

## LM-79-08 Test Report

For

## RAB Lighting Inc.

(Brand Name: RAB Lighting)

Room 6A33, No.1388, Wuzhong road, Shanghai, China.  
Xiao Xiang, 15921313292, Gary.Xiao@rabweb.com

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

**Model name(s): WP3XFU150(01)**

Representative (Tested) Model: WP3XFU150(01)

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

Test & Report By:

*Winnie Wu*

Engineer: Winnie Wu

Date: 2023-12-29

Review By:

*Jason Luo*

Manager: Jason Luo

### 1.1 Product Information:

Organization Name	RAB Lighting Inc.	
Brand Name	RAB Lighting	
Model Number	WP3XFU150(01)	
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	150W (wattage adjustable)	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K,4000K,5000K(Color tunable)	
LED Manufacturer	Lumileds Holding B.V.	
LED Model	L128-3080RC35003P1 L128-5080RC35003P1	
Sample Number	UTC2312013E-F1	
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	2023-12-13
Date of Test	2023-12-15
Test item	<ol style="list-style-type: none"> <li>1. Total Luminous Flux</li> <li>2. Luminous Distribution Intensity</li> <li>3. Luminous Efficacy</li> <li>4. Correlated Color Temperature</li> <li>5. Color Rendering Index</li> <li>6. Chromaticity Coordinate</li> <li>7. Electrical Parameters</li> </ol>
Reference Standard	<ol style="list-style-type: none"> <li>1. IES LM-79-2017 Electrical and Photometric Measurements of Solid-State Lighting Products</li> <li>2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products</li> <li>3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources</li> <li>4. CIE 15-2004 Technical Report Colorimetry</li> <li>5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source</li> <li>6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems</li> </ol>
Reference Work Instruction	BL-QP-033

### 1.3 Test Methods

<p><b>1) Photometric and Light Distribution Measurement – Goniophotometer Method:</b>  Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at <math>25^{\circ}\text{C} \pm 1^{\circ}\text{C}</math>, 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 <math>1^{\circ}</math> vertical intervals and <math>22.5^{\circ}</math> horizontal intervals. Goniophotometer far field detector <math>f1' = 1.42\%</math>, Test distance: 14.14m</p>
<p><b>2) Chromaticity Measurement – Sphere-Spectroradiometer Method:</b>  Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at <math>25^{\circ}\text{C} \pm 1^{\circ}\text{C}</math>. 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:</p>
<p><b>3) Electrical Measurements:</b>  Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at <math>25^{\circ}\text{C} \pm 1^{\circ}\text{C}</math>. 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.</p>

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

<b>Test date</b>	2023-12-15	<b>Test Ambient:</b>	25.2 ° C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	WP3XFU150(01) @150W 3000K		

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC231201	120.0	60	1.283	153.85	0.999	4.21
3E-F1	277.0	60	0.566	148.7	0.948	5.91
<b>DLC Pass Criteria</b>					>= 0.9(-3%)	<= 20(+5)

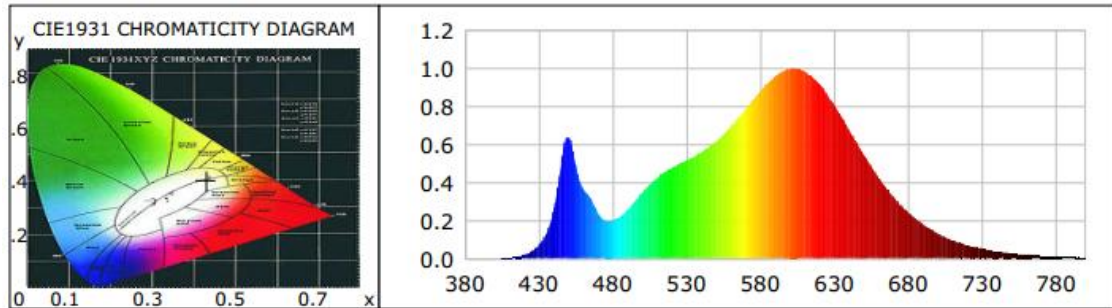
**Chromaticity Measurement - Sphere-Spectroradiometer Method:**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	81	R9	4
Frequency (Hz)	60	R2	91	R10	79
CCT (K)	3109	R3	96	R11	80
Duv	-0.0006	R4	81	R12	71
Chromaticity (x, y)	x=0.4285 y=0.3995	R5	82	R13	83
Chromaticity (u', v')	u(u')=0.2471 v'=0.5183	R6	89	R14	99
Color Rendering Index (CRI)	82	R7	81	R15	73
R9	4	R8	58	--	--
Rf	84	--	--	--	--
Rg	96	--	--	--	--
Rcs,h1 (%)	-12	--	--	--	--

**Photometric Measurement – Goniophotometer Method:**

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	20859.0	20706.5	>=300 (0-90° zone)*** (-10%)
0-90° Total Luminous (lm)	18661.9	18540.5	
Luminous Efficacy (lm/W)	135.58	139.25	Premium: >= 120(-3%)
0-90° Luminous Efficacy (lm/W)	121.30	124.68	
Most worst Luminous/Highest	134.59		
Zonal lumens in the 80-90°/0-90°zone (%)	7.49	--	<=10(+3)
Beam Angle (°)	95.3	--	--
Center Beam Candle Power (cd)	6771	--	--

**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	0.2213	535	0.4980	206.5370	690	0.3221	133.5893
385	0.0004	0.1563	540	0.5168	214.3596	695	0.2804	116.3126
390	0.0004	0.1679	545	0.5374	222.8899	700	0.2420	100.3733
395	0.0010	0.4063	550	0.5613	232.8131	705	0.2093	86.8064
400	0.0009	0.3937	555	0.5861	243.0735	710	0.1793	74.3823
405	0.0018	0.7578	560	0.6184	256.5039	715	0.1547	64.1734
410	0.0040	1.6585	565	0.6544	271.4223	720	0.1323	54.8656
415	0.0090	3.7208	570	0.6956	288.4957	725	0.1131	46.8943
420	0.0184	7.6216	575	0.7393	306.6443	730	0.0959	39.7818
425	0.0360	14.9173	580	0.7865	326.1871	735	0.0827	34.2848
430	0.0685	28.4013	585	0.8352	346.3845	740	0.0688	28.5165
435	0.1286	53.3556	590	0.8835	366.4308	745	0.0600	24.8882
440	0.2518	104.4526	595	0.9237	383.0924	750	0.0501	20.7999
445	0.4913	203.7676	600	0.9590	397.7359	755	0.0421	17.4610
450	0.6431	266.7283	605	0.9850	408.5365	760	0.0356	14.7702
455	0.4922	204.1306	610	0.9990	414.3353	765	0.0311	12.8889
460	0.3667	152.0717	615	0.9975	413.7028	770	0.0265	10.9810
465	0.3170	131.4684	620	0.9852	408.5993	775	0.0226	9.3564
470	0.2389	99.0909	625	0.9572	397.0050	780	0.0191	7.9399
475	0.1987	82.3930	630	0.9185	380.9488	785	0.0156	6.4629
480	0.2023	83.9098	635	0.8677	359.8910	790	0.0132	5.4923
485	0.2207	91.5454	640	0.8086	335.3787	795	0.0122	5.0663
490	0.2540	105.3502	645	0.7460	309.3921	800	0.0104	4.3059
495	0.3005	124.6311	650	0.6770	280.8007			
500	0.3477	144.2128	655	0.6092	252.6785			
505	0.3896	161.6006	660	0.5464	226.6069			
510	0.4253	176.3840	665	0.4825	200.1064			
515	0.4541	188.3314	670	0.4247	176.1584			
520	0.4768	197.7426	675	0.3707	153.7710			
525	0.4980	206.5370	680	0.3221	133.5893			
530	0.5168	214.3596	685	0.2804	116.3126			

**TM30**

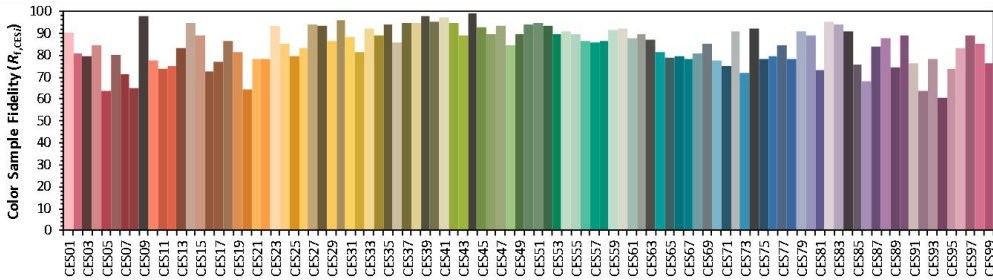
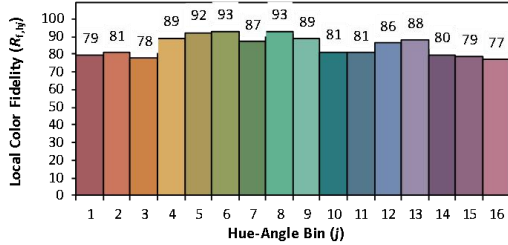
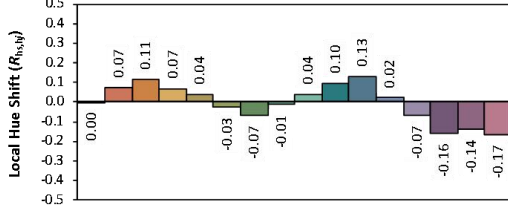
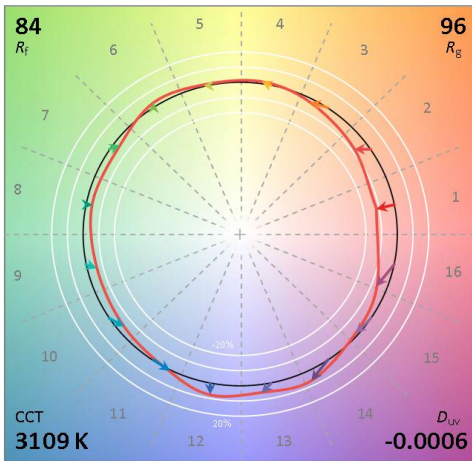
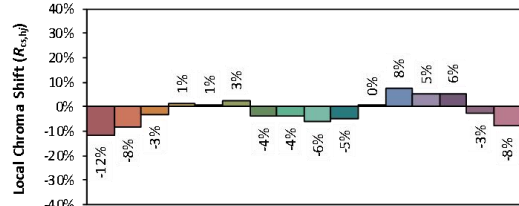
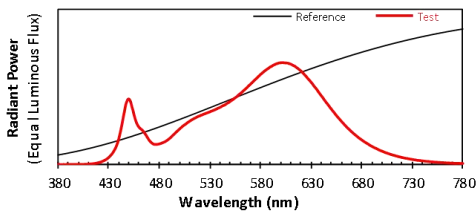
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-3080RC35003P1

Manufacturer: SMART LIGHT CO., LTD

Date: 2023/12/15

Model: AST-SWP11L-150SBSGDA1-abcW30



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

$x$  0.4285  
 $y$  0.3995  
 $u'$  0.2471  
 $v'$  0.5183

CIE 13.3-1995 (CRI)  
 $R_a$  82  
 $R_g$  4

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

**Zonal Lumen Tabulation**

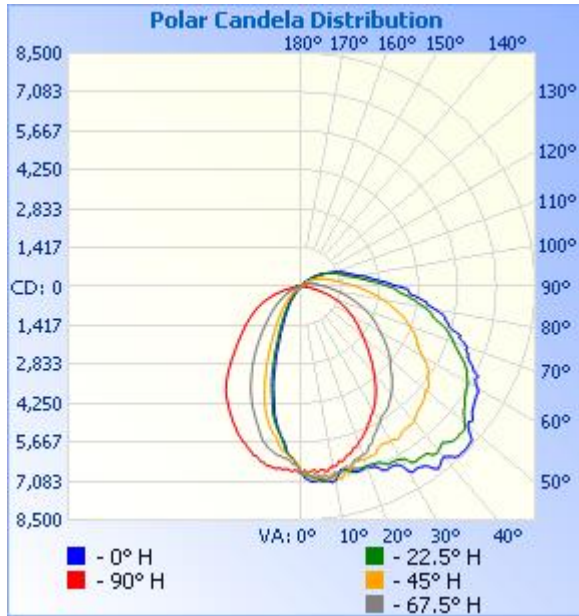
**Zonal Lumen Summary**

Zone	Lumens	% Lamp	% Luminaire
0-30	4,534.8	21.7%	21.7%
0-40	7,189.8	34.5%	34.5%
0-60	12,790.5	61.3%	61.3%
60-90	5,871.4	28.1%	28.1%
70-100	4,297.6	20.6%	20.6%
90-120	1,838.8	8.8%	8.8%
0-90	18,661.9	89.5%	89.5%
90-180	2,196.2	10.5%	10.5%
0-180	20,858.2	100%	100%

**Lumens Per Zone**

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	621.7	3.0%	90-100	898.2	4.3%
10-20	1,651.5	7.9%	100-110	572.1	2.7%
20-30	2,261.7	10.8%	110-120	368.5	1.8%
30-40	2,655.0	12.7%	120-130	196.4	0.9%
40-50	2,840.8	13.6%	130-140	89.3	0.4%
50-60	2,759.9	13.2%	140-150	40.9	0.2%
60-70	2,472.0	11.9%	150-160	19.0	0.1%
70-80	1,990.2	9.5%	160-170	9.1	0%
80-90	1,409.2	6.8%	170-180	2.7	0%

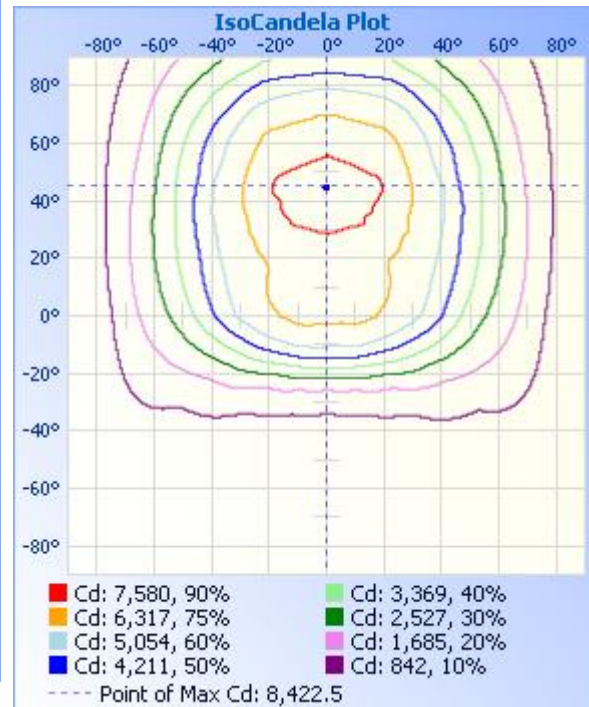
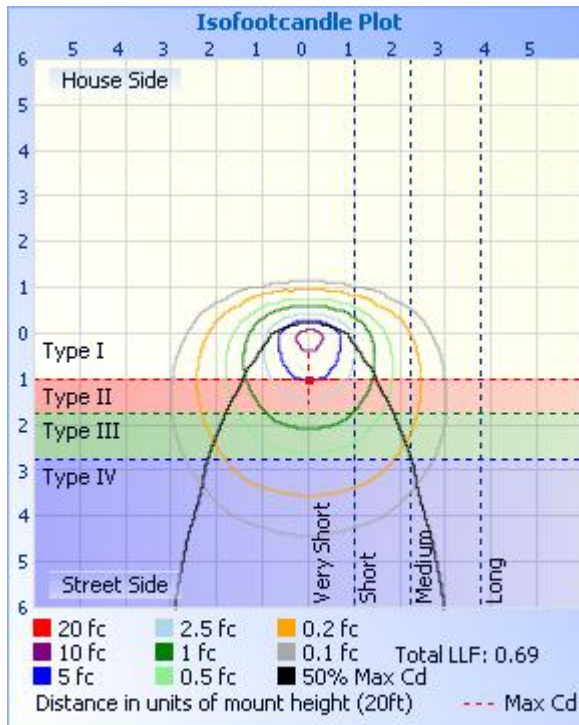
**Photometric Data**



**Illuminance at a Distance**

	Center Beam fc	Beam Width	
17.0ft	23.4 fc	39.7 ft	35.2 ft
34.0ft	5.86 fc	79.5 ft	70.3 ft
51.0ft	2.60 fc	119.2 ft	105.5 ft
68.0ft	1.46 fc	158.9 ft	140.7 ft
85.0ft	0.94 fc	198.6 ft	175.9 ft
102.0ft	0.65 fc	238.4 ft	211.0 ft

■ Vert. Spread: 98.9°  
■ Horiz. Spread: 91.9°



	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	6771	6771	6771	6771	6771	6771	6771	6771	6771	6771	6771	6771	6771	6771	6771	6771	6771
1	6972	6914	6831	6734	6683	6585	6510	6506	6551	6546	6537	6610	6764	6818	6896	6947	6972
2	7045	6899	6831	6834	6792	6581	6412	6360	6418	6372	6358	6484	6669	6809	6901	6980	7045
3	7117	6920	6999	6960	6726	6523	6370	6251	6270	6250	6306	6468	6746	6945	6940	6985	7117
4	7121	6959	7068	6830	6687	6395	6293	6167	6193	6157	6221	6341	6674	6924	7071	6959	7121
5	7080	7005	6937	6903	6788	6388	6190	6108	6065	6091	6114	6270	6660	6880	7057	6902	7080
6	7118	7126	6891	7024	6687	6390	6135	5922	5774	5908	6053	6273	6692	6978	6929	6969	7118
7	7107	7158	7037	6889	6738	6268	6063	5684	5599	5642	5999	6216	6652	6984	6950	7060	7107
8	7140	7087	7074	7001	6796	6288	5919	5560	5478	5495	5845	6201	6694	6979	7043	7097	7140
9	7217	7031	6918	7075	6654	6273	5700	5412	5303	5358	5650	6148	6665	7042	7014	7098	7217
10	7160	6983	6969	6877	6651	6167	5581	5253	5125	5200	5518	6081	6640	6969	6991	7061	7160
11	7002	6951	7128	6895	6650	6103	5464	5110	4934	5045	5455	6034	6626	6947	7057	6974	7002
12	6820	6891	7154	6930	6496	6051	5356	4927	4723	4889	5323	5976	6550	6945	7087	6803	6820
13	6842	6820	6948	6773	6520	5897	5200	4690	4438	4700	5191	5875	6543	6862	7008	6695	6842
14	6958	6880	6935	6751	6472	5800	5029	4446	4168	4413	5040	5800	6462	6873	6996	6736	6958
15	6981	6942	6922	6814	6354	5712	4900	4192	3947	4172	4902	5659	6387	6816	6937	6861	6981
16	7020	6900	6787	6690	6349	5507	4741	3971	3738	3955	4740	5526	6372	6740	6793	6889	7020
17	7046	6942	6583	6614	6261	5378	4527	3759	3462	3748	4550	5374	6275	6717	6629	6920	7046
18	7021	6965	6560	6669	6157	5288	4306	3551	3186	3520	4361	5239	6207	6670	6656	6976	7021
19	6999	6953	6682	6548	6161	5136	4100	3288	2938	3277	4136	5109	6143	6582	6721	6943	6999
20	6955	6942	6710	6512	6052	5001	3874	3038	2719	3023	3913	4989	6048	6561	6680	6898	6955
21	7047	6946	6678	6506	5956	4901	3663	2788	2460	2799	3717	4866	6020	6477	6659	6868	7047
22	7064	6968	6659	6432	5933	4758	3456	2580	2219	2580	3516	4754	5918	6371	6689	6893	7064
23	7170	6976	6684	6282	5809	4616	3263	2367	2027	2366	3322	4624	5861	6378	6729	6901	7170
24	7319	7002	6645	6253	5742	4503	3091	2158	1885	2160	3136	4478	5781	6308	6622	6944	7319
25	7365	7117	6525	6148	5647	4366	2883	1996	1738	1997	2924	4352	5671	6190	6554	7096	7365
26	7325	7207	6480	6010	5533	4213	2668	1848	1568	1843	2734	4218	5590	6132	6527	7215	7325
27	7324	7192	6443	5950	5477	4073	2503	1710	1422	1709	2554	4083	5506	6048	6478	7208	7324
28	7349	7194	6449	5859	5360	3921	2333	1569	1320	1573	2384	3926	5411	5891	6445	7214	7349
29	7432	7208	6494	5748	5295	3776	2170	1430	1223	1441	2225	3790	5327	5851	6405	7201	7432
30	7745	7263	6481	5709	5208	3626	2023	1324	1148	1331	2069	3636	5243	5809	6413	7223	7745

31	7883	7323	6480	5606	5112	3473	1866	1238	1060	1233	1925	3498	5150	5690	6481	7233	7883
32	7832	7551	6572	5532	5049	3315	1741	1147	952	1148	1800	3357	5055	5652	6573	7478	7832
33	7846	7613	6535	5514	4923	3172	1625	1071	867	1060	1685	3212	4968	5605	6506	7607	7846
34	7902	7573	6471	5475	4816	3035	1523	985	797	983	1578	3080	4879	5500	6469	7599	7902
35	7970	7583	6435	5426	4712	2898	1422	909	739	912	1469	2946	4781	5461	6461	7595	7970
36	8189	7581	6406	5387	4593	2761	1329	834	681	843	1384	2817	4686	5413	6432	7566	8189
37	8292	7607	6412	5289	4477	2622	1250	768	619	771	1300	2677	4563	5336	6415	7557	8292
38	8208	7775	6396	5230	4342	2493	1169	707	558	712	1216	2541	4444	5290	6369	7703	8208
39	8115	7820	6423	5151	4231	2374	1091	644	496	651	1143	2419	4327	5219	6431	7765	8115
40	8075	7758	6399	5082	4098	2252	1017	593	453	602	1059	2294	4190	5125	6426	7711	8075
41	8192	7717	6313	5007	3985	2139	949	539	419	546	989	2185	4061	5091	6333	7718	8192
42	8346	7652	6247	4925	3854	2036	885	488	388	495	927	2080	3918	5027	6253	7688	8346
43	8417	7744	6194	4830	3745	1921	832	441	358	453	867	1983	3773	4941	6211	7783	8417
44	8398	7847	6168	4741	3612	1821	772	411	330	419	807	1878	3651	4867	6168	7858	8398
45	8423	7889	6124	4651	3506	1734	721	376	303	381	756	1785	3508	4768	6121	7872	8423
46	8397	7894	6116	4547	3390	1645	664	342	276	349	706	1704	3385	4684	6105	7875	8397
47	8374	7873	6066	4434	3297	1554	618	309	257	319	661	1629	3272	4610	6078	7853	8374
48	8349	7894	6024	4347	3181	1478	573	290	235	300	616	1545	3159	4507	6016	7902	8349
49	8107	7881	5947	4283	3074	1399	534	268	218	275	566	1473	3052	4432	5950	7892	8107
50	7904	7748	5903	4215	2977	1328	483	244	202	251	529	1403	2959	4345	5889	7774	7904
51	7831	7623	5906	4147	2870	1254	447	221	185	233	485	1330	2860	4243	5910	7605	7831
52	7915	7490	5880	4056	2781	1185	414	201	174	212	449	1259	2760	4126	5890	7467	7915
53	7783	7401	5791	3976	2682	1120	384	183	152	192	415	1176	2674	4006	5803	7415	7783
54	7678	7358	5666	3871	2600	1054	347	161	142	175	380	1114	2589	3933	5676	7366	7678
55	7635	7240	5610	3776	2523	991	316	148	125	152	346	1061	2508	3849	5573	7280	7635
56	7584	7177	5567	3689	2446	930	293	129	106	134	316	995	2423	3769	5546	7204	7584
57	7552	7125	5496	3604	2352	877	264	115	91	125	289	937	2331	3703	5508	7148	7552
58	7498	7064	5386	3510	2273	828	241	98	75	109	264	882	2259	3626	5389	7083	7498
59	7496	7042	5240	3400	2196	783	217	81	61	88	237	837	2173	3511	5217	7062	7496
60	7409	6973	5090	3318	2114	734	192	67	42	71	219	790	2111	3417	5060	7025	7409
61	7243	6894	4965	3230	2034	685	177	55	32	53	196	747	2034	3329	4949	6966	7243
62	7173	6804	4837	3153	1955	652	161	39	20	49	175	696	1963	3249	4839	6870	7173

63	7215	6757	4751	3069	1881	615	137	24	19	33	156	659	1882	3184	4719	6792	7215
64	6964	6651	4690	2992	1802	579	122	20	20	19	145	623	1814	3096	4634	6741	6964
65	6873	6536	4637	2909	1724	536	108	18	15	18	125	582	1731	3007	4586	6573	6873
66	6704	6384	4554	2823	1631	497	98	15	18	17	115	542	1660	2928	4526	6450	6704
67	6567	6237	4497	2745	1551	460	72	16	19	19	100	501	1577	2855	4456	6323	6567
68	6545	6116	4400	2647	1467	429	66	16	14	22	88	464	1494	2781	4399	6168	6545
69	6414	5988	4283	2564	1380	395	59	19	17	22	73	433	1408	2680	4277	6072	6414
70	6404	5885	4187	2475	1287	370	55	18	21	18	68	402	1323	2589	4148	5957	6404
71	6254	5790	4090	2374	1198	337	52	15	16	18	63	363	1233	2487	4051	5871	6254
72	6040	5669	4005	2273	1107	310	58	12	20	21	63	336	1154	2408	3967	5771	6040
73	6039	5569	3904	2173	1014	279	55	18	17	18	63	304	1070	2305	3875	5624	6039
74	5730	5453	3803	2085	917	262	54	17	19	16	61	278	988	2199	3782	5528	5730
75	5562	5263	3673	1978	836	240	51	16	19	17	65	258	896	2100	3688	5331	5562
76	5499	5070	3548	1886	752	226	49	15	18	16	57	237	815	2004	3557	5143	5499
77	5376	4929	3438	1796	675	205	48	14	21	22	56	224	739	1916	3433	5021	5376
78	5339	4840	3327	1714	598	194	46	17	17	12	58	205	669	1827	3331	4912	5339
79	5211	4748	3217	1635	531	185	47	13	19	17	54	193	601	1743	3231	4820	5211
80	5001	4611	3105	1548	474	177	28	17	15	17	51	180	540	1662	3117	4681	5001
81	4813	4479	2976	1469	421	164	43	19	21	19	49	174	474	1569	2999	4546	4813
82	4628	4292	2894	1386	367	163	40	21	20	21	39	167	429	1478	2886	4385	4628
83	4559	4181	2784	1308	328	158	42	19	20	24	46	161	375	1410	2808	4237	4559
84	4378	4001	2645	1246	289	157	42	14	22	21	51	156	338	1334	2671	4066	4378
85	4198	3864	2530	1181	250	148	39	17	24	20	38	150	296	1274	2541	3930	4198
86	3987	3674	2417	1118	220	145	41	13	18	22	46	143	264	1199	2436	3752	3987
87	3910	3537	2312	1048	195	133	38	16	20	17	40	138	233	1127	2338	3599	3910
88	3897	3452	2219	993	183	137	28	23	22	20	43	133	206	1065	2244	3495	3897
89	3786	3374	2131	941	170	131	35	23	21	20	42	126	186	1004	2150	3424	3786
90	3585	3209	2032	887	158	125	39	17	21	19	42	120	175	950	2057	3278	3585
91	3343	3047	1909	833	155	119	37	18	22	21	27	114	167	897	1941	3101	3343
92	3221	2916	1802	789	153	115	35	20	21	22	40	116	168	847	1828	2938	3221
93	3089	2773	1717	740	151	112	32	20	18	23	41	105	165	794	1739	2804	3089
94	2936	2594	1636	706	150	104	36	21	19	23	38	106	157	754	1652	2650	2936

95	2767	2483	1560	671	149	96	34	20	21	22	27	102	161	715	1582	2504	2767
96	2639	2383	1494	639	147	89	33	21	22	22	23	97	161	685	1508	2406	2639
97	2530	2262	1435	606	151	89	33	18	20	22	33	95	156	651	1450	2276	2530
98	2437	2156	1370	578	149	84	35	23	22	24	38	93	155	619	1389	2173	2437
99	2374	2079	1303	552	152	79	31	16	19	24	31	93	158	590	1317	2088	2374
100	2240	1991	1242	524	148	78	31	20	21	22	35	90	155	562	1261	2001	2240
101	2107	1907	1185	499	146	75	30	24	20	23	33	90	158	536	1201	1923	2107
102	2023	1836	1134	475	149	76	34	24	26	23	33	89	156	510	1156	1843	2023
103	1944	1763	1102	454	145	64	32	23	26	21	32	85	153	489	1110	1766	1944
104	1876	1688	1056	431	143	67	28	22	23	21	36	91	147	463	1069	1704	1876
105	1806	1634	1013	418	138	55	28	20	24	24	27	87	147	442	1026	1638	1806
106	1747	1573	984	398	135	57	23	20	23	21	33	78	145	426	991	1577	1747
107	1704	1529	949	384	134	61	35	23	23	25	33	70	141	411	955	1533	1704
108	1653	1486	911	364	127	63	26	22	18	24	29	62	137	395	916	1492	1653
109	1599	1432	877	347	125	61	32	20	20	22	28	67	132	374	881	1443	1599
110	1554	1387	844	331	122	51	22	21	20	23	24	66	137	359	852	1395	1554
111	1498	1346	813	315	117	54	24	22	20	22	31	63	134	342	820	1349	1498
112	1426	1306	783	303	109	53	24	23	23	23	30	46	134	329	788	1310	1426
113	1360	1262	749	287	105	47	28	23	22	24	28	56	132	311	757	1262	1360
114	1301	1217	718	280	105	48	28	22	20	24	30	62	128	294	724	1217	1301
115	1231	1173	686	263	92	44	30	21	22	22	28	54	124	278	695	1172	1231
116	1164	1125	651	246	91	41	27	22	21	20	26	58	117	263	661	1116	1164
117	1107	1069	624	233	92	41	23	22	25	21	31	48	109	251	630	1047	1107
118	1056	1021	589	222	80	41	20	26	24	23	28	48	108	238	595	995	1056
119	1007	970	564	215	81	38	24	22	23	27	25	53	105	226	560	942	1007
120	965	912	534	200	78	38	26	24	18	24	29	45	94	210	536	887	965
121	925	861	504	185	67	38	24	24	21	24	33	40	84	198	505	836	925
122	881	812	476	182	72	40	22	22	25	23	29	47	80	188	480	776	881
123	840	754	443	168	64	37	20	21	25	22	28	44	74	181	449	722	840
124	799	701	420	157	64	38	26	22	27	24	13	32	69	165	425	679	799
125	751	645	399	154	52	36	21	20	25	21	27	43	62	153	402	629	751
126	709	598	376	143	53	33	19	26	21	26	27	44	56	140	372	590	709

127	668	548	350	132	52	32	26	24	27	22	25	42	55	135	349	553	668
128	625	511	325	128	54	31	23	23	0	22	26	38	55	123	324	510	625
129	581	468	305	118	42	32	22	24	26	22	27	42	48	113	300	474	581
130	540	432	291	116	48	27	23	21	23	21	27	37	45	110	285	437	540
131	492	402	268	109	35	36	21	24	26	27	30	39	43	104	266	406	492
132	454	368	256	102	45	30	22	24	25	22	25	36	42	98	250	372	454
133	417	342	242	97	33	34	20	24	27	25	28	37	44	88	234	350	417
134	379	318	227	91	46	28	24	23	27	24	26	38	44	90	217	314	379
135	349	297	211	89	38	25	22	24	27	27	26	31	40	83	206	295	349
136	313	268	200	84	39	25	19	24	25	27	26	32	40	81	191	274	313
137	299	248	184	74	40	31	24	26	26	27	27	31	38	73	180	255	299
138	272	240	166	73	42	29	20	19	30	25	28	34	43	64	164	237	272
139	249	221	159	74	31	26	25	23	23	26	29	35	38	67	154	219	249
140	232	204	147	68	36	30	25	22	27	26	28	33	28	63	143	205	232
141	215	189	136	66	37	27	18	26	26	26	27	36	31	64	132	192	215
142	201	179	127	67	37	28	24	20	23	28	24	20	36	47	123	172	201
143	188	163	121	61	35	25	21	21	26	30	31	32	29	59	122	166	188
144	171	155	111	56	30	24	26	26	26	25	27	29	35	56	109	152	171
145	162	143	104	49	33	23	25	24	28	22	26	30	30	44	107	143	162
146	154	137	100	53	33	24	25	26	27	28	32	29	27	51	97	136	154
147	143	127	87	54	29	20	29	27	30	29	32	31	28	51	91	130	143
148	129	117	82	50	33	24	26	27	28	29	30	30	31	41	87	123	129
149	120	109	83	50	27	22	29	27	28	31	30	31	29	44	84	111	120
150	112	105	75	47	26	29	28	33	29	22	28	32	30	44	78	104	112
151	100	95	71	34	25	18	30	26	24	27	27	24	32	38	76	92	100
152	93	87	60	34	35	24	30	32	25	25	32	33	31	38	71	88	93
153	83	82	56	36	29	24	31	25	25	29	28	31	29	44	70	79	83
154	79	73	52	37	28	24	29	23	27	30	24	27	24	35	61	76	79
155	79	73	48	35	28	22	23	31	26	24	35	31	28	32	58	70	79
156	70	61	48	31	28	26	31	23	27	24	23	33	31	35	52	66	70
157	64	62	49	33	26	28	24	30	25	30	33	22	29	31	49	61	64
158	57	56	44	32	29	22	28	30	30	28	29	30	26	33	48	59	57

159	60	52	43	33	27	22	29	30	30	29	32	32	26	28	30	58	60
160	51	53	42	31	22	26	33	24	33	29	29	28	26	31	46	52	51
161	50	49	31	34	28	24	27	34	30	34	35	34	26	32	41	51	50
162	49	43	37	32	24	25	27	33	31	32	31	36	21	31	29	52	49
163	48	47	23	33	30	26	26	27	28	34	38	31	25	27	38	46	48
164	35	42	34	28	29	27	28	34	29	32	30	31	26	21	38	37	35
165	36	39	28	32	27	25	30	31	28	30	35	24	25	28	37	42	36
166	36	30	34	31	26	25	30	21	31	30	17	31	28	27	34	40	36
167	39	35	32	32	22	24	31	34	30	36	36	35	19	23	22	37	39
168	30	31	33	27	29	26	30	32	32	36	33	34	21	22	35	35	30
169	34	30	34	31	26	26	31	35	31	30	35	38	26	26	21	31	34
170	29	28	32	28	31	29	25	29	33	35	27	30	27	29	28	20	29
171	26	32	30	32	27	30	25	24	36	30	32	37	20	26	21	23	26
172	27	29	38	26	28	27	31	34	29	32	32	34	11	28	28	21	27
173	26	31	32	32	28	28	33	30	35	30	31	31	26	25	27	25	26
174	30	31	35	33	29	29	27	32	31	22	36	31	27	28	22	28	30
175	29	31	35	28	34	28	30	24	30	22	29	17	29	28	29	25	29
176	28	27	36	31	26	28	28	29	33	32	34	33	26	30	28	24	28
177	29	32	18	28	28	28	32	27	29	30	34	34	24	28	28	27	29
178	28	35	30	30	30	19	28	30	28	24	32	32	31	28	25	24	28
179	26	24	32	26	27	29	29	29	28	29	33	34	28	26	27	30	26
180	31	29	32	30	28	27	23	32	28	31	29	32	27	23	32	28	31

**BUG**

**Lum. Classification System (LCS)**

<u>LCS Zone</u>	<u>Lumens</u>	<u>%Lamp</u>	<u>%Lum</u>
FL (0-30)	2812.4	13.5	13.5
FM (30-60)	6846.0	32.8	32.8
FH (60-80)	4163.3	20.0	20.0
FVH (80-90)	1358.9	6.5	6.5
BL (0-30)	1722.8	8.3	8.3
BM (30-60)	1411.3	6.8	6.8
BH (60-80)	298.4	1.4	1.4
BVH (80-90)	50.0	0.2	0.2
UL (90-100)	898.0	4.3	4.3
UH (100-180)	1297.8	6.2	6.2
Total	20858.9	100.0	100.0
<b>BUG Rating</b>	<b>B3-U5-G5</b>		

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

<b>Test date</b>	2023-12-15	<b>Test Ambient:</b>	25.2 ° C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	WP3XFU150(01) @150W 4000K		

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC231106	120.0	60	1.243	148.99	0.999	4.29
2E-A1	277.0	60	0.548	143.84	0.948	5.88
<b>DLC Pass Criteria</b>					>= 0.9(-3%)	<= 20(+5)

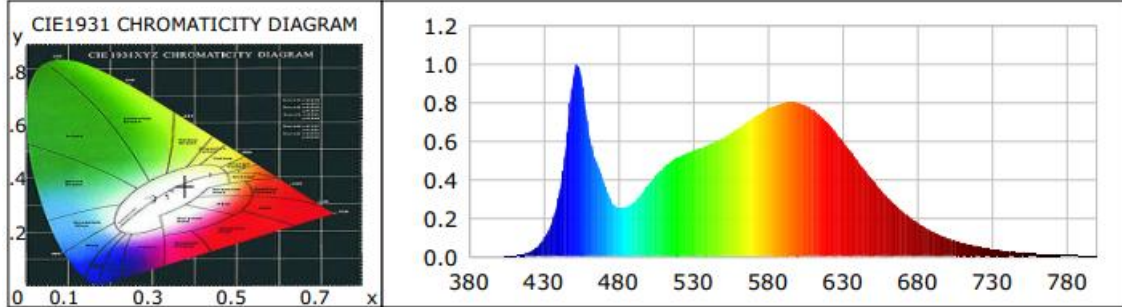
**Chromaticity Measurement - Sphere-Spectroradiometer Method:**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	83	R9	11
Frequency (Hz)	60	R2	91	R10	79
CCT (K)	4033	R3	95	R11	81
Duv	-0.0023	R4	82	R12	63
Chromaticity (x, y)	x=0.3775 y=0.3701	R5	83	R13	85
Chromaticity (u', v')	u(u')=0.2258 v'=0.4982	R6	88	R14	98
Color Rendering Index (CRI)	84	R7	84	R15	77
R9	11	R8	65	--	--
Rf	84	--	--	--	--
Rg	95	--	--	--	--
Rcs,h1(%)	-12	--	--	--	--

**Photometric Measurement – Goniophotometer Method:**

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	22396.2	22141.3	5000-10000(-10%)
Luminous Efficacy (lm/W)	150.32	153.93	Premium: >= 120(-3%)
Most worst Luminous/Highest	148.61		

**Spectral Power Distribution & Chromaticity Diagram**



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0007	0.3453	535	0.5354	257.8152	690	0.2329	112.1720
385	0.0005	0.2287	540	0.5497	264.6962	695	0.2014	96.9705
390	0.0001	0.0517	545	0.5648	271.9959	700	0.1754	84.4437
395	0.0007	0.3374	550	0.5818	280.1602	705	0.1518	73.1190
400	0.0011	0.5309	555	0.5972	287.5737	710	0.1301	62.6653
405	0.0018	0.8530	560	0.6179	297.5253	715	0.1120	53.9160
410	0.0043	2.0555	565	0.6413	308.8361	720	0.0954	45.9417
415	0.0104	5.0103	570	0.6670	321.2106	725	0.0828	39.8521
420	0.0217	10.4674	575	0.6923	333.3748	730	0.0704	33.8916
425	0.0447	21.5450	580	0.7188	346.1320	735	0.0598	28.7902
430	0.0885	42.5999	585	0.7444	358.4831	740	0.0510	24.5612
435	0.1676	80.7196	590	0.7703	370.9245	745	0.0439	21.1212
440	0.3083	148.4501	595	0.7850	377.9987	750	0.0362	17.4468
445	0.5831	280.8078	600	0.7977	384.1500	755	0.0310	14.9136
450	0.9354	450.4620	605	0.8034	386.8742	760	0.0259	12.4923
455	0.9439	454.5340	610	0.8004	385.4081	765	0.0230	11.0518
460	0.6580	316.8486	615	0.7859	378.4536	770	0.0201	9.6684
465	0.5003	240.9324	620	0.7640	367.8956	775	0.0170	8.1786
470	0.3933	189.3788	625	0.7325	352.7193	780	0.0134	6.4611
475	0.2913	140.2650	630	0.6949	334.6411	785	0.0117	5.6491
480	0.2519	121.3042	635	0.6492	312.6210	790	0.0098	4.6999
485	0.2569	123.7074	640	0.5994	288.6251	795	0.0092	4.4543
490	0.2803	134.9690	645	0.5492	264.4692	800	0.0077	3.7248
495	0.3213	154.7259	650	0.4958	238.7391			
500	0.3724	179.3284	655	0.4449	214.2652			
505	0.4205	202.4696	660	0.3968	191.0999			
510	0.4601	221.5696	665	0.3505	168.8041			
515	0.4915	236.6606	670	0.3069	147.8028			
520	0.5150	247.9820	675	0.2686	129.3540			
525	0.5354	257.8152	680	0.2329	112.1720			
530	0.5497	264.6962	685	0.2014	96.9705			

**TM30**

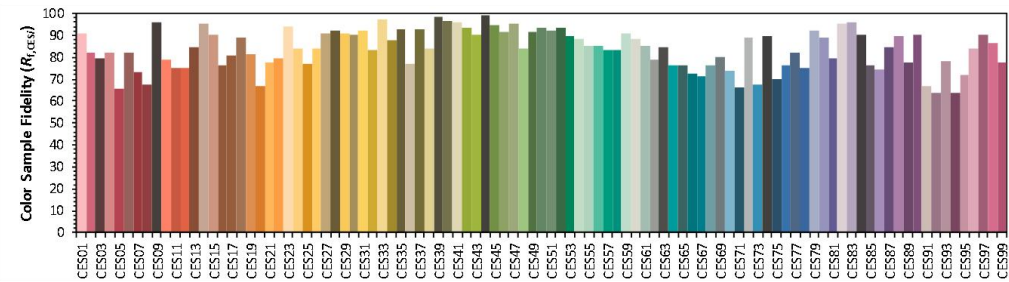
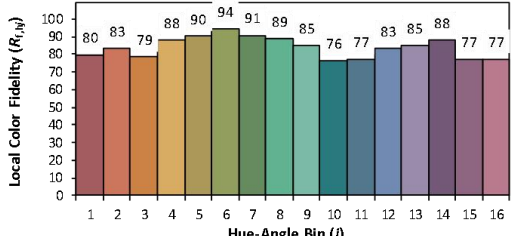
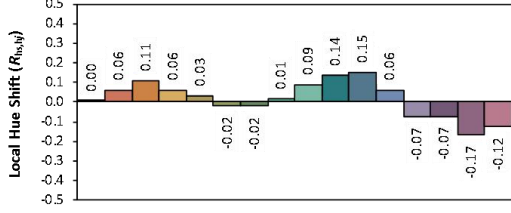
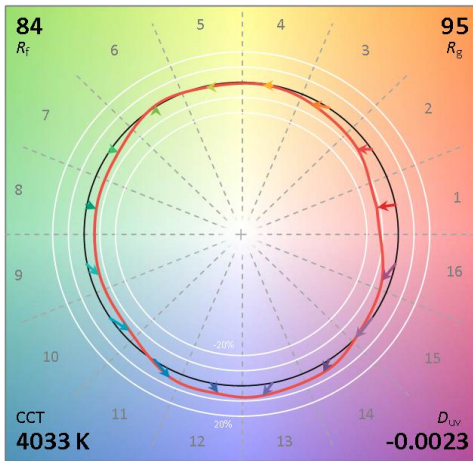
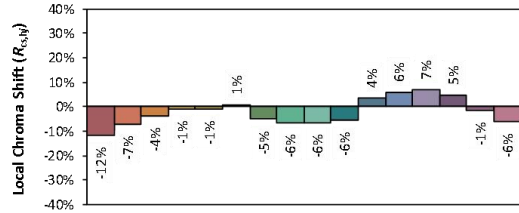
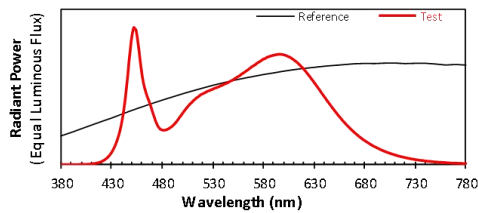
**ANSI/IES TM-30-18 Color Rendition Report**

Source: L128-3080RC35003P1  
L128-5080RC35003P1

Date: 2023/12/15

Manufacturer: ASmart LIGHT CO., LTD

Model: AST-SWP11L-150SBSGDA1-abcW40



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

$x$  0.3775  
 $y$  0.3701  
 $u'$  0.2258  
 $v'$  0.4982

CIE 13.3-1995 (CRI)  
 $R_a$  84  
 $R_g$  11

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

### 2.3 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

<b>Test date</b>	2023-12-05	<b>Test Ambient:</b>	25.2 ° C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	WP3XFU150(01) @150W 5000K		

#### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC231106	120.0	60	1.279	153.3	0.999	4.32
2E-A1	277.0	60	0.564	148.11	0.948	5.98
<b>DLC Pass Criteria</b>					<b>&gt;= 0.9(-3%)</b>	<b>&lt;= 20(+5)</b>

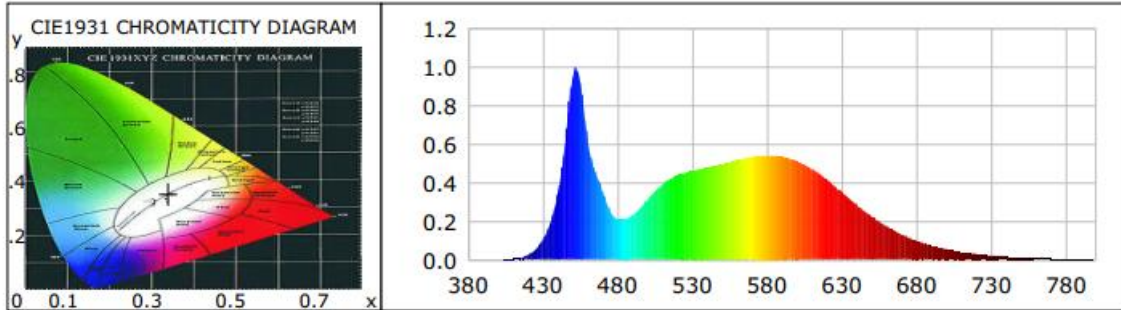
#### Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	80	R9	1
Frequency (Hz)	60	R2	88	R10	71
CCT (K)	5245	R3	92	R11	80
Duv	0.0014	R4	81	R12	58
Chromaticity (x, y)	x=0.3387 y=0.3491	R5	81	R13	82
Chromaticity (u', v')	u(u')=0.2081 v'(v')=0.4825	R6	83	R14	96
Color Rendering Index (CRI)	82	R7	86	R15	75
R9	1	R8	65	--	--
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)	22011.5	21722.1	5000-10000(-10%)
Luminous Efficacy (lm/W)	143.58	146.66	Premium: >= 120(-3%)
Most worst Luminous/Highest	141.70		

**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	0.0223	535	0.4511	294.0249	690	0.1297	84.5679
385	0.0007	0.4632	540	0.4614	300.7401	695	0.1131	73.7090
390	0.0002	0.1460	545	0.4704	306.5884	700	0.0979	63.7938
395	0.0004	0.2571	550	0.4787	312.0511	705	0.0835	54.4021
400	0.0010	0.6366	555	0.4873	317.6109	710	0.0726	47.3029
405	0.0020	1.2915	560	0.4969	323.8988	715	0.0621	40.4517
410	0.0051	3.3261	565	0.5066	330.1989	720	0.0537	35.0209
415	0.0111	7.2463	570	0.5179	337.5823	725	0.0452	29.4531
420	0.0243	15.8361	575	0.5267	343.3150	730	0.0384	24.9999
425	0.0513	33.4633	580	0.5341	348.1632	735	0.0332	21.6178
430	0.1019	66.4453	585	0.5385	351.0022	740	0.0286	18.6661
435	0.1918	125.0224	590	0.5429	353.8925	745	0.0238	15.5334
440	0.3423	223.1436	595	0.5398	351.8199	750	0.0205	13.3424
445	0.6157	401.3044	600	0.5352	348.8561	755	0.0167	10.9035
450	0.9470	617.2374	605	0.5256	342.6028	760	0.0151	9.8678
455	0.9245	602.6104	610	0.5125	334.0418	765	0.0127	8.2555
460	0.6183	403.0133	615	0.4937	321.7814	770	0.0111	7.2301
465	0.4579	298.4682	620	0.4706	306.7369	775	0.0096	6.2457
470	0.3514	229.0501	625	0.4443	289.6231	780	0.0082	5.3269
475	0.2521	164.3543	630	0.4148	270.3887	785	0.0071	4.6309
480	0.2103	137.0825	635	0.3821	249.0494	790	0.0059	3.8405
485	0.2118	138.0296	640	0.3500	228.1531	795	0.0049	3.2115
490	0.2299	149.8331	645	0.3177	207.0807	800	0.0039	2.5627
495	0.2662	173.5026	650	0.2842	185.2654			
500	0.3120	203.3662	655	0.2525	164.5835			
505	0.3555	231.7364	660	0.2238	145.9001			
510	0.3926	255.8935	665	0.1968	128.2618			
515	0.4184	272.6879	670	0.1720	112.1431			
520	0.4381	285.5504	675	0.1507	98.2433			
525	0.4511	294.0249	680	0.1297	84.5679			
530	0.4614	300.7401	685	0.1131	73.7090			

**TM30**

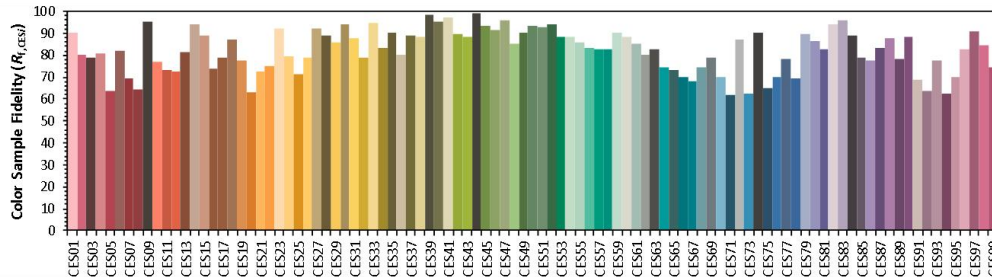
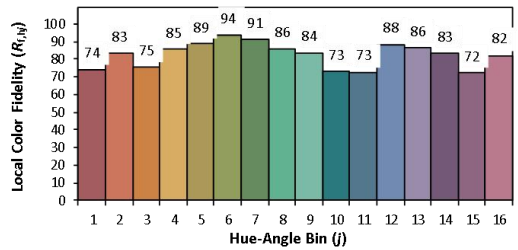
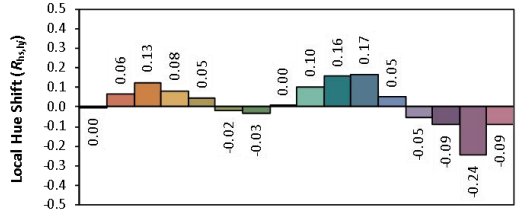
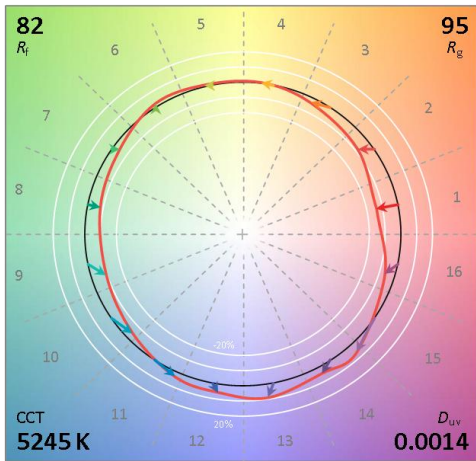
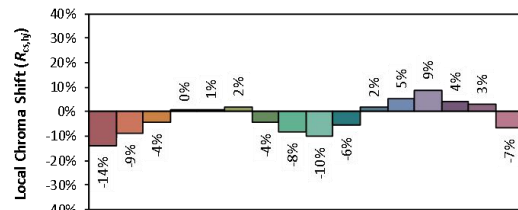
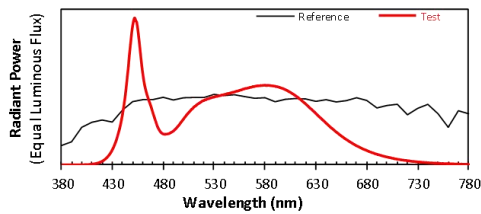
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-5080RC35003P1

Manufacturer: SMART LIGHT CO., LTD

Date: 2023/12/15

Model: AST-SWP11L-150SBSGDA1-abcW50



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

$x$  0.3387  
 $y$  0.3491  
 $u'$  0.2081  
 $v'$  0.4825

CIE 13.3-1995 (CRI)  
 $R_a$  82  
 $R_g$  1

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

### 3. Test Equipment

Equipment Name	Model No.	Serial No.	Calibration Date
Goniophotometric System	GPM-3000	DYHXF120001	2023-01-17
AC Power Source	CHP-500C	DYBWD010159	2023-01-18
Total Luminous Flux Standard Lamp	24V/150W	DYJYR040040	2023-02-01
Digital Power Meter	WT500	DYDWQ20010	2023-01-18
Integral Sphere (2M)	2M	DYJCE120067	2023-01-17
Digital Power Meter	WT500	DYDWQ200006	2023-01-18
Optical Color and Electrical Measurement System	CMS-3000S	DYJCE120067	2023-01-17
Expand Uncertainty: Photometric Measurement (Sphere): 2.08%, k=2 Chromaticity Measurement(Sphere):25.6K, k=2 Photometric Measurement(Goniophotometer):2.645%, k=2			

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