

## 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):WP2XFU80(01)

Representative (Tested) Model: WP2XFU80(01)

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

Test & Report By:

*Odin Wang*

Engineer: Odin Wang

Date:2023-07-18

Review By:

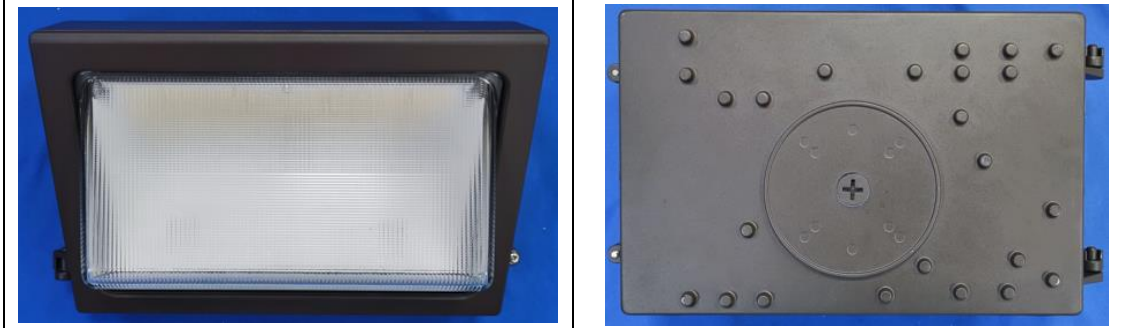
*Jason Luo*

Manager: Jason Luo

### 1.1 Product Information:

Organization Name	RAB Lighting Inc.	
Brand Name	RAB Lighting	
Model Number	WP2XFU80(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	80W(Wattage adjustable)	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K,4000K,5000K(Color tunable)	
LED Manufacturer	Lumileds Holding B.V.	
LED Model	L128-3080RA35005A1 L128-5080RA35000H1	
Sample Number	UTC2306026E-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	2023-07-12
Date of Test	2023-07-15
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-79-2008 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

### 1) Photometric and Light Distribution Measurement – Goniophotometer Method:

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

### 2) Chromaticity Measurement – Sphere-Spectroradiometer Method:

Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at  $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ . The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral power distribution taken at 5 nm intervals over the range of 380 to 780 nm.

### 3) Electrical Measurements:

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

## 2.1 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

<b>Test date</b>	2023-07-15	<b>Test Ambient:</b>	25.2 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	WP2XFU80(01) @80W 3000K		

### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC230602	120.0	60	0.670	79.49	0.989	13.40
6E-C1	277.0	60	0.305	79.42	0.939	9.97
<b>DLC Pass Criteria</b>					>= 0.9(-3%)	<= 20(+5)

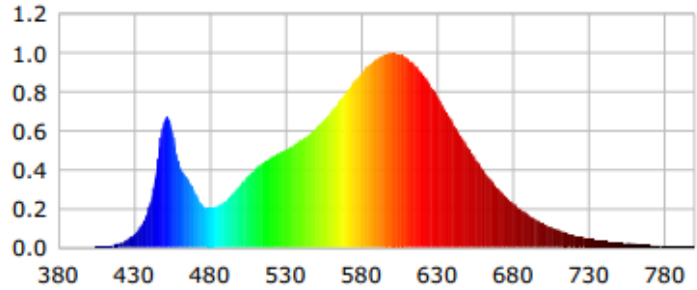
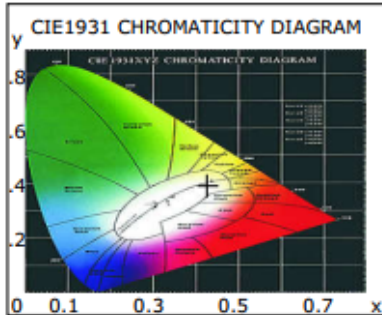
### Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	79	R9	-4
Frequency (Hz)	60	R2	90	R10	78
CCT (K)	3118	R3	95	R11	76
Duv	-0.0015	R4	78	R12	68
Chromaticity (x, y)	x=0.4267 y=0.3966	R5	79	R13	81
Chromaticity (u', v')	u(u')=0.2471 v'=0.5169	R6	88	R14	98
Color Rendering Index (CRI)	80	R7	80	R15	71
R9	-3	R8	54	--	--
Rf	83	--	--	--	--
Rg	95	--	--	--	--
Rcs,h1 (%)	-13	--	--	--	--

### 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)	11079.1	10981.5	5000-10000(-10%)
0-90 °Total Luminous (lm)	9933.2	9849.5	
Luminous Efficacy (lm/W)	139.38	138.27	Premium: >= 120(-3%)
0-90 °Luminous Efficacy (lm/W)	124.96	124.02	
Most worst Luminous/Highest	138.15		
Zonal lumens in the 80-90 °0-90 °zone (%)	7.27	--	<=10(+3)
Beam Angle (°)	96.5	--	--
Center Beam Candle Power (cd)	3843	--	--

**Spectral Power Distribution & Chromaticity Diagram**



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0001	0.0327	535	0.4799	112.4635	690	0.3032	71.0529
385	0.0003	0.0809	540	0.5014	117.5116	695	0.2632	61.6880
390	0.0005	0.1145	545	0.5232	122.6232	700	0.2272	53.2422
395	0.0005	0.1139	550	0.5499	128.8842	705	0.1961	45.9696
400	0.0010	0.2271	555	0.5776	135.3677	710	0.1678	39.3176
405	0.0017	0.4063	560	0.6106	143.1093	715	0.1441	33.7698
410	0.0042	0.9922	565	0.6517	152.7458	720	0.1235	28.9461
415	0.0097	2.2838	570	0.6967	163.2829	725	0.1049	24.5965
420	0.0197	4.6246	575	0.7456	174.7463	730	0.0895	20.9861
425	0.0372	8.7216	580	0.7951	186.3399	735	0.0758	17.7555
430	0.0665	15.5923	585	0.8478	198.6894	740	0.0644	15.1021
435	0.1164	27.2782	590	0.8968	210.1844	745	0.0537	12.5884
440	0.2073	48.5832	595	0.9335	218.7936	750	0.0463	10.8498
445	0.4056	95.0642	600	0.9675	226.7644	755	0.0388	9.0879
450	0.6518	152.7715	605	0.9897	231.9479	760	0.0337	7.9062
455	0.6051	141.8150	610	0.9984	233.9902	765	0.0283	6.6355
460	0.4232	99.1866	615	0.9913	232.3427	770	0.0243	5.7057
465	0.3582	83.9413	620	0.9725	227.9213	775	0.0208	4.8836
470	0.2878	67.4591	625	0.9389	220.0459	780	0.0186	4.3508
475	0.2188	51.2763	630	0.8934	209.3846	785	0.0150	3.5070
480	0.2018	47.3060	635	0.8390	196.6280	790	0.0130	3.0384
485	0.2127	49.8414	640	0.7764	181.9656	795	0.0101	2.3738
490	0.2352	55.1146	645	0.7116	166.7744	800	0.0078	1.8245
495	0.2748	64.3974	650	0.6468	151.6016			
500	0.3209	75.2164	655	0.5788	135.6514			
505	0.3641	85.3346	660	0.5153	120.7772			
510	0.4021	94.2477	665	0.4553	106.7076			
515	0.4330	101.4933	670	0.4000	93.7486			
520	0.4577	107.2736	675	0.3492	81.8412			
525	0.4799	112.4635	680	0.3032	71.0529			
530	0.5014	117.5116	685	0.2632	61.6880			

**TM30**

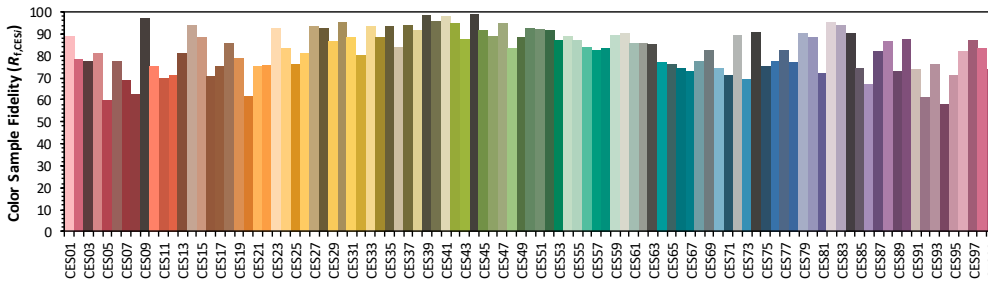
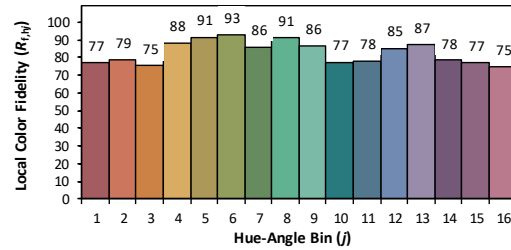
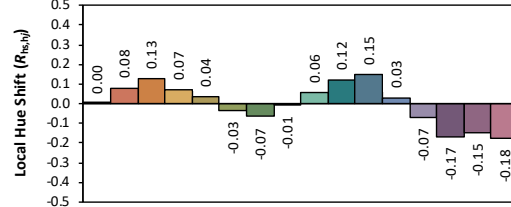
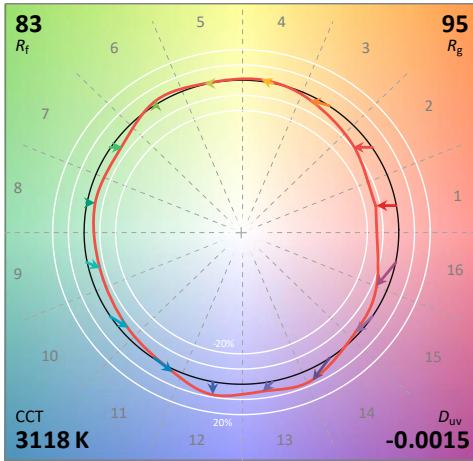
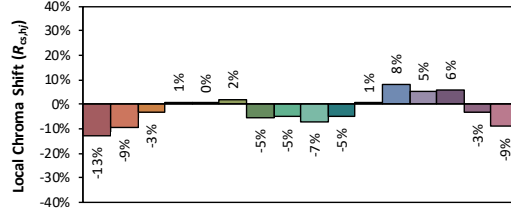
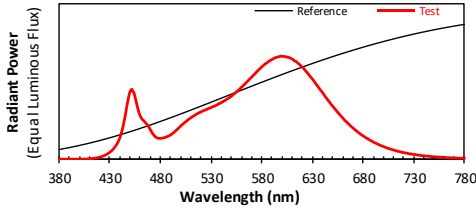
**ANSI/IES TM-30-18 Color Rendition Report**

Source: L128-3080RA35005A1

Manufacturer: ASHART LIGHT CO., LTD

Date: 2023/7/15

Model: AST-SWP11M-80WBSGDA1-abcW30



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

$x$  0.4267  
 $y$  0.3966  
 $u'$  0.2471  
 $v'$  0.5169

CIE 13.3-1995  
(CRI)  
 $R_a$  80  
 $R_g$  -3

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

## Zonal Lumen Tabulation

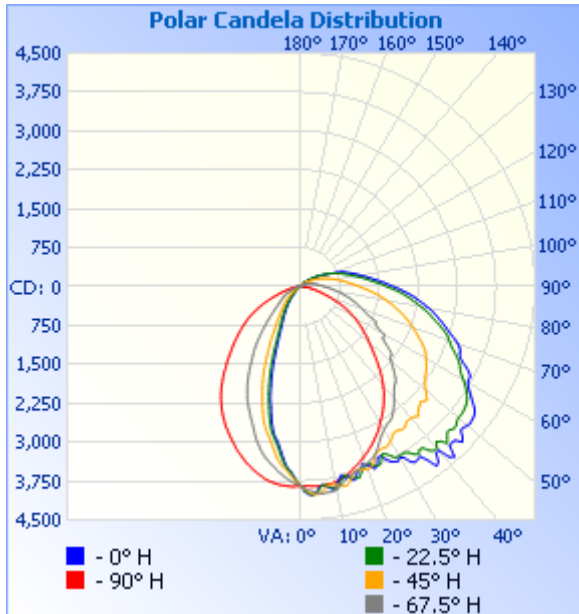
### Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0-30	2,513.9	22.7%	22.7%
0-40	3,941.2	35.6%	35.6%
0-60	6,913.5	62.4%	62.4%
60-90	3,019.7	27.3%	27.3%
70-100	2,207.7	19.9%	19.9%
90-120	966.3	8.7%	8.7%
0-90	9,933.2	89.7%	89.7%
90-180	1,145.4	10.3%	10.3%
0-180	11,078.6	100%	100%

### Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	352.9	3.2%	90-100	474.6	4.3%
10-20	923.0	8.3%	100-110	308.7	2.8%
20-30	1,238.1	11.2%	110-120	183.0	1.7%
30-40	1,427.2	12.9%	120-130	94.3	0.9%
40-50	1,508.8	13.6%	130-140	45.5	0.4%
50-60	1,463.6	13.2%	140-150	22.1	0.2%
60-70	1,286.5	11.6%	150-160	10.5	0.1%
70-80	1,011.4	9.1%	160-170	5.1	0%
80-90	721.8	6.5%	170-180	1.6	0%

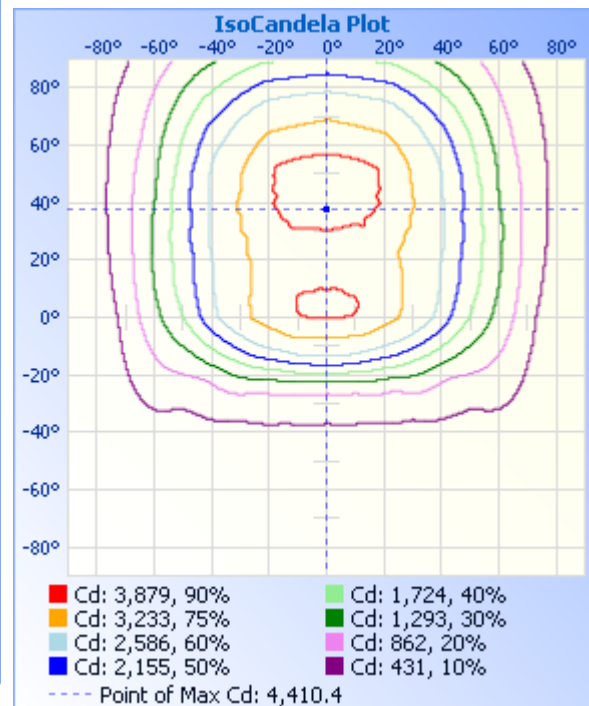
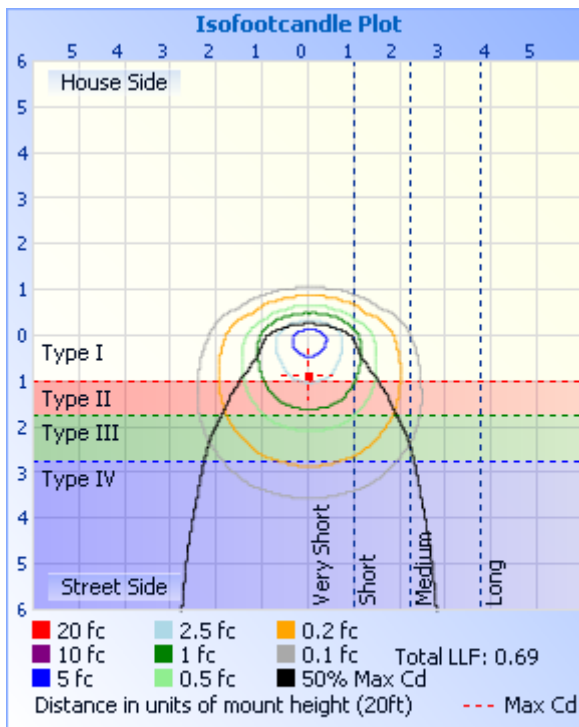
**Photometric Data**



**Illuminance at a Distance**

	Center Beam fc	Beam Width	
17.0ft	13.3 fc	41.3 ft	36.9 ft
34.0ft	3.32 fc	82.6 ft	73.8 ft
51.0ft	1.48 fc	124.0 ft	110.7 ft
68.0ft	0.83 fc	165.3 ft	147.6 ft
85.0ft	0.53 fc	206.6 ft	184.5 ft
102.0ft	0.37 fc	247.9 ft	221.4 ft

■ Vert. Spread: 101.1°  
■ Horiz. Spread: 94.7°



**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	3843	3843	3843	3843	3843	3843	3843	3843	3843	3843	3843	3843	3843	3843	3843	3843	3843
1	3949	3936	3905	3885	3845	3813	3782	3766	3767	3769	3777	3810	3847	3881	3913	3939	3949
2	4004	3986	3962	3924	3843	3789	3730	3687	3680	3691	3722	3790	3857	3927	3968	3992	4004
3	4027	4017	4003	3944	3857	3763	3665	3604	3585	3610	3659	3756	3858	3956	4013	4032	4027
4	3996	4001	4015	3978	3854	3726	3598	3531	3527	3532	3591	3720	3857	3983	4029	4027	3996
5	3903	3929	4010	3998	3859	3693	3545	3475	3443	3471	3526	3678	3846	4002	4025	3958	3903
6	3846	3851	3958	4012	3854	3654	3505	3367	3318	3371	3482	3636	3844	4016	3978	3880	3846
7	3879	3852	3901	3998	3849	3613	3437	3254	3196	3264	3411	3594	3834	4009	3915	3883	3879
8	3912	3889	3860	4005	3840	3577	3355	3133	3084	3145	3333	3542	3816	4004	3870	3907	3912
9	3957	3939	3860	3989	3838	3538	3266	3039	2994	3045	3235	3493	3804	3984	3865	3941	3957
10	3888	3965	3880	3974	3819	3507	3171	2967	2929	2965	3137	3453	3785	3969	3876	3969	3888
11	3800	3869	3910	3917	3803	3470	3084	2893	2829	2887	3045	3402	3763	3921	3889	3885	3800
12	3708	3782	3933	3866	3784	3428	3005	2796	2696	2795	2961	3355	3726	3862	3901	3796	3708
13	3809	3722	3932	3822	3749	3373	2952	2676	2545	2678	2892	3294	3699	3803	3910	3734	3809
14	3757	3795	3871	3782	3717	3309	2885	2538	2404	2539	2823	3233	3666	3756	3858	3810	3757
15	3869	3781	3788	3751	3688	3240	2796	2403	2279	2404	2736	3160	3632	3714	3776	3797	3869
16	3843	3845	3700	3722	3644	3162	2698	2287	2145	2275	2639	3092	3594	3683	3684	3863	3843
17	3713	3846	3702	3702	3613	3082	2584	2156	1976	2152	2524	3014	3562	3652	3660	3844	3713
18	3687	3759	3707	3678	3581	2997	2449	2014	1834	2008	2410	2929	3522	3634	3656	3784	3687
19	3617	3688	3726	3661	3541	2921	2344	1878	1692	1871	2289	2847	3478	3626	3681	3682	3617
20	3670	3646	3744	3644	3501	2851	2234	1743	1542	1721	2185	2773	3437	3604	3686	3659	3670
21	3713	3641	3741	3628	3458	2788	2125	1601	1394	1583	2081	2705	3399	3588	3675	3635	3713
22	3784	3716	3695	3592	3422	2732	2014	1462	1254	1445	1977	2632	3352	3567	3660	3714	3784
23	3745	3752	3602	3562	3378	2673	1898	1321	1135	1310	1865	2568	3299	3533	3554	3748	3745
24	3613	3745	3532	3517	3339	2608	1769	1199	1032	1194	1751	2504	3255	3489	3489	3736	3613
25	3599	3657	3508	3463	3295	2544	1653	1096	946	1089	1628	2441	3207	3433	3450	3684	3599
26	3696	3584	3486	3394	3243	2471	1543	1004	866	986	1516	2370	3165	3363	3437	3607	3696
27	3781	3623	3492	3332	3199	2394	1437	926	810	910	1403	2286	3112	3290	3435	3606	3781
28	3827	3699	3496	3275	3153	2314	1332	851	759	843	1305	2208	3073	3234	3431	3661	3827

29	3845	3774	3476	3228	3094	2233	1236	802	713	792	1221	2131	3024	3186	3430	3761	3845
30	3802	3767	3442	3188	3036	2137	1144	755	675	746	1121	2045	2963	3152	3401	3763	3802
31	3848	3772	3393	3151	2986	2042	1054	711	625	698	1030	1956	2918	3120	3364	3783	3848
32	3982	3768	3347	3126	2935	1951	975	675	583	657	954	1872	2860	3094	3303	3737	3982
33	4033	3817	3332	3112	2885	1866	910	624	547	613	889	1778	2806	3073	3261	3763	4033
34	4014	3902	3337	3090	2827	1788	846	586	517	582	838	1696	2745	3056	3260	3846	4014
35	3995	3944	3369	3054	2767	1698	795	550	481	547	781	1619	2688	3025	3271	3925	3995
36	4128	3876	3372	3005	2708	1619	740	522	444	505	724	1548	2625	2988	3317	3849	4128
37	4330	3895	3338	2956	2645	1537	692	487	416	477	682	1475	2560	2945	3274	3861	4330
38	4291	4006	3298	2898	2589	1462	651	446	384	438	643	1390	2500	2898	3252	3942	4291
39	4128	4064	3296	2842	2510	1380	614	418	362	410	610	1312	2424	2833	3230	4011	4128
40	4119	4065	3305	2780	2449	1284	585	390	334	385	570	1230	2352	2771	3242	3994	4119
41	4355	3963	3323	2728	2380	1209	551	362	310	355	538	1154	2279	2708	3243	3921	4355
42	4410	4011	3365	2676	2311	1132	521	337	281	320	511	1081	2213	2657	3266	3966	4410
43	4190	4124	3302	2629	2235	1067	494	306	258	303	483	1008	2126	2608	3250	4082	4190
44	4176	4047	3254	2602	2156	989	463	280	238	277	457	947	2064	2559	3197	4010	4176
45	4192	3977	3229	2575	2082	928	437	263	219	251	427	887	1996	2520	3170	3918	4192
46	4310	3973	3199	2521	2007	861	410	243	201	233	404	825	1929	2484	3144	3911	4310
47	4248	4015	3231	2454	1933	799	383	223	182	215	377	764	1858	2427	3136	3965	4248
48	4139	4011	3266	2395	1865	742	359	205	167	198	353	708	1798	2368	3179	3986	4139
49	4139	3968	3190	2330	1796	693	333	192	158	182	332	673	1738	2304	3112	3934	4139
50	4175	3941	3144	2268	1728	646	316	175	144	168	311	634	1681	2233	3053	3906	4175
51	4186	3944	3068	2209	1674	603	291	166	142	156	287	592	1622	2178	2982	3899	4186
52	4174	3946	3023	2183	1620	569	276	151	135	148	268	556	1562	2140	2936	3904	4174
53	4161	3929	2988	2184	1563	536	253	143	132	137	251	532	1508	2145	2907	3895	4161
54	4132	3913	2950	2123	1504	508	236	135	125	136	235	498	1455	2100	2870	3875	4132
55	4071	3893	2929	2044	1449	479	216	129	121	121	214	479	1395	2007	2847	3855	4071
56	3979	3853	2902	1963	1398	462	202	124	117	115	203	456	1340	1924	2825	3822	3979
57	3906	3807	2877	1894	1344	441	179	114	114	114	190	437	1290	1873	2788	3779	3906
58	3825	3746	2841	1856	1285	417	177	112	105	103	173	417	1237	1843	2756	3718	3825
59	3752	3681	2807	1858	1235	395	161	101	97	98	159	401	1180	1844	2725	3656	3752
60	3708	3608	2771	1846	1175	375	151	92	89	93	147	380	1126	1805	2689	3584	3708

61	3685	3533	2743	1738	1115	358	137	88	82	87	139	362	1064	1701	2658	3517	3685
62	3687	3471	2710	1660	1057	333	126	83	79	74	131	342	1007	1637	2624	3462	3687
63	3624	3432	2670	1612	1002	313	120	79	71	72	123	317	950	1595	2581	3423	3624
64	3535	3390	2618	1590	944	291	109	67	59	66	109	299	896	1569	2535	3376	3535
65	3428	3333	2563	1582	885	280	100	62	49	58	100	281	840	1537	2482	3320	3428
66	3351	3271	2502	1481	823	263	94	52	46	51	94	262	774	1443	2431	3252	3351
67	3315	3202	2445	1403	756	244	83	46	36	46	85	245	714	1375	2371	3181	3315
68	3304	3129	2393	1348	692	223	77	41	28	37	78	225	652	1329	2311	3113	3304
69	3264	3078	2337	1300	631	211	67	25	13	22	63	214	595	1285	2266	3055	3264
70	3211	3032	2287	1252	573	195	69	19	0	21	63	194	544	1240	2215	3011	3211
71	3136	2985	2232	1206	524	174	56	8	12	0	61	180	490	1195	2154	2966	3136
72	3050	2933	2181	1160	471	160	48	0	8	0	46	168	449	1154	2103	2915	3050
73	2972	2868	2126	1117	431	149	39	8	8	0	28	149	408	1108	2053	2849	2972
74	2911	2793	2070	1075	391	134	34	9	9	0	41	135	368	1058	2000	2766	2911
75	2846	2722	2006	1026	347	127	22	10	9	9	20	129	332	1009	1938	2694	2846
76	2785	2644	1949	985	311	116	31	10	9	10	31	117	300	964	1880	2626	2785
77	2718	2579	1885	942	276	104	28	12	9	0	27	108	275	917	1823	2553	2718
78	2654	2518	1829	894	255	95	21	0	13	8	30	102	248	874	1765	2488	2654
79	2593	2448	1775	851	221	86	24	8	10	9	32	92	222	826	1709	2422	2593
80	2524	2378	1714	813	196	79	26	11	13	8	26	85	199	786	1652	2352	2524
81	2453	2303	1654	774	177	73	26	10	12	11	26	81	175	739	1595	2274	2453
82	2378	2233	1598	734	154	66	22	12	13	9	25	68	162	699	1533	2202	2378
83	2306	2161	1533	692	138	61	24	0	8	0	22	67	142	661	1475	2136	2306
84	2239	2096	1477	647	119	53	17	9	11	0	22	64	123	623	1414	2069	2239
85	2170	2021	1416	614	107	56	22	10	12	9	20	56	112	586	1357	1998	2170
86	2089	1959	1356	581	97	44	8	10	11	0	21	55	100	552	1304	1930	2089
87	2008	1884	1295	547	87	52	21	9	10	7	21	56	95	519	1243	1856	2008
88	1934	1810	1236	509	76	46	18	0	8	14	17	48	83	487	1192	1776	1934
89	1858	1732	1178	480	72	32	15	12	10	12	19	48	77	457	1141	1708	1858
90	1785	1659	1135	458	73	47	16	8	13	8	22	46	69	432	1095	1642	1785
91	1716	1594	1087	431	68	46	17	8	15	12	24	43	69	411	1045	1575	1716
92	1647	1532	1036	410	66	41	16	12	7	10	20	48	68	385	997	1513	1647

93	1585	1465	992	394	62	31	18	8	12	0	20	45	66	368	953	1447	1585
94	1523	1410	945	374	60	38	18	7	14	0	20	40	69	351	912	1394	1523
95	1463	1351	907	354	61	36	15	8	14	12	18	36	67	336	875	1338	1463
96	1401	1301	867	339	51	37	18	9	9	11	19	36	58	318	840	1288	1401
97	1349	1250	836	328	61	38	15	8	15	11	18	30	65	302	803	1242	1349
98	1301	1202	796	307	61	32	15	12	13	10	19	37	64	291	767	1195	1301
99	1254	1160	767	288	61	28	17	0	14	10	17	27	62	276	739	1149	1254
100	1202	1109	735	275	59	32	18	14	14	11	20	37	60	260	706	1097	1202
101	1159	1067	702	262	62	19	17	12	13	10	19	32	63	252	676	1056	1159
102	1125	1026	675	250	58	20	13	10	12	13	12	25	66	238	652	1021	1125
103	1082	991	648	239	60	32	15	0	15	12	17	28	62	222	625	982	1082
104	1041	958	616	227	53	28	15	10	12	9	15	27	65	213	597	946	1041
105	999	916	589	213	59	23	11	11	15	11	14	23	61	201	571	910	999
106	966	882	561	196	57	25	14	7	13	0	17	23	53	190	543	875	966
107	932	855	537	187	56	21	14	15	10	8	17	24	63	179	521	846	932
108	901	816	517	175	57	24	13	11	12	12	15	25	62	168	500	808	901
109	865	785	485	165	56	14	13	13	13	12	19	22	62	161	473	783	865
110	836	754	462	162	50	21	11	10	15	9	17	25	54	152	448	751	836
111	778	724	440	151	50	17	14	8	17	11	20	25	62	145	423	720	778
112	726	692	418	143	49	15	14	8	13	8	14	24	59	133	405	686	726
113	671	658	396	131	55	22	15	11	12	14	15	25	60	127	379	657	671
114	623	629	373	128	50	23	11	10	16	11	14	15	58	122	360	627	623
115	589	599	350	122	49	19	11	10	11	11	14	25	54	115	341	596	589
116	544	570	332	112	47	23	10	13	9	16	12	22	52	110	319	565	544
117	515	537	310	108	49	21	12	9	16	9	18	20	51	101	304	533	515
118	486	505	291	104	47	20	0	0	14	11	16	20	45	103	282	503	486
119	460	481	278	95	37	17	12	13	12	8	11	20	47	98	269	472	460
120	434	448	260	95	43	18	16	14	8	13	14	20	46	92	255	447	434
121	410	419	245	88	37	19	8	9	13	11	18	18	48	89	239	418	410
122	387	393	232	88	37	19	12	14	12	11	13	18	44	86	226	394	387
123	366	369	217	82	39	15	11	10	14	15	14	21	43	83	208	363	366
124	339	342	205	76	26	18	12	10	11	15	16	17	42	79	201	341	339

125	316	318	191	71	35	20	10	10	15	10	16	23	33	71	187	315	316
126	297	296	183	70	37	16	13	13	12	12	16	21	40	68	177	292	297
127	274	280	170	49	37	19	12	8	11	15	17	22	31	63	170	268	274
128	261	255	159	56	34	19	11	11	11	15	14	19	36	59	158	247	261
129	244	229	152	59	34	17	15	9	18	10	12	19	35	55	148	228	244
130	221	217	145	60	29	13	12	8	14	12	15	19	34	60	142	210	221
131	210	198	132	53	34	18	8	13	14	12	18	19	32	49	133	193	210
132	192	186	127	52	28	16	11	15	15	9	15	17	36	52	124	177	192
133	177	173	123	58	26	21	9	0	10	14	16	19	31	51	122	168	177
134	173	163	117	42	28	19	14	9	14	11	12	16	32	51	111	158	173
135	157	148	108	46	29	15	11	11	10	13	12	18	33	46	108	147	157
136	152	140	101	47	30	17	11	12	12	14	15	15	31	45	97	139	152
137	140	133	93	43	24	19	13	11	15	13	16	10	30	42	96	131	140
138	132	121	93	39	28	15	18	16	12	14	16	19	34	41	87	119	132
139	123	113	86	39	26	16	14	12	13	15	16	19	28	41	82	114	123
140	117	101	81	40	27	16	12	14	16	13	15	19	29	35	83	100	117
141	109	95	78	39	26	15	14	10	14	16	18	21	30	38	73	94	109
142	103	94	72	27	23	15	15	10	9	11	15	11	26	34	68	90	103
143	94	85	65	36	24	14	11	10	16	15	16	17	17	30	69	86	94
144	90	77	62	35	24	13	13	14	11	14	17	18	28	30	69	82	90
145	77	69	61	32	20	9	17	14	14	13	13	15	26	22	55	74	77
146	81	67	56	29	20	10	14	14	17	15	14	12	27	28	62	68	81
147	61	61	54	28	23	12	15	16	18	17	15	16	23	17	51	57	61
148	65	55	48	21	23	10	16	12	19	17	17	16	25	26	52	55	65
149	58	54	47	25	21	8	13	16	17	11	16	17	27	18	44	48	58
150	60	45	42	26	22	11	16	10	18	16	17	17	24	23	39	43	60
151	55	46	45	24	20	13	16	17	18	18	18	16	21	20	35	48	55
152	43	45	41	24	20	15	14	15	13	17	15	19	21	17	33	45	43
153	43	43	32	20	19	12	14	10	14	17	17	15	22	19	20	36	43
154	47	38	39	22	16	10	12	16	14	16	19	17	22	15	33	39	47
155	39	28	36	17	20	14	14	15	18	19	18	16	19	16	33	39	39
156	31	35	31	15	18	13	17	12	13	16	18	19	23	13	30	33	31

157	40	33	27	14	16	13	13	17	16	16	22	16	17	8	33	31	40
158	40	32	25	16	21	15	14	15	17	17	19	17	20	12	28	24	40
159	34	23	22	13	19	12	15	15	16	15	17	17	23	14	23	28	34
160	30	27	30	17	18	15	16	18	17	12	19	20	23	14	21	24	30
161	28	24	20	18	12	17	16	15	17	7	20	14	22	14	22	26	28
162	28	22	19	12	20	17	14	12	18	18	19	16	21	16	23	21	28
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164	26	18	21	16	20	15	17	16	18	21	18	20	17	12	23	15	26
165	24	20	18	16	19	15	19	14	18	18	15	18	21	10	15	15	24
166	24	21	15	13	17	14	14	16	19	12	15	16	23	15	18	19	24
167	20	16	18	19	16	17	13	15	18	20	19	18	21	13	19	15	20
168	17	16	20	17	20	20	14	14	18	16	20	11	22	17	14	15	17
169	20	14	18	15	15	11	19	16	22	22	18	20	23	13	18	15	20
170	17	11	20	17	18	17	16	16	17	22	21	20	22	12	16	11	17
171	15	12	17	16	21	19	19	18	21	19	21	15	20	10	16	14	15
172	16	14	20	16	20	18	13	17	10	20	21	16	21	18	15	11	16
173	17	17	16	15	22	16	16	17	18	14	18	20	25	13	19	14	17
174	12	14	18	12	25	18	17	17	17	14	13	16	23	13	18	12	12
175	18	15	18	15	21	15	12	15	19	19	19	17	25	18	18	15	18
176	15	12	18	15	22	14	18	18	16	10	21	19	22	17	18	17	15
177	15	10	18	16	18	18	16	15	16	14	19	17	23	14	17	13	15
178	15	9	19	17	21	19	19	14	21	14	15	13	21	16	15	12	15
179	14	15	19	14	21	17	9	16	16	12	17	13	15	17	17	17	14
180	14	15	18	14	23	17	15	16	14	17	19	15	25	15	19	16	14

**BUG**

**Lum. Classification System (LCS)**

<b>LCS Zone</b>	<b>Lumens</b>	<b>%Lamp</b>	<b>%Lum</b>
FL (0-30)	1535.2	13.9	13.9
FM (30-60)	3596.0	32.5	32.5
FH (60-80)	2140.4	19.3	19.3
FVH(80-90)	701.2	6.3	6.3
BL (0-30)	979.0	8.8	8.8
BM (30-60)	804.5	7.3	7.3
BH (60-80)	157.2	1.4	1.4
BVH(80-90)	20.5	0.2	0.2
UL (90-100)	474.5	4.3	4.3
UH (100-180)	670.7	6.1	6.1
Total	11079.2	100.1	100.0
<b>BUG Rating</b>	<b>B2-U4-G4</b>		

## 2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

<b>Test date</b>	2023-07-15	<b>Test Ambient:</b>	25.2 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	WP2XFU80(01) @80W 4000K		

### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC230602	120.0	60	0.652	77.33	0.988	13.42
6E-C1	277.0	60	0.296	77.01	0.938	9.88
<b>DLC Pass Criteria</b>					>= 0.9(-3%)	<= 20(+5)

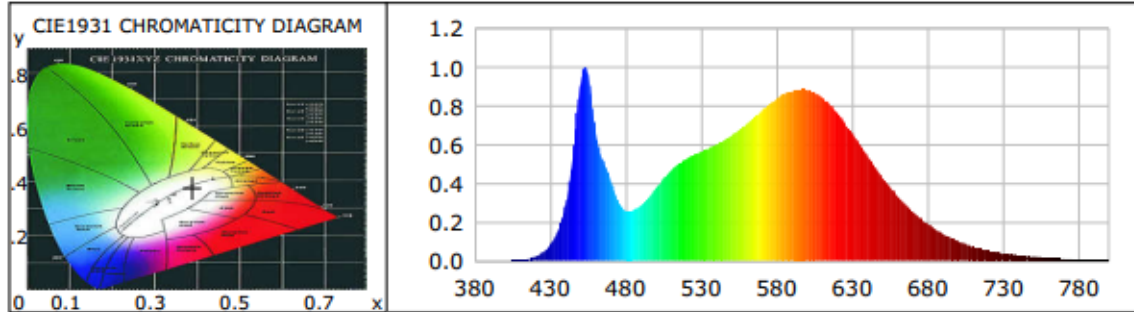
### Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	82	R9	6
Frequency (Hz)	60	R2	91	R10	79
CCT (K)	3821	R3	95	R11	79
Duv	-0.0025	R4	81	R12	64
Chromaticity (x, y)	x=0.3866 y=0.3751	R5	82	R13	85
Chromaticity (u', v')	u(u')=0.2299 v'(v')=0.5018	R6	88	R14	98
Color Rendering Index (CRI)	83	R7	83	R15	76
R9	6	R8	62	--	--
Rf	83	--	--	--	--
Rg	95	--	--	--	--
Rcs,h1 (%)	-13	--	--	--	--

### Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	11605.7	11481.4	5000-10000(-10%)
Luminous Efficacy (lm/W)	150.08	149.09	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	148.47		

**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	0.0889	535	0.5461	136.2977	690	0.2524	62.9908
385	0.0007	0.1663	540	0.5642	140.8112	695	0.2187	54.5954
390	0.0008	0.1887	545	0.5810	145.0006	700	0.1892	47.2137
395	0.0006	0.1467	550	0.6023	150.3195	705	0.1628	40.6212
400	0.0011	0.2825	555	0.6203	154.8081	710	0.1401	34.9733
405	0.0018	0.4415	560	0.6457	161.1527	715	0.1195	29.8352
410	0.0040	0.9958	565	0.6753	168.5297	720	0.1016	25.3466
415	0.0101	2.5220	570	0.7066	176.3625	725	0.0870	21.7053
420	0.0211	5.2714	575	0.7409	184.9073	730	0.0744	18.5674
425	0.0428	10.6925	580	0.7737	193.1019	735	0.0628	15.6643
430	0.0830	20.7064	585	0.8085	201.7816	740	0.0535	13.3449
435	0.1538	38.3932	590	0.8390	209.4051	745	0.0461	11.5144
440	0.2792	69.6702	595	0.8576	214.0452	750	0.0383	9.5465
445	0.5338	133.2329	600	0.8762	218.6794	755	0.0312	7.7921
450	0.9116	227.5095	605	0.8854	220.9796	760	0.0276	6.8921
455	0.9642	240.6342	610	0.8825	220.2543	765	0.0247	6.1675
460	0.6718	167.6780	615	0.8686	216.7907	770	0.0210	5.2463
465	0.5151	128.5495	620	0.8436	210.5398	775	0.0162	4.0497
470	0.4168	104.0126	625	0.8081	201.6904	780	0.0150	3.7484
475	0.3056	76.2835	630	0.7639	190.6527	785	0.0119	2.9790
480	0.2599	64.8665	635	0.7124	177.7921	790	0.0107	2.6803
485	0.2633	65.7066	640	0.6562	163.7832	795	0.0088	2.2003
490	0.2839	70.8464	645	0.5998	149.6878	800	0.0058	1.4468
495	0.3242	80.9130	650	0.5424	135.3628			
500	0.3768	94.0503	655	0.4843	120.8640			
505	0.4240	105.8268	660	0.4310	107.5687			
510	0.4661	116.3400	665	0.3792	94.6420			
515	0.5003	124.8698	670	0.3326	83.0131			
520	0.5256	131.1879	675	0.2903	72.4585			
525	0.5461	136.2977	680	0.2524	62.9908			
530	0.5642	140.8112	685	0.2187	54.5954			

**TM30**

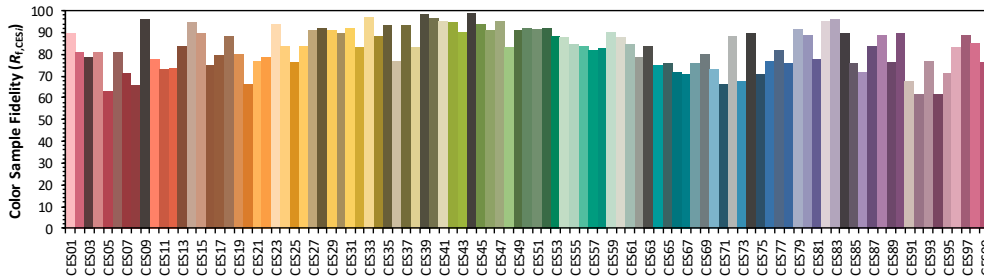
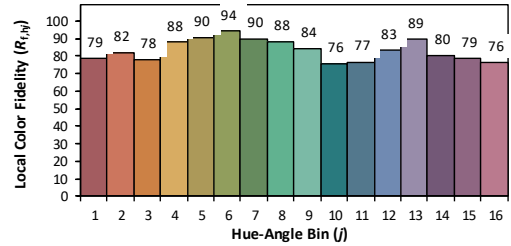
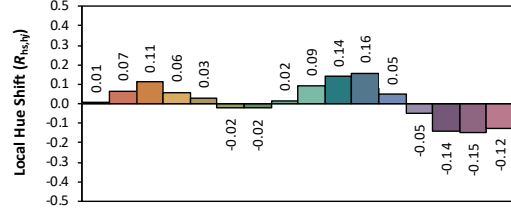
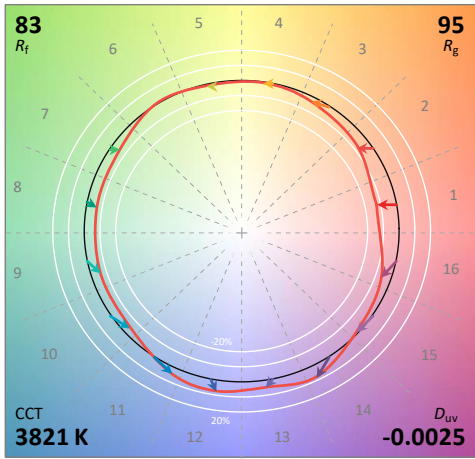
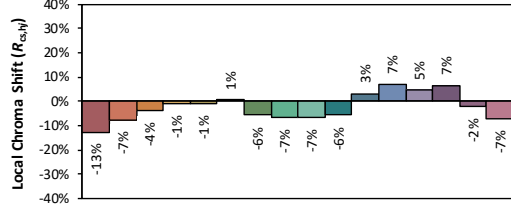
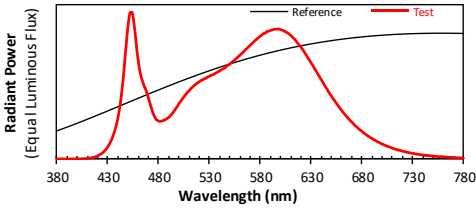
**ANSI/IES TM-30-18 Color Rendition Report**

**Source:** L128-3080RA35005A1  
L128-5080RA35000H1

**Date:** 2023/7/15

**Manufacturer:** ASmart LIGHT CO., LTD

**Model:** AST-SWP11M-80WBSGDA1-abcW40



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

$x$  0.3866  
 $y$  0.3751  
 $u'$  0.2299  
 $v'$  0.5018

CIE 13.3-1995 (CRI)	
$R_a$	83
$R_9$	6

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>	2023-07-15	<b>Test Ambient:</b>	25.2 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	WP2XFU80(01) @80W 5000K		

#### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC230602	120.0	60	0.667	79.22	0.990	13.46
6E-C1	277.0	60	0.304	78.92	0.938	9.96
<b>DLC Pass Criteria</b>					>= 0.9(-3%)	<= 20(+5)

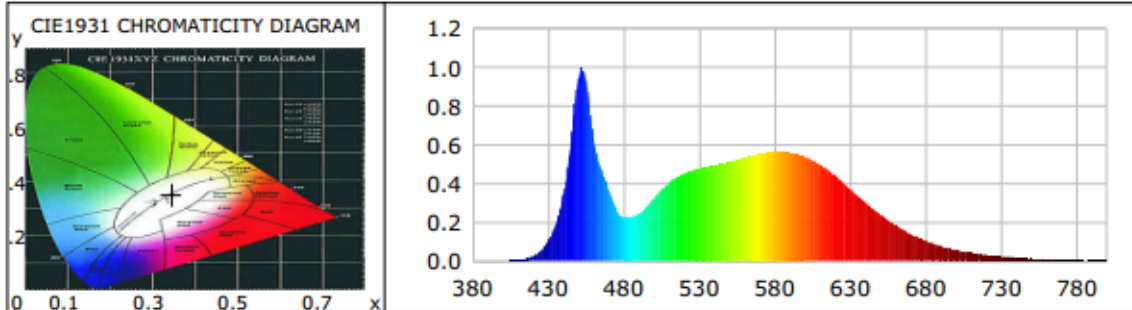
#### Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	81	R9	2
Frequency (Hz)	60	R2	88	R10	72
CCT (K)	5133	R3	93	R11	81
Duv	0.0014	R4	81	R12	60
Chromaticity (x, y)	x=0.3417 y=0.3516	R5	81	R13	83
Chromaticity (u', v')	u(u')=0.2091 v'(v')=0.4842	R6	84	R14	96
Color Rendering Index (CRI)	82	R7	85	R15	75
R9	2	R8	65	--	--
Rf	83	--	--	--	--
Rg	95	--	--	--	--
Rcs,h1 (%)	-14	--	--	--	--

#### 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)	11296.0	11161.7	5000-10000(-10%)
Luminous Efficacy (lm/W)	142.59	141.43	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	140.89		

### 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	0.2251	535	0.4649	158.1871	690	0.1379	46.9302
385	0.0008	0.2735	540	0.4746	161.4923	695	0.1201	40.8763
390	0.0004	0.1359	545	0.4835	164.5034	700	0.1034	35.1854
395	0.0001	0.0215	550	0.4950	168.4187	705	0.0901	30.6503
400	0.0008	0.2582	555	0.5013	170.5625	710	0.0772	26.2634
405	0.0018	0.6089	560	0.5110	173.8547	715	0.0659	22.4234
410	0.0046	1.5522	565	0.5230	177.9414	720	0.0560	19.0647
415	0.0112	3.7971	570	0.5339	181.6604	725	0.0477	16.2336
420	0.0246	8.3718	575	0.5430	184.7532	730	0.0412	14.0024
425	0.0517	17.5801	580	0.5528	188.0955	735	0.0355	12.0846
430	0.1020	34.7151	585	0.5607	190.7580	740	0.0301	10.2419
435	0.1905	64.8237	590	0.5636	191.7562	745	0.0244	8.3105
440	0.3384	115.1270	595	0.5618	191.1570	750	0.0215	7.3181
445	0.6063	206.2850	600	0.5587	190.0896	755	0.0182	6.2048
450	0.9404	319.9591	605	0.5508	187.4173	760	0.0154	5.2408
455	0.9334	317.5946	610	0.5373	182.8007	765	0.0128	4.3486
460	0.6353	216.1534	615	0.5188	176.5311	770	0.0114	3.8734
465	0.4725	160.7681	620	0.4965	168.9424	775	0.0094	3.2108
470	0.3688	125.4644	625	0.4697	159.8282	780	0.0086	2.9227
475	0.2671	90.8874	630	0.4380	149.0277	785	0.0072	2.4424
480	0.2247	76.4407	635	0.4038	137.3873	790	0.0059	2.0239
485	0.2249	76.5233	640	0.3695	125.7062	795	0.0061	2.0845
490	0.2427	82.5829	645	0.3361	114.3581	800	0.0043	1.4572
495	0.2789	94.8941	650	0.3023	102.8631			
500	0.3246	110.4474	655	0.2678	91.1127			
505	0.3671	124.9195	660	0.2371	80.6839			
510	0.4048	137.7362	665	0.2090	71.1002			
515	0.4319	146.9624	670	0.1831	62.3108			
520	0.4511	153.4802	675	0.1595	54.2641			
525	0.4649	158.1871	680	0.1379	46.9302			
530	0.4746	161.4923	685	0.1201	40.8763			

**TM30**

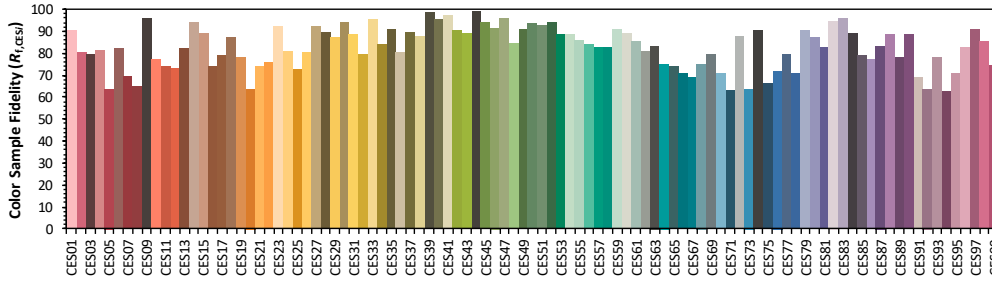
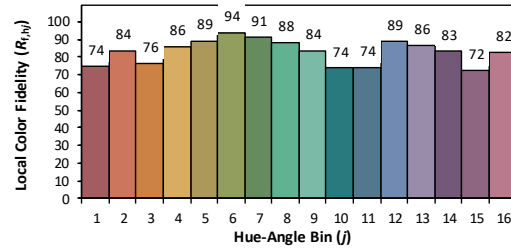
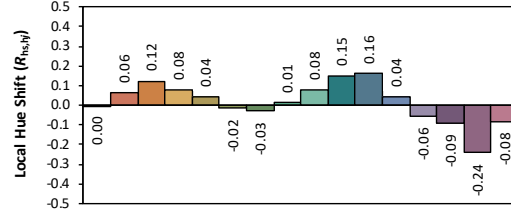
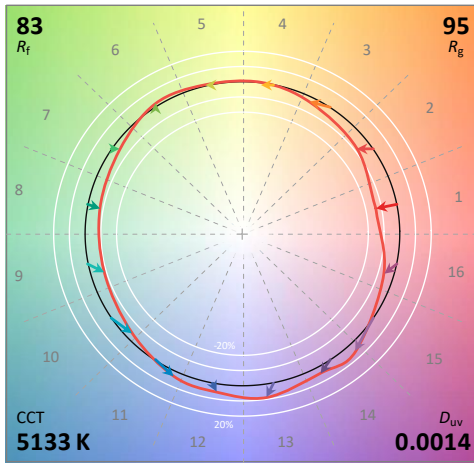
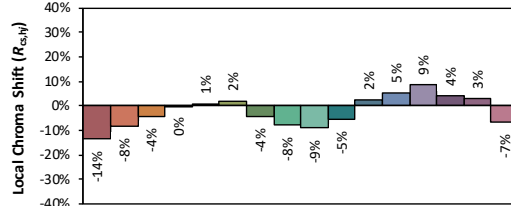
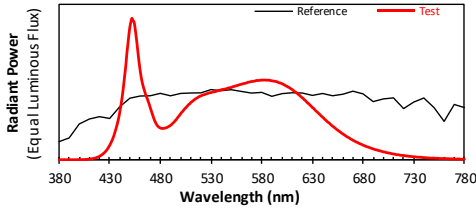
**ANSI/IES TM-30-18 Color Rendition Report**

Source: L128-5080RA35000H1

Manufacturer: SMART LIGHT CO., LTD

Date: 2023/7/15

Model: AST-SWP11M-80WBSGDA1-abcW50



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

$x$  **0.3417**  
 $y$  **0.3516**  
 $u'$  **0.2091**  
 $v'$  **0.4842**

CIE 13.3-1995 (CRI)	
$R_a$	82
$R_g$	2

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 \*\*\*\*\*