

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 (40W)

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 (40W,3000K)
IK-SWPM-60WBSGDA1-BRW30/40/50 (40W,4000K)
IK-SWPM-60WBSGDA1-BRW30/40/50 (40W,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 (40W)		
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	40W(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-A1		
Luminaire Aperture (for downlights)	--	in. mm mm s	
Luminaire Length	--		
Luminaires Width	--		
Number of Units (modular products)	N/A		
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-40WBSGDA1-abc30:1.01252

AST-SWP11M-40WBSGDA1-abc40:1.01252

AST-SWP11M-40WBSGDA1-abc50:1.01252

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 (40W,3000K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC230602	120.0	60	0.333	39.51	0.990	9.92
6E-A1	277.0	60	0.152	38.51	0.917	14.06
DLC Pass Criteria					$\geq 0.9(-3\%)$	$\leq 20(+5)$

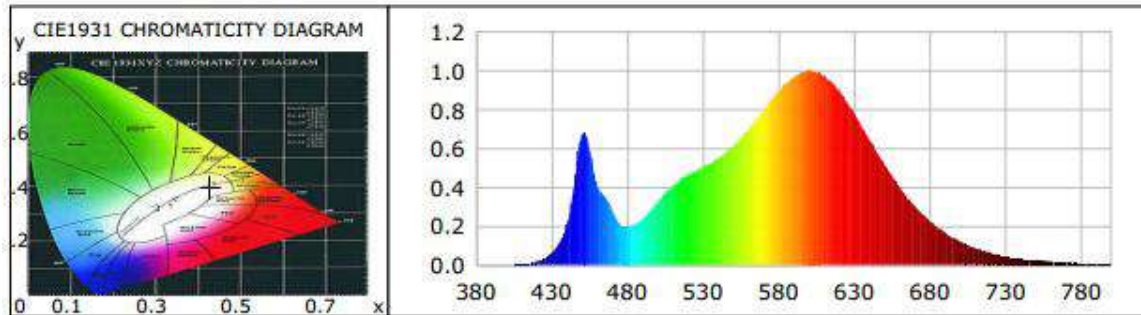
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	79	R9	-3
Frequency (Hz)	60	R2	90	R10	78
CCT (K)	3120	R3	95	R11	77
Duv	-0.0013	R4	78	R12	68
Chromaticity (x, y)	x=0.4269 y=0.3973	R5	79	R13	81
Chromaticity (u', v')	u(u')=0.2470 v'=0.5172	R6	88	R14	98
Color Rendering Index (CRI)	81	R7	80	R15	71
R9	-3	R8	55	--	--
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)	5392.3	5434.3	5000-10000(-10%)
0-90° Total Luminous (lm)	4796.7	4832.1	
Luminous Efficacy (lm/W)	136.48	141.11	Premium: $\geq 120(-3\%)$
0-90° Luminous Efficacy (lm/W)	121.40	125.48	
Most worst Luminous/Highest	136.48		$\leq 10(+3)$
Zonal lumens in the 80-90°/0-90°zone (%)	7.81		
Beam Angle (°)	95.5	--	--
Center Beam Candle Power (cd)	1799	--	--

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	0.0241	535	0.4845	53.9822	690	0.3020	33.6540
385	0.0006	0.0668	540	0.5045	56.2111	695	0.2621	29.2012
390	0.0004	0.0417	545	0.5260	58.6148	700	0.2258	25.1643
395	0.0005	0.0545	550	0.5517	61.4725	705	0.1940	21.6116
400	0.0011	0.1213	555	0.5779	64.3940	710	0.1675	18.6656
405	0.0015	0.1643	560	0.6133	68.3383	715	0.1414	15.7533
410	0.0036	0.4065	565	0.6530	72.7657	720	0.1213	13.5173
415	0.0085	0.9424	570	0.6980	77.7728	725	0.1029	11.4632
420	0.0180	2.0003	575	0.7466	83.1888	730	0.0877	9.7698
425	0.0346	3.8521	580	0.7961	88.7057	735	0.0738	8.2194
430	0.0630	7.0146	585	0.8487	94.5634	740	0.0644	7.1738
435	0.1124	12.5299	590	0.8948	99.7063	745	0.0542	6.0400
440	0.2075	23.1160	595	0.9341	104.0863	750	0.0448	4.9918
445	0.4186	46.6397	600	0.9685	107.9230	755	0.0372	4.1447
450	0.6709	74.7578	605	0.9902	110.3329	760	0.0329	3.6625
455	0.5950	66.2999	610	1.0000	111.4278	765	0.0287	3.2024
460	0.4103	45.7133	615	0.9928	110.6269	770	0.0232	2.5854
465	0.3531	39.3429	620	0.9749	108.6309	775	0.0204	2.2723
470	0.2793	31.1214	625	0.9430	105.0744	780	0.0174	1.9360
475	0.2110	23.5102	630	0.8960	99.8361	785	0.0147	1.6387
480	0.1988	22.1526	635	0.8407	93.6733	790	0.0132	1.4660
485	0.2111	23.5234	640	0.7795	86.8539	795	0.0100	1.1165
490	0.2347	26.1562	645	0.7136	79.5102	800	0.0074	0.8285
495	0.2763	30.7883	650	0.6468	72.0701			
500	0.3244	36.1506	655	0.5789	64.5086			
505	0.3681	41.0118	660	0.5158	57.4783			
510	0.4063	45.2726	665	0.4555	50.7562			
515	0.4370	48.6982	670	0.3997	44.5330			
520	0.4623	51.5135	675	0.3475	38.7254			
525	0.4845	53.9822	680	0.3020	33.6540			
530	0.5045	56.2111	685	0.2621	29.2012			

TM30

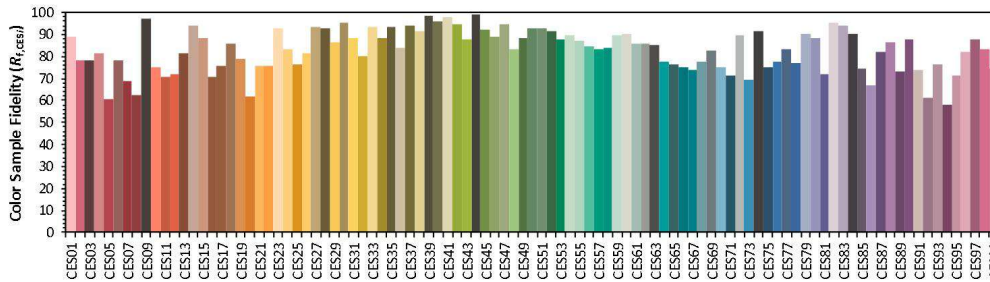
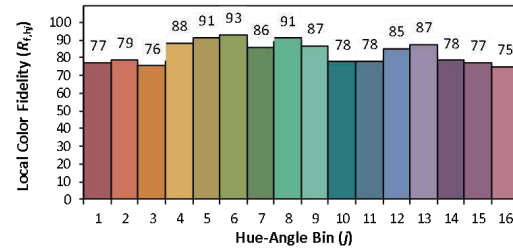
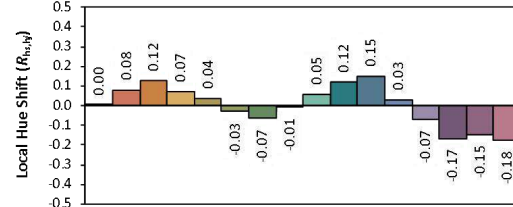
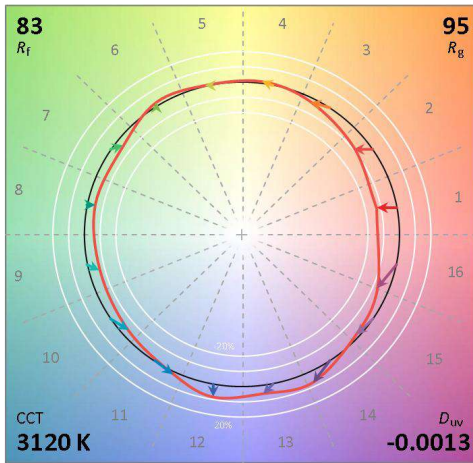
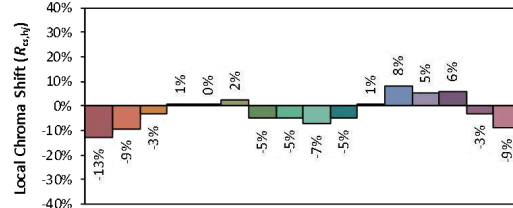
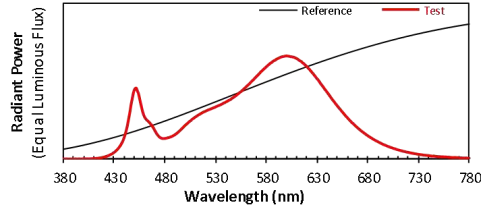
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-3080RA35005A1

Manufacturer: IKIO LED LIGHTING

Date: 2023/7/15

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



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

x 0.4269
 y 0.3973
 u' 0.2470
 v' 0.5172

CIE 13.3-1995
(CRI)
 R_a 81
 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

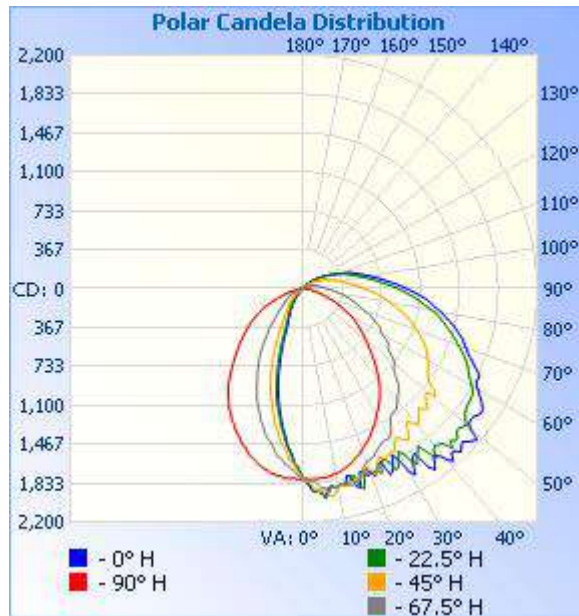
Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0-30	1,169.3	21.7%	21.7%
0-40	1,839.7	34.1%	34.1%
0-60	3,272.4	60.7%	60.7%
60-90	1,524.3	28.3%	28.3%
70-100	1,136.3	21.1%	21.1%
90-120	508.5	9.4%	9.4%
0-90	4,796.7	89%	89%
90-180	595.4	11%	11%
0-180	5,392.1	100%	100%

Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	164.6	3.1%	90-100	249.9	4.6%
10-20	428.3	7.9%	100-110	161.9	3%
20-30	576.5	10.7%	110-120	96.8	1.8%
30-40	670.4	12.4%	120-130	49.5	0.9%
40-50	721.5	13.4%	130-140	21.6	0.4%
50-60	711.1	13.2%	140-150	9.6	0.2%
60-70	637.9	11.8%	150-160	4.1	0.1%
70-80	512.0	9.5%	160-170	1.7	0%
80-90	374.4	6.9%	170-180	0.5	0%

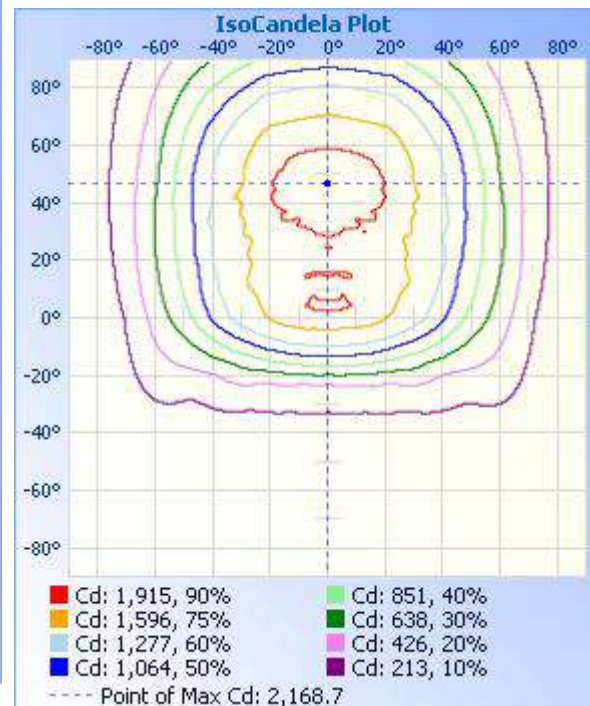
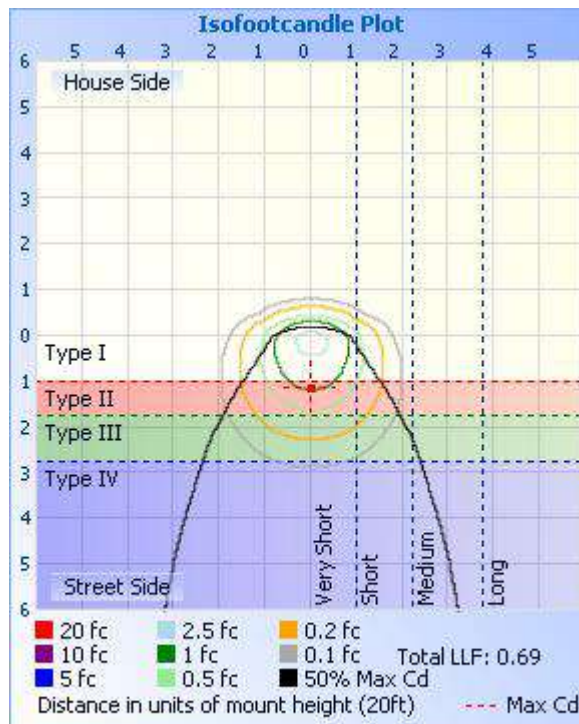
Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width	
17.0ft	6.22 fc	40.8 ft	37.1 ft
34.0ft	1.56 fc	81.6 ft	74.3 ft
51.0ft	0.69 fc	122.4 ft	111.4 ft
68.0ft	0.39 fc	163.2 ft	148.6 ft
85.0ft	0.25 fc	204.0 ft	185.7 ft
102.0ft	0.17 fc	244.9 ft	222.9 ft

■ Vert. Spread: 100.4°
■ Horiz. Spread: 95.1°



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	1799	1799	1799	1799	1799	1799	1799	1799	1799	1799	1799	1799	1799	1799	1799	1799	1799
1	1827	1823	1817	1806	1791	1775	1756	1744	1738	1738	1757	1777	1794	1811	1823	1828	1827
2	1882	1863	1830	1811	1798	1753	1707	1687	1677	1680	1716	1754	1797	1821	1830	1864	1882
3	1923	1914	1888	1813	1795	1726	1673	1644	1648	1652	1663	1719	1790	1811	1891	1930	1923
4	1906	1915	1914	1843	1798	1702	1649	1574	1568	1590	1637	1703	1795	1831	1916	1930	1906
5	1937	1925	1911	1880	1793	1678	1593	1522	1530	1521	1606	1674	1794	1866	1920	1933	1937
6	1968	1988	1913	1890	1792	1655	1540	1503	1479	1495	1542	1660	1796	1902	1915	1988	1968
7	1896	1947	1954	1901	1789	1645	1511	1443	1402	1433	1508	1627	1779	1911	1939	1953	1896
8	1890	1872	1979	1897	1786	1621	1485	1371	1356	1369	1486	1610	1777	1904	1995	1878	1890
9	1903	1897	1951	1897	1778	1589	1444	1325	1291	1329	1436	1593	1771	1892	1958	1906	1903
10	1891	1894	1896	1885	1767	1543	1390	1259	1232	1267	1378	1561	1772	1881	1888	1907	1891
11	1871	1883	1890	1876	1764	1515	1342	1208	1172	1211	1337	1516	1748	1882	1872	1893	1871
12	1891	1873	1905	1888	1749	1491	1298	1158	1115	1157	1300	1482	1741	1869	1889	1883	1891
13	1810	1896	1893	1896	1737	1469	1243	1111	1054	1113	1241	1462	1730	1883	1887	1908	1810
14	1814	1829	1881	1911	1718	1447	1191	1047	986	1055	1190	1437	1717	1900	1877	1851	1814
15	1929	1825	1862	1894	1712	1412	1149	979	926	986	1143	1412	1698	1898	1851	1826	1929
16	1949	1930	1872	1871	1691	1386	1106	927	859	932	1096	1371	1679	1863	1855	1939	1949
17	1805	1970	1867	1841	1671	1350	1059	866	780	869	1053	1333	1665	1841	1873	1993	1805
18	1822	1852	1822	1800	1654	1310	1007	799	713	805	1015	1308	1651	1793	1813	1856	1822
19	1864	1796	1777	1759	1638	1274	948	734	652	734	965	1265	1621	1747	1760	1806	1864
20	1840	1856	1810	1735	1611	1233	904	671	586	674	909	1228	1595	1733	1799	1869	1840
21	1885	1849	1867	1736	1594	1194	858	606	517	611	859	1189	1587	1722	1855	1862	1885
22	1851	1852	1863	1718	1569	1164	799	541	456	548	806	1160	1564	1716	1869	1879	1851
23	1796	1888	1778	1703	1552	1133	743	480	410	487	752	1125	1532	1709	1774	1900	1796
24	1789	1799	1734	1679	1530	1096	692	430	371	436	703	1084	1516	1681	1708	1816	1789
25	1933	1770	1765	1658	1504	1060	637	393	343	394	650	1040	1496	1651	1751	1788	1933
26	1914	1813	1780	1643	1480	1015	590	360	322	364	603	1004	1470	1636	1769	1819	1914
27	1859	1915	1754	1628	1453	976	545	335	299	338	555	970	1444	1626	1743	1933	1859
28	1775	1902	1752	1620	1428	936	497	315	281	318	509	932	1419	1605	1735	1911	1775

Laboratory: UTEST TECHNICAL LABORATORY A2LA Certificate# 4810.01

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Report Format Number BL-FM-SA-012

29	1842	1836	1756	1626	1406	897	450	296	264	298	459	898	1403	1613	1750	1824	1842
30	1994	1779	1716	1616	1374	863	413	277	249	278	422	859	1371	1606	1698	1760	1994
31	2043	1807	1673	1600	1351	820	383	261	235	262	394	828	1348	1597	1647	1806	2043
32	1948	1916	1652	1559	1328	784	358	247	222	249	367	792	1326	1564	1629	1940	1948
33	1892	1968	1686	1502	1305	753	332	234	204	235	338	759	1295	1501	1674	1969	1892
34	1868	1925	1724	1464	1276	722	309	220	193	221	316	728	1265	1464	1710	1932	1868
35	2052	1875	1730	1443	1253	682	292	204	178	206	298	682	1236	1450	1702	1857	2052
36	2110	1836	1676	1438	1221	642	274	190	165	191	281	645	1209	1439	1648	1826	2110
37	2048	1919	1611	1434	1195	606	259	179	155	179	266	604	1179	1423	1585	1930	2048
38	1990	2029	1586	1421	1164	569	246	166	142	165	253	572	1147	1406	1569	2027	1990
39	2026	1947	1632	1397	1134	538	235	154	132	153	240	540	1117	1388	1626	1942	2026
40	2105	1926	1674	1374	1099	504	223	143	123	143	228	511	1083	1372	1651	1928	2105
41	2152	1949	1657	1351	1064	471	210	133	113	131	216	479	1048	1346	1627	1959	2152
42	2084	1961	1618	1327	1031	442	196	122	103	122	202	454	1012	1335	1592	1957	2084
43	2090	2057	1593	1315	998	411	185	113	94	112	191	417	979	1318	1584	2041	2090
44	2137	1991	1563	1292	962	383	174	104	86	105	179	389	948	1299	1543	1972	2137
45	2105	2025	1607	1259	931	353	161	95	78	95	167	361	913	1263	1588	2008	2105
46	2079	2020	1629	1216	897	331	151	88	71	88	157	343	884	1216	1607	2021	2079
47	2113	1968	1580	1174	863	310	142	80	65	82	147	321	856	1178	1545	1969	2113
48	2143	1967	1547	1142	834	290	132	74	60	75	137	303	829	1146	1521	1970	2143
49	2169	1982	1519	1124	804	272	124	69	55	69	128	284	802	1136	1515	1981	2169
50	2046	2000	1524	1118	774	255	115	64	52	64	119	268	772	1133	1516	1994	2046
51	2009	1964	1604	1107	747	242	107	59	50	59	112	255	745	1113	1604	1971	2009
52	2000	1932	1562	1072	722	231	99	55	50	55	104	243	719	1075	1511	1935	2000
53	2006	1912	1496	1031	696	221	93	51	49	51	97	233	693	1046	1474	1918	2006
54	2027	1898	1453	996	668	211	87	48	49	49	90	224	668	1014	1449	1908	2027
55	2042	1891	1428	968	644	201	80	45	47	45	84	213	644	984	1427	1900	2042
56	2036	1889	1414	957	619	192	75	43	44	43	78	205	616	991	1413	1892	2036
57	2004	1882	1398	957	594	183	69	40	40	40	72	195	593	974	1396	1888	2004
58	1971	1875	1382	930	568	175	64	38	36	38	67	187	568	928	1379	1878	1971
59	1928	1860	1373	890	539	165	59	36	33	36	62	177	545	892	1365	1858	1928
60	1895	1831	1357	852	514	156	54	33	30	34	57	167	520	865	1346	1831	1895

61	1863	1799	1335	834	487	147	50	30	27	31	53	158	495	857	1332	1801	1863
62	1849	1768	1317	823	453	138	46	28	24	28	48	150	464	842	1312	1768	1849
63	1854	1746	1300	807	427	130	42	24	20	24	44	141	436	822	1296	1742	1854
64	1839	1726	1282	786	400	123	38	21	16	21	40	133	411	785	1276	1720	1839
65	1797	1704	1263	750	373	115	35	18	12	18	37	125	383	761	1259	1699	1797
66	1756	1678	1238	726	345	108	32	14	10	14	34	117	357	743	1232	1673	1756
67	1722	1648	1214	703	317	101	29	9	2	10	30	110	330	723	1211	1644	1722
68	1677	1616	1187	678	287	94	26	5	2	6	27	102	302	695	1185	1609	1677
69	1654	1583	1161	651	262	86	24	2	2	2	24	94	277	655	1156	1574	1654
70	1629	1551	1134	614	239	79	20	2	2	2	21	87	250	625	1130	1546	1629
71	1602	1522	1110	587	216	73	18	2	2	2	18	81	229	601	1104	1518	1602
72	1581	1492	1087	564	196	67	14	2	2	2	15	74	209	579	1080	1488	1581
73	1556	1461	1061	542	179	61	11	2	2	2	12	68	190	557	1054	1461	1556
74	1518	1432	1032	522	161	57	10	2	2	2	11	63	172	535	1026	1434	1518
75	1490	1399	1003	500	144	51	10	2	2	2	10	57	154	516	996	1405	1490
76	1459	1369	977	480	130	48	9	1	2	2	9	53	140	490	970	1370	1459
77	1427	1337	947	458	117	44	9	2	2	2	10	48	124	470	943	1339	1427
78	1387	1313	917	436	105	40	8	2	2	2	9	45	112	448	916	1311	1387
79	1355	1284	887	418	94	36	8	2	2	3	8	40	101	425	887	1281	1355
80	1326	1246	859	394	82	33	7	1	2	3	8	36	90	401	857	1242	1326
81	1289	1202	828	374	74	30	8	2	2	2	8	34	79	381	830	1203	1289
82	1251	1163	800	352	65	29	7	2	2	2	7	32	70	358	802	1162	1251
83	1222	1129	775	334	58	27	7	2	2	2	7	30	62	340	773	1127	1222
84	1191	1097	745	316	51	25	7	2	3	3	7	28	56	319	744	1094	1191
85	1163	1064	720	298	45	23	6	2	3	2	7	26	50	300	716	1060	1163
86	1124	1032	690	282	41	22	4	2	2	2	7	25	44	284	688	1029	1124
87	1086	995	662	265	37	21	6	2	3	2	6	24	39	266	657	995	1086
88	1048	961	632	250	33	21	6	2	3	3	7	23	36	251	628	963	1048
89	1011	926	603	235	31	19	6	2	3	2	6	22	33	235	602	926	1011
90	977	891	580	222	29	18	6	2	3	3	6	21	30	222	577	893	977
91	940	859	552	209	28	18	5	2	3	3	6	21	29	209	552	860	940
92	899	821	531	198	28	18	5	2	3	3	4	20	28	196	530	824	899

93	866	787	509	189	27	17	5	2	3	3	6	19	28	186	508	791	866
94	830	755	485	180	26	16	4	3	3	3	5	19	27	177	484	758	830
95	797	726	465	172	26	16	4	3	2	3	6	18	26	169	465	729	797
96	766	700	448	164	25	15	5	3	3	3	6	17	26	162	446	704	766
97	737	669	429	156	26	14	5	2	2	3	4	16	26	154	428	675	737
98	707	644	411	149	25	14	5	3	3	3	5	16	26	147	411	648	707
99	682	617	393	141	25	13	5	2	3	3	5	15	26	139	392	622	682
100	653	594	377	135	26	13	4	2	3	3	4	15	26	133	376	596	653
101	628	570	362	128	25	12	4	3	3	2	5	14	27	127	360	572	628
102	606	547	348	122	25	11	5	3	3	3	5	13	27	121	345	549	606
103	582	527	335	116	25	11	4	3	3	3	4	13	27	115	332	526	582
104	561	505	321	110	25	11	4	3	4	3	4	12	26	109	318	508	561
105	539	488	308	104	25	11	5	3	3	4	4	11	26	103	306	489	539
106	518	471	294	98	25	10	4	3	3	3	4	11	26	98	292	472	518
107	500	454	282	93	24	9	3	3	3	4	4	11	25	93	280	454	500
108	483	439	269	88	24	9	3	2	3	3	5	10	25	88	267	439	483
109	466	422	257	83	23	8	4	3	3	3	4	10	25	83	255	424	466
110	447	406	245	78	23	8	4	3	3	3	4	10	24	79	242	407	447
111	415	390	233	73	22	8	3	3	4	3	4	10	23	74	231	391	415
112	387	374	221	69	22	8	3	3	3	3	4	10	24	70	220	376	387
113	362	359	210	65	21	8	3	3	3	3	4	9	22	65	208	360	362
114	340	344	199	61	21	7	3	3	3	4	4	9	22	62	197	346	340
115	320	328	187	58	20	7	3	2	3	3	4	8	22	58	187	330	320
116	299	313	176	55	20	7	3	3	4	4	4	8	21	55	175	315	299
117	282	297	166	52	19	7	3	3	3	3	4	8	20	52	165	299	282
118	268	283	156	49	19	7	3	3	4	3	4	8	20	50	155	284	268
119	255	267	146	47	18	6	3	3	3	3	4	7	19	47	146	268	255
120	243	253	137	45	18	6	3	3	3	3	4	7	18	45	137	255	243
121	230	239	129	43	17	6	2	3	3	4	4	7	18	43	128	240	230
122	219	224	120	41	16	6	3	3	4	3	4	7	17	41	120	226	219
123	206	209	112	39	16	6	3	3	4	4	3	7	16	39	112	209	206
124	194	194	105	37	16	5	3	3	4	4	4	7	16	37	105	194	194

125	181	179	98	35	15	6	3	3	3	4	4	7	16	35	98	180	181
126	170	165	92	34	14	5	3	3	4	4	4	7	15	34	91	165	170
127	158	153	85	32	14	6	4	3	4	3	4	6	14	32	86	153	158
128	148	139	80	30	13	5	3	3	3	4	4	6	14	31	80	140	148
129	137	128	74	29	12	5	3	3	3	4	3	6	14	29	74	127	137
130	126	116	70	28	12	6	3	3	4	4	4	5	13	28	69	116	126
131	116	106	65	27	12	6	3	3	4	4	4	7	12	26	65	106	116
132	107	98	61	25	12	5	3	4	3	4	4	7	12	26	61	97	107
133	98	90	57	24	11	5	3	3	4	4	3	6	11	24	57	89	98
134	90	83	54	23	11	5	3	4	4	4	4	7	12	23	54	81	90
135	83	75	50	22	10	5	3	4	4	3	3	7	11	23	51	75	83
136	77	70	47	22	10	5	3	4	5	4	4	6	10	22	47	69	77
137	71	65	45	20	10	5	3	4	4	4	4	6	10	20	45	64	71
138	67	60	42	19	10	5	4	3	4	4	4	6	10	20	41	60	67
139	62	56	39	19	9	5	4	4	4	4	5	5	10	19	40	56	62
140	58	52	37	18	8	5	3	4	3	4	4	6	9	18	37	51	58
141	54	48	35	17	8	5	3	4	5	4	4	5	9	17	35	48	54
142	50	45	32	16	9	4	3	4	5	5	5	6	8	16	32	44	50
143	46	42	31	15	8	4	4	4	4	4	4	5	8	15	30	41	46
144	43	39	29	15	7	3	4	4	5	5	5	5	7	15	29	38	43
145	40	36	27	14	7	4	4	5	5	4	5	5	8	14	27	36	40
146	38	33	25	13	7	3	4	3	4	5	5	5	7	13	25	33	38
147	35	31	24	13	6	4	4	4	5	4	4	5	6	12	24	31	35
148	32	29	22	12	6	3	4	5	5	5	5	5	7	11	22	28	32
149	29	26	21	12	6	3	4	4	5	4	5	5	6	10	20	26	29
150	27	24	19	11	5	4	4	5	5	5	4	5	6	9	19	24	27
151	25	22	18	10	6	4	5	5	4	5	5	5	5	9	18	22	25
152	23	21	17	10	4	4	5	5	5	5	5	5	5	9	17	21	23
153	21	20	16	8	4	4	5	5	5	5	4	5	5	7	16	19	21
154	20	19	14	8	5	4	5	5	5	5	5	5	5	7	14	18	20
155	18	17	14	8	5	4	5	5	5	5	5	5	5	6	14	17	18
156	17	16	12	7	4	5	4	6	5	5	5	5	3	5	13	16	17

157	16	15	12	7	4	5	5	5	5	5	5	5	4	6	11	15	16
158	16	14	11	6	3	4	4	5	5	5	5	5	4	6	11	13	16
159	14	13	10	6	4	4	5	5	5	5	5	5	4	6	10	12	14
160	13	12	9	5	5	4	5	5	6	5	6	5	5	5	9	12	13
161	12	11	8	6	4	5	5	5	6	6	5	5	4	5	8	11	12
162	11	11	8	5	5	5	5	5	6	6	6	4	4	5	8	10	11
163	10	10	7	6	4	5	5	5	4	5	6	6	4	5	7	9	10
164	9	9	7	5	5	4	5	5	5	5	6	5	5	4	6	9	9
165	8	8	6	5	4	4	6	5	6	5	6	5	4	5	6	8	8
166	8	8	6	5	5	5	5	6	6	6	6	6	5	4	5	7	8
167	7	7	6	5	5	5	5	6	5	4	6	6	5	4	4	7	7
168	7	6	5	6	5	6	5	5	5	5	6	6	5	5	5	6	7
169	6	7	6	6	5	5	5	6	6	6	6	6	4	4	4	6	6
170	6	6	5	5	5	5	5	6	5	6	6	6	5	5	4	5	6
171	5	5	5	5	4	5	6	6	6	5	6	6	5	3	4	4	5
172	5	5	5	5	5	6	5	5	6	6	5	6	5	5	4	5	5
173	5	4	5	5	5	5	5	5	5	5	6	6	4	4	4	4	5
174	5	5	5	6	5	5	5	5	5	5	6	6	5	5	4	4	5
175	4	5	5	5	5	6	5	5	5	5	5	6	5	5	4	3	4
176	4	4	5	4	5	5	5	5	5	5	5	5	5	5	4	5	4
177	4	4	5	5	6	5	5	5	5	5	5	6	5	5	5	4	4
178	4	4	5	5	5	5	5	5	5	5	5	6	5	5	5	4	4
179	5	4	4	5	5	5	5	5	5	5	5	5	5	5	4	5	5
180	4	5	5	5	6	5	5	5	4	3	5	4	5	4	4	5	4

BUG

Lum. Classification System (LCS)

<u>LCS Zone</u>	<u>Lumens</u>	<u>%Lamp</u>	<u>%Lum</u>
FL (0-30)	753.0	14.0	14.0
FM (30-60)	1769.9	32.8	32.8
FH (60-80)	1084.5	20.1	20.1
FVH(80-90)	366.0	6.8	6.8
BL (0-30)	416.5	7.7	7.7
BM (30-60)	333.5	6.2	6.2
BH (60-80)	65.2	1.2	1.2
BVH(80-90)	8.3	0.2	0.2
UL (90-100)	249.8	4.6	4.6
UH (100-180)	345.4	6.4	6.4
Total	5392.1	100.0	100.0
BUG Rating	B1-U3-G3		

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 (40W,4000K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC230602	120.0	60	0.326	38.77	0.990	9.87
6E-A1	277.0	60	0.147	37.41	0.918	14.06
DLC Pass Criteria					$\geq 0.9(-3\%)$	$\leq 20(+5)$

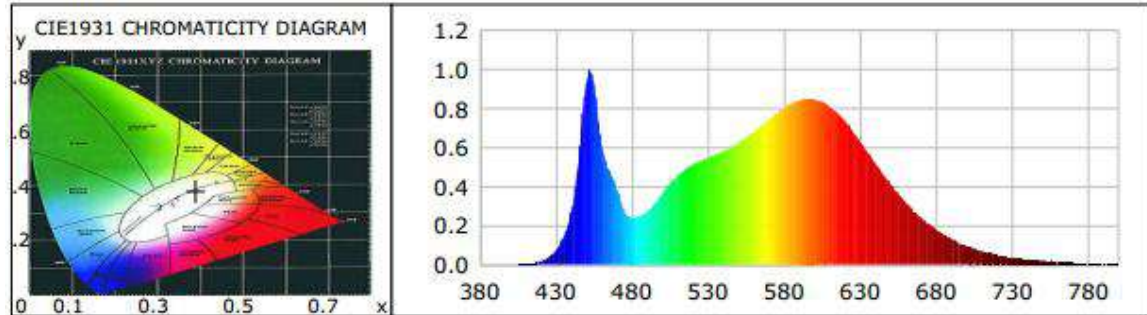
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	82	R9	6
Frequency (Hz)	60	R2	91	R10	79
CCT (K)	3836	R3	96	R11	80
Duv	-0.0022	R4	81	R12	63
Chromaticity (x, y)	x=0.3862 y=0.3755	R5	82	R13	84
Chromaticity (u', v')	u(u')=0.2294 v'=0.5019	R6	88	R14	98
Color Rendering Index (CRI)	83	R7	83	R15	76
R9	6	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)	5748.8	5685.6	5000-10000(-10%)
Luminous Efficacy (lm/W)	148.28	151.98	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	146.65		

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	0.0301	535	0.5315	65.6457	690	0.2403	29.6851
385	0.0003	0.0315	540	0.5463	67.4763	695	0.2079	25.6746
390	0.0005	0.0644	545	0.5626	69.4870	700	0.1787	22.0745
395	0.0006	0.0773	550	0.5817	71.8421	705	0.1533	18.9360
400	0.0010	0.1254	555	0.6004	74.1516	710	0.1320	16.3021
405	0.0015	0.1863	560	0.6225	76.8863	715	0.1120	13.8388
410	0.0028	0.3402	565	0.6517	80.4889	720	0.0959	11.8410
415	0.0076	0.9362	570	0.6803	84.0289	725	0.0824	10.1810
420	0.0174	2.1549	575	0.7123	87.9755	730	0.0691	8.5393
425	0.0364	4.4922	580	0.7436	91.8387	735	0.0585	7.2239
430	0.0726	8.9688	585	0.7748	95.6969	740	0.0501	6.1872
435	0.1414	17.4652	590	0.8036	99.2564	745	0.0427	5.2785
440	0.2674	33.0302	595	0.8236	101.7198	750	0.0363	4.4834
445	0.5391	66.5876	600	0.8423	104.0330	755	0.0300	3.7090
450	0.9286	114.6893	605	0.8500	104.9848	760	0.0259	3.2004
455	0.9289	114.7328	610	0.8472	104.6355	765	0.0234	2.8895
460	0.6164	76.1368	615	0.8326	102.8391	770	0.0184	2.2682
465	0.4822	59.5559	620	0.8088	99.8999	775	0.0171	2.1112
470	0.3850	47.5512	625	0.7766	95.9226	780	0.0122	1.5090
475	0.2777	34.3029	630	0.7348	90.7481	785	0.0114	1.4036
480	0.2416	29.8336	635	0.6849	84.5868	790	0.0102	1.2562
485	0.2485	30.6860	640	0.6307	77.9006	795	0.0084	1.0347
490	0.2711	33.4850	645	0.5731	70.7819	800	0.0065	0.8079
495	0.3128	38.6281	650	0.5198	64.1978			
500	0.3661	45.2137	655	0.4636	57.2601			
505	0.4147	51.2249	660	0.4120	50.8874			
510	0.4564	56.3653	665	0.3623	44.7451			
515	0.4883	60.3152	670	0.3178	39.2486			
520	0.5125	63.2951	675	0.2766	34.1580			
525	0.5315	65.6457	680	0.2403	29.6851			
530	0.5463	67.4763	685	0.2079	25.6746			

TM30

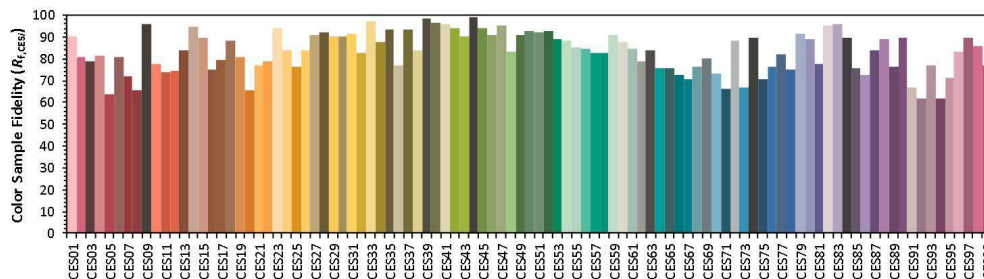
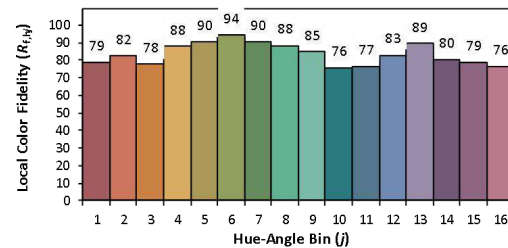
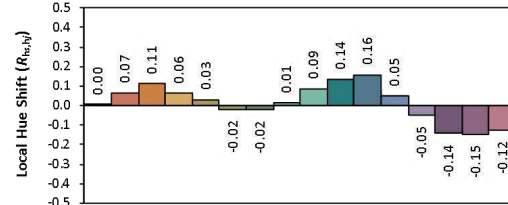
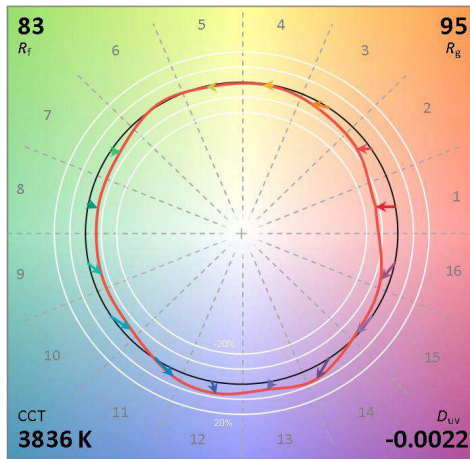
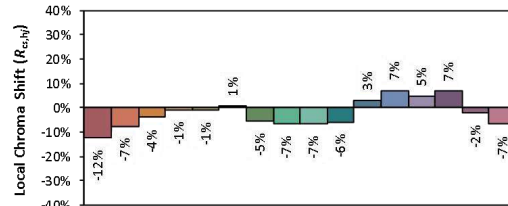
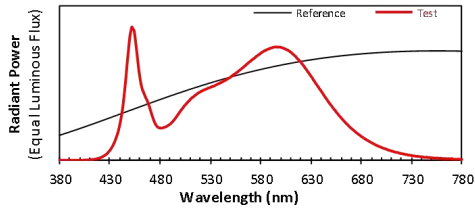
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-3080RA35005A1
L128-5080RA35000H1

Manufacturer: IKIO LED LIGHTING

Date: 2023/7/15

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



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

x 0.3862
 y 0.3755
 u' 0.2294
 v' 0.5019

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)

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 (40W,5000K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC230602	120.0	60	0.331	39.31	0.990	9.98
6E-A1	277.0	60	0.151	38.30	0.918	14.14
DLC Pass Criteria					$\geq 0.9(-3\%)$	$\leq 20(+5)$

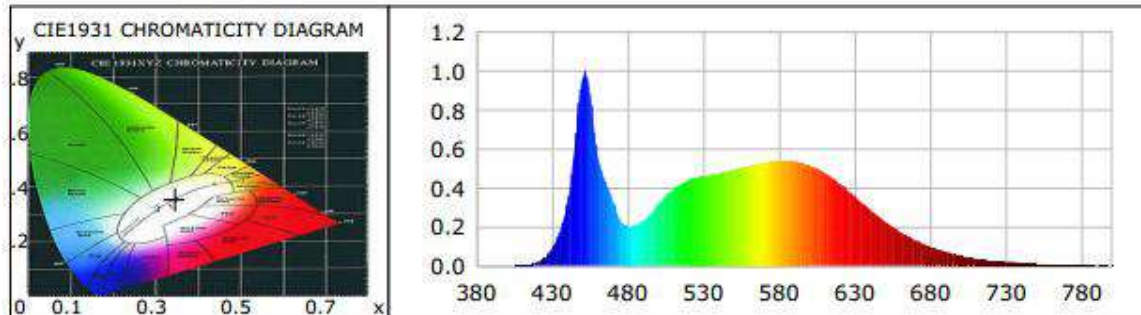
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	80	R9	1
Frequency (Hz)	60	R2	88	R10	71
CCT (K)	5127	R3	93	R11	81
Duv	0.0018	R4	82	R12	59
Chromaticity (x, y)	x=0.3419 y=0.3526	R5	81	R13	83
Chromaticity (u', v')	u(u')=0.2089 v'=0.4847	R6	83	R14	96
Color Rendering Index (CRI)	82	R7	86	R15	75
R9	1	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)	5535.2	5525.5	5000-10000(-10%)
Luminous Efficacy (lm/W)	140.81	144.27	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	140.56		

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	0.1119	535	0.4517	76.7187	690	0.1315	22.3354
385	0.0007	0.1192	540	0.4608	78.2563	695	0.1140	19.3609
390	0.0004	0.0680	545	0.4681	79.5008	700	0.0977	16.5918
395	0.0008	0.1307	550	0.4772	81.0419	705	0.0839	14.2469
400	0.0009	0.1548	555	0.4836	82.1378	710	0.0724	12.2978
405	0.0014	0.2461	560	0.4933	83.7752	715	0.0617	10.4769
410	0.0033	0.5672	565	0.5041	85.6207	720	0.0531	9.0215
415	0.0083	1.4064	570	0.5138	87.2545	725	0.0449	7.6219
420	0.0193	3.2707	575	0.5237	88.9492	730	0.0382	6.4814
425	0.0420	7.1330	580	0.5305	90.0966	735	0.0324	5.5022
430	0.0877	14.8914	585	0.5377	91.3117	740	0.0277	4.7005
435	0.1726	29.3134	590	0.5400	91.7057	745	0.0236	4.0138
440	0.3232	54.8940	595	0.5386	91.4751	750	0.0198	3.3696
445	0.6148	104.4137	600	0.5369	91.1825	755	0.0166	2.8216
450	0.9618	163.3397	605	0.5286	89.7668	760	0.0146	2.4732
455	0.8901	151.1685	610	0.5160	87.6318	765	0.0123	2.0817
460	0.5724	97.2165	615	0.4994	84.8117	770	0.0101	1.7201
465	0.4364	74.1076	620	0.4773	81.0575	775	0.0090	1.5205
470	0.3356	56.9973	625	0.4515	76.6767	780	0.0083	1.4142
475	0.2375	40.3416	630	0.4228	71.8028	785	0.0055	0.9413
480	0.2047	34.7606	635	0.3895	66.1580	790	0.0053	0.8952
485	0.2101	35.6753	640	0.3569	60.6182	795	0.0050	0.8525
490	0.2307	39.1792	645	0.3241	55.0393	800	0.0036	0.6186
495	0.2680	45.5103	650	0.2903	49.3061			
500	0.3167	53.7934	655	0.2580	43.8205			
505	0.3588	60.9344	660	0.2277	38.6663			
510	0.3944	66.9860	665	0.1998	33.9244			
515	0.4208	71.4723	670	0.1755	29.8126			
520	0.4389	74.5466	675	0.1513	25.6936			
525	0.4517	76.7187	680	0.1315	22.3354			
530	0.4608	78.2563	685	0.1140	19.3609			

TM30

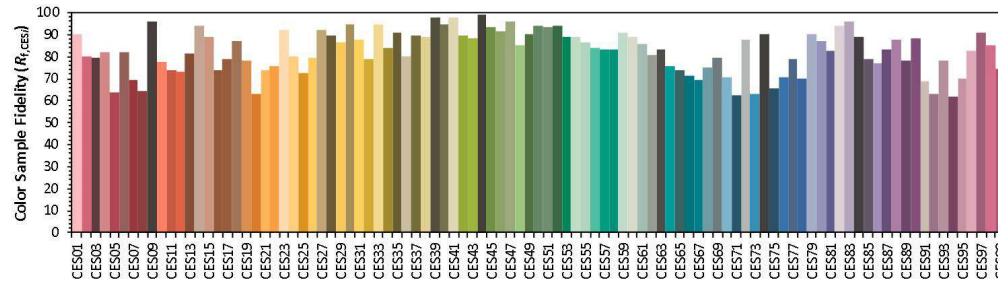
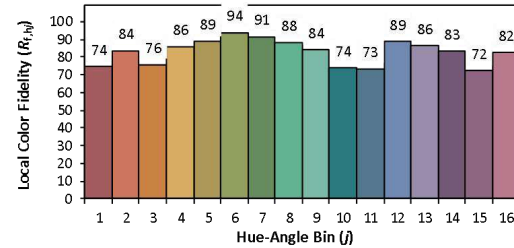
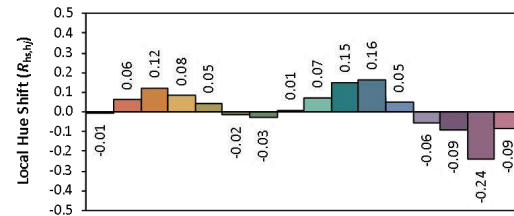
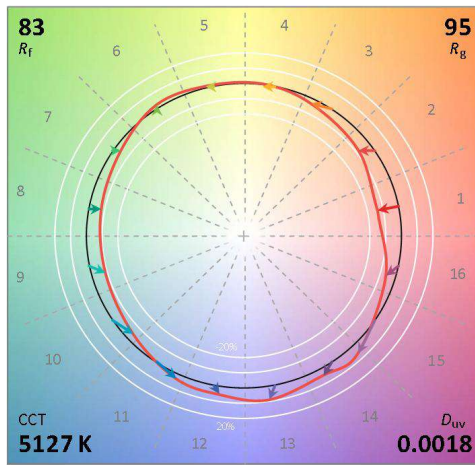
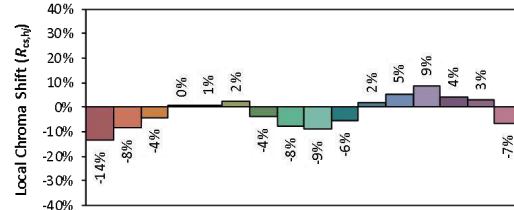
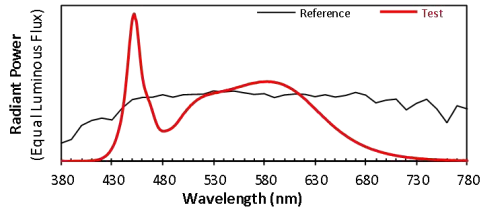
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-5080RA35000H1

Manufacturer: IKIO LED LIGHTING

Date: 2023/7/15

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



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

x 0.3419
 y 0.3526
 u' 0.2089
 v' 0.4847

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 *****