	27	16	5	3	5	14	25	11	45	48	43	37
127	33	40	45	36	12	27	16	5	3	5	13	25	11	43	46	40	33
128	29	37	43	35	11	27	15	6	4	4	13	24	11	43	44	38	29
129	27	34	42	34	11	26	15	5	4	4	13	24	11	41	42	35	27
130	25	32	40	33	11	26	15	6	4	5	13	24	11	40	41	34	25
131	24	31	39	33	11	25	15	5	4	4	13	23	11	40	39	32	24
132	22	29	37	33	11	25	15	5	4	5	13	22	10	38	38	30	22
133	21	28	35	32	10	24	14	5	4	5	12	22	11	37	36	29	21
134	20	27	34	32	10	23	14	5	4	4	12	22	10	36	34	28	20
135	19	26	32	31	10	23	14	5	4	4	12	22	10	35	33	27	19
136	19	24	30	30	10	22	14	5	3	5	11	21	10	34	31	25	19
137	18	23	28	30	10	22	14	5	4	4	11	20	10	33	30	24	18
138	17	22	27	30	9	21	13	5	4	5	11	20	10	32	28	22	17
139	16	21	25	29	9	21	13	5	4	5	11	19	9	31	28	21	16
140	15	20	25	28	10	20	12	5	3	5	11	19	9	30	27	20	15
141	15	19	24	28	9	19	12	5	3	5	11	19	9	29	27	19	15
142	13	18	24	27	9	19	12	5	4	5	10	18	9	28	26	18	13
143	13	17	24	26	8	19	12	5	4	4	10	18	9	27	25	17	13
144	12	16	23	26	8	18	12	5	3	5	10	17	8	26	25	16	12
145	11	16	23	25	8	18	11	4	4	5	10	17	7	26	24	16	11
146	11	16	23	23	8	17	11	5	5	5	10	16	8	24	23	15	11
147	11	15	21	21	7	17	10	5	5	5	9	16	8	24	23	15	11
148	10	16	22	19	7	16	11	6	4	5	9	15	8	23	22	14	10
149	11	15	21	17	7	15	11	5	4	5	9	15	7	22	21	13	11
150	9	15	20	16	7	15	10	5	4	5	9	15	6	21	20	13	9
151	10	15	19	15	6	14	10	5	5	5	9	14	7	20	19	13	10
152	9	15	19	14	6	14	9	5	4	5	8	13	6	20	18	12	9
153	9	14	18	13	5	13	9	5	5	5	9	13	6	18	18	12	9
154	9	14	17	13	5	13	9	6	5	4	8	12	6	17	17	11	9
155	8	13	16	13	5	13	9	5	5	5	8	12	6	16	16	11	8
156	9	12	16	13	6	11	9	5	5	5	8	11	5	15	15	10	9
157	8	12	15	12	5	11	8	5	4	5	8	10	5	14	14	10	8

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158	8	12	14	11	6	10	8	4	5	4	7	9	5	13	14	10	8
159	8	11	14	10	6	10	7	5	4	4	7	9	5	13	13	9	8
160	8	10	13	10	4	9	7	5	5	4	7	9	6	12	12	8	8
161	8	10	11	9	5	8	7	5	4	5	6	8	6	12	12	8	8
162	7	10	10	8	5	8	7	4	5	5	7	8	5	11	11	8	7
163	7	9	9	7	5	8	7	5	5	5	7	8	6	10	10	7	7
164	7	9	8	7	5	7	6	5	4	4	6	8	5	9	9	7	7
165	7	8	7	6	4	7	6	5	5	5	6	8	5	8	9	6	7
166	6	8	6	5	4	6	6	4	4	5	6	7	6	8	9	7	6
167	6	8	7	5	5	5	5	5	5	5	6	7	5	7	8	6	6
168	6	7	6	5	3	6	6	5	5	5	6	7	5	7	7	6	6
169	6	6	5	5	4	5	5	5	5	5	5	7	4	6	6	6	6
170	5	5	6	5	4	5	5	4	4	5	6	6	5	6	6	5	5
171	5	5	5	5	4	5	5	5	4	5	5	5	4	5	6	5	5
172	5	5	5	5	3	5	5	5	4	5	5	6	4	5	6	5	5
173	4	5	5	5	4	5	5	5	5	5	5	6	4	5	5	4	4
174	4	5	5	5	3	4	5	5	5	4	5	4	4	4	4	5	4
175	5	5	5	4	4	4	5	5	4	5	4	5	4	4	4	4	5
176	5	4	4	5	4	4	4	5	5	5	5	4	4	3	4	4	5
177	5	4	5	5	3	4	5	4	5	5	5	5	4	4	5	4	5
178	4	4	5	5	3	4	4	5	5	4	5	5	4	4	4	5	4
179	5	5	4	5	3	3	4	4	5	5	4	5	4	4	5	4	5
180	4	4	5	5	3	4	4	4	5	4	4	5	4	4	4	5	4



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BUG

Lum. Classification System (LCS)

<u>LCS Zone</u>	<u>Lumens</u>	<u>%Lamp</u>	<u>%Lum</u>
FL (0-30)	405.8	N.A.	14.5
FM (30-60)	802.7	N.A.	28.7
FH (60-80)	404.1	N.A.	14.5
FVH (80-90)	113.0	N.A.	4.0
BL (0-30)	338.0	N.A.	12.1
BM (30-60)	341.9	N.A.	12.2
BH (60-80)	106.5	N.A.	3.8
BVH (80-90)	24.4	N.A.	0.9
UL (90-100)	92.6	N.A.	3.3
UH (100-180)	165.4	N.A.	5.9
Total	2794.4	N.A.	100.0
BUG Rating	B1-U3-G2		

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

Test date	2020-08-26	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	AST-MWP03C-20D4BYFSA1-ab50g		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC200803	120.0	60	0.1621	19.33	0.994	6.45
0E-A3	277.0	60	0.0767	19.61	0.923	11.42
DLC Pass Criteria					$\geq 0.9(-3\%)$	$\leq 20(+5)$

Chromaticity Measurement - Sphere-Spectroradiometer Method**(Self-absorption factor: 1.157):**

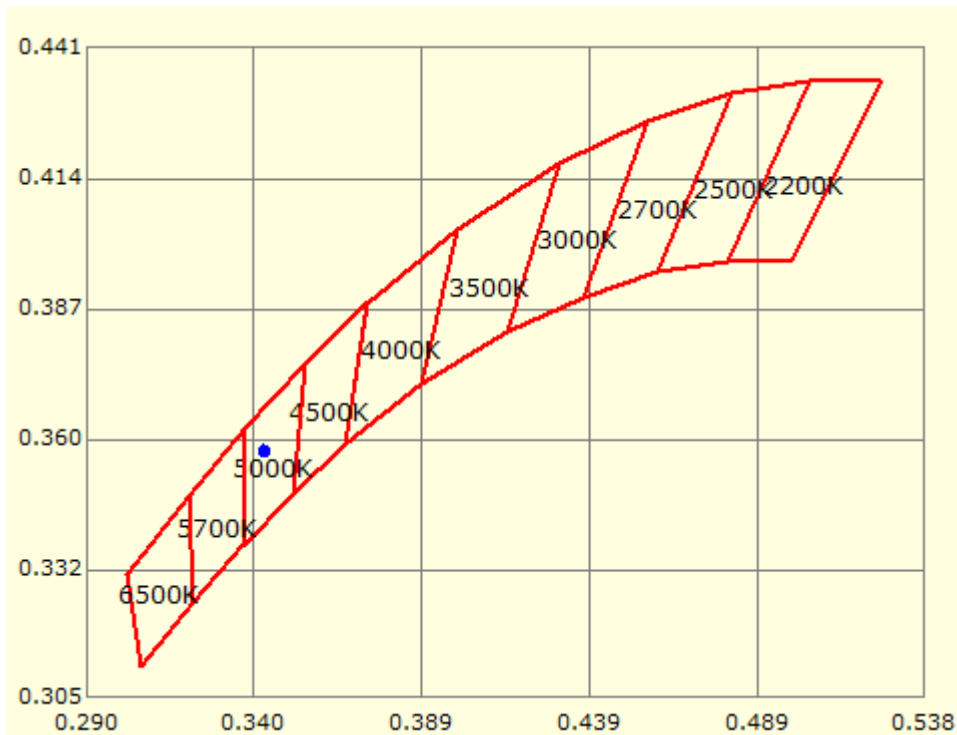
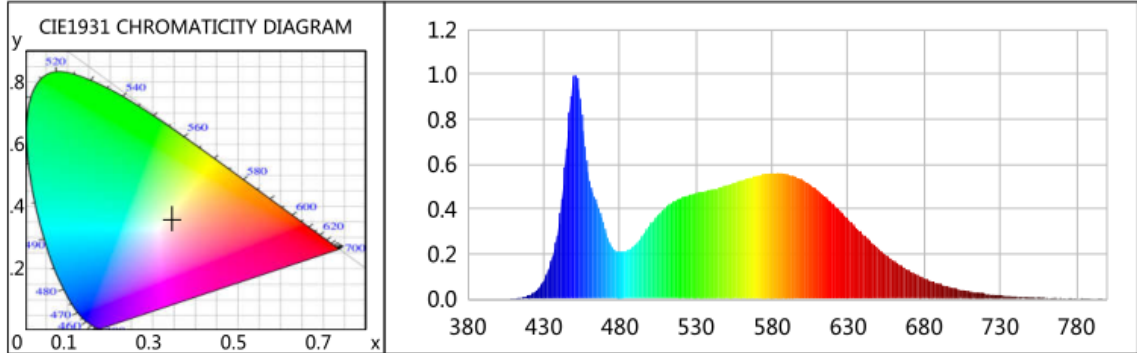
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	78	R9	-8
Frequency (Hz)	60	R2	87	R10	69
CCT (K)	5082	R3	93	R11	79
Duv	0.0034	R4	80	R12	58
Chromaticity (x, y)	x=0.3434 y=0.3570	R5	80	R13	81
Chromaticity (u', v')	u(u')=0.2082 v'(v')=0.4870	R6	82	R14	96
Color Rendering Index (CRI)	81	R7	85	R15	72
R9	-8	R8	62	--	--
Rf	82	--	--	--	--
Rg	95	--	--	--	--
Rcs,h1 (%)	-14	--	--	--	--

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)	2745.3	2735.9	300-5000(-10%)
0-90 °Total Luminous (lm)	2474	2466.1	
Luminous Efficacy (lm/W)	142.02	139.52	Premium: $\geq 120(-3\%)$
0-90 °Luminous Efficacy (lm/W)	127.99	125.76	
Most worst Luminous/Highest	139.52		
Zonal lumens in the 80-90 °0-90 °zone (%)	5.74		$\leq 10(+3)$
Beam Angle (°)	95.8	--	--
Center Beam Candle Power (cd)	944	--	--



Spectral Power Distribution & Chromaticity Diagram



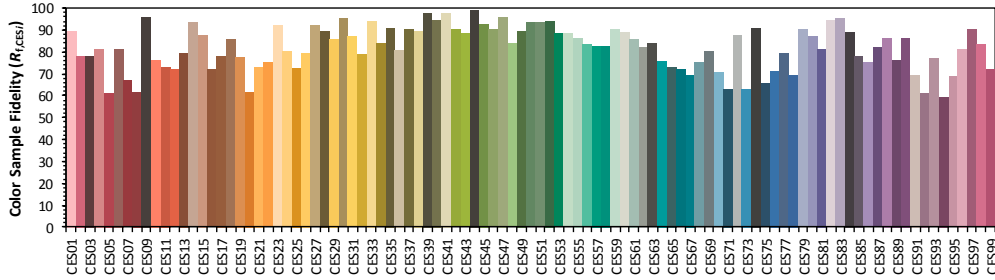
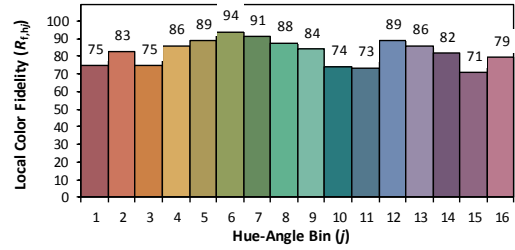
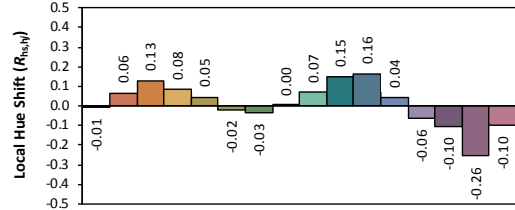
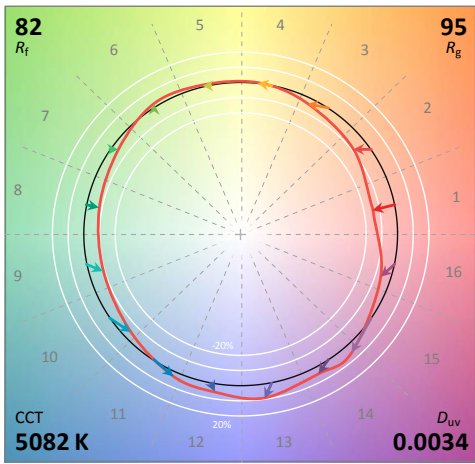
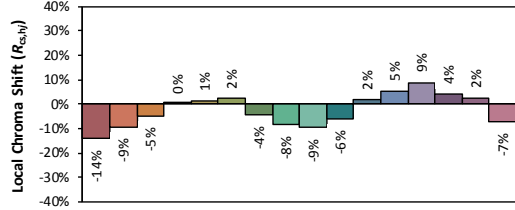
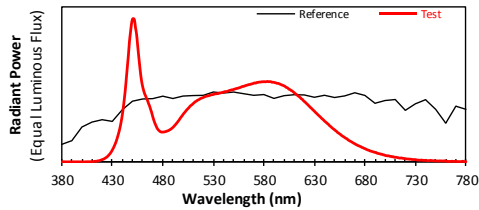


TM30

ANSI/IES TM-30-18 Color Rendition Report

Source: L128-XX80RA35000H1
Date: 2020/8/26

Manufacturer: ASHART LIGHT CO., LTD
Model: AST-MWP03C-20D4BYFSA1-ab50g



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

x 0.3434
y 0.3569
u' 0.2082
v' 0.4870

CIE 13.3-1995 (CRI)	
R _a	81
R ₉	-8

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



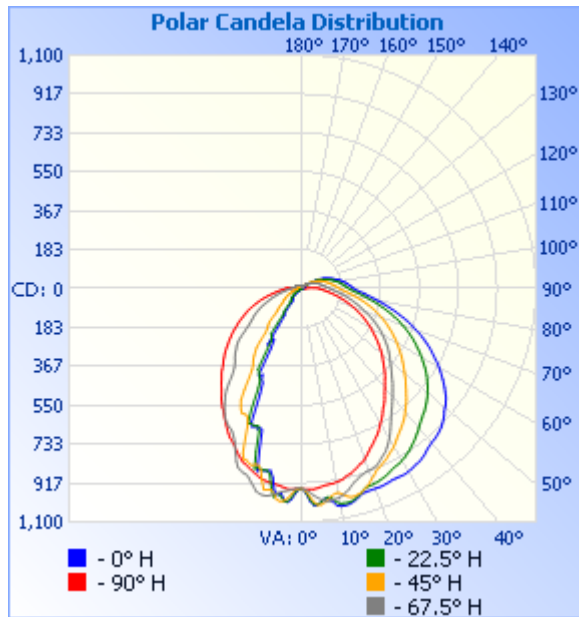
Zonal Lumen Tabulation

Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0-30	710.5	25.9%	25.9%
0-40	1,094.3	39.9%	39.9%
0-60	1,817.1	66.2%	66.2%
60-90	656.9	23.9%	23.9%
70-100	455.9	16.6%	16.6%
90-120	210.5	7.7%	7.7%
0-90	2,474.0	90.1%	90.1%
90-180	271.1	9.9%	9.9%
0-180	2,745.1	100%	100%

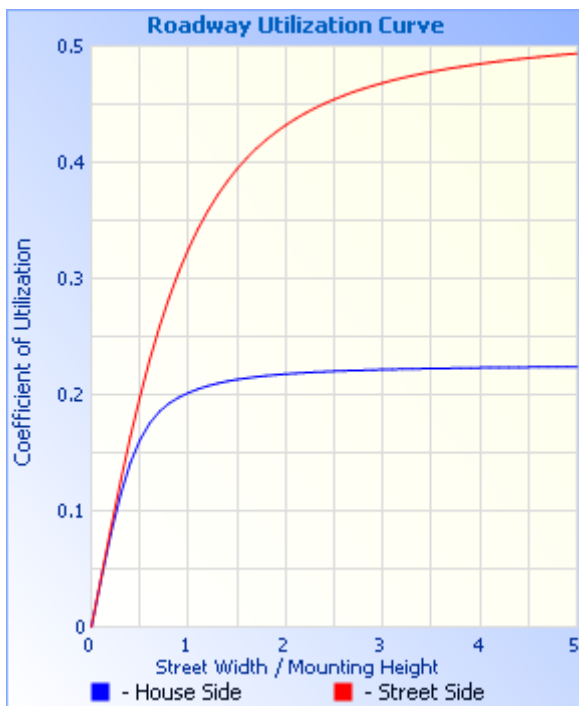
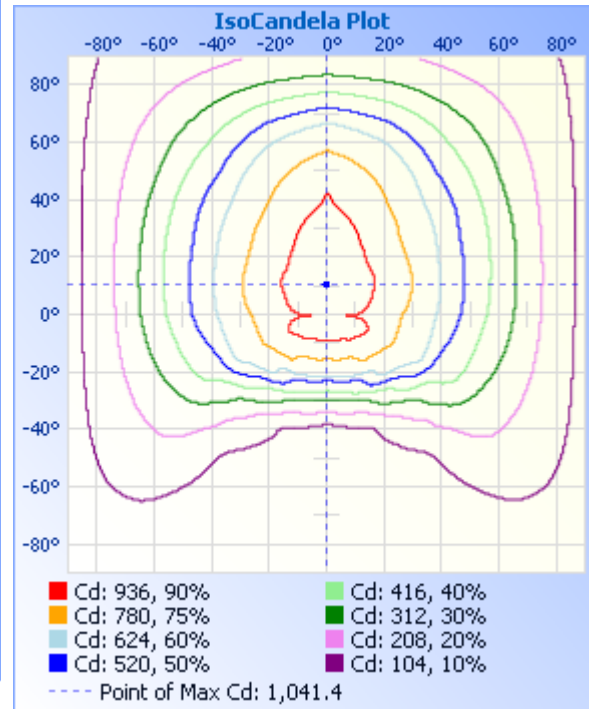
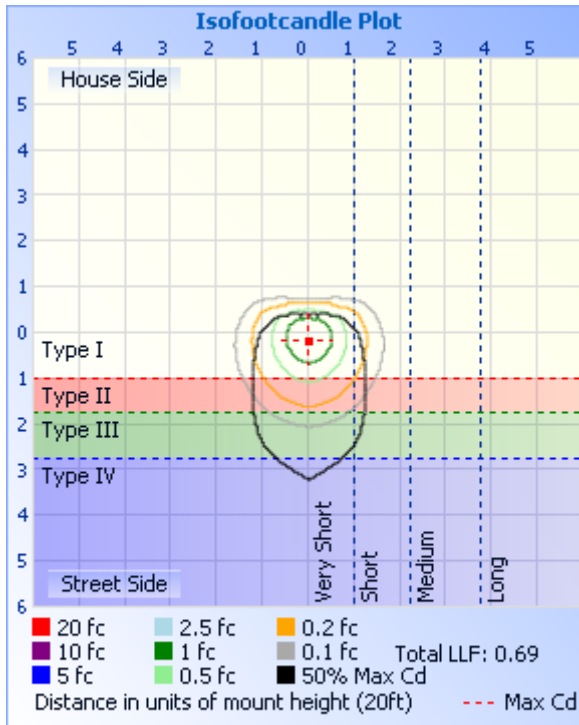
Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	93.5	3.4%	90-100	95.3	3.5%
10-20	259.3	9.4%	100-110	67.4	2.5%
20-30	357.6	13.0%	110-120	47.7	1.7%
30-40	383.9	14.0%	120-130	28.1	1%
40-50	373.4	13.6%	130-140	15.9	0.6%
50-60	349.4	12.7%	140-150	9.3	0.3%
60-70	296.3	10.8%	150-160	4.9	0.2%
70-80	218.7	8.0%	160-170	2.0	0.1%
80-90	141.9	5.2%	170-180	0.5	0%





Photometric Data



Illuminance at a Distance

Height	Center Beam fc	Beam Width	Beam Width
17.0ft	3.27 fc	37.1 ft	37.6 ft
34.0ft	0.82 fc	74.2 ft	75.2 ft
51.0ft	0.36 fc	111.2 ft	112.8 ft
68.0ft	0.20 fc	148.3 ft	150.4 ft
85.0ft	0.13 fc	185.4 ft	188.1 ft
102.0ft	0.09 fc	222.5 ft	225.7 ft

■ Vert. Spread: 95.0°
■ Horiz. Spread: 95.8°



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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	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944
1	965	961	957	950	946	943	945	945	947	946	942	940	943	949	954	960	965
2	1001	994	980	961	947	947	955	963	965	957	948	942	944	959	977	993	1001
3	1022	1019	1006	975	947	950	973	990	993	983	966	948	947	972	1006	1017	1022
4	1022	1020	1022	986	944	954	991	1007	1010	1004	989	953	947	985	1024	1021	1022
5	1008	1010	1021	997	939	959	1004	1009	1001	1006	1003	957	943	996	1026	1009	1008
6	995	996	1012	1005	935	963	1007	984	970	984	1008	962	938	1004	1020	997	995
7	995	989	1000	1010	931	972	994	971	977	973	1002	971	933	1010	1007	992	995
8	1012	997	986	1007	930	979	966	985	961	991	976	978	930	1012	993	1000	1012
9	1034	1018	977	1003	929	987	959	937	900	947	958	986	928	1009	983	1019	1034
10	1040	1029	977	999	925	990	965	880	870	889	963	991	926	1006	982	1033	1040
11	1041	1029	987	993	922	986	951	866	876	872	963	991	922	999	990	1038	1041
12	1040	1031	1000	981	917	982	913	873	875	875	924	987	918	990	1004	1035	1040
13	1035	1028	1008	970	908	969	876	870	875	872	877	978	911	979	1014	1031	1035
14	1027	1021	1009	956	903	950	851	865	885	870	856	959	902	966	1014	1025	1027
15	1018	1012	1005	944	898	933	850	874	784	879	857	942	895	952	1009	1018	1018
16	1008	1001	1000	934	889	920	854	791	693	798	866	925	887	943	1003	1005	1008
17	1004	989	990	926	879	917	849	696	685	704	861	914	878	933	995	995	1004
18	1003	982	980	919	871	907	842	670	695	678	852	912	871	923	986	986	1003
19	1002	981	968	914	866	897	837	677	683	685	851	903	865	917	975	983	1002
20	1002	980	953	911	854	882	805	675	694	685	824	894	852	912	962	980	1002
21	1003	977	941	911	843	865	737	669	672	680	753	871	841	910	947	977	1003
22	1003	974	926	906	829	833	673	673	536	686	691	843	828	907	930	974	1003
23	1000	970	918	901	817	806	647	609	481	620	662	817	812	903	919	971	1000
24	999	965	910	891	807	783	640	502	472	514	651	788	800	892	909	968	999
25	996	959	903	880	795	766	638	469	446	476	652	769	790	882	901	963	996
26	996	953	896	870	783	750	635	459	465	464	652	754	781	873	891	956	996
27	996	947	886	861	773	739	620	447	454	453	640	743	768	859	880	950	996
28	998	943	876	847	761	734	603	430	320	438	622	739	754	846	879	942	998
29	998	940	869	832	746	722	579	422	279	435	601	730	741	832	870	937	998

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30	996	935	859	817	733	710	534	345	272	355	548	721	727	816	858	934	996
31	993	931	848	799	721	696	475	287	276	288	489	708	713	799	848	930	993
32	989	923	836	780	708	681	440	275	312	279	449	693	699	781	834	923	989
33	986	917	825	762	693	666	421	266	212	271	430	676	685	766	820	917	986
34	983	908	816	745	678	649	408	258	155	263	418	657	676	749	806	907	983
35	978	899	806	728	669	630	391	254	147	261	403	639	663	732	794	896	978
36	972	891	797	712	656	607	372	200	156	198	387	620	651	717	785	889	972
37	965	882	787	699	643	579	357	157	126	154	370	595	636	701	778	880	965
38	957	872	777	686	627	553	338	143	87	142	355	565	621	686	769	876	957
39	951	864	766	672	615	524	303	134	78	135	318	532	607	671	762	866	951
40	946	852	753	661	604	501	272	125	75	128	275	507	596	656	752	854	946
41	944	843	741	647	591	484	254	101	73	103	257	490	584	642	738	845	944
42	940	834	729	635	579	469	241	88	72	86	249	478	570	629	724	839	940
43	936	827	717	622	570	458	232	83	70	82	239	467	560	616	710	832	936
44	930	819	703	610	558	450	223	79	69	80	231	459	550	605	697	825	930
45	924	813	689	596	546	440	214	77	67	77	222	451	536	593	686	817	924
46	915	804	677	584	534	431	201	75	65	75	206	441	523	582	675	809	915
47	906	796	665	572	522	421	180	72	64	73	182	432	511	571	664	803	906
48	897	788	653	561	510	409	165	70	61	70	166	421	501	559	652	792	897
49	884	778	641	550	500	400	155	67	58	68	157	412	490	549	641	784	884
50	875	768	627	540	489	390	148	64	55	65	151	400	480	537	629	774	875
51	869	758	617	530	479	377	142	62	52	63	145	389	469	526	616	764	869
52	856	748	605	521	466	364	135	60	49	61	139	372	455	515	605	753	856
53	846	736	594	510	453	349	127	57	45	58	130	352	443	505	594	743	846
54	831	725	582	502	442	334	120	54	42	55	122	335	434	497	584	733	831
55	818	713	572	491	431	317	115	51	39	52	116	320	422	487	575	722	818
56	803	702	560	480	418	306	110	48	36	49	112	306	410	478	563	710	803
57	787	688	548	469	406	296	107	45	33	46	108	294	399	468	551	696	787
58	772	675	536	458	394	286	103	42	30	43	105	284	387	457	540	683	772
59	757	661	526	447	383	277	99	40	28	41	101	277	376	447	528	669	757
60	742	648	514	436	371	269	95	37	25	38	98	268	365	436	517	656	742
61	727	634	504	425	360	259	92	35	23	36	94	261	353	425	506	642	727

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62	708	620	491	413	348	251	89	33	21	33	91	251	344	414	494	628	708
63	693	605	479	401	337	242	85	30	19	31	87	242	333	403	481	614	693
64	676	592	467	389	325	233	83	28	18	29	84	232	321	391	470	600	676
65	660	578	455	377	314	223	79	26	16	27	80	224	310	379	460	586	660
66	643	564	444	364	302	214	76	24	14	25	77	215	299	367	447	570	643
67	626	549	432	351	289	205	72	23	13	23	73	204	289	354	437	556	626
68	608	533	419	338	277	196	69	21	12	21	70	194	279	341	425	539	608
69	589	517	408	324	266	186	66	19	11	20	66	185	268	328	412	522	589
70	569	501	395	311	254	177	63	18	9	19	64	176	256	316	400	508	569
71	549	485	384	301	242	169	60	17	9	17	60	167	245	304	389	492	549
72	532	470	372	289	230	160	57	15	8	16	57	158	234	294	376	475	532
73	513	452	359	278	218	152	54	14	7	15	54	151	222	282	363	459	513
74	493	436	346	267	208	144	52	13	7	14	52	143	212	273	351	441	493
75	472	418	333	256	196	137	49	12	5	13	49	135	200	262	338	424	472
76	453	402	320	247	185	129	47	11	5	12	47	128	190	252	326	407	453
77	434	386	308	236	175	122	44	11	4	11	44	121	178	242	313	391	434
78	415	369	295	227	165	115	42	10	4	11	42	114	169	233	300	375	415
79	395	354	283	217	156	108	41	9	4	10	40	107	160	223	288	358	395
80	379	337	270	208	146	102	39	9	3	9	38	101	151	213	275	341	379
81	361	321	258	198	138	96	37	8	3	9	37	95	141	203	263	327	361
82	343	307	246	189	130	91	36	8	3	8	35	90	132	194	251	311	343
83	328	293	235	180	122	85	34	7	3	8	34	85	125	185	240	297	328
84	311	279	225	172	114	80	33	7	3	8	32	80	118	177	230	284	311
85	297	267	215	164	107	76	32	8	3	8	31	75	110	170	220	271	297
86	284	255	205	156	101	72	31	7	3	8	31	72	104	161	210	259	284
87	271	244	197	148	95	68	31	7	3	7	29	68	97	153	201	248	271
88	260	235	189	143	89	65	29	6	3	8	28	64	92	147	194	239	260
89	251	226	183	136	85	62	28	6	3	7	28	61	87	141	187	230	251
90	243	220	175	131	80	59	28	7	3	7	26	58	82	135	180	223	243
91	237	213	170	126	76	56	27	6	3	7	26	55	78	130	175	217	237
92	232	208	165	121	71	53	26	6	3	7	26	53	74	125	170	211	232
93	227	204	161	116	63	51	25	6	3	7	25	51	70	121	165	206	227

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94	222	199	157	113	48	50	24	6	3	7	24	49	64	117	161	202	222
95	218	196	153	109	35	47	24	6	3	7	23	47	52	114	157	198	218
96	214	191	149	106	24	45	24	6	3	7	23	45	40	110	154	195	214
97	209	187	146	103	15	44	23	6	3	7	23	43	31	107	150	190	209
98	205	183	142	100	8	42	23	6	3	7	22	42	22	104	146	186	205
99	200	178	138	98	5	41	22	6	4	7	21	41	16	101	142	181	200
100	194	174	134	95	2	40	22	6	4	7	21	40	10	99	139	177	194
101	189	169	132	93	2	39	21	6	3	6	21	39	5	96	135	172	189
102	185	165	128	90	2	38	21	6	4	6	21	38	4	93	132	167	185
103	179	159	125	88	2	38	21	6	3	7	20	37	3	91	128	163	179
104	173	155	121	86	2	37	20	6	3	7	20	36	3	88	125	158	173
105	168	150	119	83	2	36	20	6	3	6	19	36	3	86	122	154	168
106	162	146	115	81	5	36	20	6	4	6	19	36	3	84	118	149	162
107	157	141	112	79	7	35	19	4	4	6	19	35	2	82	115	144	157
108	152	137	109	77	10	34	19	5	4	6	19	34	3	79	112	139	152
109	147	132	106	74	12	34	19	6	3	6	18	34	4	77	109	134	147
110	141	128	103	72	14	33	18	6	4	6	18	34	6	75	106	129	141
111	136	123	100	70	16	33	19	6	4	6	18	33	6	72	102	124	136
112	131	118	96	68	16	33	18	5	3	6	18	33	7	70	99	120	131
113	125	113	94	66	16	32	18	6	3	6	18	32	9	68	96	115	125
114	121	109	91	64	16	32	18	6	4	5	17	32	11	66	93	110	121
115	116	104	87	62	16	32	17	5	3	6	17	32	12	64	89	106	116
116	111	99	84	60	16	31	18	6	3	6	17	31	14	62	85	100	111
117	105	94	80	58	16	31	17	6	4	6	17	31	15	60	82	95	105
118	99	89	77	56	15	31	17	6	4	6	17	31	16	58	78	91	99
119	95	84	73	55	16	30	17	6	4	6	17	30	16	57	74	86	95
120	90	80	69	53	15	30	17	5	3	6	16	30	16	55	70	81	90
121	84	75	66	52	15	29	16	5	3	6	16	30	16	53	66	76	84
122	77	70	62	50	15	29	16	5	4	6	16	30	16	52	63	72	77
123	67	65	60	47	14	28	16	5	4	5	16	29	15	50	60	67	67
124	56	60	56	44	14	28	16	5	4	6	16	28	15	48	57	62	56
125	49	56	53	43	13	27	16	5	4	5	15	28	15	47	54	57	49



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Certificate#4810.01

126	44	51	51	41	13	27	16	5	4	6	16	28	15	46	52	52	44
127	39	47	48	39	13	26	16	5	4	5	15	27	15	44	49	48	39
128	36	43	46	39	13	26	16	5	4	5	15	26	14	43	47	44	36
129	32	40	44	37	12	25	15	5	4	5	15	26	14	42	45	41	32
130	30	37	42	36	12	24	15	5	4	6	15	26	14	41	43	38	30
131	27	35	41	35	12	24	15	5	4	5	14	25	13	40	41	36	27
132	26	33	39	35	11	23	15	5	3	4	15	24	13	39	40	34	26
133	24	31	37	34	11	22	14	5	4	5	14	24	13	38	38	32	24
134	23	30	36	34	11	22	14	5	4	6	14	24	13	37	37	31	23
135	22	28	34	34	10	20	13	4	4	5	14	23	12	36	35	29	22
136	21	27	32	33	10	20	13	5	4	5	14	22	12	35	33	27	21
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139	18	23	29	30	10	19	12	5	3	4	13	21	11	33	29	23	18
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147	12	16	23	22	9	15	10	5	4	6	11	17	9	25	21	14	12
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179	5	5	5	5	3	4	4	4	5	5	5	5	4	4	4	4	5
180	5	5	5	4	3	4	5	3	5	5	5	5	4	4	3	5	5



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BUG

Lum. Classification System (LCS)

<u>LCS Zone</u>	<u>Lumens</u>	<u>%Lamp</u>	<u>%Lum</u>
FL (0-30)	395.4	N.A.	14.4
FM (30-60)	796.2	N.A.	29.0
FH (60-80)	414.0	N.A.	15.1
FVH (80-90)	118.2	N.A.	4.3
BL (0-30)	315.1	N.A.	11.5
BM (30-60)	310.7	N.A.	11.3
BH (60-80)	101.0	N.A.	3.7
BVH(80-90)	23.7	N.A.	0.9
UL (90-100)	95.3	N.A.	3.5
UH (100-180)	175.8	N.A.	6.4
Total	2745.4	N.A.	100.0
BUG Rating	B1-U3-G2		

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

Test date	2020-08-26	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	AST-MWP03C-20D4BYFSA1-ab65g		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC200803	120.0	60	0.1636	19.49	0.993	7.45
0E-A4	277.0	60	0.0771	19.88	0.931	12.31
DLC Pass Criteria					$\geq 0.9(-3\%)$	$\leq 20(+5)$

Chromaticity Measurement - Sphere-Spectroradiometer Method**(Self-absorption factor: 1.157):**

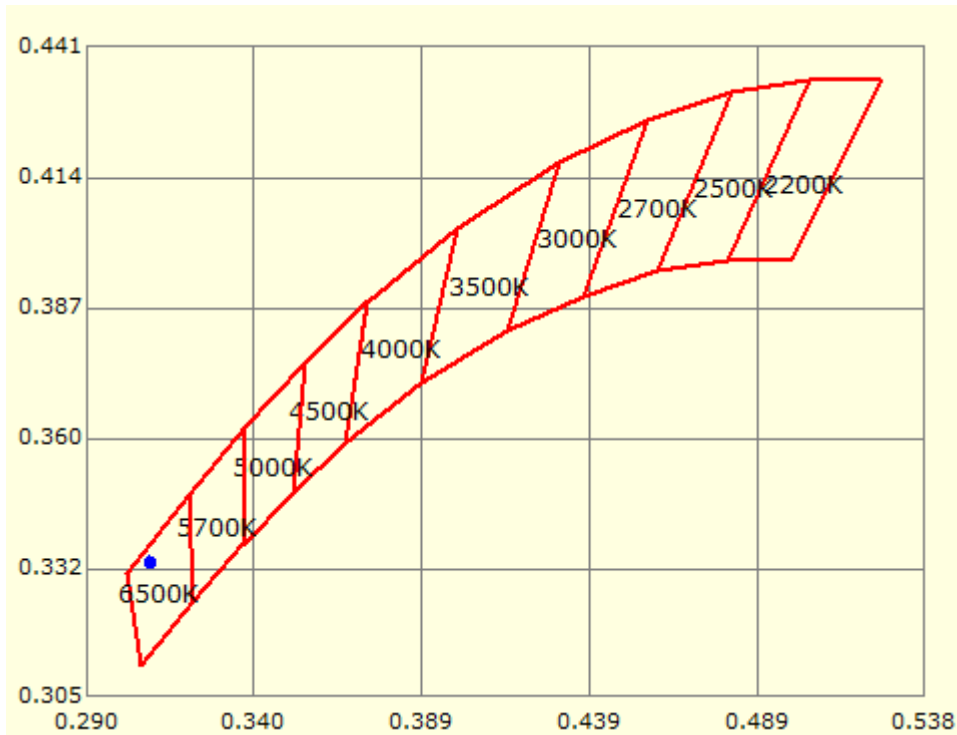
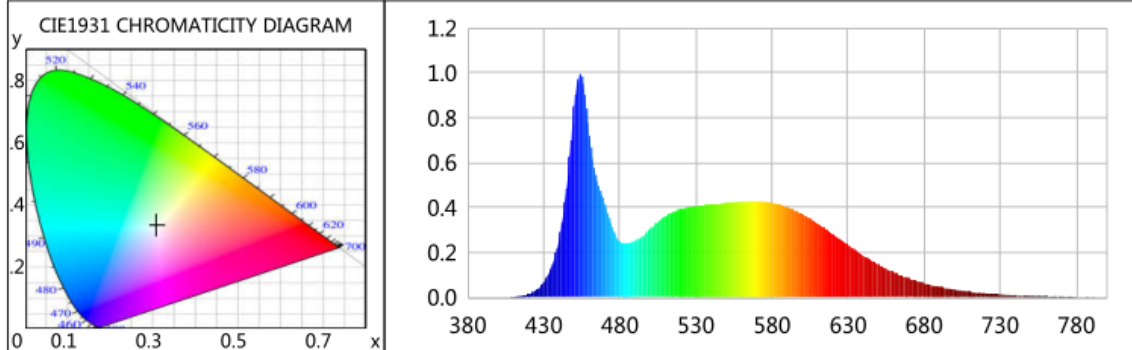
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	79	R9	-7
Frequency (Hz)	60	R2	89	R10	73
CCT (K)	6641	R3	93	R11	77
Duv	0.0071	R4	78	R12	54
Chromaticity (x, y)	x=0.3095 y=0.3335	R5	79	R13	82
Chromaticity (u', v')	u(u')=0.1939 v'(v')=0.4702	R6	84	R14	97
Color Rendering Index (CRI)	81	R7	86	R15	73
R9	-7	R8	64	--	--
Rf	81	--	--	--	--
Rg	90	--	--	--	--
Rcs,h1 (%)	-15	--	--	--	--

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)	2646.7	2639.1	300-5000(-10%)
0-90 °Total Luminous (lm)	2387.7	2378.5	
Luminous Efficacy (lm/W)	135.80	132.75	Premium: $\geq 120(-3\%)$
0-90 °Luminous Efficacy (lm/W)	122.51	119.64	
Most worst Luminous/Highest	132.75		
Zonal lumens in the 80-90 °/0-90 °zone (%)	5.77		$\leq 10(+3)$
Beam Angle (°)	95.3	--	--
Center Beam Candle Power (cd)	1000	--	--



Spectral Power Distribution & Chromaticity Diagram





TM30

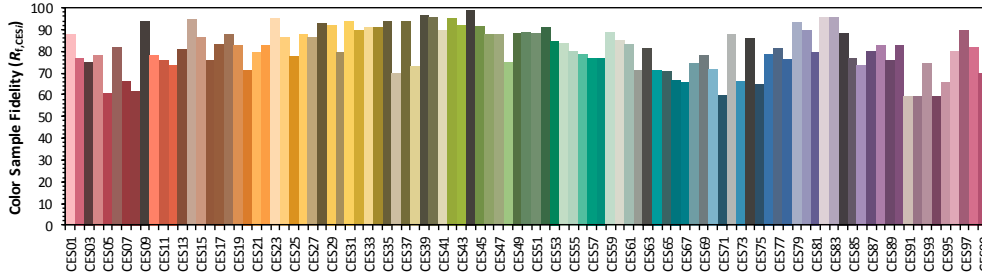
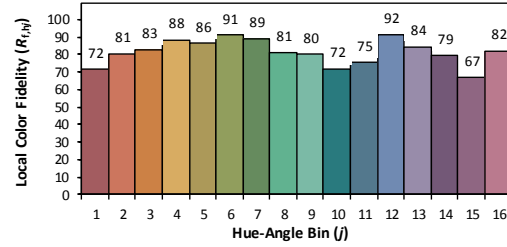
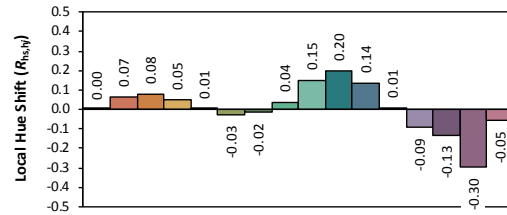
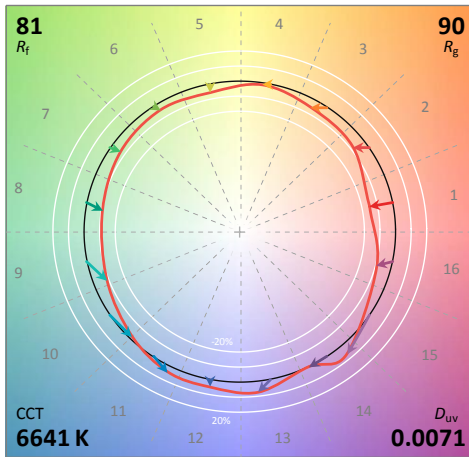
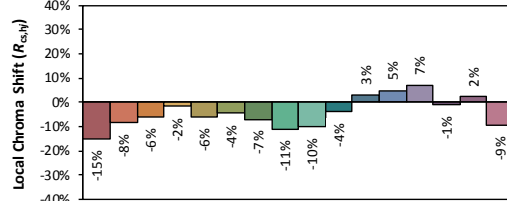
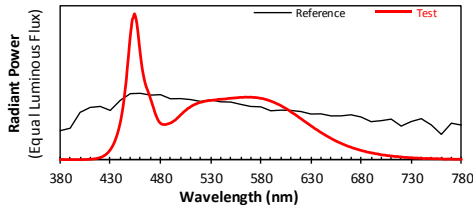
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-XX80RA35000H1

Manufacturer: AS MART LIGHT CO., LTD

Date: 2020/8/26

Model: AST-MWP03C-20D4BYFSA1-ab65g



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

x **0.3095**
 y **0.3335**
 u' **0.1939**
 v' **0.4702**

CIE 13.3-1995 (CRI)	
R_a	81
R_9	-7

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



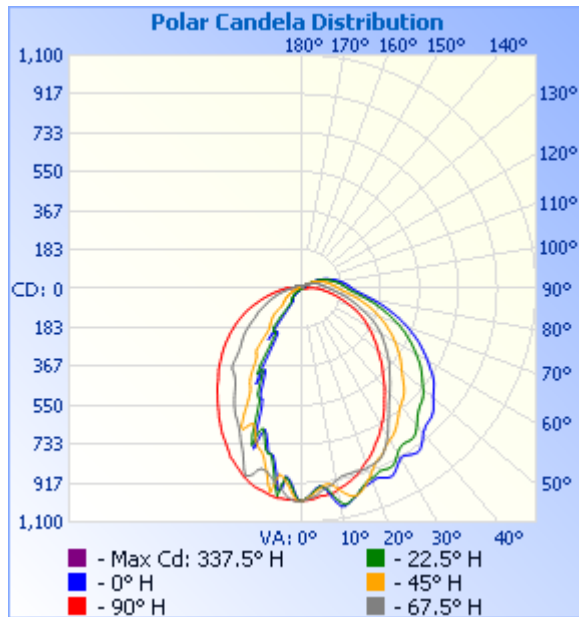
Zonal Lumen Tabulation

Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0-30	685.3	25.9%	25.9%
0-40	1,055.6	39.9%	39.9%
0-60	1,753.7	66.3%	66.3%
60-90	633.9	24%	24%
70-100	440.8	16.7%	16.7%
90-120	202.3	7.6%	7.6%
0-90	2,387.7	90.2%	90.2%
90-180	258.8	9.8%	9.8%
0-180	2,646.5	100%	100%

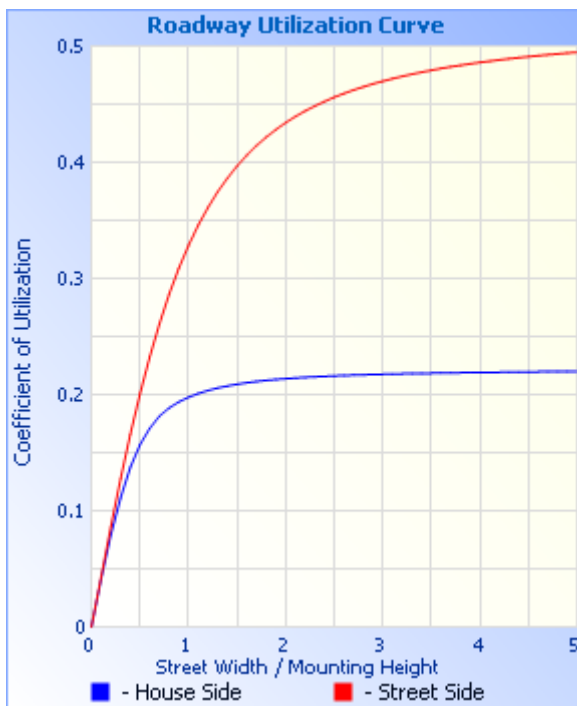
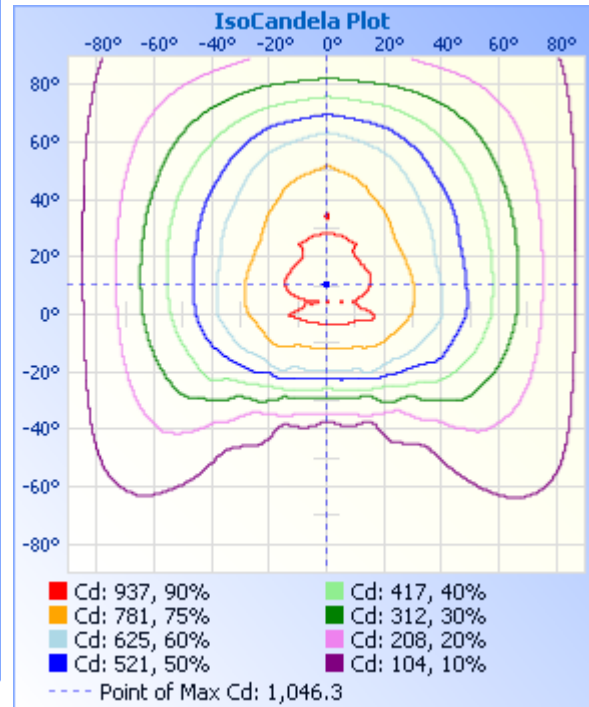
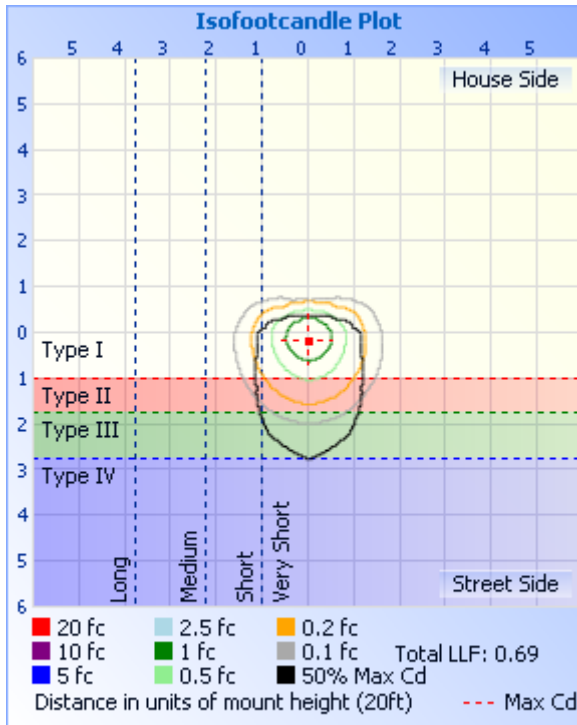
Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	90.3	3.4%	90-100	92.3	3.5%
10-20	249.6	9.4%	100-110	64.8	2.4%
20-30	345.4	13.1%	110-120	45.2	1.7%
30-40	370.3	14.0%	120-130	25.9	1%
40-50	361.6	13.7%	130-140	15.0	0.6%
50-60	336.5	12.7%	140-150	8.8	0.3%
60-70	285.5	10.8%	150-160	4.6	0.2%
70-80	210.7	8.0%	160-170	1.8	0.1%
80-90	137.7	5.2%	170-180	0.4	0%





Photometric Data



Illuminance at a Distance

Height	Center Beam fc	Beam Width	Beam Width
17.0ft	3.46 fc	35.1 ft	37.3 ft
34.0ft	0.86 fc	70.1 ft	74.6 ft
51.0ft	0.38 fc	105.2 ft	111.9 ft
68.0ft	0.22 fc	140.3 ft	149.1 ft
85.0ft	0.14 fc	175.3 ft	186.4 ft
102.0ft	0.10 fc	210.4 ft	223.7 ft

■ Vert. Spread: 91.8°
■ Horiz. Spread: 95.3°

Candela Table - Type C

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	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	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
1	988	989	991	995	997	1002	1003	999	1000	1001	1003	1003	997	996	992	989	988
2	974	976	981	989	996	999	986	972	968	976	991	1003	999	990	985	978	974
3	957	959	968	982	992	992	957	935	930	939	963	996	994	988	973	959	957
4	943	947	955	975	987	981	930	899	900	910	934	987	998	984	964	948	943
5	934	937	945	961	981	963	904	879	888	891	910	970	995	978	954	939	934
6	941	939	933	950	982	946	883	911	952	926	891	952	993	964	945	940	941
7	960	950	929	944	977	932	881	972	955	984	882	937	994	957	935	952	960
8	990	974	931	938	976	917	911	926	885	933	918	923	989	948	932	970	990
9	1018	1001	941	928	971	900	956	862	836	870	971	907	985	939	939	1002	1018
10	1041	1020	957	918	960	883	938	814	798	821	937	893	979	931	949	1026	1041
11	1045	1037	975	908	954	875	888	787	793	793	884	879	972	924	968	1046	1045
12	1036	1034	989	902	949	864	843	786	783	792	850	873	967	914	990	1045	1036
13	1025	1023	1002	901	940	856	803	774	737	776	814	870	964	905	1007	1032	1025
14	1014	1012	1008	899	934	859	776	735	706	736	793	882	958	900	1019	1019	1014
15	1003	1001	1005	899	925	874	764	703	687	701	782	906	949	896	1022	1007	1003
16	989	989	996	895	918	884	759	682	715	686	773	918	940	892	1010	997	989
17	977	974	984	897	906	896	744	689	788	705	751	920	932	890	996	984	977
18	974	963	969	901	895	884	719	745	705	775	720	894	920	888	981	970	974
19	971	956	952	900	880	860	693	731	595	728	693	857	907	889	965	961	971
20	965	951	935	898	870	839	673	634	554	633	677	822	897	886	951	957	965
21	960	948	917	894	862	809	665	561	554	568	684	797	886	888	934	952	960
22	961	939	902	892	851	779	667	539	527	553	701	777	873	888	916	945	961
23	968	933	887	890	838	749	676	532	474	542	722	753	867	890	902	939	968
24	976	934	877	885	825	721	683	504	433	502	711	732	849	886	885	937	976
25	980	938	873	876	809	701	656	462	421	456	652	713	833	881	878	938	980
26	976	939	862	866	798	681	600	429	499	428	584	698	819	878	867	938	976
27	964	936	850	851	786	667	545	420	439	432	543	686	805	866	857	937	964
28	949	927	838	835	773	653	510	426	296	457	524	674	794	854	845	928	949
29	934	911	830	818	758	640	493	421	242	410	513	659	781	841	834	914	934
30	923	897	823	801	743	630	482	334	236	303	494	642	767	824	820	897	923

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31	920	882	816	782	730	618	469	257	236	250	472	626	751	804	813	881	920
32	925	876	809	761	717	602	444	238	237	240	437	608	737	782	805	870	925
33	934	871	799	742	701	584	413	236	241	242	406	588	724	762	797	865	934
34	939	873	788	724	687	563	388	237	287	244	388	570	706	745	790	864	939
35	943	875	775	708	673	543	368	231	202	237	378	553	693	728	778	866	943
36	940	876	762	691	655	528	354	218	101	229	373	539	679	710	766	870	940
37	929	873	750	677	641	514	344	212	80	229	360	529	665	690	752	867	929
38	916	864	737	663	628	500	329	194	75	169	313	521	651	675	738	864	916
39	900	852	727	652	614	487	296	132	72	103	267	513	638	658	725	853	900
40	883	838	719	639	601	477	262	94	69	85	245	507	625	641	715	837	883
41	877	823	711	627	585	470	237	84	67	80	234	505	614	627	706	821	877
42	868	810	705	615	570	462	225	80	65	78	227	496	598	617	699	803	868
43	864	798	697	604	556	455	217	77	63	76	221	478	583	605	691	791	864
44	861	789	688	592	543	449	212	75	62	74	214	450	572	595	682	780	861
45	857	781	677	580	531	439	205	73	60	72	207	430	562	582	673	774	857
46	850	776	664	570	520	423	197	71	59	69	197	414	551	570	662	769	850
47	842	771	650	560	507	404	188	68	58	67	188	400	538	560	652	764	842
48	830	763	637	550	493	388	179	66	56	64	179	389	525	549	638	758	830
49	817	754	624	542	479	373	170	64	54	62	159	379	512	539	626	748	817
50	804	743	611	531	468	359	158	61	51	60	135	370	499	530	611	737	804
51	792	730	600	520	456	349	141	59	47	58	122	359	488	521	599	723	792
52	784	717	590	509	445	340	127	57	44	56	117	348	476	513	591	710	784
53	774	706	581	497	435	330	120	54	41	54	113	337	465	504	582	698	774
54	766	695	571	488	423	322	114	52	38	51	110	325	453	494	572	689	766
55	754	684	560	478	411	313	110	49	36	48	107	311	441	483	562	679	754
56	741	672	549	467	400	304	106	46	33	45	104	298	428	473	551	668	741
57	725	660	537	456	390	293	103	44	31	42	100	285	416	462	540	655	725
58	709	648	526	447	380	283	99	41	28	40	97	271	404	452	529	642	709
59	695	633	515	437	368	273	96	39	26	38	94	260	393	442	517	628	695
60	681	619	504	428	358	262	93	36	23	36	91	252	380	432	508	615	681
61	667	605	493	418	348	252	89	34	22	33	88	245	369	422	498	602	667
62	651	591	482	406	338	242	86	32	20	31	85	238	357	410	487	589	651

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63	636	578	470	394	327	233	83	30	18	29	81	228	344	399	474	576	636
64	620	564	457	383	316	223	80	28	16	27	79	216	333	389	463	563	620
65	607	549	444	371	305	215	77	26	15	25	75	204	322	380	451	549	607
66	590	536	433	358	293	206	73	24	13	23	72	195	309	369	440	535	590
67	574	522	422	346	282	196	70	22	12	22	69	187	298	358	428	521	574
68	557	506	409	333	268	187	67	21	11	20	66	179	285	346	417	506	557
69	540	491	397	319	257	178	64	19	10	18	63	171	273	334	405	491	540
70	524	474	385	307	244	170	61	18	9	17	60	165	260	321	394	475	524
71	508	459	373	294	233	160	59	16	8	16	57	158	249	310	382	462	508
72	490	443	361	284	220	152	56	15	8	15	55	151	236	296	370	447	490
73	474	428	348	272	210	145	53	14	7	14	52	145	224	285	358	431	474
74	455	411	336	261	199	137	51	14	6	13	49	138	213	272	345	416	455
75	438	396	323	250	190	129	47	12	5	12	47	131	203	262	332	401	438
76	421	381	311	241	178	122	46	12	5	11	45	124	192	252	320	386	421
77	404	366	298	230	170	116	44	10	4	10	43	118	181	242	308	371	404
78	389	351	285	220	160	110	42	10	4	9	40	111	172	233	296	355	389
79	371	336	274	211	151	103	40	9	3	9	39	106	162	223	285	341	371
80	354	321	261	201	142	97	38	9	3	8	37	99	153	213	272	325	354
81	339	307	250	192	134	91	36	8	3	8	35	93	144	204	260	311	339
82	323	293	239	184	126	86	35	8	3	8	34	88	136	194	249	297	323
83	308	280	228	175	118	81	33	8	2	7	32	83	127	185	238	284	308
84	295	268	218	167	111	76	33	8	2	7	31	79	120	177	227	271	295
85	281	256	209	159	104	72	31	8	2	7	30	74	113	169	218	260	281
86	269	244	200	152	98	68	30	7	3	7	29	70	105	161	208	249	269
87	258	234	192	145	92	65	29	7	2	6	28	67	99	153	199	239	258
88	249	227	185	139	86	61	29	7	3	6	28	64	93	146	191	230	249
89	242	220	178	134	81	58	28	7	3	7	26	60	88	140	184	223	242
90	235	213	173	128	77	56	27	7	3	6	25	57	82	134	178	216	235
91	230	208	168	123	73	54	26	6	3	6	25	55	79	129	172	210	230
92	225	204	163	119	67	51	25	7	3	6	24	52	74	124	167	205	225
93	220	199	159	114	56	49	25	6	2	6	23	50	68	120	162	200	220
94	215	195	155	111	41	47	24	7	2	6	23	48	55	115	158	196	215

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95	211	191	151	108	30	46	24	6	3	6	22	46	43	111	154	192	211
96	206	186	147	105	20	43	23	6	3	6	22	44	33	108	150	187	206
97	201	182	143	102	12	42	23	6	3	6	21	43	24	105	146	183	201
98	196	177	140	99	6	41	22	6	3	6	21	42	16	101	142	178	196
99	191	172	136	96	3	40	22	6	2	6	21	40	11	99	138	173	191
100	185	167	132	93	2	39	22	6	3	6	20	39	6	95	134	168	185
101	180	163	128	91	2	38	21	6	3	6	20	38	4	93	131	163	180
102	175	158	125	89	2	37	21	6	2	4	19	37	2	90	128	159	175
103	169	153	122	87	2	36	21	6	2	6	19	37	2	88	124	154	169
104	164	149	119	84	1	36	20	6	3	5	19	36	2	86	120	149	164
105	158	144	115	82	4	35	20	5	3	6	19	35	2	83	117	144	158
106	153	139	112	80	8	34	20	5	3	6	18	35	2	81	114	139	153
107	148	135	109	78	11	34	19	5	3	6	17	34	3	78	111	135	148
108	143	130	106	75	14	33	19	6	3	5	18	33	4	77	108	130	143
109	138	126	103	73	17	33	19	6	3	5	17	33	6	74	104	125	138
110	132	121	100	71	19	33	18	6	3	6	17	33	6	72	101	120	132
111	126	116	97	69	21	32	18	5	3	6	17	32	7	69	97	116	126
112	122	111	93	66	21	32	18	6	3	5	17	32	8	67	94	111	122
113	117	106	90	64	21	32	17	5	3	5	17	31	9	65	91	106	117
114	112	102	87	62	21	31	17	5	3	5	16	31	11	63	86	101	112
115	107	97	83	60	20	31	17	5	3	5	16	31	11	61	82	97	107
116	102	93	79	58	20	30	17	5	3	5	16	31	12	59	79	92	102
117	97	88	75	56	20	30	16	5	3	5	16	30	13	57	76	87	97
118	91	83	72	53	19	30	17	6	3	5	16	30	14	56	72	83	91
119	87	79	68	50	20	29	16	5	3	5	15	29	14	54	68	78	87
120	81	73	65	46	19	29	17	5	3	4	15	29	14	53	66	73	81
121	76	69	62	44	18	29	17	5	3	5	15	29	14	51	62	68	76
122	67	63	59	42	18	29	16	5	3	5	15	28	13	49	59	63	67
123	57	59	55	39	18	28	16	5	3	5	15	28	14	48	56	59	57
124	48	54	53	35	17	28	16	5	3	4	15	27	14	47	53	54	48
125	42	50	49	33	17	27	16	5	3	5	15	27	13	45	51	50	42
126	38	46	47	31	16	27	15	5	3	4	14	27	13	44	49	47	38

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127	34	43	45	30	16	26	15	5	3	4	14	26	13	42	47	43	34
128	32	40	43	29	16	26	15	4	3	5	14	26	13	41	45	40	32
129	29	37	40	28	15	25	15	5	3	4	14	25	12	40	43	37	29
130	27	34	38	29	15	25	14	5	3	5	13	25	12	39	41	35	27
131	26	33	37	28	15	24	15	5	3	4	13	24	12	38	39	33	26
132	24	31	34	28	15	24	14	4	3	4	13	24	12	37	38	32	24
133	23	29	33	28	14	23	14	4	3	4	13	23	12	36	36	30	23
134	21	28	31	28	14	23	13	4	3	4	13	23	12	35	35	29	21
135	21	27	30	28	13	22	14	5	3	4	13	23	11	34	33	27	21
136	20	25	28	28	13	21	13	4	3	5	13	22	11	33	32	26	20
137	19	23	27	28	13	21	13	4	3	4	12	22	11	33	30	24	19
138	18	23	26	27	12	21	13	5	3	3	12	21	11	31	28	24	18
139	17	21	25	27	13	20	12	4	3	5	12	21	10	31	27	22	17
140	16	20	24	26	12	19	12	4	3	5	12	20	10	29	26	21	16
141	15	19	23	25	11	19	12	5	4	4	12	20	10	29	25	20	15
142	14	17	22	25	12	18	11	4	3	4	12	19	9	28	24	19	14
143	14	17	22	25	12	18	11	5	3	5	11	19	9	28	23	18	14
144	13	16	21	24	11	17	11	5	3	5	11	18	9	27	22	16	13
145	12	15	21	23	11	17	11	5	4	5	11	18	8	26	22	15	12
146	11	14	21	21	11	16	11	5	4	5	11	17	9	25	21	15	11
147	11	14	20	19	10	16	11	5	4	5	11	17	8	25	20	14	11
148	11	13	20	17	10	15	10	5	3	4	10	17	8	24	20	13	11
149	10	13	20	15	9	15	10	5	4	5	10	16	8	23	19	13	10
150	9	13	19	13	9	14	9	5	4	4	10	15	8	22	18	12	9
151	9	12	19	12	8	13	9	5	4	5	9	15	7	21	18	12	9
152	9	12	19	11	8	13	9	5	3	5	9	14	7	20	17	11	9
153	9	12	18	12	7	13	9	5	4	5	9	14	6	18	17	11	9
154	8	12	18	12	7	12	8	5	4	5	9	13	6	17	16	10	8
155	9	12	16	12	7	12	9	5	4	5	8	13	6	16	16	10	9
156	8	12	16	11	6	11	8	5	4	5	8	12	5	14	15	9	8
157	8	11	16	11	6	10	7	3	4	5	8	11	6	13	15	9	8
158	8	11	15	10	7	10	8	4	4	4	7	11	6	13	13	9	8

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159	6	11	13	9	6	10	7	4	3	5	8	10	5	12	13	8	6
160	7	10	12	9	6	9	7	4	4	4	7	10	5	12	12	8	7
161	8	9	11	8	6	9	7	5	4	4	7	9	6	12	12	7	8
162	7	9	10	7	5	8	6	4	4	4	7	9	5	11	11	7	7
163	6	8	8	6	5	7	6	5	4	5	6	9	5	10	10	6	6
164	7	9	7	6	5	7	6	5	4	5	6	8	5	9	10	7	7
165	6	8	7	6	5	7	6	5	4	5	6	8	5	9	9	6	6
166	6	8	6	5	5	6	5	4	4	4	6	8	5	8	8	6	6
167	6	7	6	6	5	6	5	5	4	5	6	7	5	8	8	6	6
168	5	7	6	5	5	5	5	5	4	4	6	7	5	7	7	6	5
169	6	6	5	5	4	5	5	5	4	4	5	7	5	6	7	4	6
170	5	5	5	5	4	5	5	4	4	5	5	6	5	6	6	5	5
171	5	5	4	5	4	4	5	4	4	4	5	6	4	5	5	4	5
172	5	5	5	5	4	4	5	4	4	4	5	6	4	5	4	4	5
173	4	5	4	4	4	4	4	4	4	4	5	5	4	5	4	4	4
174	5	4	4	5	3	4	4	4	4	5	5	5	4	4	4	4	5
175	5	5	4	5	3	3	4	4	4	5	5	5	4	4	4	4	5
176	4	5	5	4	3	4	4	4	4	5	5	5	4	4	4	4	4
177	5	4	5	4	2	3	4	4	4	4	4	4	3	4	3	4	5
178	5	5	2	4	3	3	4	4	4	4	4	5	3	3	4	4	5
179	5	4	3	5	3	4	4	4	4	4	4	5	4	4	4	4	5
180	4	5	4	4	3	4	4	4	4	4	5	4	4	4	4	4	4



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BUG

Lum. Classification System (LCS)

<u>LCS Zone</u>	<u>Lumens</u>	<u>%Lamp</u>	<u>%Lum</u>
FL (0-30)	388.2	N.A.	14.7
FM (30-60)	770.3	N.A.	29.1
FH (60-80)	398.6	N.A.	15.1
FVH (80-90)	114.6	N.A.	4.3
BL (0-30)	297.1	N.A.	11.2
BM (30-60)	298.3	N.A.	11.3
BH (60-80)	97.6	N.A.	3.7
BVH(80-90)	23.1	N.A.	0.9
UL (90-100)	92.3	N.A.	3.5
UH (100-180)	166.5	N.A.	6.3
Total	2646.6	N.A.	100.0
BUG Rating	B1-U3-G2		



Calculated Efficacy Data for family models (3500K, 4500K and 5700K):

Model Number	Luminous Flux (lm)	Power (W)	Efficacy (lm/W)
AST-MWP03C-20D4BYFSA1-ab30g	2614.2	19.45	134.40
AST-MWP03C-20D4BYFSA1-ab35g	2704.3	19.41	139.33
AST-MWP03C-20D4BYFSA1-ab40g	2794.4	19.37	144.27
AST-MWP03C-20D4BYFSA1-ab45g	2769.9	19.35	143.15
AST-MWP03C-20D4BYFSA1-ab50g	2745.3	19.33	142.02
AST-MWP03C-20D4BYFSA1-ab57g	2696.0	19.41	138.90
AST-MWP03C-20D4BYFSA1-ab65g	2646.7	19.49	135.80

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

$$2704.3=(2794.4-2614.2)/2+2614.2$$

$$2769.9=(2745.3-2794.4)/2+2794.4$$

$$2696.0=(2646.7-2745.3)/2+2746.3$$

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

$$19.41=(13.37+19.45)/2$$

$$19.35=(19.33+19.37)/2$$

$$19.41=(19.49+19.33)/2$$

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

$$139.33=2704.3/19.41$$

$$143.15=2769.9/19.35$$

$$138.90=2696.0/19.41$$



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3. Test Equipment

Equipment Name	Model No.	Serial No.	Next Calibration Date
Goniophotometric System	GPM-3000	DYHXF120001	2021/2/26
AC Power Source	CHP-500C	N/A	2021/3/29
Total Luminous Flux Standard Lamp	24V/150W	DYJYR040040	2021/3/1
Digital Power Meter	WT500	DYDWQ200006	2021/3/29
Integral Sphere (2M)	2M	DYJCE120067	2021/2/26
Digital Power Meter	WT500	DYDWQ200006	2021/3/29
Optical Color and Electrical Measurement System	CMS-3000S	DYJCE120067	2021/2/26

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 *****