Certificate#4810.01

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-30D4BYFDA1-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-30D4BYFDA1-ab30g(Tested at 0% CCT Setting)
AST-MWP03C-30D4BYFDA1-ab40g(Tested at 50% CCT Setting)
AST-MWP03C-30D4BYFDA1-ab50g(Tested at 100% CCT Setting)

Model Different: N/A

Test & Report By: Grace Li

Review By: Jason Luo

Engineer: Grace Li

Manager: Jason Luo

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)

1.1 Product Information:

Organization Name	ASMART LIGHT CO., LTD	
Brand Name	ASMART	
Model Number	AST-MWP03C-30D4BYFDA1-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	30W	
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-C1	
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	1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate 7. Electrical Parameters
Reference Standard	1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	BL-QP-033

1.3 Test Methods

1) Photometric and Light Distribution Measurement – Goniophotometer Method:

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at 25 °C ±1 °C, measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 1 °vertical intervals and 22.5 °horizontal intervals.

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 ºC ±1 ºC. 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 ºC ±1 ºC. 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 ℃
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	AST-MWP03C-30D4BYFDA1-ab30g(Tested at 0% CCT Setting)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC200700 1E-C1	120.0	60	0.2446	29.17	0.994	9.74
	277.0	60	0.1103	28.48	0.932	12.83
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

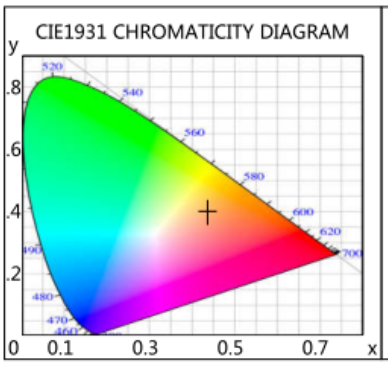
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	2989
Duv	-0.00253
Chromaticity (x, y)	x=0.4340 y=0.3968
Chromaticity (u', v')	u(u')=0.2519 v'=0.5181
Color Rendering Index (CRI)	81
R9	0
Rf	83
Rg	97
Rcs,h1 (%)	-12

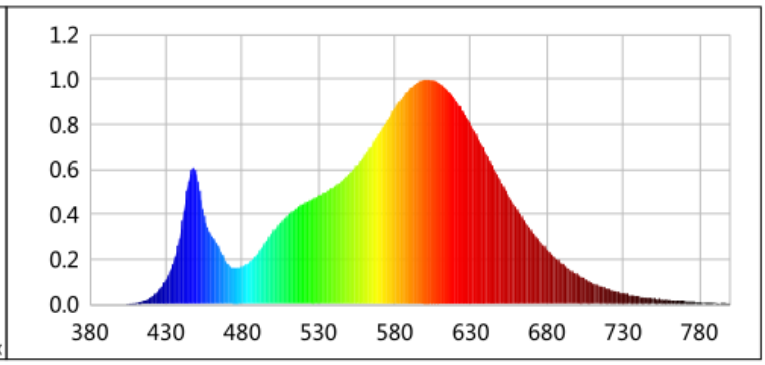
Special Color Rendering Indices			
R1	80	R9	0
R2	90	R10	79
R3	95	R11	80
R4	80	R12	75
R5	81	R13	82
R6	89	R14	98
R7	80	R15	72
R8	55	--	--
--	--	--	--
--	--	--	--
--	--	--	--

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)	3947.0	3832.2	300-5000(-10%)
0-90 °Total Luminous (lm)	3568.5	3463.8	
Luminous Efficacy (lm/W)	135.31	134.56	Premium: >= 120(-3%)
0-90 °Luminous Efficacy (lm/W)	122.33	121.62	
Most worst Luminous/Highest	131.38		
Zonal lumens in the 80-90 %0-90 %zone (%)	5.43		<=10(+3)
Beam Angle (°)	92	--	--
Center Beam Candle Power (cd)	1305	--	--

Spectral Power Distribution & Chromaticity Diagram



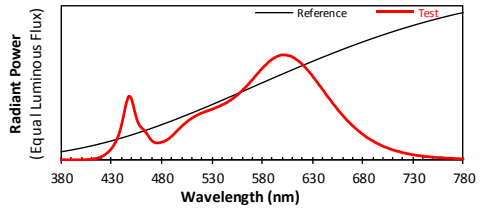


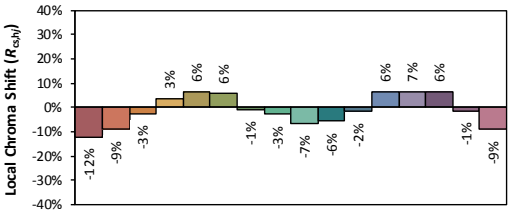
WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0003	0.0233	525	0.4642	39.2408	670	0.3260	27.5600
385	0.0002	0.0181	530	0.4822	40.7678	675	0.2818	23.8210
390	0.0004	0.0340	535	0.5012	42.3743	680	0.2443	20.6522
395	0.0008	0.0668	540	0.5226	44.1852	685	0.2084	17.6188
400	0.0011	0.0912	545	0.5464	46.1972	690	0.1818	15.3669
405	0.0023	0.1973	550	0.5791	48.9552	695	0.1543	13.0485
410	0.0058	0.4866	555	0.6157	52.0516	700	0.1314	11.1057
415	0.0142	1.1985	560	0.6579	55.6175	705	0.1122	9.4884
420	0.0305	2.5779	565	0.7070	59.7703	710	0.0943	7.9733
425	0.0597	5.0434	570	0.7615	64.3758	715	0.0808	6.8294
430	0.1084	9.1630	575	0.8160	68.9852	720	0.0688	5.8136
435	0.1868	15.7936	580	0.8713	73.6586	725	0.0582	4.9181
440	0.3314	28.0141	585	0.9171	77.5361	730	0.0488	4.1244
445	0.5477	46.3063	590	0.9592	81.0948	735	0.0402	3.3972
450	0.5789	48.9418	595	0.9852	83.2942	740	0.0366	3.0952
455	0.3961	33.4828	600	1.0000	84.5419	745	0.0324	2.7404
460	0.3061	25.8753	605	0.9959	84.1962	750	0.0271	2.2926
465	0.2516	21.2679	610	0.9789	82.7583	755	0.0218	1.8446
470	0.1844	15.5924	615	0.9493	80.2557	760	0.0189	1.5961
475	0.1620	13.6951	620	0.9085	76.8079	765	0.0150	1.2717
480	0.1686	14.2526	625	0.8581	72.5463	770	0.0140	1.1828
485	0.1887	15.9546	630	0.7990	67.5516	775	0.0117	0.9871
490	0.2249	19.0139	635	0.7362	62.2364	780	0.0078	0.6586
495	0.2736	23.1326	640	0.6710	56.7252	785	0.0061	0.5184
500	0.3207	27.1111	645	0.6054	51.1802	790	0.0093	0.7824
505	0.3605	30.4759	650	0.5414	45.7737	795	0.0055	0.4618
510	0.3965	33.5196	655	0.4816	40.7122	800	0.0042	0.3514
515	0.4239	35.8377	660	0.4248	35.9105			
520	0.4468	37.7720	665	0.3711	31.3709			

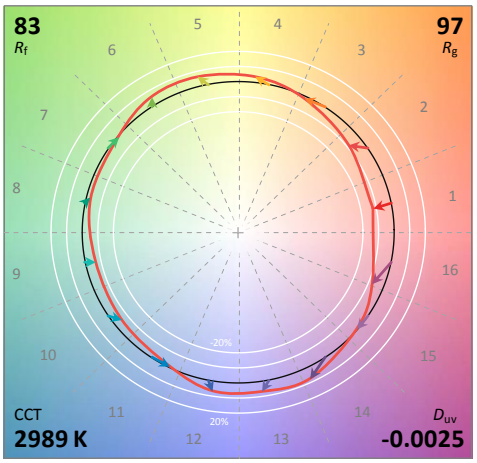
TM30

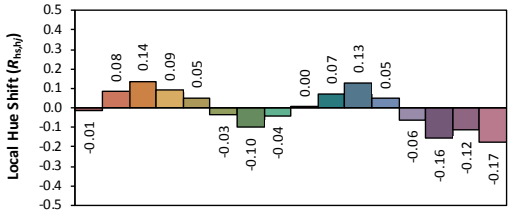
ANSI/IES TM-30-18 Color Rendition Report

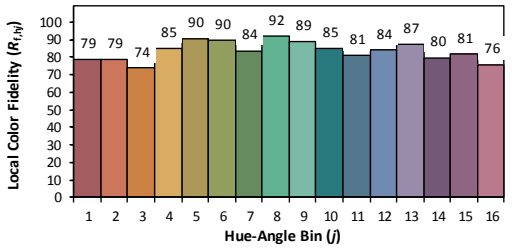
Source:	L128-3080RA35003H1 L128-5080RA35000H1	**Manufacturer:**	Organization Name ASMART LIGHT CO., LTD
Date:	2020/7/2	**Model:**	AST-MWP03C-30D4BYFDA1-ab30g(Tested at 0% CCT Setting)

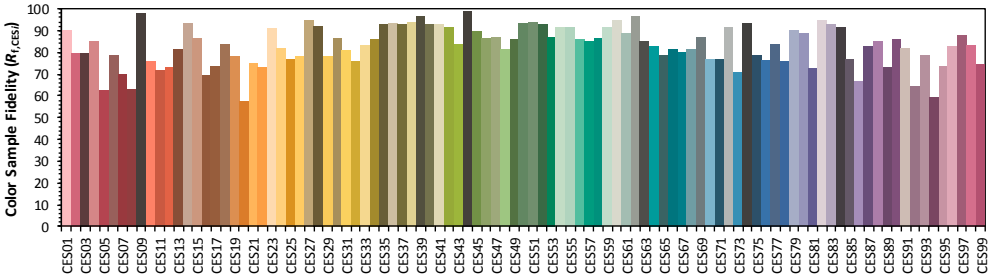












x	0.4340
y	0.3968
u'	0.2519
v'	0.5181

CIE 13.3-1995 (CRI)

R_a	81
R_9	0

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

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	$R_{cs,hj}$	$R_{hs,hj}$	$R_{f,hj}$
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	-7%	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%	-0.12	81
16	-9%	-0.17	76

Zonal Lumen Tabulation

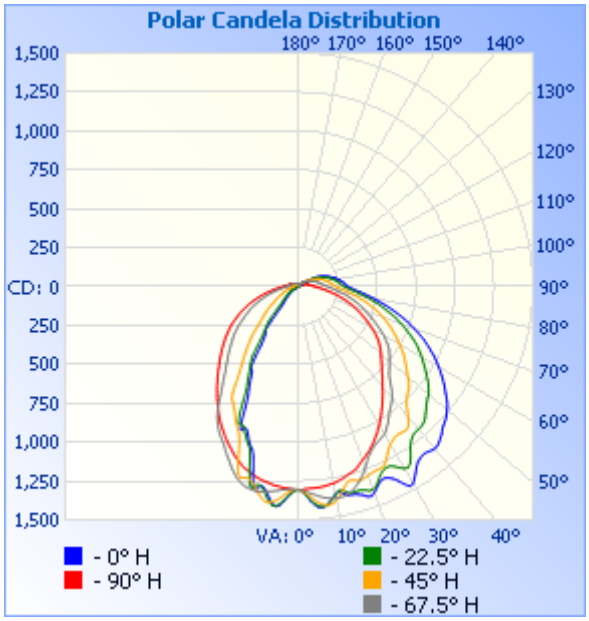
Zonal Lumen Summary

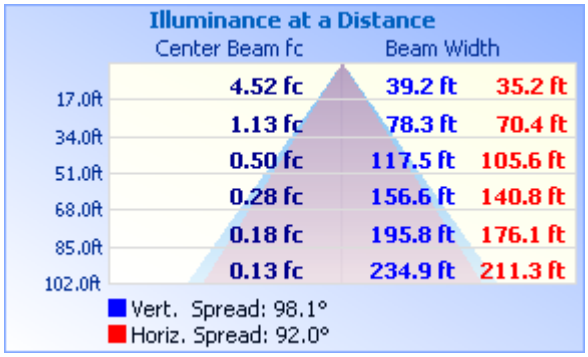
Zone	Lumens	% Lamp	% Luminaire
0-30	1,006.6	25.5%	25.5%
0-40	1,576.4	39.9%	39.9%
0-60	2,635.7	66.8%	66.8%
60-90	932.8	23.6%	23.6%
70-100	636.4	16.1%	16.1%
90-120	298.2	7.6%	7.6%
0-90	3,568.5	90.4%	90.4%
90-180	378.3	9.6%	9.6%
0-180	3,946.8	100%	100%

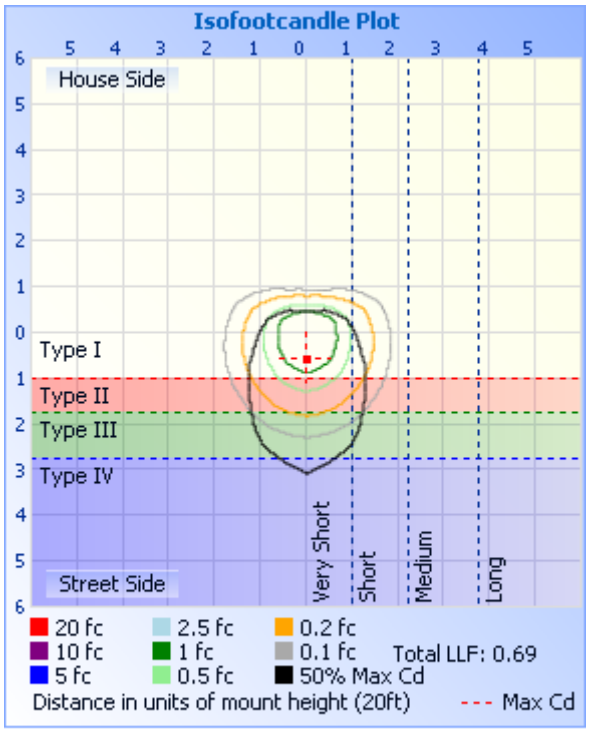
Lumens Per Zone

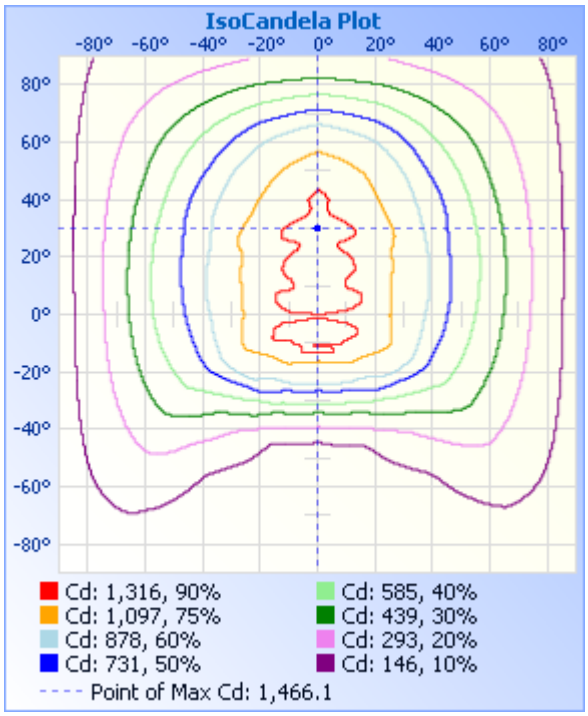
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	130.0	3.3%	90-100	131.8	3.3%
10-20	364.3	9.2%	100-110	99.7	2.5%
20-30	512.3	13.0%	110-120	66.7	1.7%
30-40	569.8	14.4%	120-130	37.8	1%
40-50	549.3	13.9%	130-140	21.5	0.5%
50-60	509.9	12.9%	140-150	12.1	0.3%
60-70	428.2	10.8%	150-160	6.0	0.2%
70-80	310.9	7.9%	160-170	2.2	0.1%
80-90	193.8	4.9%	170-180	0.5	0%

Photometric Data









Candela Table - Type C

	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
0	1305	1305	1305	1305	1305	1305	1305	1305	1305	1305	1305	1305	1305	1305	1305	1305	1305
1	1319	1320	1315	1312	1303	1302	1304	1308	1305	1310	1304	1302	1305	1306	1314	1316	1319
2	1345	1342	1332	1317	1300	1300	1314	1320	1325	1324	1312	1303	1302	1310	1328	1339	1345
3	1378	1369	1350	1330	1298	1301	1326	1347	1347	1346	1324	1304	1298	1316	1348	1373	1378
4	1402	1396	1372	1338	1297	1303	1344	1379	1380	1375	1340	1309	1298	1320	1367	1397	1402
5	1421	1414	1392	1349	1297	1310	1367	1406	1408	1399	1362	1311	1294	1329	1384	1417	1421
6	1427	1423	1404	1359	1295	1316	1386	1419	1420	1416	1380	1318	1289	1336	1401	1427	1427
7	1418	1420	1415	1367	1293	1323	1404	1420	1405	1416	1393	1323	1288	1347	1414	1427	1418
8	1398	1405	1416	1372	1289	1331	1413	1395	1374	1393	1401	1328	1281	1352	1415	1412	1398
9	1375	1381	1408	1378	1285	1336	1412	1361	1337	1359	1397	1331	1275	1357	1411	1387	1375
10	1350	1354	1393	1380	1281	1344	1393	1329	1310	1324	1381	1338	1271	1359	1400	1363	1350
11	1340	1336	1368	1379	1276	1350	1362	1307	1301	1302	1358	1341	1266	1363	1380	1343	1340
12	1359	1334	1341	1377	1269	1358	1335	1307	1338	1301	1328	1342	1258	1367	1358	1336	1359
13	1375	1356	1312	1371	1262	1361	1307	1342	1313	1332	1303	1340	1252	1363	1331	1349	1375
14	1378	1368	1291	1362	1253	1356	1288	1321	1220	1314	1282	1336	1242	1355	1307	1362	1378
15	1380	1365	1286	1347	1245	1352	1278	1230	1132	1232	1271	1331	1233	1343	1294	1367	1380
16	1389	1365	1294	1331	1238	1343	1289	1141	1090	1146	1276	1321	1223	1330	1290	1366	1389
17	1399	1366	1306	1311	1230	1329	1310	1090	1068	1086	1286	1308	1214	1315	1295	1368	1399
18	1418	1375	1305	1289	1217	1313	1296	1068	1043	1061	1265	1293	1202	1297	1297	1375	1418
19	1424	1386	1297	1267	1200	1291	1230	1046	1006	1035	1208	1271	1187	1270	1296	1386	1424
20	1409	1387	1292	1238	1188	1268	1146	1015	980	1010	1130	1249	1174	1247	1292	1390	1409
21	1387	1376	1285	1212	1177	1242	1085	987	970	985	1068	1227	1159	1223	1284	1381	1387
22	1366	1350	1281	1184	1160	1211	1045	970	994	962	1027	1203	1142	1199	1278	1359	1366
23	1351	1324	1281	1165	1149	1189	1016	972	952	958	1001	1182	1126	1177	1276	1333	1351
24	1347	1304	1281	1147	1131	1167	999	978	848	958	981	1159	1110	1155	1277	1309	1347
25	1356	1293	1277	1134	1118	1151	974	928	773	903	960	1134	1094	1135	1273	1295	1356
26	1373	1290	1259	1123	1099	1133	951	825	737	817	933	1114	1078	1116	1261	1286	1373
27	1400	1293	1236	1115	1081	1119	930	761	698	748	909	1097	1060	1099	1243	1287	1400
28	1436	1309	1210	1109	1065	1106	912	724	657	709	887	1078	1043	1082	1221	1299	1436
29	1466	1331	1188	1101	1043	1090	893	690	622	676	869	1062	1026	1069	1199	1315	1466

30	1463	1349	1167	1094	1027	1077	878	656	613	643	852	1040	1010	1058	1174	1337	1463
31	1437	1356	1158	1080	1006	1063	862	623	603	614	837	1017	991	1048	1156	1351	1437
32	1410	1343	1149	1062	988	1041	835	594	526	588	804	993	972	1035	1142	1343	1410
33	1382	1312	1143	1047	967	1013	783	570	448	564	755	962	952	1023	1132	1319	1382
34	1361	1278	1142	1024	948	971	728	542	408	530	702	927	934	1009	1124	1286	1361
35	1349	1245	1145	1006	930	933	682	475	383	470	661	894	913	993	1119	1257	1349
36	1342	1223	1148	987	909	894	648	414	367	418	630	857	895	979	1116	1235	1342
37	1340	1208	1148	973	889	858	624	384	359	384	601	827	877	964	1113	1216	1340
38	1346	1196	1137	959	871	828	597	363	345	359	576	796	857	951	1109	1202	1346
39	1352	1195	1117	945	851	800	568	344	287	340	550	770	839	935	1097	1196	1352
40	1357	1194	1087	928	833	778	537	324	231	321	525	746	818	917	1077	1195	1357
41	1353	1192	1060	908	815	757	510	302	194	302	499	722	799	900	1054	1194	1353
42	1343	1187	1030	885	800	739	484	272	170	276	476	703	782	882	1029	1192	1343
43	1328	1179	1012	861	783	717	460	231	155	237	454	685	765	860	1003	1186	1328
44	1317	1165	993	841	764	700	437	195	143	207	432	665	747	838	981	1176	1317
45	1298	1147	983	818	751	681	404	170	134	183	405	648	728	819	963	1164	1298
46	1287	1133	971	803	737	664	375	154	127	166	375	632	713	800	946	1149	1287
47	1277	1116	961	791	723	645	352	143	119	153	352	616	697	781	933	1136	1277
48	1266	1104	948	780	710	629	336	134	112	141	334	601	683	763	920	1122	1266
49	1253	1091	932	769	697	613	322	126	104	132	317	585	666	747	906	1111	1253
50	1238	1083	912	758	685	597	309	118	97	125	302	567	651	733	891	1100	1238
51	1224	1069	893	746	674	582	296	112	91	118	288	552	636	718	876	1087	1224
52	1205	1053	877	737	663	570	284	106	85	111	276	540	621	706	858	1075	1205
53	1184	1038	860	725	649	557	272	100	80	104	262	526	606	697	841	1057	1184
54	1160	1019	845	715	637	543	257	94	73	97	249	511	591	686	825	1041	1160
55	1141	999	829	705	626	532	242	87	69	92	234	495	578	674	810	1025	1141
56	1121	981	815	691	611	514	225	82	64	86	221	480	563	662	796	1005	1121
57	1100	963	798	676	595	497	210	77	59	80	209	464	549	648	780	984	1100
58	1078	944	781	658	579	482	198	72	54	75	197	447	535	634	763	966	1078
59	1057	924	763	643	562	465	188	67	50	70	187	431	520	617	747	950	1057
60	1035	909	747	628	544	449	177	63	46	65	177	416	506	604	729	929	1035
61	1012	892	726	611	526	434	170	59	43	61	167	403	492	587	712	910	1012

62	990	871	713	590	507	421	162	55	39	57	159	389	475	571	694	888	990
63	968	854	693	572	490	408	154	51	36	53	151	374	459	553	676	868	968
64	941	833	677	553	473	394	148	47	33	49	144	360	445	538	661	847	941
65	919	811	659	535	456	378	141	44	30	46	137	346	429	522	645	826	919
66	891	789	645	517	439	364	134	41	27	42	129	332	413	506	628	803	891
67	869	765	627	502	421	349	128	37	24	38	123	319	399	487	611	782	869
68	839	741	608	484	405	334	121	34	22	35	116	304	382	468	594	758	839
69	812	721	590	467	389	318	115	31	20	32	110	290	366	452	577	730	812
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71	757	675	553	437	355	287	104	26	16	27	98	263	336	420	539	683	757
72	731	651	536	423	339	273	98	24	14	26	93	247	320	404	521	659	731
73	703	629	516	407	322	258	92	22	13	24	88	234	304	390	504	633	703
74	673	602	497	392	306	243	87	21	11	22	82	221	289	374	485	608	673
75	645	579	477	377	287	229	83	19	10	20	77	210	274	359	465	584	645
76	619	556	459	362	271	215	79	17	9	18	73	196	260	346	446	559	619
77	590	532	440	347	254	201	74	16	7	17	69	184	245	331	427	535	590
78	563	511	420	330	239	187	71	15	7	15	65	173	230	318	410	510	563
79	537	486	402	317	224	175	67	13	5	14	61	162	217	303	390	488	537
80	510	464	382	303	208	164	63	12	4	13	58	152	203	289	372	463	510
81	485	442	364	287	194	153	60	11	3	11	55	142	190	276	355	441	485
82	459	420	347	273	181	143	57	10	3	11	51	133	178	261	336	418	459
83	435	400	330	260	169	133	55	10	3	10	49	124	167	250	321	399	435
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86	372	345	284	223	136	109	48	9	3	9	43	102	136	214	279	343	372
87	353	327	271	212	127	102	46	9	3	9	41	96	127	203	266	327	353
88	338	312	259	202	118	95	45	9	3	9	40	91	119	194	255	314	338
89	326	301	248	193	111	91	44	9	3	9	39	86	112	185	245	302	326
90	315	291	239	184	105	85	42	9	3	9	37	81	105	177	237	293	315
91	307	283	231	177	100	80	41	9	3	9	37	77	100	171	230	285	307
92	301	277	225	171	94	76	39	8	3	8	36	74	94	164	224	278	301
93	296	271	220	165	89	73	38	9	3	8	35	71	90	159	218	273	296

94	292	267	215	159	85	69	37	7	3	8	33	68	85	154	214	268	292
95	287	263	210	154	81	67	36	7	3	9	33	65	82	149	210	264	287
96	283	258	205	151	78	64	35	8	2	8	33	63	79	146	205	260	283
97	277	253	201	146	74	61	34	8	3	8	31	60	76	141	201	254	277
98	271	247	197	143	72	59	34	8	3	7	31	58	73	137	196	249	271
99	266	242	192	138	69	57	33	8	3	8	30	57	71	134	193	244	266
100	260	236	188	135	67	56	32	8	3	8	30	55	69	131	188	239	260
101	254	231	183	132	66	54	32	8	3	8	29	54	67	128	183	233	254
102	248	225	179	128	64	53	31	8	3	8	30	53	65	125	180	227	248
103	241	219	175	125	62	52	30	7	4	8	29	51	63	122	175	221	241
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105	228	207	166	119	59	50	30	8	3	8	28	49	60	115	167	209	228
106	221	201	162	115	58	49	29	8	3	8	27	48	59	112	163	202	221
107	214	195	159	112	57	48	29	7	3	7	27	48	58	109	158	196	214
108	207	189	154	109	55	47	28	7	3	7	27	47	57	106	153	189	207
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112	179	163	136	97	39	45	27	7	4	7	25	44	41	94	134	163	179
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115	159	144	120	88	27	43	26	7	4	7	24	43	23	86	118	144	159
116	152	137	114	85	27	43	26	6	4	7	23	42	21	84	113	137	152
117	144	130	109	83	26	42	25	7	3	7	23	42	21	82	108	129	144
118	137	122	103	80	25	42	25	6	4	7	23	41	21	79	103	122	137
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121	112	100	89	74	24	40	24	6	4	6	22	40	21	73	89	99	112
122	95	92	84	71	24	39	23	6	4	7	22	39	21	71	84	93	95
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126	53	66	70	62	22	37	22	6	4	6	20	36	20	63	70	67	53
127	48	61	67	61	21	36	21	6	4	7	20	36	20	61	67	62	48
128	45	56	64	59	20	34	21	6	4	6	20	35	19	59	64	57	45
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131	35	45	56	54	19	32	20	6	4	6	19	33	18	54	57	47	35
132	33	43	53	52	19	32	19	6	4	6	19	33	18	53	55	46	33
133	32	41	51	50	18	31	19	6	4	5	18	32	18	51	52	44	32
134	30	40	49	49	18	30	18	6	4	5	18	31	17	50	50	41	30
135	29	37	47	47	17	30	18	6	4	6	17	30	17	49	47	39	29
136	27	36	44	45	17	28	18	6	4	6	17	29	17	47	44	37	27
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138	25	32	40	43	16	28	17	5	4	6	17	29	15	44	41	33	25
139	23	30	38	41	16	27	17	5	5	7	16	28	16	43	39	32	23
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141	20	26	35	39	16	25	16	5	4	6	16	27	14	41	35	28	20
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178	5	6	6	6	3	4	5	6	5	6	5	6	4	5	5	5	5
179	5	6	6	5	3	4	5	5	5	4	5	6	4	5	5	5	5
180	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5

BUG

Lum. Classification System (LCS)

LCS Zone	Lumens	%Lamp	%Lum
FL (0-30)	540.4	13.7	13.7
FM (30-60)	1119.3	28.4	28.4
FH (60-80)	580.4	14.7	14.7
FVH (80-90)	159.7	4.0	4.0
BL (0-30)	466.3	11.8	11.8
BM (30-60)	510.1	12.9	12.9
BH (60-80)	158.6	4.0	4.0
BVH (80-90)	34.0	0.9	0.9
UL (90-100)	131.7	3.3	3.3
UH (100-180)	246.5	6.2	6.2
Total	3947.0	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 ºC
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	AST-MWP03C-30D4BYFDA1-ab40g(Tested at 50% CCT Setting)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC200700 1E-C1	120.0	60	0.2482	29.64	0.995	9.82
	277.0	60	0.1116	28.94	0.936	12.94
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	3812
Duv	-0.0025
Chromaticity (x, y)	x=0.3871 y=0.3754
Chromaticity (u', v')	u(u')=0.2300 v'=0.5020
Color Rendering Index (CRI)	83
R9	8
Rf	84
Rg	96
Rcs,h1 (%)	-12

Special Color Rendering Indices			
R1	82	R9	8
R2	91	R10	78
R3	96	R11	82
R4	82	R12	66
R5	83	R13	84
R6	87	R14	98
R7	84	R15	76
R8	63	--	--
--	--	--	--
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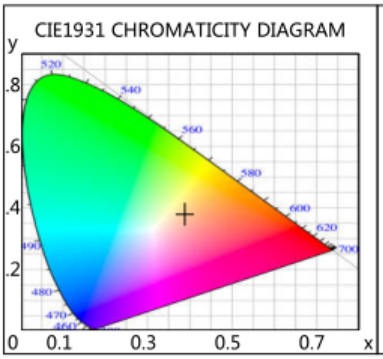
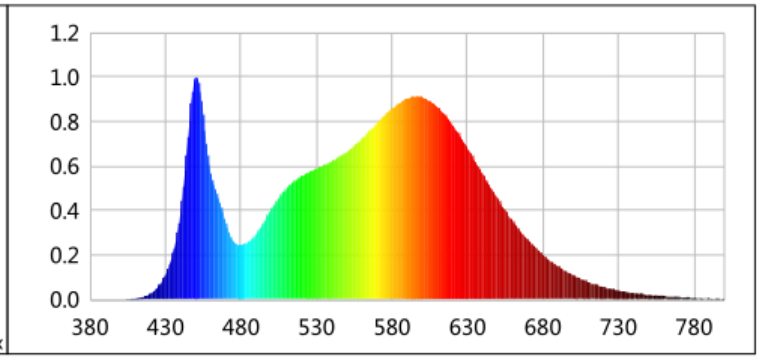
Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	4362.4	4235.6	300-5000(-10%)
Luminous Efficacy (lm/W)	147.18	146.36	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	142.90		

Spectral Power Distribution & Chromaticity Diagram



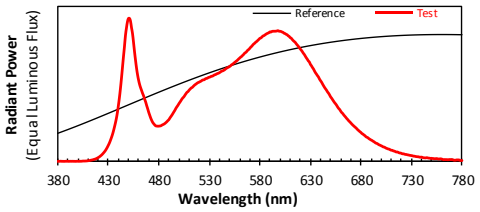


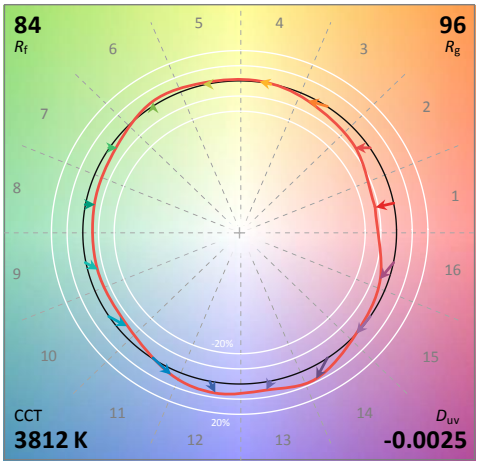
WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0000	0.0036	525	0.5714	48.4522	670	0.2690	22.8090
385	0.0006	0.0494	530	0.5888	49.9263	675	0.2349	19.9226
390	0.0009	0.0724	535	0.6050	51.2988	680	0.2024	17.1633
395	0.0009	0.0797	540	0.6207	52.6357	685	0.1724	14.6224
400	0.0007	0.0627	545	0.6401	54.2792	690	0.1497	12.6960
405	0.0025	0.2080	550	0.6632	56.2352	695	0.1273	10.7954
410	0.0046	0.3869	555	0.6919	58.6729	700	0.1093	9.2724
415	0.0117	0.9944	560	0.7226	61.2778	705	0.0922	7.8149
420	0.0265	2.2506	565	0.7574	64.2273	710	0.0781	6.6243
425	0.0566	4.8026	570	0.7907	67.0529	715	0.0656	5.5595
430	0.1119	9.4930	575	0.8272	70.1446	720	0.0565	4.7883
435	0.2089	17.7151	580	0.8607	72.9862	725	0.0482	4.0848
440	0.3901	33.0775	585	0.8844	74.9967	730	0.0405	3.4375
445	0.7294	61.8481	590	0.9061	76.8343	735	0.0334	2.8296
450	0.9998	84.7844	595	0.9106	77.2152	740	0.0297	2.5201
455	0.8320	70.5538	600	0.9101	77.1733	745	0.0259	2.1959
460	0.5687	48.2219	605	0.8941	75.8175	750	0.0216	1.8280
465	0.4577	38.8104	610	0.8660	73.4340	755	0.0195	1.6564
470	0.3440	29.1737	615	0.8327	70.6102	760	0.0162	1.3773
475	0.2633	22.3238	620	0.7865	66.6901	765	0.0125	1.0612
480	0.2465	20.9052	625	0.7359	62.4013	770	0.0119	1.0062
485	0.2604	22.0788	630	0.6794	57.6085	775	0.0107	0.9045
490	0.2923	24.7859	635	0.6207	52.6335	780	0.0061	0.5202
495	0.3472	29.4376	640	0.5650	47.9070	785	0.0053	0.4512
500	0.4049	34.3323	645	0.5075	43.0321	790	0.0085	0.7174
505	0.4535	38.4568	650	0.4516	38.2927	795	0.0056	0.4734
510	0.4985	42.2721	655	0.4020	34.0865	800	0.0038	0.3236
515	0.5311	45.0342	660	0.3513	29.7890			
520	0.5546	47.0313	665	0.3085	26.1641			

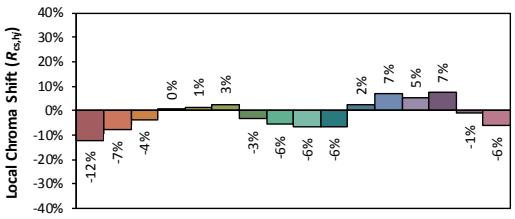
TM30

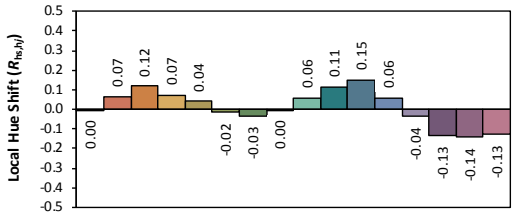
ANSI/IES TM-30-18 Color Rendition Report

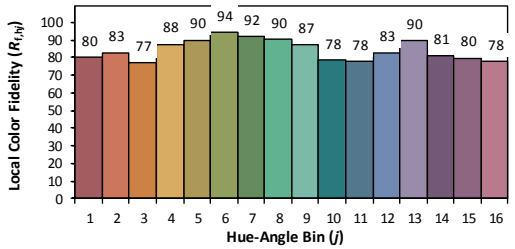
Source:	L128-3080RA35003H1 L128-5080RA35000H1	**Manufacturer:**	Organization Name ASMART LIGHT CO., LT
Date:	2020/7/2	**Model:**	AST-MWP03C-30D4BYFDA1-ab40g(Tested at 50% CCT Setting)

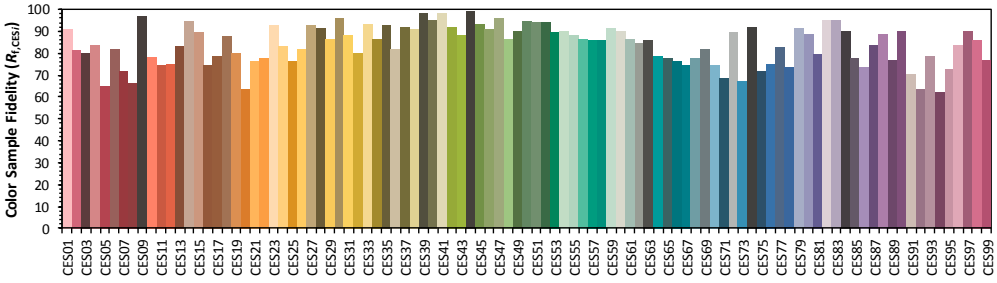












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.3871
y	0.3754
u'	0.2300
v'	0.5020

CIE 13.3-1995 (CRI)

R_a	83
R_9	8

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	$R_{cs,hj}$	$R_{hs,hj}$	$R_{f,hj}$
1	-12%	0.00	80
2	-7%	0.07	83
3	-4%	0.12	77
4	0%	0.07	88
5	1%	0.04	90
6	3%	-0.02	94
7	-3%	-0.03	92
8	-6%	0.00	90
9	-6%	0.06	87
10	-6%	0.11	78
11	2%	0.15	78
12	7%	0.06	83
13	5%	-0.04	90
14	7%	-0.13	81
15	-1%	-0.14	80
16	-6%	-0.13	78

2.3 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2020-07-02	Test Ambient:	25.2 ºC
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	AST-MWP03C-30D4BYFDA1-ab50g(Tested at 100% CCT Setting)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC200700 1E-C1	120.0	60	0.2563	30.57	0.994	10.03
	277.0	60	0.1154	29.85	0.934	13.17
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	5118
Duv	0.00303
Chromaticity (x, y)	x=0.3423 y=0.3554
Chromaticity (u', v')	u(u')=0.2081 v'=0.4861
Color Rendering Index (CRI)	81.0
R9	-6
Rf	82
Rg	95
Rcs,h1 (%)	-14

Special Color Rendering Indices			
R1	79	R9	-6
R2	87	R10	69
R3	93	R11	80
R4	81	R12	59
R5	80	R13	81
R6	82	R14	96
R7	85	R15	73
R8	63	--	--
--	--	--	--
--	--	--	--
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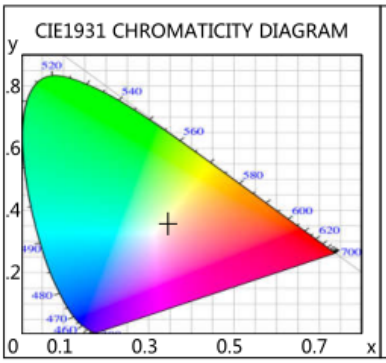
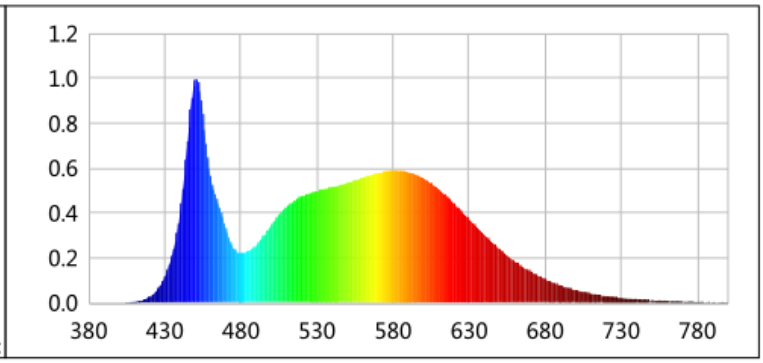
Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	4207.0	4084.7	300-5000(-10%)
Luminous Efficacy (lm/W)	137.62	136.86	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	133.62		

Spectral Power Distribution & Chromaticity Diagram



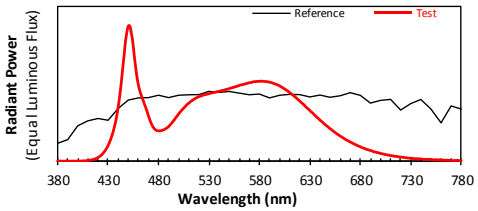


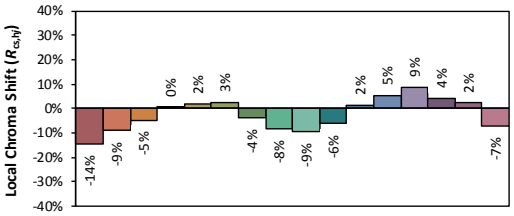
WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0002	0.0265	525	0.4886	56.1019	670	0.1418	16.2885
385	0.0006	0.0676	530	0.4969	57.0652	675	0.1228	14.1061
390	0.0006	0.0648	535	0.5070	58.2192	680	0.1069	12.2737
395	0.0007	0.0802	540	0.5148	59.1150	685	0.0904	10.3808
400	0.0008	0.0865	545	0.5242	60.1938	690	0.0792	9.0924
405	0.0022	0.2524	550	0.5350	61.4354	695	0.0672	7.7206
410	0.0046	0.5254	555	0.5456	62.6524	700	0.0572	6.5647
415	0.0119	1.3617	560	0.5579	64.0695	705	0.0481	5.5221
420	0.0274	3.1450	565	0.5677	65.1937	710	0.0414	4.7537
425	0.0576	6.6158	570	0.5781	66.3849	715	0.0349	4.0106
430	0.1155	13.2605	575	0.5861	67.2986	720	0.0301	3.4606
435	0.2169	24.9070	580	0.5891	67.6475	725	0.0263	3.0239
440	0.3970	45.5907	585	0.5874	67.4547	730	0.0227	2.6110
445	0.7190	82.5659	590	0.5833	66.9817	735	0.0180	2.0654
450	0.9959	114.3652	595	0.5715	65.6240	740	0.0173	1.9922
455	0.8438	96.8958	600	0.5558	63.8204	745	0.0144	1.6584
460	0.5650	64.8765	605	0.5335	61.2669	750	0.0130	1.4888
465	0.4438	50.9609	610	0.5055	58.0440	755	0.0114	1.3101
470	0.3346	38.4231	615	0.4760	54.6607	760	0.0089	1.0246
475	0.2479	28.4718	620	0.4426	50.8198	765	0.0064	0.7362
480	0.2230	25.6100	625	0.4085	46.9076	770	0.0074	0.8490
485	0.2313	26.5641	630	0.3736	42.9039	775	0.0057	0.6527
490	0.2548	29.2628	635	0.3381	38.8205	780	0.0044	0.5067
495	0.2989	34.3267	640	0.3035	34.8533	785	0.0021	0.2365
500	0.3485	40.0243	645	0.2706	31.0742	790	0.0049	0.5600
505	0.3914	44.9504	650	0.2401	27.5682	795	0.0020	0.2353
510	0.4286	49.2192	655	0.2116	24.2945	800	0.0022	0.2496
515	0.4551	52.2559	660	0.1858	21.3367			
520	0.4748	54.5184	665	0.1622	18.6274			

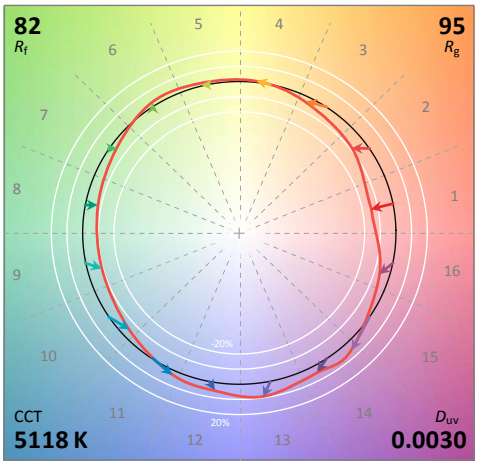
TM30

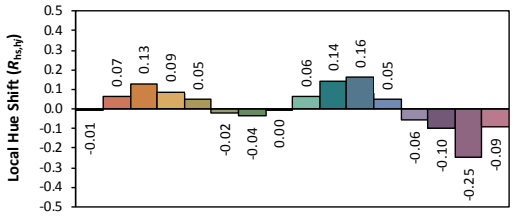
ANSI/IES TM-30-18 Color Rendition Report

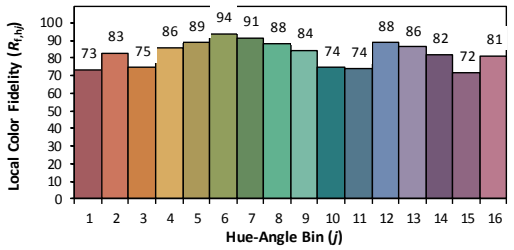
Source:	L128-3080RA35003H1 L128-5080RA35000H1	**Manufacturer:**	Organization Name ASMART LIGHT CO., LTD
Date:	2020/7/2	**Model:**	AST-MWP03C-30D4BYFDA1-ab50g(Tested at 100% CCT Setting)

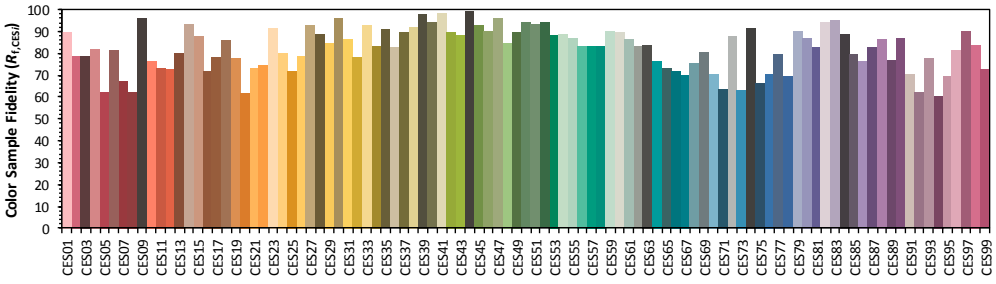












Notes:	This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.3423
y	0.3554
u'	0.2081
v'	0.4861

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.

Rcs,h1 (%)

HUE-ANGLE BIN	LOCAL CHROMA SHIFT	LOCAL HUE SHIFT	LOCAL COLOR FIDELITY
j	$R_{cs,hj}$	$R_{hs,hj}$	$R_{f,hj}$
1	-14%	-0.01	73
2	-9%	0.07	83
3	-5%	0.13	75
4	0%	0.09	86
5	2%	0.05	89
6	3%	-0.02	94
7	-4%	-0.04	91
8	-8%	0.00	88
9	-9%	0.06	84
10	-6%	0.14	74
11	2%	0.16	74
12	5%	0.05	88
13	9%	-0.06	86
14	4%	-0.10	82
15	2%	-0.25	72
16	-7%	-0.09	81

3. Test Equipment

Equipment Name	Model No.	Serial No.	Next Calibration Date
Goniophotometeric 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 ********