LM-79-08 Test Report

For

ASMART LIGHT CO., LTD

(Brand Name: ASMART)

506 N GARFIELD AVE SUITE#210 ALHAMBRA CA 91801

High-Bay Luminaires for Commercial and Industrial Buildings

Model name(s):
AST-PHB10-400WBML1A1-abeWD
Remark: "a" can be any two letters for housing colors; "b" can be "DMS", "DPS" or blank for Sensor provided or not; "e" can be any digits for CCT; "W" for wattage adjustable; "D" for CCT Tunable.
Representative (Tested) Model:
AST-PHB10-400WBML1A1-ab40WD
AST-PHB10-400WBML1A1-ab50WD

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

Test & Report By:

Engineer: Arvin Qin
Date: 2023-08-31

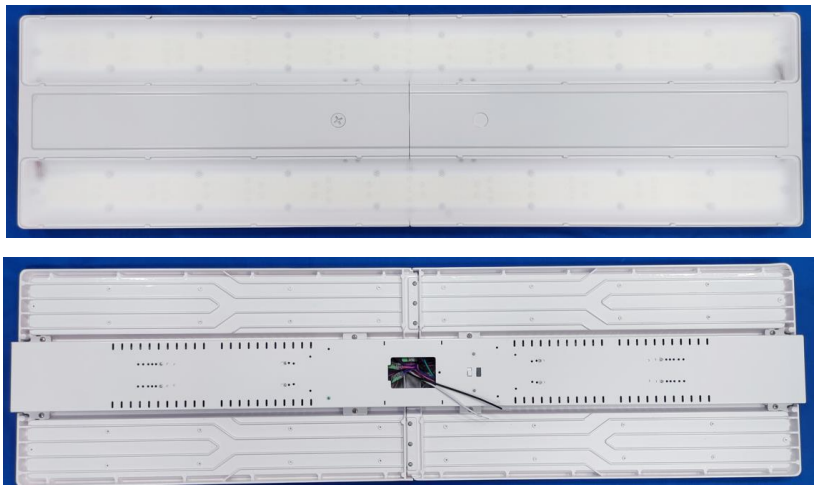
Review By:

Manager: Jason Luo

1.1 Product Information:

Organization Name	ASMART LIGHT CO., LTD	
Brand Name	ASMART	
Model Number	AST-PHB10-400WBML1A1-abeWD	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	High-Bay Luminaires for Commercial and Industrial Buildings	
Rated Voltage / Frequency	120-277Vac, 50/60 Hz	
Nominal Power	400W(Power adjustable)	
Rated Initial Lamp Lumen	--	
Declared CCT	4000K,5000K(Color tunable)	
LED Manufacturer	Lumileds Holding B.V	
LED Model	L128-3080RC35000E1 L128-5080RC35003P1	
Sample Number	UTC2308050E-A1-2	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Photo



1.2 Test Specifications:

Date of Receipt	2023-08-27
Date of Test	2023-08-31
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-79-2017 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	BL-QP-033

1.3 Test Methods

1) Photometric and Light Distribution Measurement – Goniophotometer Method:

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at 25° C ± 1° C, measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals.
Goniophotometer far field detector f1'=1.42%, Test distance: 14.14m

2) Chromaticity Measurement – Sphere-Spectroradiometer Method:

Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25º C ± 1º C. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral power distribution taken at 5 nm intervals over the range of 380 to 780 nm.
Self-absorption: AST-PHB10-400WBML1A1-abeWD:1.2345

3) Electrical Measurements:

Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at 25º C ± 1º C. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.

2.1 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2023-08-31	Test Ambient:	25.1 º C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	AST-PHB10-400WBML1A1-ab40WD		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC230805 0E-A1	120.0	60	3.327	398.87	0.999	4.64
	277.0	60	1.468	388.06	0.954	8.68
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

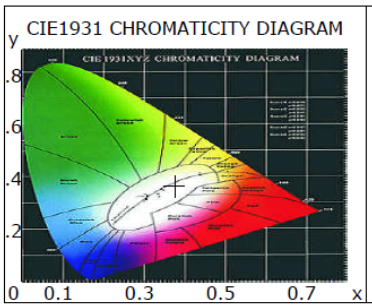
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	4125
Duv	-0.0015
Chromaticity (x, y)	x=0.3742 y=0.3696
Chromaticity (u', v')	u(u')=0.2238 v'=0.4975
Color Rendering Index (CRI)	85
R9	19
Rf	85
Rg	96
Rcs,h1(%)	-11

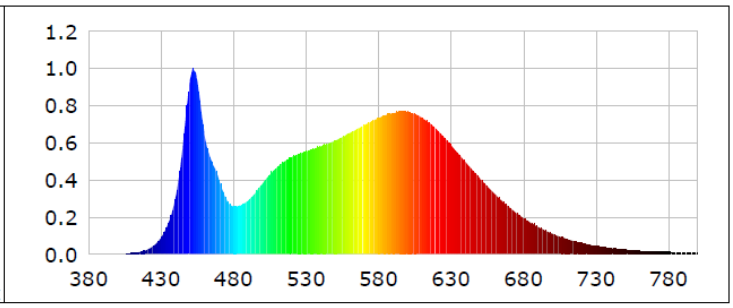
Special Color Rendering Indices			
R1	84	R9	19
R2	92	R10	80
R3	96	R11	83
R4	84	R12	63
R5	84	R13	87
R6	88	R14	98
R7	86	R15	79
R8	68	--	--
--	--	--	--
--	--	--	--

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)	57265.8	56606.3	>=10000(-10%)
Luminous Efficacy (lm/W)	143.57	145.87	Premium: >= 135(-3%)
Most worst Luminous/Highest	141.92		
Zonal lumens in the 20-50° zone (%)	61.6	--	>=30(-10)
Beam Angle (°)	89.4	--	--
Center Beam Candle Power (cd)	27337	--	--

Spectral Power Distribution & Chromaticity Diagram



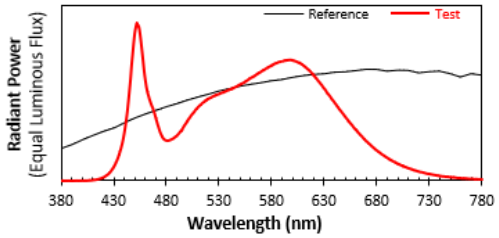


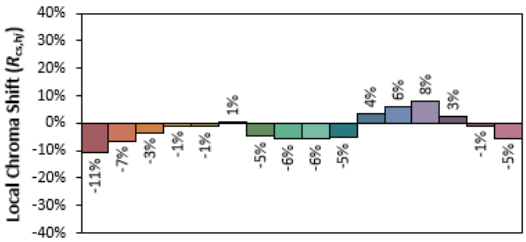
WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0004	0.4742	535	0.5368	629.2006	690	0.2513	294.6091
385	0.0005	0.6197	540	0.5502	644.9019	695	0.2198	257.6210
390	0.0003	0.3172	545	0.5629	659.8525	700	0.1924	225.5612
395	0.0009	1.0636	550	0.5781	677.6546	705	0.1672	196.0527
400	0.0012	1.4202	555	0.5924	694.4426	710	0.1453	170.2902
405	0.0014	1.6319	560	0.6105	715.5948	715	0.1249	146.4677
410	0.0041	4.7690	565	0.6282	736.3436	720	0.1079	126.4834
415	0.0097	11.3948	570	0.6507	762.7741	725	0.0933	109.4217
420	0.0212	24.8059	575	0.6715	787.1071	730	0.0795	93.2439
425	0.0438	51.3678	580	0.6916	810.7319	735	0.0675	79.1014
430	0.0864	101.2322	585	0.7139	836.9004	740	0.0587	68.7631
435	0.1645	192.8806	590	0.7324	858.5575	745	0.0508	59.5558
440	0.3005	352.2709	595	0.7467	875.2882	750	0.0432	50.6551
445	0.5762	675.4445	600	0.7592	889.9320	755	0.0367	43.0583
450	0.9359	1097.1413	605	0.7652	897.0392	760	0.0311	36.4683
455	0.9328	1093.3954	610	0.7627	893.9987	765	0.0262	30.7377
460	0.6405	750.7511	615	0.7515	880.9235	770	0.0228	26.7802
465	0.4974	583.0746	620	0.7346	861.1244	775	0.0197	23.1032
470	0.3981	466.6322	625	0.7054	826.8438	780	0.0166	19.4023
475	0.2947	345.4324	630	0.6704	785.8415	785	0.0152	17.8344
480	0.2551	299.0911	635	0.6292	737.5692	790	0.0126	14.8119
485	0.2631	308.4567	640	0.5852	685.9550	795	0.0108	12.6791
490	0.2861	335.3852	645	0.5394	632.2529	800	0.0089	10.4546
495	0.3265	382.7091	650	0.4943	579.3731			
500	0.3775	442.5453	655	0.4488	526.1371			
505	0.4256	498.9272	660	0.4055	475.3172			
510	0.4657	545.9069	665	0.3632	425.7269			
515	0.4970	582.5477	670	0.3239	379.6697			
520	0.5190	608.3846	675	0.2867	336.0432			
525	0.5368	629.2006	680	0.2513	294.6091			
530	0.5502	644.9019	685	0.2198	257.6210			

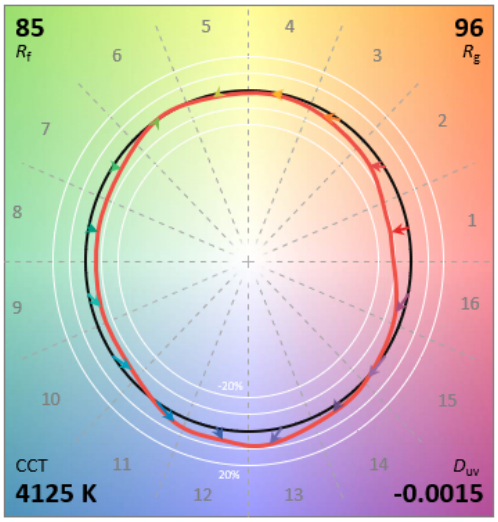
TM30

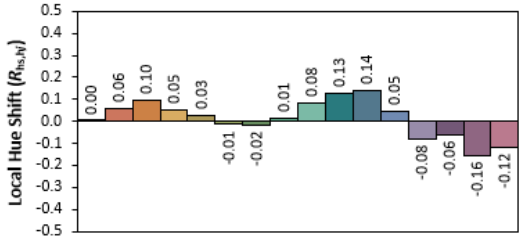
ANSI/IES TM-30-18 Color Rendition Report

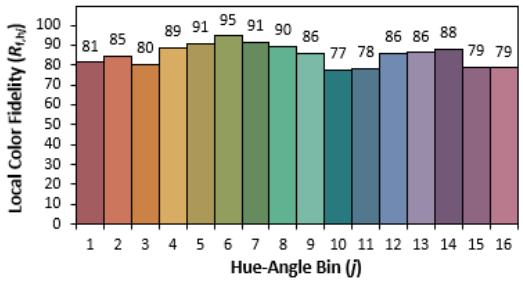
Source:	L128-3080RC35000E1 L128-5080RC35003P1	**Manufacturer**	ASMART LIGHT CO., LTD
Date:	2023/8/31	**Model:**	AST-PHB10-400WBML1A1-ab40WD

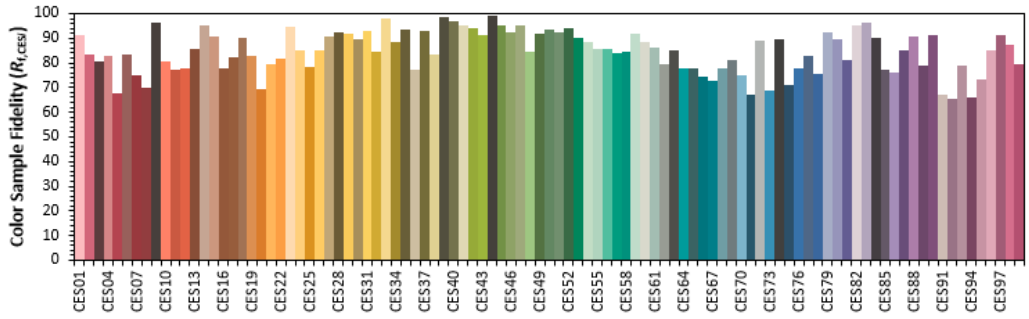












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.3742
y	0.3696
u'	0.2238
v'	0.4975

CIE 13.3-1995 (CRI)

R_a	85
R_9	19

Zonal Lumen Tabulation

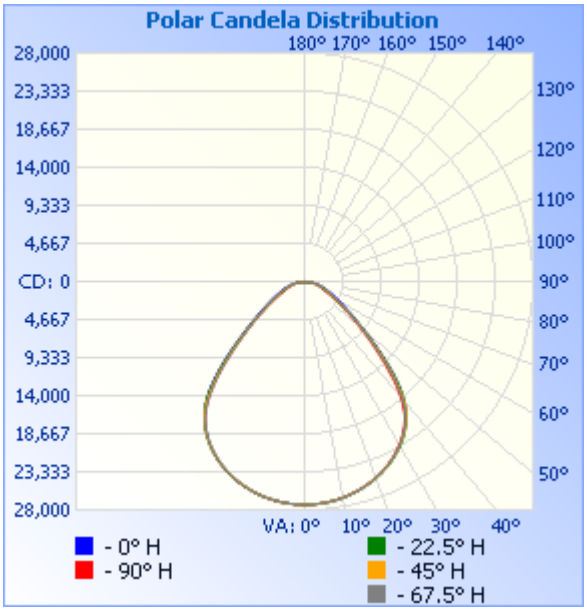
Zonal Lumen Summary

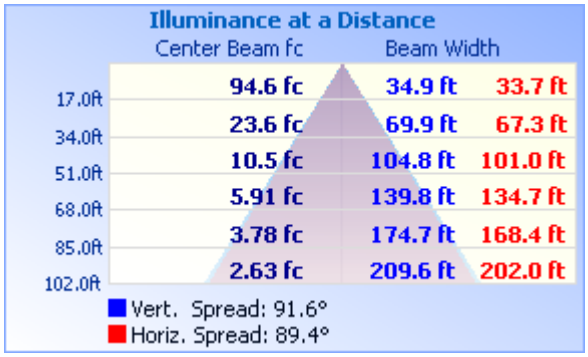
Zone	Lumens	% Lamp	% Luminaire
0-30	21,317.6	37.2%	37.2%
0-40	34,578.3	60.4%	60.4%
0-60	51,198.4	89.4%	89.4%
60-90	5,888.8	10.3%	10.3%
70-100	2,569.1	4.5%	4.5%
90-120	53.3	0.1%	0.1%
0-90	57,087.1	99.7%	99.7%
90-180	170.9	0.3%	0.3%
0-180	57,258.1	100%	100%

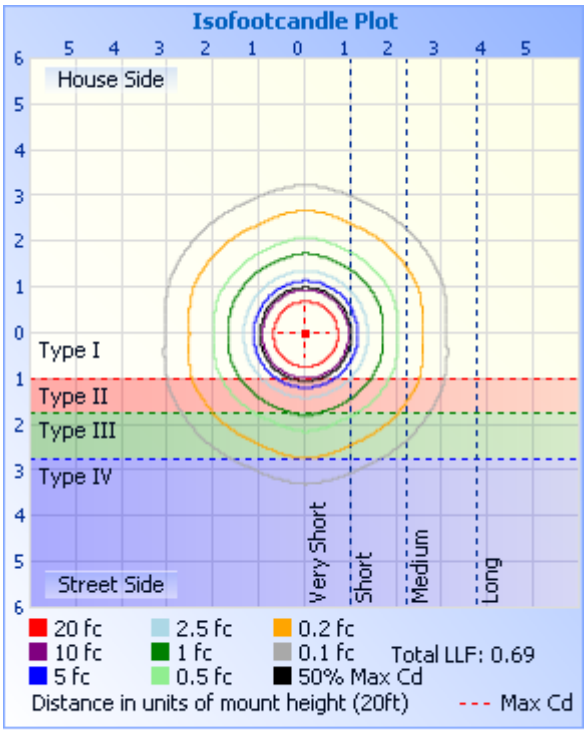
Lumens Per Zone

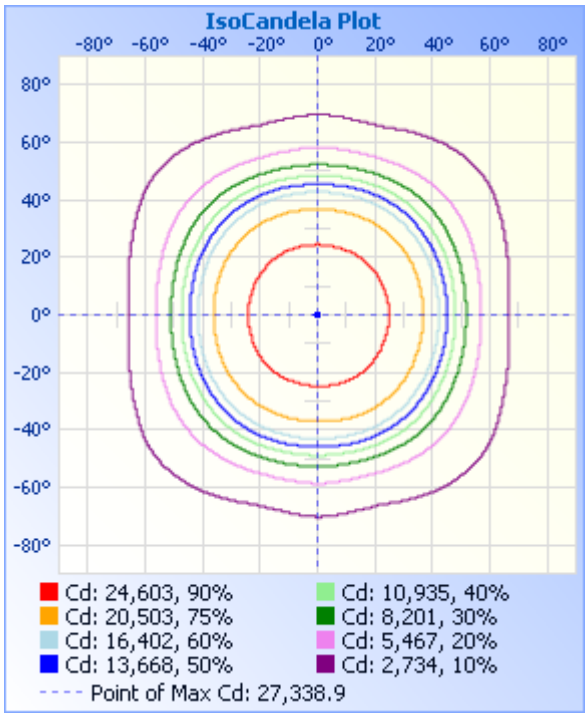
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	2,588.1	4.5%	90-100	18.7	0%
10-20	7,435.6	13.0%	100-110	17.3	0%
20-30	11,293.9	19.7%	110-120	17.3	0%
30-40	13,260.8	23.2%	120-130	20.0	0%
40-50	10,689.4	18.7%	130-140	23.8	0%
50-60	5,930.6	10.4%	140-150	26.5	0%
60-70	3,338.3	5.8%	150-160	24.1	0%
70-80	1,959.8	3.4%	160-170	17.2	0%
80-90	590.6	1.0%	170-180	6.1	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	27337	27337	27337	27337	27337	27337	27337	27337	27337	27337	27337	27337	27337	27337	27337	27337	27337
1	27331	27327	**27339**	27331	27328	27337	27329	27333	27324	27328	27334	27326	27334	27335	27332	27327	27331
2	27316	27320	27313	27317	27316	27316	27308	27317	27309	27317	27318	27309	27321	27318	27318	27318	27316
3	27296	27299	27298	27301	27286	27295	27286	27290	27287	27289	27294	27292	27300	27292	27302	27297	27296
4	27266	27271	27267	27267	27253	27261	27246	27261	27256	27259	27256	27263	27274	27271	27270	27270	27266
5	27225	27232	27227	27234	27213	27222	27205	27214	27214	27214	27217	27219	27239	27230	27233	27226	27225
6	27180	27185	27177	27180	27158	27172	27152	27166	27157	27172	27169	27169	27192	27185	27190	27179	27180
7	27120	27120	27128	27125	27102	27114	27091	27109	27104	27114	27102	27107	27137	27122	27143	27125	27120
8	27060	27066	27063	27060	27034	27049	27020	27045	27039	27044	27035	27034	27070	27057	27075	27067	27060
9	26983	26994	26989	26988	26960	26972	26946	26968	26961	26966	26963	26968	26999	26990	27003	26986	26983
10	26901	26910	26902	26907	26872	26883	26857	26894	26883	26899	26877	26876	26911	26893	26924	26908	26901
11	26816	26815	26804	26808	26780	26788	26764	26802	26779	26806	26776	26786	26823	26803	26826	26825	26816
12	26719	26727	26712	26712	26672	26687	26662	26698	26674	26704	26677	26685	26715	26707	26726	26725	26719
13	26606	26609	26604	26602	26566	26581	26550	26586	26568	26602	26549	26557	26611	26586	26623	26609	26606
14	26494	26508	26484	26489	26443	26461	26426	26466	26450	26472	26434	26440	26491	26468	26510	26497	26494
15	26363	26374	26357	26360	26314	26338	26297	26340	26326	26358	26302	26315	26357	26349	26377	26362	26363
16	26227	26243	26221	26222	26184	26185	26161	26205	26190	26212	26160	26173	26223	26210	26239	26224	26227
17	26086	26095	26059	26079	26025	26038	26014	26066	26033	26073	26019	26030	26081	26064	26094	26085	26086
18	25936	25947	25920	25912	25871	25885	25866	25902	25879	25915	25863	25853	25926	25900	25939	25919	25936
19	25759	25799	25759	25753	25713	25727	25688	25725	25718	25762	25683	25696	25743	25741	25771	25750	25759
20	25587	25630	25575	25586	25541	25531	25510	25553	25537	25568	25511	25515	25564	25556	25602	25575	25587
21	25402	25453	25404	25399	25356	25360	25336	25361	25352	25383	25329	25330	25382	25371	25417	25396	25402
22	25214	25262	25200	25206	25171	25151	25148	25162	25158	25191	25127	25136	25194	25174	25209	25208	25214
23	25025	25044	25002	24987	24940	24941	24947	24954	24932	24985	24920	24926	24992	24971	25004	24991	25025
24	24818	24848	24791	24771	24723	24724	24736	24728	24706	24769	24711	24689	24769	24755	24782	24768	24818
25	24593	24638	24577	24548	24503	24499	24497	24473	24473	24542	24464	24460	24537	24526	24553	24536	24593
26	24355	24393	24334	24303	24268	24236	24270	24236	24238	24292	24229	24219	24290	24258	24311	24298	24355
27	24105	24164	24075	24071	24013	23982	24027	23982	23956	24033	23981	23963	24033	24000	24064	24042	24105
28	23837	23900	23843	23801	23720	23714	23765	23703	23689	23767	23717	23665	23756	23754	23796	23800	23837

29	23553	23629	23571	23516	23432	23428	23492	23383	23402	23489	23440	23384	23448	23468	23515	23487	23553
30	23269	23352	23263	23230	23131	23126	23197	23085	23097	23196	23107	23075	23152	23137	23221	23198	23269
31	22960	23018	22971	22895	22823	22811	22857	22759	22782	22881	22805	22751	22834	22819	22920	22890	22960
32	22628	22726	22652	22567	22495	22449	22531	22429	22425	22523	22489	22423	22493	22480	22596	22564	22628
33	22273	22381	22318	22217	22103	22087	22189	22073	22069	22171	22138	22029	22132	22142	22243	22203	22273
34	21898	21996	21960	21844	21726	21707	21815	21699	21700	21798	21766	21637	21735	21744	21870	21831	21898
35	21503	21613	21569	21440	21314	21282	21409	21254	21292	21398	21319	21207	21300	21321	21477	21438	21503
36	21049	21201	21163	21015	20851	20820	20909	20813	20861	20965	20874	20725	20832	20864	21011	21021	21049
37	20597	20704	20706	20527	20338	20249	20413	20338	20393	20447	20383	20188	20238	20348	20528	20571	20597
38	20081	20186	20179	19957	19697	19664	19863	19820	19830	19917	19829	19511	19616	19751	19971	20058	20081
39	19522	19603	19575	19287	19001	18988	19235	19168	19257	19328	19176	18793	18899	19070	19334	19471	19522
40	18879	19011	18862	18519	18217	18233	18527	18501	18613	18644	18355	17983	18105	18306	18683	18815	18879
41	18176	18285	18077	17678	17343	17376	17627	17741	17880	17864	17501	17093	17247	17486	17818	18093	18176
42	17424	17394	17127	16789	16410	16460	16748	16909	17066	16907	16598	16167	16342	16519	16970	17304	17424
43	16574	16475	16193	15752	15366	15433	15825	16025	16103	15981	15668	15218	15388	15577	16046	16347	16574
44	15631	15491	15194	14849	14401	14474	14882	15012	15180	15027	14622	14166	14389	14581	15064	15388	15631
45	14633	14478	14187	13823	13414	13501	13811	14050	14219	13961	13637	13182	13373	13571	14058	14408	14633
46	13582	13511	13222	12774	12458	12540	12836	13095	13264	12996	12661	12237	12389	12635	13073	13456	13582
47	12658	12480	12283	11875	11561	11552	11909	12172	12238	12049	11746	11351	11493	11666	12061	12531	12658
48	11753	11572	11304	10941	10703	10693	11019	11271	11329	11139	10866	10508	10590	10838	11185	11627	11753
49	10888	10700	10460	10132	9847	9920	10212	10361	10508	10311	9996	9670	9815	10045	10356	10758	10888
50	10056	9861	9653	9431	9128	9211	9387	9602	9757	9470	9267	9000	9059	9285	9563	9931	10056
51	9318	9091	8963	8686	8459	8501	8697	8909	9080	8758	8598	8346	8385	8614	8862	9114	9318
52	8628	8381	8300	8087	7836	7911	8058	8233	8383	8097	7977	7768	7763	7975	8213	8445	8628
53	8048	7766	7691	7536	7192	7368	7466	7614	7807	7480	7400	7177	7193	7444	7575	7819	8048
54	7518	7196	7085	6975	6647	6874	6928	6992	7285	6919	6870	6698	6610	6953	7040	7242	7518
55	6980	6660	6577	6497	6147	6418	6387	6475	6812	6348	6342	6252	6113	6444	6534	6656	6980
56	6559	6147	6114	6057	5694	5969	5944	6001	6342	5880	5907	5850	5638	6044	6077	6163	6559
57	6116	5662	5691	5676	5229	5589	5534	5556	5944	5449	5500	5439	5224	5647	5664	5707	6116
58	5751	5265	5262	5293	4836	5237	5160	5113	5580	5047	5127	5097	4843	5277	5246	5292	5751
59	5378	4893	4918	4961	4485	4920	4787	4746	5250	4690	4759	4784	4488	4936	4892	4906	5378
60	5064	4550	4594	4654	4159	4621	4467	4407	4940	4355	4445	4495	4165	4644	4577	4551	5064

61	4765	4231	4302	4376	3871	4327	4194	4107	4633	4037	4171	4233	3846	4371	4287	4205	4765
62	4484	3939	4036	4125	3585	4080	3939	3808	4376	3776	3898	3973	3586	4129	4026	3917	4484
63	4238	3668	3769	3889	3350	3851	3684	3563	4131	3538	3667	3757	3344	3873	3757	3655	4238
64	3981	3423	3551	3657	3130	3636	3465	3336	3897	3297	3455	3552	3108	3655	3537	3402	3981
65	3769	3221	3354	3462	2937	3417	3274	3131	3677	3108	3269	3370	2916	3455	3347	3195	3769
66	3551	3023	3172	3284	2741	3229	3093	2948	3454	2935	3092	3189	2745	3277	3166	3005	3551
67	3347	2855	3000	3106	2581	3057	2928	2783	3264	2775	2933	3004	2581	3108	2994	2831	3347
68	3167	2692	2823	2934	2438	2895	2766	2624	3085	2619	2770	2847	2429	2927	2819	2665	3167
69	2975	2554	2685	2771	2305	2723	2626	2487	2902	2488	2631	2700	2282	2769	2682	2531	2975
70	2807	2411	2538	2613	2183	2575	2496	2367	2741	2370	2498	2554	2163	2619	2543	2400	2807
71	2632	2294	2401	2474	2058	2431	2372	2243	2592	2254	2374	2397	2044	2473	2408	2284	2632
72	2487	2191	2278	2324	1944	2287	2234	2129	2440	2145	2234	2262	1942	2331	2284	2162	2487
73	2348	2074	2156	2185	1838	2138	2116	2023	2295	2025	2105	2129	1833	2185	2157	2053	2348
74	2208	1959	2028	2057	1724	2003	1996	1918	2139	1918	1991	1992	1732	2053	2039	1947	2208
75	2045	1852	1906	1907	1625	1873	1862	1797	1994	1811	1858	1852	1640	1903	1908	1845	2045
76	1905	1735	1772	1761	1522	1734	1735	1694	1857	1703	1735	1716	1538	1769	1780	1730	1905
77	1766	1623	1652	1634	1422	1603	1616	1578	1723	1591	1612	1584	1437	1637	1653	1621	1766
78	1623	1508	1524	1493	1311	1461	1491	1469	1570	1468	1489	1451	1332	1502	1527	1506	1623
79	1498	1397	1403	1368	1186	1324	1368	1356	1434	1355	1362	1300	1229	1374	1405	1391	1498
80	1344	1264	1275	1229	1076	1194	1243	1225	1302	1237	1221	1164	1113	1234	1275	1273	1344
81	1209	1140	1134	1078	959	1043	1106	1112	1169	1108	1096	1024	979	1087	1138	1141	1209
82	1058	1012	1000	925	809	898	972	982	1016	973	953	868	835	919	1003	1012	1058
83	921	882	864	786	686	749	840	855	882	844	824	720	690	784	870	889	921
84	804	773	728	629	522	597	705	720	754	724	682	536	551	623	733	769	804
85	662	631	587	468	371	429	536	589	618	582	490	364	376	436	583	622	662
86	518	491	401	306	235	274	369	446	474	424	313	213	229	278	389	478	518
87	365	339	229	157	124	147	204	307	321	280	160	105	132	152	216	340	365
88	225	188	105	74	54	58	94	142	188	129	62	42	46	69	98	176	225
89	95	59	38	40	27	26	34	39	67	35	18	28	30	32	35	56	95
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91	19	19	26	21	7	14	21	17	20	19	18	18	20	18	21	17	19
92	18	21	21	22	13	15	17	21	20	18	16	17	16	17	0	23	18

93	17	19	22	22	14	15	12	20	19	17	18	18	16	16	16	9	17
94	18	20	24	19	16	12	19	17	21	18	15	15	12	16	20	20	18
95	18	20	22	20	14	15	16	15	23	12	17	14	10	18	15	20	18
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97	23	14	19	17	9	13	17	19	18	19	13	9	14	14	17	21	23
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99	20	21	18	18	16	16	18	14	16	15	15	18	15	17	15	20	20
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101	21	23	21	19	15	16	15	15	18	21	17	13	13	20	17	20	21
102	13	24	18	18	14	12	18	16	16	18	16	11	13	12	15	19	13
103	20	18	18	20	14	0	15	17	20	17	18	10	14	16	20	19	20
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105	20	18	19	14	13	13	15	19	17	21	17	14	14	13	17	21	20
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107	20	21	19	18	8	15	18	14	17	16	15	18	14	14	20	18	20
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110	18	21	22	18	16	11	17	16	17	16	21	15	15	17	15	21	18
111	20	19	24	19	14	13	15	20	17	15	18	17	18	19	21	15	20
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113	21	23	18	17	14	10	15	15	18	16	21	18	14	16	17	19	21
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119	21	23	17	17	12	18	17	20	21	25	22	14	15	20	17	21	21
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123	24	22	20	18	19	20	19	23	25	21	25	23	18	20	28	25	24
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126	27	25	21	22	20	20	23	23	26	27	24	26	16	14	26	25	27
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137	36	43	40	33	30	27	31	40	37	38	37	32	26	36	37	37	36
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142	47	41	41	36	32	29	39	41	43	34	44	39	30	39	41	36	47
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147	53	46	52	46	40	42	44	50	52	53	47	47	35	37	45	48	53
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152	49	58	57	52	26	42	45	55	56	53	51	49	42	51	56	58	49
153	54	59	55	50	42	47	49	55	57	51	54	50	48	52	56	52	54
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155	57	52	55	41	43	39	48	49	57	60	57	48	45	56	53	55	57
156	63	56	51	58	36	47	44	58	59	54	52	56	47	55	55	58	63

157	60	60	61	60	48	52	60	61	60	59	59	56	46	56	55	60	60
158	60	58	56	55	41	53	55	59	57	45	61	54	49	54	57	58	60
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161	63	67	63	60	45	53	60	60	63	57	56	55	44	52	63	49	63
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169	70	63	65	65	61	63	70	68	71	66	67	66	59	64	63	69	70
170	63	62	62	60	59	61	57	71	65	66	71	66	56	62	66	67	63
171	67	64	59	63	63	64	66	73	63	68	75	68	59	66	65	64	67
172	66	69	60	62	61	64	68	70	71	64	69	72	61	61	64	48	66
173	66	66	63	66	61	68	68	68	61	69	73	68	61	58	67	65	66
174	66	66	63	59	64	68	67	65	69	67	72	72	61	61	64	68	66
175	62	68	65	63	53	57	63	64	68	49	67	68	59	66	47	66	62
176	66	67	62	63	61	58	68	68	66	66	69	74	59	63	63	63	66
177	62	60	63	61	66	63	62	68	68	64	68	70	50	66	63	63	62
178	66	60	63	67	64	61	57	63	68	63	63	68	63	64	63	58	66
179	56	67	72	65	61	59	55	63	63	67	64	69	63	61	55	64	56
180	57	68	64	63	64	58	60	63	64	57	68	64	57	60	63	63	57

UGR

UGR Table - Corrected

Reflectances											
Ceiling Cavity		70	70	50	50	30	70	70	50	50	30
Walls		50	30	50	30	30	50	30	50	30	30
Floor Cavity		20	20	20	20	20	20	20	20	20	20
Room Size		UGR Viewed Crosswise					UGR Viewed Endwise				
X=2H	Y=2H	22.1	23.5	22.5	23.9	24.2	21.9	23.3	22.2	23.6	23.9
	3H	23.4	24.7	23.8	25.0	25.4	23.1	24.3	23.4	24.7	25.0
	4H	24.0	25.2	24.4	25.6	25.9	23.5	24.7	23.9	25.1	25.5
	6H	24.5	25.6	25.0	26.0	26.4	24.0	25.1	24.4	25.4	25.8
	8H	24.7	25.8	25.2	26.2	26.6	24.1	25.2	24.5	25.5	26.0
	12H	24.9	25.9	25.3	26.3	26.7	24.2	25.2	24.6	25.6	26.0
4H	2H	22.5	23.7	22.9	24.0	24.4	22.3	23.5	22.7	23.8	24.2
	3H	24.0	25.0	24.4	25.4	25.8	23.7	24.7	24.1	25.1	25.5
	4H	24.7	25.6	25.2	26.0	26.5	24.4	25.3	24.9	25.7	26.2
	6H	25.4	26.2	25.9	26.6	27.1	25.0	25.8	25.5	26.2	26.7
	8H	25.7	26.4	26.1	26.9	27.3	25.2	25.9	25.7	26.4	26.8
	12H	25.9	26.5	26.4	27.0	27.5	25.3	25.9	25.8	26.4	26.9
8H	4H	25.0	25.7	25.5	26.2	26.6	24.7	25.4	25.2	25.9	26.3
	6H	25.8	26.4	26.3	26.9	27.4	25.4	26.0	25.9	26.5	27.0
	8H	26.2	26.7	26.7	27.2	27.7	25.7	26.3	26.2	26.8	27.3
	12H	26.5	27.0	27.0	27.5	28.0	25.9	26.4	26.4	26.9	27.4
12H	4H	25.0	25.7	25.5	26.1	26.6	24.7	25.4	25.2	25.9	26.3
	6H	25.9	26.4	26.4	26.9	27.4	25.5	26.1	26.1	26.5	27.1
	8H	26.3	26.8	26.8	27.3	27.8	25.9	26.3	26.4	26.8	27.4

Maximum UGR = 28.0

2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2023-08-31	Test Ambient:	25.1 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	AST-PHB10-400WBML1A1-ab50WD		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC230805 0E-A2	120.0	60	3.403	407.97	0.999	4.41
	277.0	60	1.508	398.37	0.954	8.91
				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)	5048
Duv	-0.0002
Chromaticity (x, y)	x=0.3437 y=0.3501
Chromaticity (u', v')	u(u')=0.2111 v'=0.4837
Color Rendering Index (CRI)	84
R9	10
Rf	84
Rg	96
Rcs,h1(%)	-12

Special Color Rendering Indices			
R1	83	R9	10
R2	90	R10	75
R3	94	R11	83
R4	84	R12	63
R5	84	R13	85
R6	85	R14	97
R7	86	R15	78
R8	67	--	--
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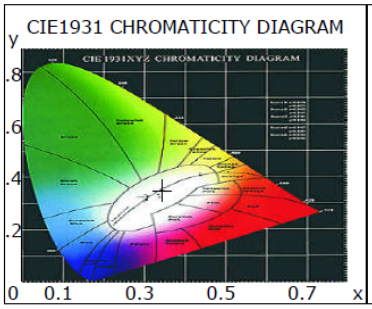
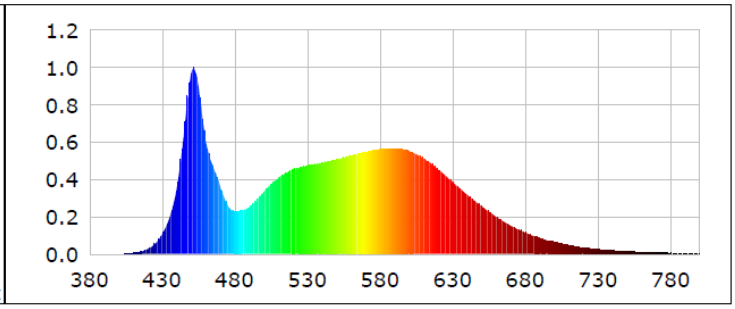
Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	58474.3	57950.9	>=10000(-10%)
Luminous Efficacy (lm/W)	143.33	145.47	Premium: >= 135(-3%)
Most worst Luminous/Highest Watts	142.05		

Spectral Power Distribution & Chromaticity Diagram



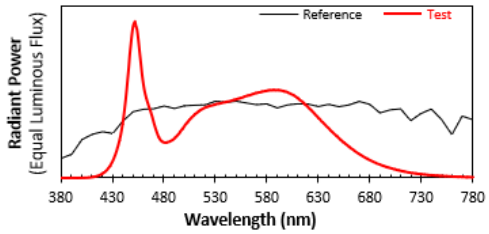


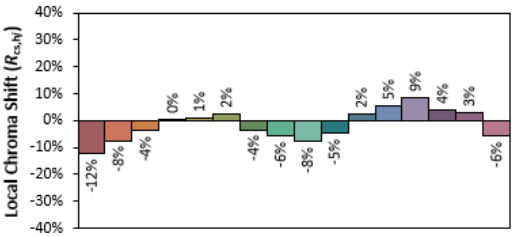
WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0005	0.7853	535	0.4627	705.0145	690	0.1518	231.2493
385	0.0001	0.0878	540	0.4706	717.0035	695	0.1317	200.6673
390	0.0009	1.3584	545	0.4788	729.6015	700	0.1143	174.2355
395	0.0004	0.5579	550	0.4874	742.6774	705	0.0988	150.5762
400	0.0007	1.1246	555	0.4942	753.0695	710	0.0856	130.3701
405	0.0016	2.4256	560	0.5043	768.4529	715	0.0729	111.0650
410	0.0047	7.1444	565	0.5143	783.6312	720	0.0631	96.0775
415	0.0114	17.4218	570	0.5258	801.2317	725	0.0542	82.5861
420	0.0256	39.0635	575	0.5350	815.2520	730	0.0460	70.0779
425	0.0527	80.3150	580	0.5449	830.3537	735	0.0396	60.3583
430	0.1028	156.6514	585	0.5548	845.3773	740	0.0323	49.2205
435	0.1922	292.9082	590	0.5599	853.1772	745	0.0279	42.5737
440	0.3452	526.0633	595	0.5629	857.6458	750	0.0243	37.0809
445	0.6406	976.0712	600	0.5638	859.1213	755	0.0210	31.9270
450	0.9665	1472.6660	605	0.5589	851.6483	760	0.0181	27.5811
455	0.9032	1376.2447	610	0.5495	837.3376	765	0.0151	23.0663
460	0.6104	930.0718	615	0.5338	813.4015	770	0.0128	19.5065
465	0.4692	715.0082	620	0.5116	779.5026	775	0.0115	17.5616
470	0.3616	550.9971	625	0.4856	739.9108	780	0.0096	14.6013
475	0.2630	400.6828	630	0.4538	691.4605	785	0.0079	12.0197
480	0.2281	347.6290	635	0.4211	641.6637	790	0.0065	9.9111
485	0.2321	353.7074	640	0.3845	585.8206	795	0.0056	8.5396
490	0.2504	381.5454	645	0.3517	535.9468	800	0.0051	7.7558
495	0.2871	437.5224	650	0.3181	484.7495			
500	0.3327	506.9709	655	0.2847	433.7688			
505	0.3742	570.1876	660	0.2544	387.5724			
510	0.4092	623.4959	665	0.2257	343.9713			
515	0.4336	660.7471	670	0.1986	302.5485			
520	0.4514	687.7937	675	0.1738	264.7649			
525	0.4627	705.0145	680	0.1518	231.2493			
530	0.4706	717.0035	685	0.1317	200.6673			

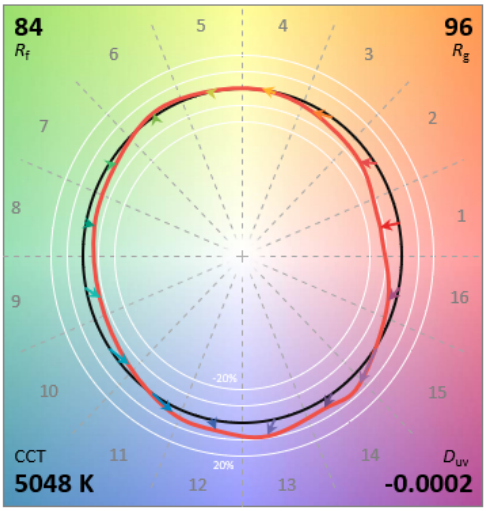
TM30

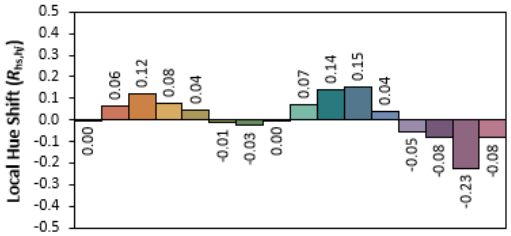
ANSI/IES TM-30-18 Color Rendition Report

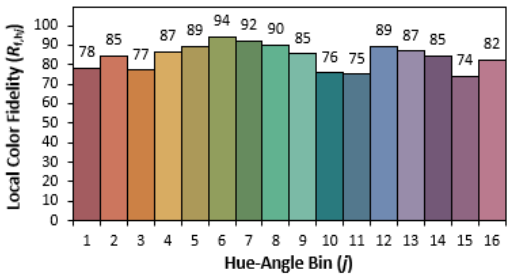
Source:	L128-5080RC35003P1	**Manufacturer**	ASMART LIGHT CO., LTD
Date:	2023/8/31	**Model:**	AST-PHB10-400WBML1A1-ab50WD

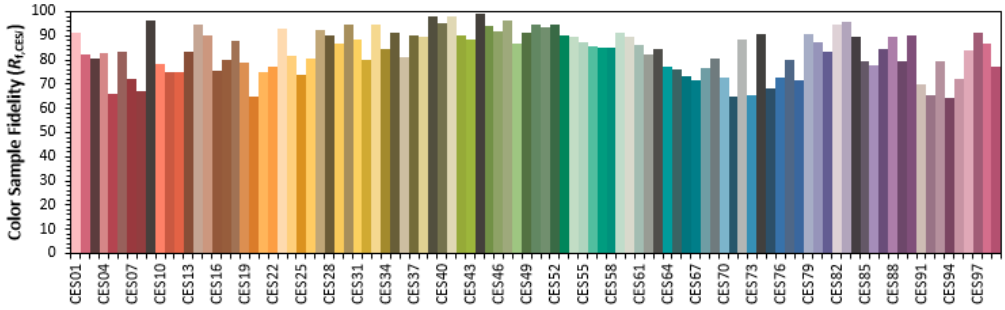












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.3437
y	0.3501
u'	0.2111
v'	0.4837

CIE 13.3-1995 (CRI)

R_a	84
R_9	10

3. Test Equipment

Equipment Name	Model No.	Serial No.	Calibration Date
Goniophotometeric System	GPM-3000	DYHXF120001	2023-01-17
AC Power Source	CHP-500C	DYBD010159	2023-01-18
Total Luminous Flux Standard Lamp	24V/150W	DYJYR040040	2023-02-01
Digital Power Meter	WT500	DYDWQ20010	2023-01-18
Integral Sphere (2M)	2M	DYJCE120067	2023-01-17
Digital Power Meter	WT500	DYDWQ200006	2023-01-18
Optical Color and Electrical Measurement System	CMS-3000S	DYJCE120067	2023-01-17
Expand Uncertainty: Photometric Measurement (Sphere): 2.08%, k=2 Chromaticity Measurement(Sphere):25.6K, k=2 Photometric Measurement(Goniophotometer):2.645%, k=2			

******** END OF REPORT ********