

LM-79-08 Test Report

For

IKIO LED LIGHTING

(Brand Name: IKIO)

470 Allison Pointe Blvd, Suite 128 Indianapolis, IN 46250

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

Luminaires

Model name(s):
IK-SWPM-60WBSGDA1-BRW30/40/50 (60W)

Remark: "a" can be any two letters for lamp colors;
"b" can be "M" for motion microwave sensor, "R" for motion PIR sensor or blank for no sensor function;
"c" can be "S" for Surge-Protective Device provided or blank for not provided;
"e" can be any digits for CCT.

Representative (Tested) Model:

IK-SWPM-60WBSGDA1-BRW30/40/50 (60W,3000K)
IK-SWPM-60WBSGDA1-BRW30/40/50 (60W,4000K)
IK-SWPM-60WBSGDA1-BRW30/40/50 (60W,5000K)

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

Test & Report By:



Engineer: Odin Wang

Date:2023-07-18

Review By:



Manager: Jason Luo

1.1 Product Information:

Organization Name	IKIO LED LIGHTING	
Brand Name	IKIO	
Model Number	IK-SWPM-60WBSGDA1-BRW30/40/50 (60W)	
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	60W(Power 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-B1	
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"> 1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate 7. Electrical Parameters
Reference Standard	<ol style="list-style-type: none"> 1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	BL-QP-033

1.3 Test Methods

1) Photometric and Light Distribution Measurement – Goniophotometer Method:

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

2) Chromaticity Measurement – Sphere-Spectroradiometer Method:

Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. 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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. 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.

AST-SWP11M-60WBSGDA1-abc30:1.01457

AST-SWP11M-60WBSGDA1-abc40:1.01457

AST-SWP11M-60WBSGDA1-abc50:1.01457

2.1 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2023-07-15	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	IK-SWPM-60WBSGDA1-BRW30/40/50 (60W,3000K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC230602	120.0	60	0.528	62.67	0.989	13.42
6E-B1	277.0	60	0.240	62.89	0.946	8.55
DLC Pass Criteria					$\geq 0.9(-3\%)$	$\leq 20(+5)$

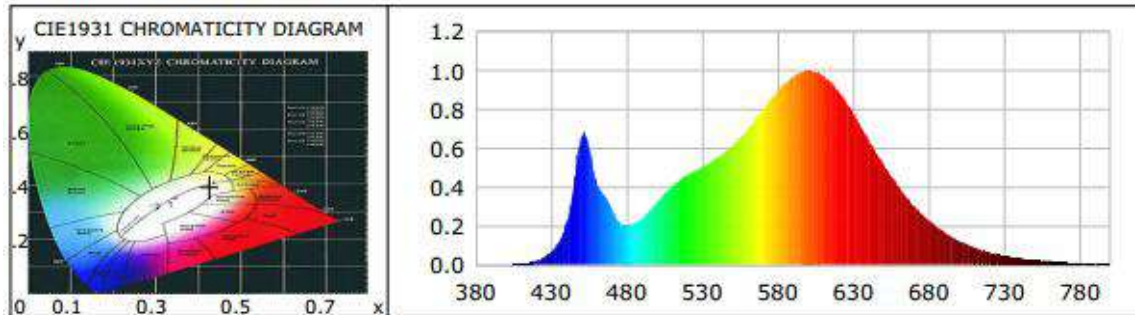
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	79	R9	-4
Frequency (Hz)	60	R2	90	R10	78
CCT (K)	3124	R3	95	R11	76
Duv	-0.0015	R4	78	R12	68
Chromaticity (x, y)	x=0.4263 y=0.3964	R5	79	R13	81
Chromaticity (u', v')	u(u')=0.2470 v'=0.5167	R6	88	R14	98
Color Rendering Index (CRI)	80	R7	79	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)	8762.0	8742.8	5000-10000(-10%)
0-90° Total Luminous (lm)	7845.9	7827.2	
Luminous Efficacy (lm/W)	139.81	139.02	Premium: $\geq 120(-3\%)$
0-90° Luminous Efficacy (lm/W)	125.19	124.46	
Most worst Luminous/Highest	139.02		
Zonal lumens in the 80-90°/0-90°zone (%)	7.49	--	$\leq 10(+3)$
Beam Angle (°)	96.5	--	--
Center Beam Candle Power (cd)	2985	--	--

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	0.0070	535	0.4818	87.9934	690	0.3029	55.3183
385	0.0006	0.1039	540	0.5022	91.7189	695	0.2624	47.9226
390	0.0006	0.1069	545	0.5240	95.6923	700	0.2268	41.4261
395	0.0005	0.0921	550	0.5513	100.6751	705	0.1962	35.8318
400	0.0008	0.1464	555	0.5787	105.6828	710	0.1680	30.6740
405	0.0022	0.4013	560	0.6119	111.7516	715	0.1437	26.2417
410	0.0041	0.7399	565	0.6524	119.1311	720	0.1227	22.3997
415	0.0096	1.7539	570	0.6980	127.4658	725	0.1050	19.1692
420	0.0203	3.7073	575	0.7474	136.4800	730	0.0895	16.3400
425	0.0382	6.9701	580	0.7967	145.4955	735	0.0758	13.8498
430	0.0677	12.3707	585	0.8482	154.9008	740	0.0644	11.7626
435	0.1176	21.4789	590	0.8966	163.7303	745	0.0554	10.1169
440	0.2087	38.1149	595	0.9345	170.6467	750	0.0466	8.5159
445	0.4075	74.4122	600	0.9700	177.1326	755	0.0388	7.0847
450	0.6562	119.8385	605	0.9902	180.8356	760	0.0346	6.3163
455	0.6084	111.1039	610	0.9990	182.4410	765	0.0290	5.2918
460	0.4249	77.5900	615	0.9910	180.9803	770	0.0246	4.4933
465	0.3602	65.7724	620	0.9735	177.7724	775	0.0210	3.8292
470	0.2895	52.8675	625	0.9395	171.5611	780	0.0183	3.3508
475	0.2193	40.0474	630	0.8935	163.1591	785	0.0145	2.6497
480	0.2033	37.1187	635	0.8378	153.0030	790	0.0129	2.3623
485	0.2137	39.0301	640	0.7768	141.8651	795	0.0110	2.0119
490	0.2360	43.0990	645	0.7114	129.9120	800	0.0081	1.4736
495	0.2755	50.3060	650	0.6451	117.8099			
500	0.3227	58.9278	655	0.5775	105.4594			
505	0.3648	66.6145	660	0.5147	93.9984			
510	0.4032	73.6347	665	0.4554	83.1704			
515	0.4343	79.3084	670	0.4006	73.1606			
520	0.4594	83.9026	675	0.3479	63.5376			
525	0.4818	87.9934	680	0.3029	55.3183			
530	0.5022	91.7189	685	0.2624	47.9226			

TM30

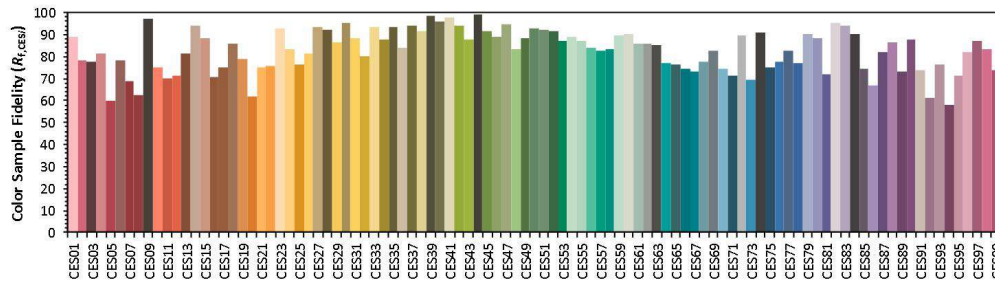
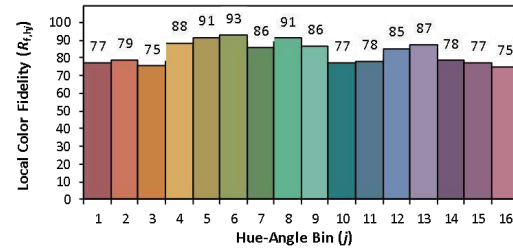
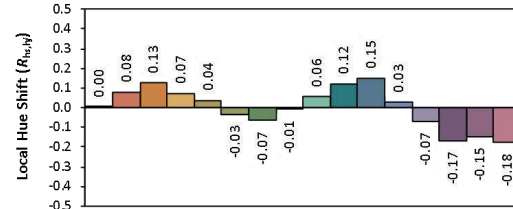
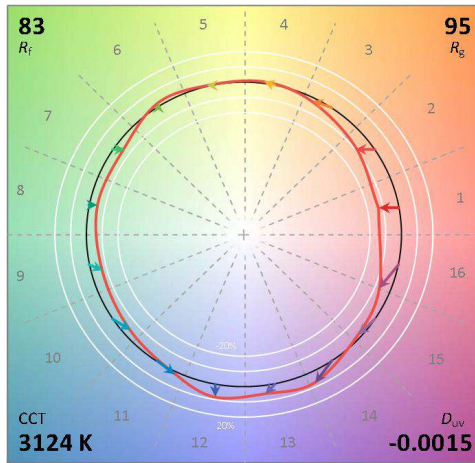
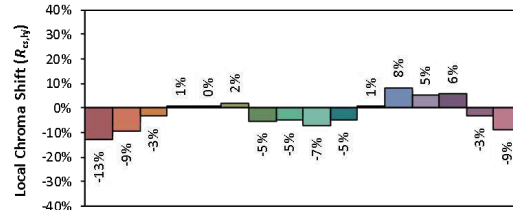
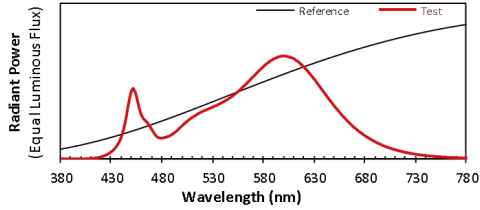
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-3080RA35005A1

Manufacturer: IKIO LED LIGHTING

Date: 2023/7/15

Model: IK-SWPM-60WBSGDA1-BRW30/40/50
(60W,3000K)



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

x 0.4263
 y 0.3964
 u' 0.2470
 v' 0.5167

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

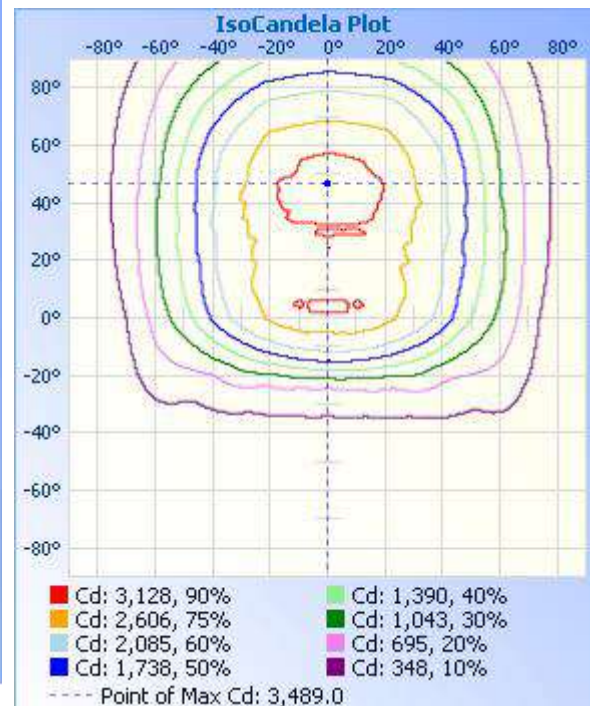
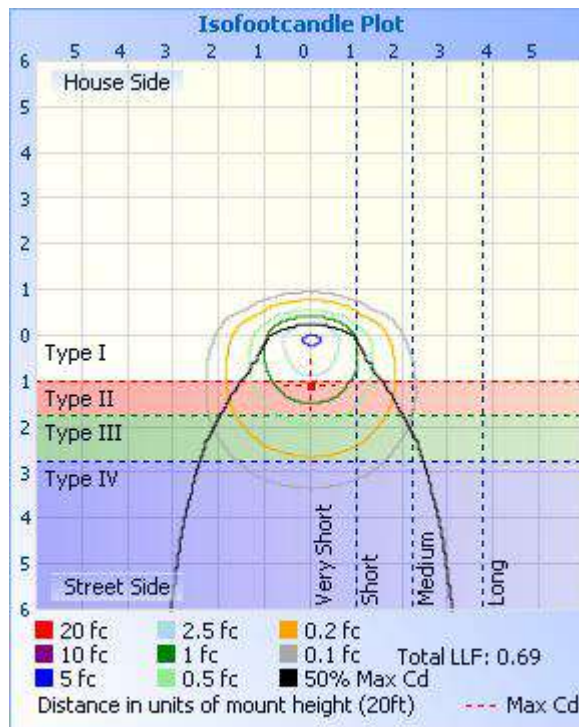
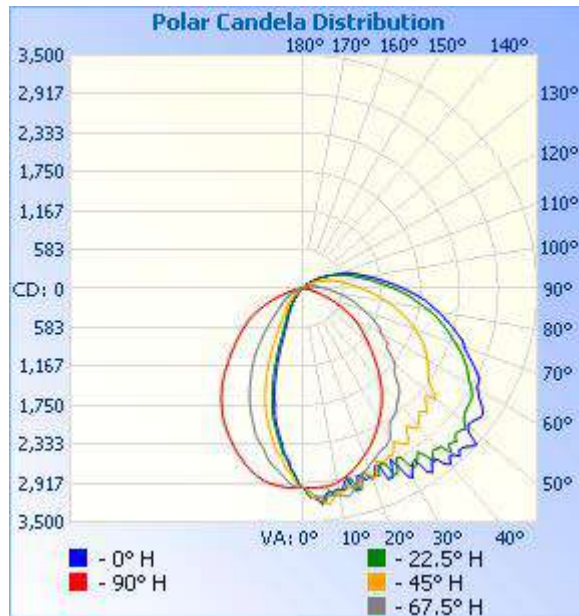
Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0-30	1,959.0	22.4%	22.4%
0-40	3,072.7	35.1%	35.1%
0-60	5,414.4	61.8%	61.8%
60-90	2,431.5	27.8%	27.8%
70-100	1,791.6	20.4%	20.4%
90-120	787.3	9%	9%
0-90	7,845.9	89.5%	89.5%
90-180	915.7	10.5%	10.5%
0-180	8,761.6	100%	100%

Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	275.5	3.1%	90-100	389.2	4.4%
10-20	719.5	8.2%	100-110	250.8	2.9%
20-30	964.0	11.0%	110-120	147.3	1.7%
30-40	1,113.7	12.7%	120-130	73.0	0.8%
40-50	1,186.7	13.5%	130-140	31.7	0.4%
50-60	1,155.0	13.2%	140-150	14.2	0.2%
60-70	1,029.2	11.7%	150-160	6.1	0.1%
70-80	814.8	9.3%	160-170	2.6	0%
80-90	587.5	6.7%	170-180	0.8	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	2985	2985	2985	2985	2985	2985	2985	2985	2985	2985	2985	2985	2985	2985	2985	2985	2985
1	3056	3069	3047	3009	2983	2981	2966	2955	2955	2957	2969	2979	2981	2988	3014	3046	3056
2	3140	3138	3123	3062	2991	2966	2916	2869	2859	2872	2924	2974	2985	3032	3104	3136	3140
3	3139	3137	3150	3109	2989	2947	2836	2777	2765	2780	2854	2960	2986	3094	3146	3142	3139
4	3176	3160	3147	3125	2988	2897	2773	2724	2707	2727	2777	2933	2991	3130	3149	3160	3176
5	3238	3248	3163	3133	2991	2858	2728	2611	2578	2630	2739	2881	2992	3146	3158	3251	3238
6	3115	3199	3234	3135	2987	2815	2650	2535	2530	2538	2686	2834	2984	3141	3215	3192	3115
7	3064	3053	3257	3134	2987	2766	2559	2484	2460	2499	2590	2796	2987	3147	3238	3057	3064
8	3094	3097	3196	3129	2976	2736	2520	2391	2342	2407	2523	2746	2977	3140	3163	3110	3094
9	3061	3079	3086	3128	2963	2706	2487	2301	2268	2317	2496	2725	2970	3141	3051	3106	3061
10	3065	3055	3108	3143	2945	2653	2404	2229	2177	2251	2441	2693	2963	3160	3088	3079	3065
11	3071	3076	3112	3172	2925	2593	2323	2138	2100	2160	2348	2648	2943	3183	3101	3096	3071
12	2960	3078	3086	3185	2903	2533	2256	2067	2016	2084	2282	2601	2936	3198	3072	3082	2960
13	2914	2975	3065	3167	2883	2479	2177	1986	1916	2012	2218	2539	2913	3160	3054	2960	2914
14	3092	2938	3063	3118	2849	2441	2096	1888	1782	1923	2139	2480	2897	3111	3050	2929	3092
15	3141	3083	3070	3066	2829	2400	2028	1773	1686	1815	2063	2439	2867	3030	3052	3121	3141
16	2925	3139	3037	2996	2792	2358	1961	1671	1575	1696	2001	2399	2844	2957	3015	3170	2925
17	2922	2993	2958	2946	2765	2312	1884	1573	1464	1599	1934	2358	2814	2940	2892	2981	2922
18	3016	2902	2875	2898	2729	2239	1792	1466	1344	1497	1850	2310	2784	2920	2877	2928	3016
19	2995	2970	2942	2870	2693	2180	1695	1341	1223	1388	1767	2256	2755	2895	2990	3019	2995
20	3030	3015	3020	2841	2664	2115	1598	1227	1096	1264	1683	2188	2713	2874	3047	3021	3030
21	2974	2994	3014	2809	2628	2056	1513	1119	979	1156	1596	2126	2685	2839	2976	3025	2974
22	2869	3026	2910	2784	2596	2000	1425	1010	867	1047	1509	2071	2653	2806	2835	3019	2869
23	2876	2899	2812	2753	2563	1943	1330	903	766	940	1416	2021	2616	2781	2813	2892	2876
24	3120	2855	2830	2723	2519	1887	1235	804	690	839	1318	1962	2587	2744	2873	2867	3120
25	3136	2912	2875	2701	2479	1830	1149	718	629	754	1229	1905	2540	2721	2869	3003	3136
26	3032	3107	2847	2681	2441	1765	1056	655	577	680	1149	1847	2510	2711	2828	3158	3032
27	2880	3101	2818	2671	2398	1697	975	604	539	625	1070	1781	2475	2713	2859	3102	2880
28	3003	2983	2836	2657	2358	1632	898	562	504	581	984	1729	2434	2679	2791	2967	3003

29	3218	2894	2781	2628	2311	1562	807	523	471	544	899	1659	2396	2625	2705	2895	3218
30	3271	2933	2703	2588	2266	1499	736	489	443	508	817	1595	2358	2542	2666	2979	3271
31	3162	3090	2679	2518	2227	1437	680	459	413	475	749	1532	2317	2472	2722	3168	3162
32	3087	3152	2740	2436	2183	1367	630	434	388	445	697	1472	2281	2455	2786	3194	3087
33	3060	3116	2788	2383	2141	1304	593	409	362	420	646	1418	2235	2458	2827	3120	3060
34	3312	3047	2800	2358	2095	1237	545	385	337	395	598	1358	2189	2448	2771	3050	3312
35	3363	2990	2735	2344	2048	1182	509	355	317	371	556	1298	2142	2432	2656	3001	3363
36	3276	3085	2617	2330	1999	1116	479	331	291	343	521	1241	2098	2394	2593	3209	3276
37	3193	3255	2578	2298	1952	1041	448	310	271	319	491	1180	2049	2345	2630	3270	3193
38	3259	3137	2642	2264	1900	972	425	288	253	298	460	1116	1999	2312	2729	3161	3259
39	3386	3104	2699	2220	1841	914	404	267	233	275	435	1041	1949	2292	2713	3134	3386
40	3430	3126	2672	2192	1789	860	384	246	218	256	414	977	1904	2273	2667	3194	3430
41	3336	3140	2621	2170	1734	811	363	227	201	236	394	918	1847	2242	2649	3242	3336
42	3345	3304	2593	2140	1681	757	341	211	184	220	374	861	1790	2198	2591	3290	3345
43	3435	3188	2539	2106	1625	701	317	195	170	202	350	811	1738	2124	2576	3201	3435
44	3364	3208	2550	2053	1566	646	298	180	156	187	329	762	1678	2071	2691	3264	3364
45	3368	3239	2633	1990	1512	600	276	166	142	173	311	704	1622	2026	2611	3272	3368
46	3410	3159	2554	1925	1458	559	257	153	130	160	291	654	1568	1989	2561	3214	3410
47	3462	3155	2506	1864	1406	524	241	142	120	149	272	611	1517	1977	2543	3220	3462
48	3489	3171	2448	1824	1353	488	224	130	110	138	253	574	1466	1961	2531	3233	3489
49	3275	3210	2452	1808	1303	454	208	119	102	128	236	541	1417	1906	2632	3270	3275
50	3212	3154	2578	1796	1261	428	192	111	94	118	220	505	1369	1860	2599	3198	3212
51	3205	3096	2547	1756	1218	406	179	103	89	110	205	477	1323	1807	2516	3139	3205
52	3222	3065	2439	1694	1175	387	168	96	85	102	190	450	1277	1739	2472	3112	3222
53	3251	3043	2361	1623	1129	366	155	90	84	95	177	429	1232	1689	2434	3088	3251
54	3281	3031	2319	1561	1089	349	144	83	83	89	165	410	1182	1681	2405	3077	3281
55	3278	3022	2287	1524	1048	334	133	79	83	83	153	391	1144	1681	2372	3070	3278
56	3240	3019	2255	1513	1008	320	124	74	80	78	142	375	1104	1616	2343	3064	3240
57	3177	3006	2226	1501	964	303	115	70	76	72	131	358	1066	1541	2315	3045	3177
58	3105	2980	2197	1445	922	288	106	66	71	69	122	343	1023	1492	2283	3019	3105
59	3059	2941	2173	1384	879	273	97	62	64	64	113	327	988	1463	2252	2972	3059
60	3011	2889	2139	1337	836	256	90	58	57	60	105	311	948	1455	2230	2931	3011

Laboratory: UTEST TECHNICAL LABORATORY A2LA Certificate# 4810.01

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Report Format Number BL-FM-SA-012

10 / 22

61	2982	2842	2108	1314	789	242	83	54	51	56	97	294	909	1437	2202	2887	2982
62	2978	2800	2081	1299	732	227	76	49	45	52	89	280	865	1364	2176	2841	2978
63	2958	2764	2054	1271	686	214	70	44	39	47	82	260	819	1304	2148	2798	2958
64	2896	2727	2023	1234	639	201	64	39	34	41	75	245	769	1279	2115	2757	2896
65	2837	2686	1989	1182	591	188	58	33	27	35	68	230	722	1259	2079	2719	2837
66	2776	2638	1952	1147	541	176	52	29	19	31	62	216	674	1227	2040	2674	2776
67	2719	2593	1907	1111	488	163	47	21	15	24	56	202	625	1150	1999	2628	2719
68	2660	2538	1864	1066	443	151	42	15	3	16	51	188	573	1092	1956	2576	2660
69	2607	2484	1818	1018	401	138	37	3	3	9	45	175	519	1053	1916	2520	2607
70	2567	2433	1780	964	363	127	33	2	3	3	40	162	476	1020	1873	2471	2567
71	2536	2382	1735	921	326	118	28	2	3	3	35	150	436	983	1831	2419	2536
72	2503	2329	1693	886	295	108	23	2	3	3	30	136	393	951	1789	2369	2503
73	2442	2284	1650	851	265	99	18	2	2	3	26	125	358	915	1746	2329	2442
74	2379	2239	1606	816	239	90	15	3	3	3	20	115	327	879	1696	2287	2379
75	2335	2185	1561	783	214	83	15	2	3	3	19	106	293	843	1652	2227	2335
76	2278	2128	1514	750	192	76	14	2	3	3	18	97	266	808	1607	2181	2278
77	2221	2084	1466	713	172	68	13	2	3	3	16	88	237	771	1555	2126	2221
78	2168	2036	1417	681	155	62	12	2	3	3	16	80	212	736	1508	2075	2168
79	2118	1979	1370	647	138	56	11	1	3	3	14	74	189	701	1461	2022	2118
80	2063	1913	1328	610	122	52	11	2	3	3	14	68	168	667	1412	1953	2063
81	2006	1853	1282	574	109	47	10	2	2	3	13	62	150	631	1365	1886	2006
82	1952	1793	1232	541	96	44	10	3	4	3	13	57	131	598	1314	1833	1952
83	1904	1740	1184	509	86	41	9	3	3	3	12	52	115	563	1263	1779	1904
84	1857	1686	1137	481	76	38	10	3	3	3	11	48	100	532	1218	1729	1857
85	1803	1640	1095	452	67	36	9	3	3	4	12	45	87	504	1173	1673	1803
86	1743	1588	1052	425	60	34	9	3	4	3	11	43	76	475	1124	1626	1743
87	1679	1531	1003	398	55	32	8	3	4	3	12	41	67	450	1074	1572	1679
88	1617	1473	957	374	49	31	8	2	4	3	11	39	60	424	1024	1509	1617
89	1562	1421	916	353	46	30	7	3	4	4	11	38	54	398	985	1455	1562
90	1504	1367	878	332	44	29	8	3	4	4	11	36	50	376	942	1404	1504
91	1446	1313	841	313	42	27	8	3	3	4	11	35	47	357	904	1344	1446
92	1393	1255	806	297	41	25	7	3	4	3	10	34	45	336	864	1293	1393

93	1337	1200	771	281	39	25	7	4	5	4	10	32	43	320	826	1233	1337
94	1280	1155	736	268	38	24	7	3	5	4	10	31	42	305	794	1185	1280
95	1229	1113	706	254	37	23	7	3	5	4	10	30	42	292	762	1139	1229
96	1179	1070	677	241	38	21	7	3	5	4	10	29	42	278	731	1098	1179
97	1138	1026	651	230	38	21	7	4	5	4	10	28	41	265	699	1054	1138
98	1095	986	623	218	38	19	7	4	4	4	9	27	41	252	670	1013	1095
99	1051	943	595	205	37	19	6	4	5	4	9	26	41	240	639	971	1051
100	1008	901	568	195	37	17	6	4	5	5	9	24	42	228	612	929	1008
101	970	867	545	185	37	17	6	4	5	4	8	23	42	217	588	893	970
102	933	833	525	176	37	16	6	4	5	4	8	22	42	206	564	859	933
103	898	800	503	166	37	16	6	3	5	5	9	21	42	197	542	826	898
104	865	773	482	157	36	15	5	4	5	5	8	21	41	186	518	799	865
105	833	746	459	148	36	14	6	3	5	5	8	20	41	176	497	769	833
106	804	717	438	139	35	14	5	4	5	4	8	19	40	166	474	742	804
107	775	691	418	131	35	13	5	4	5	5	7	19	40	156	453	716	775
108	749	665	398	124	34	13	5	4	5	4	7	18	39	148	433	690	749
109	724	641	378	117	33	12	5	4	5	5	8	17	38	139	413	664	724
110	691	614	360	109	32	11	5	4	5	5	7	17	38	131	393	639	691
111	639	589	342	103	32	11	4	4	5	5	7	16	37	123	372	612	639
112	595	563	322	97	31	11	4	4	5	4	7	16	36	115	354	584	595
113	556	536	305	91	30	11	5	4	5	5	7	15	36	108	335	560	556
114	520	515	287	86	29	10	4	4	5	5	7	14	35	102	317	536	520
115	484	489	271	82	28	10	5	5	6	5	7	14	33	95	297	510	484
116	454	466	255	79	28	10	4	4	5	5	7	13	33	90	280	486	454
117	427	439	238	75	27	9	5	4	5	5	7	13	32	85	261	459	427
118	402	416	223	71	26	9	3	5	5	5	6	13	31	81	245	435	402
119	381	392	209	68	25	9	3	4	6	5	7	13	30	78	230	410	381
120	362	370	196	65	24	8	4	4	5	4	6	12	29	74	216	387	362
121	342	346	183	62	24	8	4	4	5	4	7	12	28	70	202	362	342
122	323	323	171	59	23	8	4	5	5	6	6	12	27	67	188	340	323
123	302	300	159	56	22	8	4	4	6	6	6	11	26	63	175	315	302
124	282	278	149	53	21	8	4	3	5	5	6	11	25	60	164	291	282

125	263	255	138	50	20	8	5	4	6	5	6	11	24	57	153	268	263
126	245	235	130	48	19	7	4	5	5	5	6	11	23	54	142	246	245
127	229	217	121	46	19	7	4	4	6	5	6	11	22	51	134	227	229
128	211	197	114	44	18	7	4	4	6	6	6	11	21	48	125	206	211
129	195	179	106	41	17	7	2	5	6	6	6	10	20	46	116	189	195
130	179	164	99	39	17	7	4	5	6	5	6	10	20	44	109	172	179
131	165	151	92	38	16	7	4	4	5	6	6	10	19	42	102	156	165
132	153	138	87	37	15	7	4	5	6	6	6	10	18	39	95	144	153
133	140	128	82	36	15	7	5	5	6	6	6	10	18	38	90	131	140
134	130	118	77	34	14	7	5	5	6	6	6	10	17	37	85	122	130
135	120	109	73	33	14	7	5	5	7	6	6	10	17	35	79	111	120
136	112	101	68	32	13	6	4	6	6	6	7	10	16	33	74	103	112
137	104	94	65	31	13	6	5	6	6	6	6	9	15	32	70	96	104
138	98	88	61	29	12	6	5	6	7	6	6	9	15	31	65	89	98
139	91	81	57	28	12	6	5	6	7	6	6	9	14	30	61	82	91
140	86	75	53	26	12	6	5	5	7	5	6	9	14	28	57	77	86
141	79	71	50	25	11	6	5	6	7	7	6	9	13	26	54	71	79
142	73	65	47	24	10	5	5	6	7	6	7	8	13	25	50	67	73
143	68	60	44	23	10	5	6	6	7	6	7	8	12	24	47	62	68
144	63	56	42	21	10	5	6	7	7	6	7	8	12	22	45	58	63
145	59	52	39	20	9	5	7	7	7	7	7	8	11	21	42	53	59
146	55	48	37	19	9	5	6	7	8	7	8	8	11	20	39	50	55
147	50	44	34	18	9	5	6	7	7	8	7	8	10	18	36	45	50
148	46	41	32	17	8	5	7	7	8	8	7	8	10	17	34	42	46
149	42	38	30	16	7	6	7	7	8	7	8	7	9	16	32	39	42
150	39	35	28	15	8	5	8	7	8	7	8	7	9	15	29	36	39
151	36	33	27	14	7	6	6	8	8	8	8	8	8	13	28	33	36
152	34	31	25	13	7	6	7	8	8	8	8	7	8	13	26	32	34
153	31	29	23	12	7	6	7	8	8	8	8	8	7	11	24	29	31
154	30	27	22	11	6	6	7	8	9	8	8	8	7	10	22	27	30
155	28	26	20	10	6	5	8	8	7	8	8	8	7	9	20	26	28
156	25	25	19	9	5	6	8	7	8	8	8	8	6	9	18	24	25

157	24	23	17	8	5	7	8	8	9	8	8	8	6	8	17	22	24
158	22	21	16	9	5	7	7	8	9	8	8	8	6	7	16	20	22
159	21	19	15	8	6	6	8	8	9	8	8	8	6	8	15	19	21
160	19	18	14	8	6	7	8	8	9	9	9	8	6	7	13	17	19
161	18	17	12	8	5	7	8	9	9	9	9	9	6	7	12	16	18
162	16	15	12	8	6	7	8	9	9	8	9	9	7	7	12	15	16
163	15	14	11	8	5	7	8	9	9	9	9	8	7	6	10	13	15
164	13	13	10	7	6	7	8	9	9	9	10	9	6	7	9	12	13
165	13	12	10	8	6	7	9	9	9	9	10	9	6	7	9	12	13
166	12	12	9	8	6	7	8	9	9	9	9	9	7	7	8	10	12
167	10	10	9	8	7	7	9	9	9	9	10	9	7	6	7	9	10
168	10	9	8	8	6	8	8	9	9	9	10	9	7	7	7	8	10
169	9	10	8	8	7	8	9	9	10	10	10	9	6	7	7	8	9
170	9	8	8	8	7	8	9	9	9	10	9	9	7	7	7	8	9
171	8	8	8	8	7	8	9	9	9	9	9	9	7	6	6	7	8
172	7	8	8	8	7	8	9	9	9	9	8	9	7	7	7	6	7
173	7	8	8	8	7	8	8	8	9	9	9	9	7	7	7	7	7
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175	8	7	8	8	7	8	8	9	9	9	9	9	7	7	7	7	8
176	7	8	8	8	7	8	8	8	9	8	9	9	7	8	7	7	7
177	7	7	8	9	6	8	8	8	9	8	8	8	7	7	7	7	7
178	8	8	7	8	7	7	8	8	8	9	8	8	8	8	8	7	8
179	7	7	8	8	7	7	8	8	8	8	8	8	8	8	7	7	7
180	8	8	8	8	7	8	8	8	8	8	5	8	8	8	8	8	8

BUG

Lum. Classification System (LCS)

<u>LCS Zone</u>	<u>Lumens</u>	<u>%Lamp</u>	<u>%Lum</u>
FL (0-30)	1226.7	14.0	14.0
FM (30-60)	2870.7	32.8	32.8
FH (60-80)	1730.5	19.8	19.8
FVH(80-90)	573.9	6.5	6.5
BL (0-30)	732.5	8.4	8.4
BM (30-60)	585.3	6.7	6.7
BH (60-80)	113.3	1.3	1.3
BVH(80-90)	13.6	0.2	0.2
UL (90-100)	389.2	4.4	4.4
UH (100-180)	526.4	6.0	6.0
Total	8762.1	100.1	100.0
BUG Rating	B2-U4-G4		

2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2023-07-15	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	IK-SWPM-60WBSGDA1-BRW30/40/50 (60W,4000K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC230602	120.0	60	0.510	60.63	0.990	13.55
6E-B1	277.0	60	0.232	60.78	0.945	8.51
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

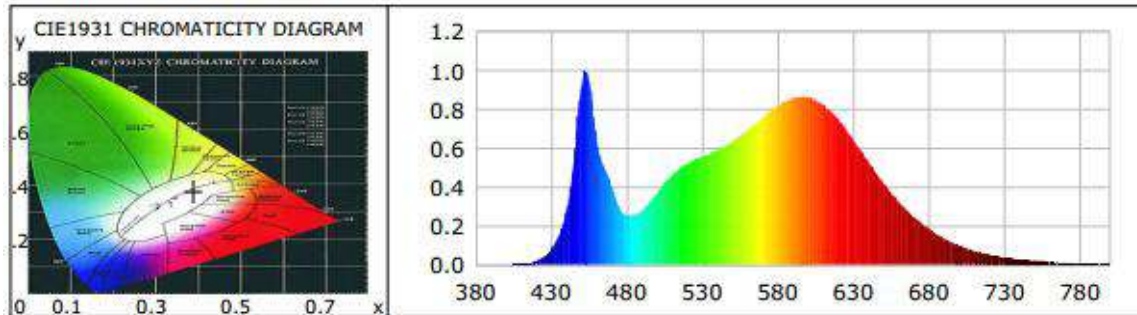
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	82	R9	6
Frequency (Hz)	60	R2	91	R10	79
CCT (K)	3841	R3	95	R11	80
Duv	-0.0023	R4	81	R12	63
Chromaticity (x, y)	x=0.3859 y=0.3751	R5	82	R13	85
Chromaticity (u', v')	u(u')=0.2294 v'=0.5016	R6	88	R14	98
Color Rendering Index (CRI)	83	R7	83	R15	76
R9	7	R8	62	--	--
Rf	83	--	--	--	--
Rg	95	--	--	--	--
Rcs,h1(%)	-12	--	--	--	--

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)	9140.0	9103.6	5000-10000(-10%)
Luminous Efficacy (lm/W)	150.75	149.78	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	149.78		

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	0.1025	535	0.5393	107.0753	690	0.2454	48.7236
385	0.0005	0.0985	540	0.5555	110.2955	695	0.2112	41.9341
390	0.0004	0.0850	545	0.5726	113.6948	700	0.1833	36.4003
395	0.0004	0.0810	550	0.5921	117.5591	705	0.1570	31.1654
400	0.0008	0.1603	555	0.6093	120.9865	710	0.1353	26.8723
405	0.0016	0.3156	560	0.6344	125.9677	715	0.1154	22.9206
410	0.0035	0.6949	565	0.6623	131.5013	720	0.0982	19.5074
415	0.0089	1.7690	570	0.6922	137.4329	725	0.0840	16.6761
420	0.0195	3.8621	575	0.7252	144.0027	730	0.0716	14.2214
425	0.0404	8.0232	580	0.7574	150.3837	735	0.0618	12.2630
430	0.0789	15.6571	585	0.7901	156.8795	740	0.0514	10.2063
435	0.1485	29.4824	590	0.8175	162.3188	745	0.0439	8.7233
440	0.2741	54.4158	595	0.8387	166.5368	750	0.0367	7.2905
445	0.5350	106.2266	600	0.8567	170.0972	755	0.0316	6.2696
450	0.9188	182.4387	605	0.8643	171.6061	760	0.0264	5.2468
455	0.9491	188.4443	610	0.8627	171.2934	765	0.0234	4.6539
460	0.6475	128.5671	615	0.8475	168.2831	770	0.0186	3.6885
465	0.5009	99.4492	620	0.8239	163.5939	775	0.0173	3.4317
470	0.4028	79.9806	625	0.7899	156.8363	780	0.0137	2.7169
475	0.2930	58.1788	630	0.7457	148.0699	785	0.0131	2.5990
480	0.2511	49.8558	635	0.6957	138.1293	790	0.0106	2.1113
485	0.2570	51.0277	640	0.6409	127.2640	795	0.0090	1.7773
490	0.2791	55.4127	645	0.5852	116.1992	800	0.0076	1.5103
495	0.3193	63.4072	650	0.5278	104.8035			
500	0.3709	73.6427	655	0.4717	93.6625			
505	0.4202	83.4335	660	0.4180	82.9945			
510	0.4628	91.8833	665	0.3701	73.4837			
515	0.4945	98.1904	670	0.3235	64.2241			
520	0.5182	102.8891	675	0.2821	56.0123			
525	0.5393	107.0753	680	0.2454	48.7236			
530	0.5555	110.2955	685	0.2112	41.9341			

TM30

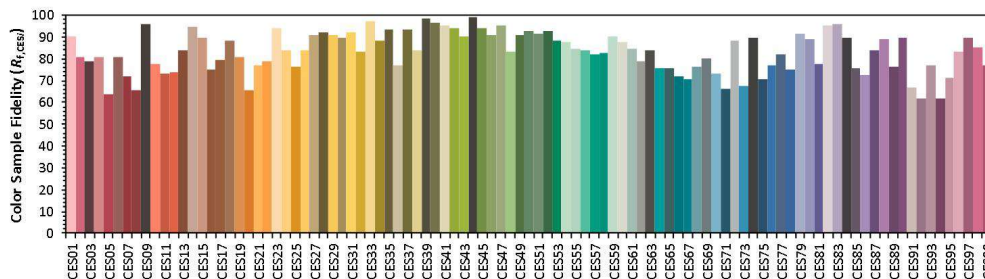
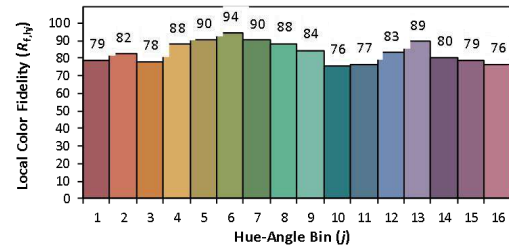
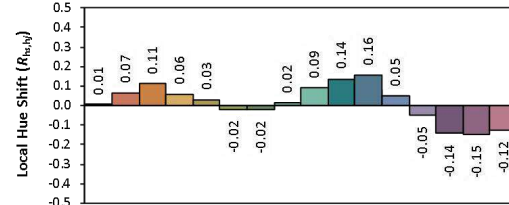
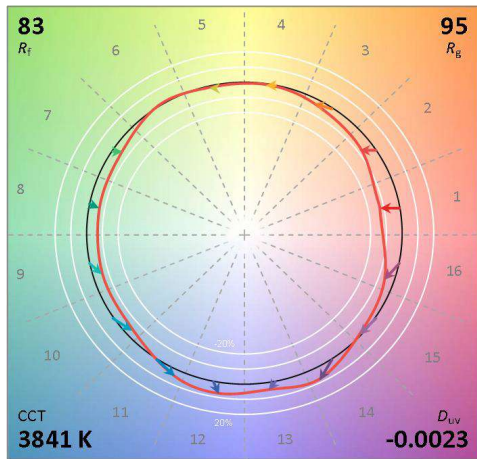
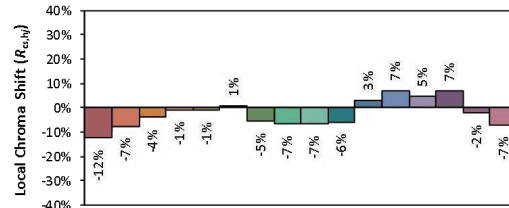
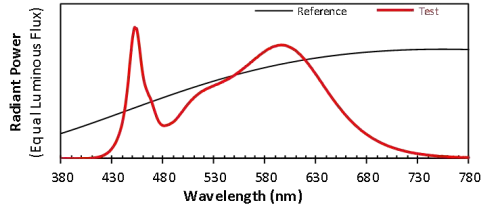
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-3080RA35005A1
L128-5080RA35000H1

Manufacturer: IKIO LED LIGHTING

Date: 2023/7/15

Model: IK-SWPM-60WBSGDA1-BRW30/40/50
(60W,4000K)



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

x 0.3859
 y 0.3750
 u' 0.2294
 v' 0.5016

CIE 13.3-1995
(CRI)

R_a 83
 R_9 7

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)

Test date	2023-07-15	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	IK-SWPM-60WBSGDA1-BRW30/40/50 (60W,5000K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC230602	120.0	60	0.530	62.93	0.990	13.35
6E-B1	277.0	60	0.242	63.36	0.945	8.60
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

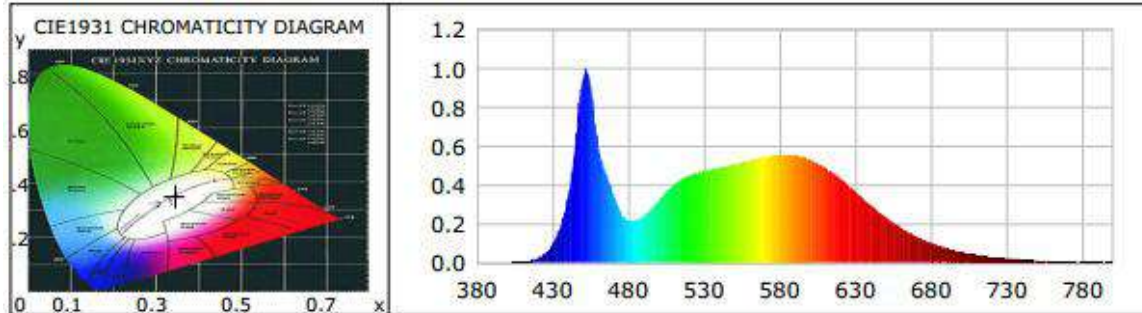
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	80	R9	1
Frequency (Hz)	60	R2	88	R10	72
CCT (K)	5128	R3	93	R11	81
Duv	0.0017	R4	82	R12	59
Chromaticity (x, y)	x=0.3418 y=0.3523	R5	81	R13	83
Chromaticity (u', v')	u(u')=0.2090 v'=0.4845	R6	83	R14	96
Color Rendering Index (CRI)	82	R7	86	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)	8990.2	9006.6	5000-10000(-10%)
Luminous Efficacy (lm/W)	142.86	142.15	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	141.89		

Spectral Power Distribution & Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0002	0.0511	535	0.4604	124.3195	690	0.1356	36.6152
385	0.0005	0.1217	540	0.4697	126.8273	695	0.1176	31.7628
390	0.0002	0.0413	545	0.4789	129.3041	700	0.1009	27.2495
395	0.0003	0.0742	550	0.4872	131.5481	705	0.0873	23.5610
400	0.0010	0.2598	555	0.4948	133.5938	710	0.0751	20.2687
405	0.0021	0.5587	560	0.5048	136.3012	715	0.0647	17.4653
410	0.0040	1.0877	565	0.5155	139.2050	720	0.0551	14.8838
415	0.0094	2.5474	570	0.5265	142.1549	725	0.0459	12.4000
420	0.0225	6.0711	575	0.5371	145.0314	730	0.0401	10.8375
425	0.0475	12.8223	580	0.5446	147.0474	735	0.0343	9.2716
430	0.0957	25.8383	585	0.5513	148.8466	740	0.0276	7.4615
435	0.1821	49.1757	590	0.5557	150.0553	745	0.0249	6.7120
440	0.3309	89.3339	595	0.5514	148.8853	750	0.0207	5.5759
445	0.6101	164.7424	600	0.5504	148.6108	755	0.0163	4.4086
450	0.9492	256.2962	605	0.5429	146.5800	760	0.0155	4.1721
455	0.9162	247.3932	610	0.5309	143.3510	765	0.0129	3.4915
460	0.6079	164.1366	615	0.5117	138.1685	770	0.0105	2.8397
465	0.4573	123.4706	620	0.4898	132.2485	775	0.0103	2.7844
470	0.3548	95.8103	625	0.4623	124.8148	780	0.0083	2.2385
475	0.2551	68.8910	630	0.4323	116.7387	785	0.0065	1.7467
480	0.2167	58.5181	635	0.3993	107.8245	790	0.0053	1.4353
485	0.2193	59.2102	640	0.3646	98.4418	795	0.0043	1.1740
490	0.2384	64.3727	645	0.3312	89.4364	800	0.0038	1.0227
495	0.2760	74.5188	650	0.2965	80.0484			
500	0.3216	86.8446	655	0.2648	71.4862			
505	0.3643	98.3785	660	0.2342	63.2425			
510	0.4011	108.2905	665	0.2047	55.2732			
515	0.4286	115.7383	670	0.1804	48.7031			
520	0.4483	121.0488	675	0.1559	42.0946			
525	0.4604	124.3195	680	0.1356	36.6152			
530	0.4697	126.8273	685	0.1176	31.7628			

TM30

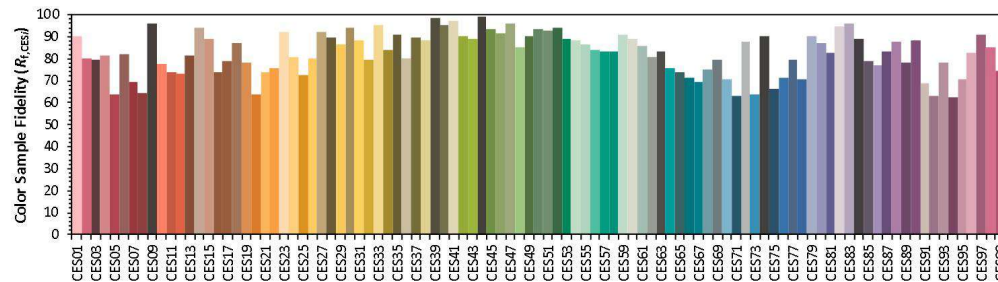
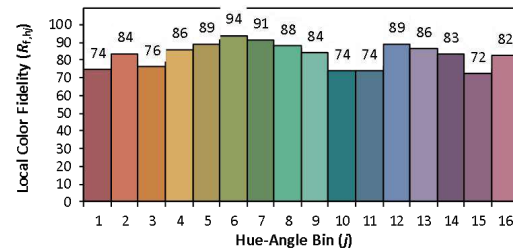
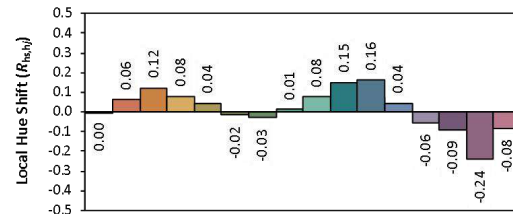
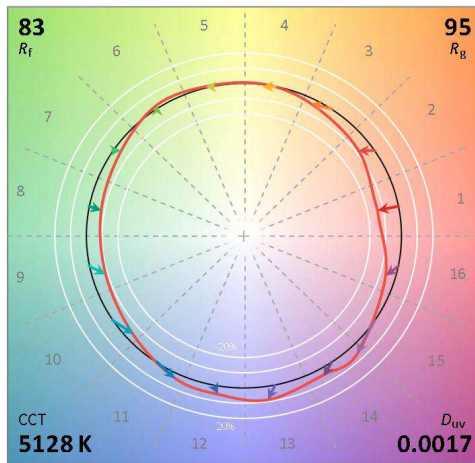
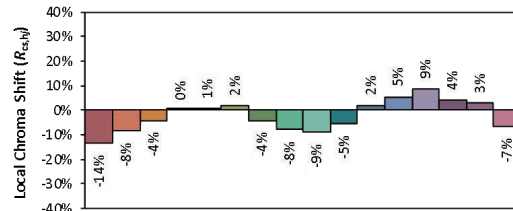
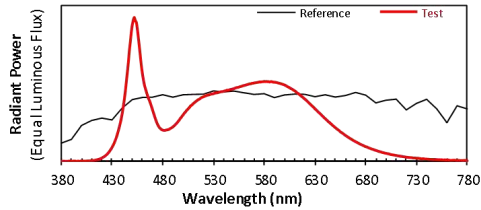
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-5080RA35000H1

Manufacturer: IKIO LED LIGHTING

Date: 2023/7/15

Model: IK-SWPM-60WBSGDA1-BRW30/40/50
(60W,5000K)



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

x 0.3418
 y 0.3523
 u' 0.2090
 v' 0.4845

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 *****