

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-120WBSGDA1-BRW30/40/50 (120W)

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-120WBSGDA1-BRW30/40/50 (120W,3000K)
IK-SWPM-120WBSGDA1-BRW30/40/50 (120W,4000K)
IK-SWPM-120WBSGDA1-BRW30/40/50 (120W,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-120WBSGDA1-BRW30/40/50 (120W)	
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	120W(Power adjustable)	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K,4000K,5000K(Color tunable)	
LED Manufacturer	Lumileds Holding B.V.	
LED Model	L128-3080RC35005A1 L128-5080RC35003P1	
Sample Number	UTC2306026E-E1	
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-120WBSGDA1-abc30:1.01694

AST-SWP11M-120WBSGDA1-abc40:1.01694

AST-SWP11M-120WBSGDA1-abc50:1.01694

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-120WBSGDA1-BRW30/40/50 (120W,3000K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC230602	120.0	60	1.034	123.53	0.996	5.37
6E-E1	277.0	60	0.475	120.67	0.917	11.52
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

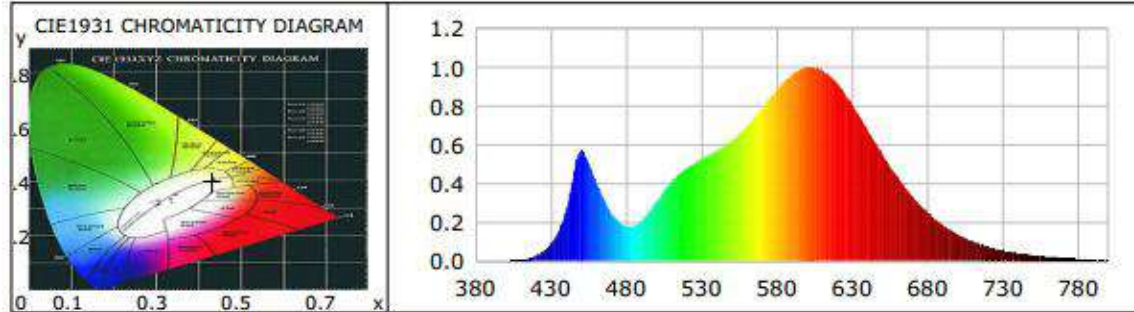
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	80	R9	2
Frequency (Hz)	60	R2	90	R10	77
CCT (K)	3076	R3	96	R11	79
Duv	-0.0008	R4	80	R12	68
Chromaticity (x, y)	x=0.4306 y=0.3999	R5	80	R13	82
Chromaticity (u', v')	u(u')=0.2482 v'=0.5188	R6	88	R14	98
Color Rendering Index (CRI)	82	R7	81	R15	72
R9	3	R8	57	--	--
Rf	84	--	--	--	--
Rg	96	--	--	--	--
Rcs,h1 (%)	-12	--	--	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	17138.2	16859.3	5000-10000(-10%)
0-90° Total Luminous (lm)	15206.8	14948.8	
Luminous Efficacy (lm/W)	138.74	139.71	Premium: >= 120(-3%)
0-90° Luminous Efficacy (lm/W)	123.10	123.88	
Most worst Luminous/Highest	136.48		<=10(+3)
Zonal lumens in the 80-90°/0-90°zone (%)	7.84	--	
Beam Angle (°)	97.3	--	--
Center Beam Candle Power (cd)	5782	--	--

Spectral Power Distribution & Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0003	0.1115	535	0.5018	184.0290	690	0.3308	121.3009
385	0.0002	0.0748	540	0.5224	191.5780	695	0.2876	105.4710
390	0.0003	0.1149	545	0.5431	199.1526	700	0.2494	91.4674
395	0.0003	0.1244	550	0.5681	208.3364	705	0.2165	79.4030
400	0.0011	0.4068	555	0.5903	216.4770	710	0.1869	68.5550
405	0.0024	0.8798	560	0.6198	227.2790	715	0.1599	58.6232
410	0.0051	1.8723	565	0.6555	240.3762	720	0.1376	50.4746
415	0.0127	4.6738	570	0.6943	254.5944	725	0.1177	43.1769
420	0.0259	9.4822	575	0.7389	270.9725	730	0.1017	37.2805
425	0.0491	18.0056	580	0.7836	287.3660	735	0.0865	31.7045
430	0.0884	32.4315	585	0.8350	306.2204	740	0.0731	26.7947
435	0.1502	55.0681	590	0.8834	323.9417	745	0.0628	23.0458
440	0.2532	92.8512	595	0.9226	338.3211	750	0.0530	19.4275
445	0.4368	160.1738	600	0.9592	351.7523	755	0.0459	16.8229
450	0.5698	208.9524	605	0.9852	361.2761	760	0.0394	14.4475
455	0.5081	186.3276	610	0.9998	366.6293	765	0.0339	12.4344
460	0.4125	151.2569	615	0.9976	365.8467	770	0.0276	10.1247
465	0.3219	118.0575	620	0.9847	361.1003	775	0.0240	8.7895
470	0.2497	91.5821	625	0.9585	351.4804	780	0.0206	7.5567
475	0.2035	74.6125	630	0.9175	336.4733	785	0.0179	6.5778
480	0.1787	65.5452	635	0.8659	317.5298	790	0.0153	5.6112
485	0.1806	66.2279	640	0.8085	296.4958	795	0.0116	4.2706
490	0.2058	75.4525	645	0.7456	273.4135	800	0.0110	4.0221
495	0.2496	91.5273	650	0.6807	249.6081			
500	0.3015	110.5620	655	0.6135	224.9778			
505	0.3551	130.2218	660	0.5498	201.6245			
510	0.4051	148.5503	665	0.4871	178.6276			
515	0.4445	162.9883	670	0.4316	158.2794			
520	0.4755	174.3691	675	0.3784	138.7532			
525	0.5018	184.0290	680	0.3308	121.3009			
530	0.5224	191.5780	685	0.2876	105.4710			

TM30

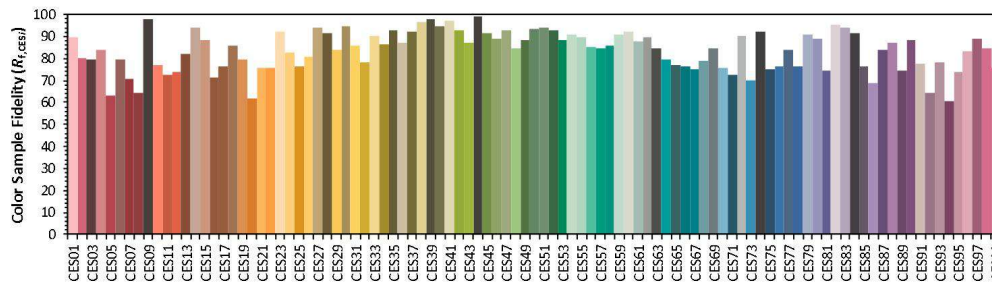
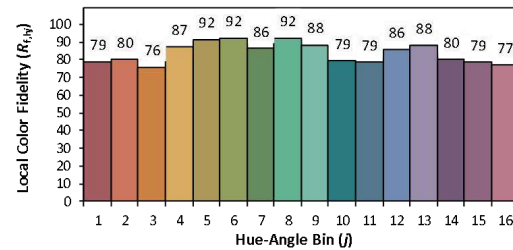
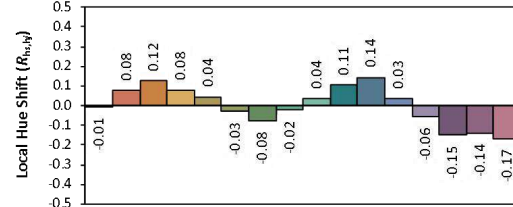
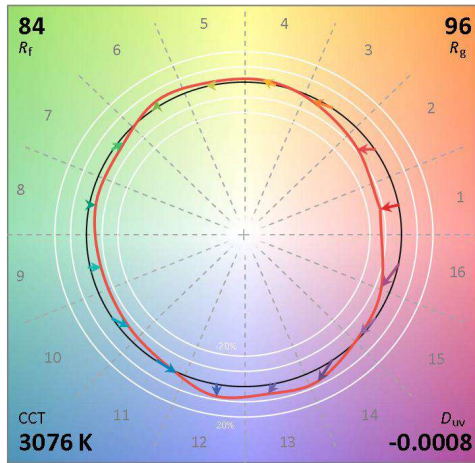
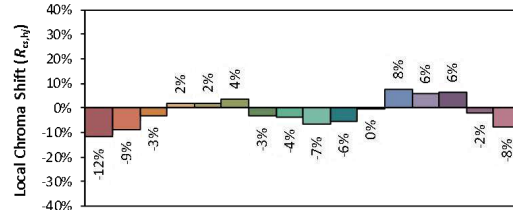
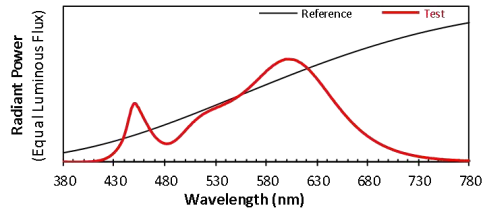
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-3080RC35005A1

Manufacturer: IKIO LED LIGHTING

Date: 2023/7/15

Model: IK-SWPM-120WBSGDA1-BRW30/40/50
(120W,3000K)



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

x 0.4306
 y 0.3999
 u' 0.2482
 v' 0.5188

CIE 13.3-1995
(CRI)
 R_a 82
 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

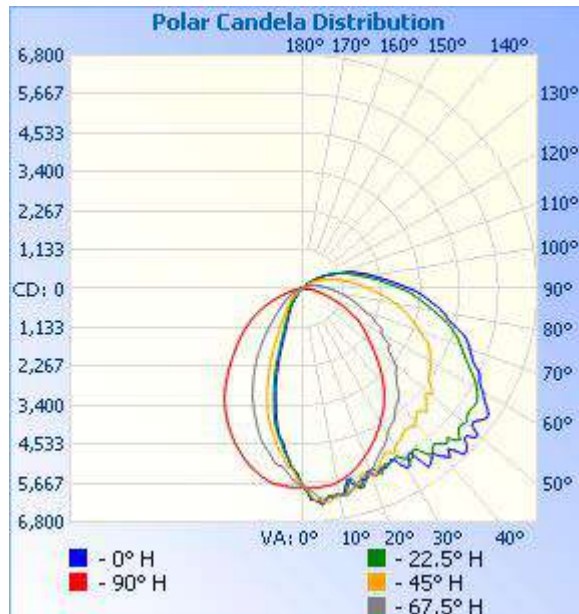
Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0-30	3,766.4	22%	22%
0-40	5,881.7	34.3%	34.3%
0-60	10,387.2	60.6%	60.6%
60-90	4,819.7	28.1%	28.1%
70-100	3,614.0	21.1%	21.1%
90-120	1,641.2	9.6%	9.6%
0-90	15,206.8	88.7%	88.7%
90-180	1,930.7	11.3%	11.3%
0-180	17,137.5	100%	100%

Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	533.4	3.1%	90-100	803.7	4.7%
10-20	1,390.9	8.1%	100-110	524.6	3.1%
20-30	1,842.2	10.7%	110-120	312.8	1.8%
30-40	2,115.4	12.3%	120-130	160.9	0.9%
40-50	2,262.3	13.2%	130-140	73.0	0.4%
50-60	2,243.1	13.1%	140-150	33.7	0.2%
60-70	2,009.4	11.7%	150-160	14.0	0.1%
70-80	1,617.9	9.4%	160-170	6.2	0%
80-90	1,192.4	7.0%	170-180	1.8	0%

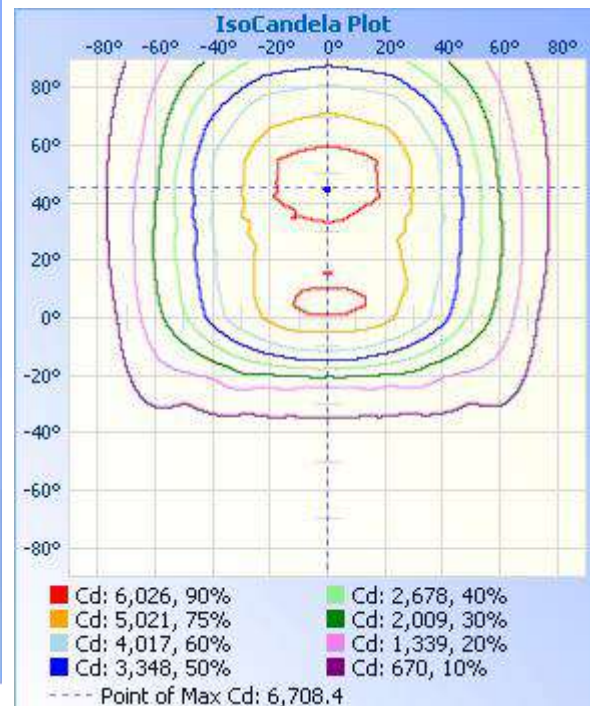
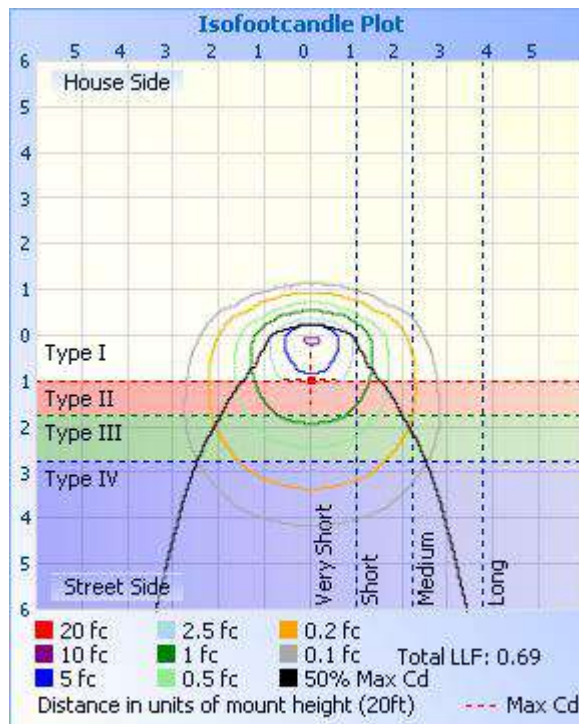
Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width	
17.0ft	20.0 fc	42.1 ft	36.2 ft
34.0ft	5.00 fc	84.2 ft	72.3 ft
51.0ft	2.22 fc	126.3 ft	108.5 ft
68.0ft	1.25 fc	168.4 ft	144.7 ft
85.0ft	0.80 fc	210.5 ft	180.8 ft
102.0ft	0.56 fc	252.6 ft	217.0 ft

■ Vert. Spread: 102.1°
■ Horiz. Spread: 93.5°



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	5782	5782	5782	5782	5782	5782	5782	5782	5782	5782	5782	5782	5782	5782	5782	5782	5782
1	5925	5920	5880	5836	5784	5715	5663	5620	5612	5621	5656	5718	5780	5834	5887	5916	5925
2	6141	6108	6003	5891	5798	5650	5520	5401	5379	5412	5527	5652	5793	5894	6012	6104	6141
3	6168	6147	6159	5973	5791	5575	5358	5272	5297	5269	5353	5582	5792	5939	6155	6162	6168
4	6223	6198	6146	6070	5808	5495	5285	5215	5175	5216	5243	5493	5789	6022	6159	6208	6223
5	6324	6282	6187	6150	5799	5394	5244	5012	4978	5013	5212	5378	5781	6086	6187	6319	6324
6	6168	6233	6260	6167	5792	5320	5114	4887	4842	4871	5072	5286	5779	6132	6247	6306	6168
7	6098	6098	6280	6144	5778	5269	4960	4754	4635	4748	4935	5216	5752	6113	6308	6150	6098
8	6124	6077	6189	6125	5778	5248	4867	4525	4476	4545	4822	5198	5758	6102	6272	6107	6124
9	6078	6105	6119	6138	5756	5216	4780	4443	4394	4437	4723	5163	5737	6104	6165	6108	6078
10	6099	6084	6091	6126	5726	5130	4616	4329	4236	4316	4568	5073	5705	6101	6102	6077	6099
11	6118	6095	6135	6150	5690	5047	4466	4169	4046	4152	4420	4970	5665	6116	6090	6097	6118
12	5878	6060	6132	6146	5652	4934	4385	4015	3825	4001	4323	4869	5622	6130	6070	6106	5878
13	5701	5826	6042	6093	5607	4844	4262	3815	3587	3801	4208	4785	5584	6124	6001	5917	5701
14	5859	5699	6005	6001	5562	4746	4130	3594	3352	3578	4053	4711	5534	6093	5992	5752	5859
15	5957	5867	6000	5897	5509	4676	3994	3373	3144	3360	3937	4633	5486	6020	5992	5821	5957
16	6054	6016	5877	5841	5457	4590	3847	3171	2945	3159	3786	4528	5442	5904	5958	5932	6054
17	5834	6037	5696	5770	5396	4491	3680	2960	2699	2947	3614	4429	5384	5814	5799	6012	5834
18	5836	5860	5635	5744	5336	4374	3496	2756	2464	2739	3431	4303	5322	5755	5628	5929	5836
19	5662	5800	5708	5719	5265	4268	3298	2550	2220	2532	3253	4180	5256	5703	5603	5849	5662
20	5650	5654	5792	5686	5204	4143	3121	2308	1987	2286	3062	4057	5190	5634	5650	5715	5650
21	5843	5613	5818	5620	5137	4032	2947	2100	1760	2083	2889	3952	5117	5580	5696	5647	5843
22	5801	5761	5724	5526	5075	3922	2778	1858	1562	1839	2722	3853	5049	5493	5678	5729	5801
23	5705	5843	5641	5421	5003	3818	2604	1662	1396	1643	2550	3740	4983	5398	5610	5803	5705
24	5731	5694	5527	5341	4928	3709	2412	1493	1277	1482	2377	3622	4912	5305	5538	5734	5731
25	5734	5636	5437	5278	4863	3600	2253	1363	1184	1352	2214	3511	4839	5228	5469	5645	5734
26	5664	5683	5354	5203	4791	3477	2094	1251	1111	1242	2041	3384	4769	5176	5384	5721	5664
27	5593	5646	5345	5157	4707	3358	1922	1164	1032	1160	1873	3262	4691	5145	5280	5699	5593
28	5662	5610	5423	5079	4641	3231	1753	1088	956	1090	1713	3142	4611	5121	5264	5642	5662

29	5873	5579	5463	4994	4555	3102	1585	1021	892	1015	1560	3021	4532	5086	5290	5585	5873
30	6035	5703	5328	4897	4479	2986	1456	951	840	946	1442	2901	4447	5025	5261	5623	6035
31	6012	5779	5260	4798	4399	2864	1358	889	798	883	1339	2782	4365	4936	5202	5698	6012
32	5733	5902	5253	4738	4328	2748	1266	832	755	827	1239	2654	4284	4844	5154	5867	5733
33	5700	5829	5212	4696	4249	2632	1175	788	706	789	1154	2534	4190	4727	5190	5859	5700
34	6008	5690	5153	4678	4173	2516	1083	750	667	741	1077	2417	4105	4637	5152	5748	6008
35	6340	5688	5083	4607	4081	2403	1013	703	627	692	1015	2301	4008	4548	5048	5644	6340
36	6297	5884	5051	4526	3989	2268	958	660	589	653	958	2174	3917	4475	4953	5798	6297
37	6203	6050	5071	4428	3906	2135	902	616	548	609	897	2043	3812	4403	4956	5951	6203
38	6073	6114	5095	4362	3812	2011	842	574	502	568	841	1924	3713	4322	4993	6072	6073
39	6268	5955	5164	4310	3710	1899	800	535	467	531	797	1815	3610	4257	5025	5899	6268
40	6384	5919	5081	4285	3608	1788	757	503	427	488	752	1712	3507	4206	4994	5915	6384
41	6502	5975	4969	4238	3510	1689	718	458	393	452	709	1610	3403	4187	4893	5999	6502
42	6288	6088	4913	4135	3415	1583	673	427	364	422	660	1498	3297	4154	4854	6008	6288
43	6448	6146	4879	4028	3309	1478	627	393	328	384	620	1402	3178	4074	4825	6054	6448
44	6708	6035	4932	3919	3194	1370	597	363	300	357	587	1312	3086	3974	4817	5926	6708
45	6695	6250	5072	3838	3092	1275	553	333	277	329	541	1225	2984	3868	4857	6144	6695
46	6619	6344	4947	3762	2987	1195	519	304	254	298	507	1145	2881	3765	4844	6341	6619
47	6404	6169	4881	3681	2891	1119	490	285	231	282	474	1069	2781	3652	4776	6177	6404
48	6410	6078	4787	3604	2792	1046	449	263	215	260	446	1001	2688	3544	4726	6013	6410
49	6628	6052	4698	3573	2688	974	418	247	206	243	418	944	2603	3469	4614	5987	6628
50	6617	6122	4764	3522	2596	903	391	227	192	223	389	889	2518	3423	4598	6068	6617
51	6315	6130	4830	3417	2515	854	371	208	192	207	366	838	2437	3377	4678	6103	6315
52	6290	6045	4739	3293	2429	812	347	201	184	197	337	803	2346	3299	4612	6027	6290
53	6378	6000	4629	3168	2348	763	318	189	186	183	312	763	2264	3187	4517	5975	6378
54	6484	6006	4517	3059	2261	725	300	176	177	171	296	724	2183	3079	4390	5956	6484
55	6532	6020	4460	2989	2185	686	274	163	166	165	272	684	2102	2999	4316	5987	6532
56	6494	6033	4434	3006	2119	651	255	153	158	153	255	647	2025	2954	4294	6013	6494
57	6366	6026	4396	2984	2039	617	236	147	151	152	233	615	1938	2940	4252	5996	6366
58	6233	5975	4348	2831	1971	584	223	140	136	142	217	585	1862	2851	4213	5940	6233
59	6121	5903	4302	2692	1890	547	202	127	122	129	199	551	1789	2705	4171	5867	6121
60	6038	5827	4257	2627	1811	518	192	120	107	120	181	525	1713	2618	4120	5789	6038

Laboratory: UTEST TECHNICAL LABORATORY A2LA Certificate# 4810.01

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Report Format Number BL-FM-SA-012

10 / 22

61	5907	5736	4209	2580	1728	487	176	106	94	111	168	493	1630	2546	4070	5709	5907
62	5801	5641	4169	2579	1619	463	156	100	82	98	154	463	1536	2481	4022	5620	5801
63	5757	5527	4134	2551	1534	433	148	87	78	87	143	436	1445	2470	3980	5508	5757
64	5712	5404	4082	2404	1450	406	130	71	55	69	127	408	1363	2393	3935	5390	5712
65	5601	5314	4034	2302	1362	383	121	61	38	66	116	385	1279	2280	3875	5303	5601
66	5455	5215	3969	2241	1274	357	106	51	30	44	104	361	1184	2200	3808	5207	5455
67	5351	5115	3873	2200	1174	334	93	25	11	35	99	339	1094	2125	3726	5106	5351
68	5289	5028	3777	2117	1082	309	89	20	12	17	83	312	1009	2087	3638	5007	5289
69	5207	4947	3680	1967	995	286	79	0	8	8	76	289	931	1986	3546	4930	5207
70	5152	4882	3597	1887	915	263	66	9	10	7	65	269	853	1869	3460	4860	5152
71	5102	4807	3518	1817	834	249	58	0	8	12	52	251	774	1799	3380	4777	5102
72	5021	4726	3438	1756	766	224	45	0	10	11	45	230	711	1733	3302	4703	5021
73	4940	4646	3363	1692	702	206	38	9	8	8	41	205	651	1663	3232	4624	4940
74	4845	4550	3286	1626	641	188	38	0	11	9	35	187	600	1595	3150	4540	4845
75	4697	4465	3206	1564	584	172	35	0	9	10	32	176	543	1530	3074	4440	4697
76	4552	4364	3127	1499	525	160	31	0	9	12	28	162	495	1467	2994	4330	4552
77	4411	4247	3046	1438	472	145	25	0	9	13	30	153	447	1397	2909	4235	4411
78	4305	4129	2950	1378	425	135	27	0	11	9	26	135	407	1333	2830	4122	4305
79	4231	4009	2856	1314	383	122	31	0	12	10	29	121	361	1261	2742	3999	4231
80	4157	3889	2777	1257	342	111	25	0	13	11	17	111	324	1194	2661	3889	4157
81	4068	3776	2685	1195	300	101	28	0	13	0	23	109	292	1140	2567	3771	4068
82	3968	3673	2608	1139	273	97	25	0	13	11	22	99	266	1080	2488	3665	3968
83	3850	3568	2522	1085	243	85	22	9	11	10	24	93	235	1026	2404	3557	3850
84	3738	3468	2433	1030	211	85	23	8	14	12	24	85	209	977	2321	3450	3738
85	3635	3360	2328	985	187	73	24	9	13	9	20	83	184	927	2223	3358	3635
86	3551	3267	2239	929	160	68	26	0	13	11	15	79	163	878	2133	3255	3551
87	3453	3178	2146	886	146	62	20	0	12	12	19	70	147	825	2045	3168	3453
88	3354	3089	2057	841	127	68	22	7	15	10	22	73	130	782	1964	3062	3354
89	3232	2977	1971	794	121	64	13	8	11	10	19	70	117	741	1880	2962	3232
90	3101	2859	1901	754	108	58	20	7	15	11	17	66	108	699	1809	2849	3101
91	2957	2745	1830	718	99	64	16	0	13	13	21	64	99	667	1740	2723	2957
92	2842	2627	1760	685	92	56	20	0	15	14	21	62	93	636	1674	2608	2842

93	2737	2510	1678	651	87	61	18	9	13	12	20	58	94	604	1598	2499	2737
94	2625	2414	1620	623	90	38	18	8	14	12	18	55	89	575	1536	2393	2625
95	2531	2327	1557	593	84	57	19	8	14	11	21	58	93	548	1482	2300	2531
96	2434	2242	1493	563	85	51	16	10	12	14	20	52	89	516	1420	2216	2434
97	2336	2150	1428	537	88	52	15	0	15	11	21	56	87	500	1366	2136	2336
98	2244	2070	1371	512	85	47	17	8	13	15	21	51	87	471	1303	2052	2244
99	2155	1993	1319	483	84	48	14	10	14	10	15	49	85	446	1252	1967	2155
100	2084	1912	1261	463	86	48	14	10	13	16	20	39	85	427	1196	1895	2084
101	2022	1843	1208	444	83	42	16	10	18	13	17	47	83	406	1148	1822	2022
102	1951	1770	1163	426	88	43	18	8	17	14	17	43	81	394	1105	1758	1951
103	1872	1709	1113	402	88	34	17	12	13	14	19	46	84	377	1055	1687	1872
104	1798	1642	1066	387	85	35	13	10	13	14	18	40	87	352	1010	1626	1798
105	1730	1573	1022	363	84	36	10	9	14	16	13	38	84	338	969	1561	1730
106	1658	1517	977	340	85	27	13	10	17	16	16	41	84	320	929	1499	1658
107	1603	1464	931	326	83	27	13	10	19	15	14	40	81	300	884	1445	1603
108	1550	1414	895	306	79	33	12	11	14	15	17	39	78	291	845	1392	1550
109	1493	1354	844	295	80	36	12	10	15	16	14	35	80	273	806	1343	1493
110	1426	1305	811	281	82	33	12	0	13	13	15	36	75	264	765	1288	1426
111	1330	1255	770	265	68	25	8	0	15	14	16	37	77	248	735	1241	1330
112	1241	1198	730	248	67	30	9	10	17	15	15	29	70	234	693	1186	1241
113	1155	1150	693	232	78	30	11	10	8	18	11	31	75	224	654	1137	1155
114	1082	1101	658	223	76	30	13	10	12	16	8	31	73	211	623	1088	1082
115	1012	1051	619	207	69	30	15	10	11	15	11	29	68	202	587	1039	1012
116	951	1001	581	202	62	25	16	9	15	12	11	31	66	187	553	993	951
117	897	947	550	185	55	25	9	11	14	14	17	28	67	177	521	942	897
118	849	906	516	179	69	27	11	12	18	14	15	27	63	169	491	896	849
119	808	859	485	170	60	27	9	9	15	13	15	32	68	165	458	847	808
120	766	809	457	161	66	28	12	0	14	15	14	25	63	156	429	805	766
121	729	766	433	157	62	23	10	10	11	14	12	29	54	153	405	752	729
122	694	716	405	147	58	10	8	0	17	15	14	30	60	145	385	707	694
123	650	671	380	136	60	24	9	9	16	17	10	29	50	136	361	658	650
124	612	622	358	132	58	25	7	11	13	14	12	30	56	126	337	605	612

125	574	574	336	130	57	27	8	10	14	16	15	27	54	121	320	557	574
126	533	526	315	118	53	25	10	10	16	17	9	29	52	117	294	509	533
127	495	482	294	114	47	21	11	12	19	15	17	23	46	112	278	472	495
128	460	443	276	105	42	25	11	12	18	13	12	23	42	104	261	427	460
129	427	405	258	106	37	22	9	0	14	15	13	28	45	101	247	392	427
130	398	377	247	96	42	25	8	9	17	17	15	26	41	95	234	367	398
131	364	346	234	91	40	22	9	8	15	17	15	25	44	89	223	332	364
132	338	317	219	86	42	19	17	11	15	15	12	22	41	84	212	303	338
133	311	291	205	84	43	22	16	11	12	13	15	25	36	81	194	281	311
134	293	271	190	79	43	13	14	12	15	18	9	27	35	71	183	260	293
135	269	253	182	72	39	22	13	10	16	14	17	26	34	75	178	242	269
136	249	233	174	72	40	25	15	10	15	16	10	24	40	65	167	227	249
137	232	221	160	72	37	23	11	14	17	16	17	24	37	71	154	214	232
138	218	212	150	67	32	21	13	12	14	15	16	23	36	66	150	199	218
139	207	196	143	68	37	21	13	11	15	15	17	22	29	62	141	190	207
140	194	182	135	62	35	19	13	14	17	15	14	19	29	63	129	173	194
141	185	170	124	61	32	21	10	14	19	17	17	21	29	57	121	163	185
142	172	157	118	52	34	19	8	14	19	19	16	21	28	55	113	152	172
143	165	150	109	53	32	18	16	13	16	18	18	20	18	54	107	141	165
144	155	142	99	54	29	18	14	15	18	19	15	21	28	50	95	134	155
145	141	128	94	47	27	18	11	15	19	20	17	20	21	48	90	122	141
146	136	120	83	40	25	13	9	12	15	22	17	17	24	46	86	113	136
147	125	107	76	43	27	18	13	17	16	21	12	14	24	41	79	104	125
148	115	100	76	43	24	16	16	19	15	17	18	19	17	40	68	96	115
149	102	92	71	39	24	19	14	15	18	20	17	16	25	35	65	86	102
150	94	74	68	38	20	20	8	13	22	19	16	23	19	38	62	76	94
151	76	79	56	32	24	13	11	12	21	14	18	18	20	22	51	71	76
152	76	62	59	19	17	19	14	11	20	20	17	14	19	34	48	69	76
153	74	64	54	39	18	16	15	20	16	18	21	16	14	34	51	63	74
154	71	61	49	30	20	15	14	15	20	18	18	19	15	27	45	58	71
155	65	53	38	26	12	17	16	17	24	23	21	20	18	28	41	53	65
156	60	54	44	29	16	19	16	19	18	22	19	16	11	27	42	54	60

157	53	53	45	25	22	16	16	18	19	18	19	13	18	22	30	45	53
158	52	48	43	25	19	22	19	20	19	21	20	16	18	23	37	41	52
159	42	46	34	26	17	18	15	17	17	19	14	19	15	18	32	40	42
160	37	38	31	24	19	14	20	17	21	22	22	14	15	23	34	34	37
161	41	42	36	24	17	21	14	17	22	21	19	20	18	21	15	39	41
162	41	32	30	22	18	21	23	11	20	20	22	18	16	20	24	30	41
163	31	33	28	19	20	24	13	19	22	19	18	21	16	14	25	29	31
164	36	28	29	11	21	24	18	20	23	20	23	19	15	18	24	32	36
165	31	31	25	18	18	19	18	20	19	21	23	21	15	19	20	24	31
166	18	28	20	20	22	19	21	19	20	22	19	21	14	21	21	19	18
167	22	25	16	20	18	22	21	19	17	22	20	20	16	16	17	20	22
168	29	22	23	23	20	23	13	18	24	21	18	22	17	17	20	22	29
169	21	23	18	22	20	22	19	18	23	16	21	20	21	17	17	16	21
170	25	23	19	18	23	22	14	15	24	21	17	25	19	20	14	15	25
171	17	22	19	20	21	16	18	19	13	26	26	23	17	21	13	14	17
172	18	13	19	22	21	15	16	19	20	23	17	23	15	19	13	16	18
173	11	18	12	19	25	24	19	18	18	26	18	16	16	22	14	17	11
174	15	18	18	21	24	17	17	18	19	22	20	23	18	19	18	14	15
175	18	17	19	17	19	20	19	16	17	19	12	20	17	21	14	10	18
176	20	18	18	13	24	21	13	19	18	17	20	19	18	15	12	14	20
177	8	19	17	20	19	20	18	16	18	18	15	13	17	20	14	16	8
178	21	15	18	18	24	19	22	13	19	18	20	20	20	21	15	16	21
179	17	23	19	18	24	21	17	16	20	17	17	22	22	22	18	14	17
180	16	20	23	18	23	20	17	17	20	17	20	19	20	23	14	18	16

BUG

Lum. Classification System (LCS)

<u>LCS Zone</u>	<u>Lumens</u>	<u>%Lamp</u>	<u>%Lum</u>
FL (0-30)	2374.4	13.9	13.9
FM (30-60)	5497.2	32.1	32.1
FH (60-80)	3404.8	19.9	19.9
FVH(80-90)	1162.8	6.8	6.8
BL (0-30)	1392.3	8.1	8.1
BM (30-60)	1124.9	6.6	6.6
BH (60-80)	222.1	1.3	1.3
BVH(80-90)	29.4	0.2	0.2
UL (90-100)	803.5	4.7	4.7
UH (100-180)	1126.8	6.6	6.6
Total	17138.2	100.2	100.0
BUG Rating	B3-U5-G5		

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-120WBSGDA1-BRW30/40/50 (120W,4000K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC230602	120.0	60	0.994	118.87	0.997	5.23
6E-E1	277.0	60	0.458	116.21	0.916	11.64
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

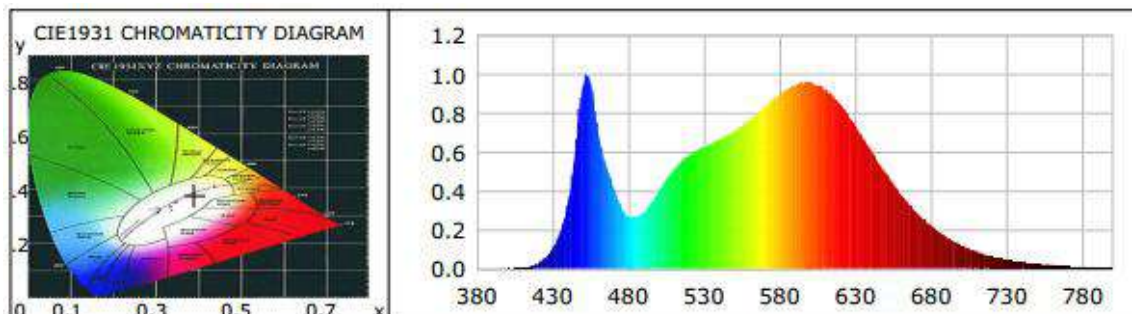
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	83	R9	11
Frequency (Hz)	60	R2	91	R10	78
CCT (K)	3778	R3	96	R11	81
Duv	-0.0021	R4	82	R12	64
Chromaticity (x, y)	x=0.3890 y=0.3773	R5	83	R13	85
Chromaticity (u', v')	u(u')=0.2305 v'=0.5031	R6	88	R14	98
Color Rendering Index (CRI)	84	R7	84	R15	77
R9	11	R8	64	--	--
Rf	84	--	--	--	--
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)	18118.2	17804.5	5000-10000(-10%)
Luminous Efficacy (lm/W)	152.42	153.21	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	0.0007	0.2347	535	0.6062	213.3968	690	0.2918	102.7071
385	0.0003	0.1041	540	0.6252	220.0811	695	0.2540	89.4087
390	0.0006	0.1962	545	0.6440	226.6961	700	0.2190	77.1068
395	0.0006	0.2143	550	0.6644	233.8892	705	0.1907	67.1247
400	0.0015	0.5241	555	0.6822	240.1523	710	0.1639	57.6927
405	0.0021	0.7456	560	0.7065	248.6986	715	0.1401	49.3325
410	0.0052	1.8437	565	0.7359	259.0510	720	0.1211	42.6337
415	0.0126	4.4237	570	0.7673	270.1090	725	0.1034	36.3952
420	0.0268	9.4381	575	0.7989	281.2261	730	0.0884	31.1092
425	0.0543	19.1004	580	0.8331	293.2534	735	0.0755	26.5932
430	0.1043	36.7163	585	0.8693	306.0217	740	0.0638	22.4679
435	0.1901	66.9265	590	0.8996	316.6824	745	0.0550	19.3534
440	0.3350	117.9300	595	0.9214	324.3513	750	0.0461	16.2151
445	0.6093	214.4949	600	0.9440	332.2966	755	0.0385	13.5363
450	0.9404	331.0300	605	0.9559	336.5096	760	0.0341	11.9910
455	0.9601	337.9753	610	0.9571	336.9198	765	0.0284	10.0111
460	0.7105	250.0931	615	0.9432	332.0135	770	0.0240	8.4470
465	0.5350	188.3261	620	0.9214	324.3382	775	0.0208	7.3171
470	0.4227	148.8040	625	0.8900	313.2809	780	0.0177	6.2403
475	0.3204	112.7851	630	0.8447	297.3545	785	0.0144	5.0537
480	0.2671	94.0317	635	0.7922	278.8671	790	0.0135	4.7555
485	0.2659	93.6050	640	0.7344	258.5270	795	0.0108	3.8036
490	0.2902	102.1567	645	0.6721	236.5969	800	0.0078	2.7405
495	0.3364	118.4228	650	0.6117	215.3302			
500	0.3967	139.6455	655	0.5489	193.2168			
505	0.4557	160.4000	660	0.4910	172.8318			
510	0.5089	179.1265	665	0.4343	152.8928			
515	0.5515	194.1260	670	0.3823	134.5938			
520	0.5817	204.7757	675	0.3345	117.7331			
525	0.6062	213.3968	680	0.2918	102.7071			
530	0.6252	220.0811	685	0.2540	89.4087			

TM30

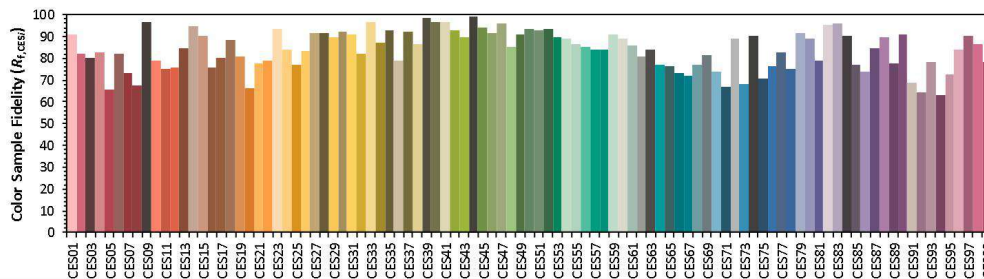
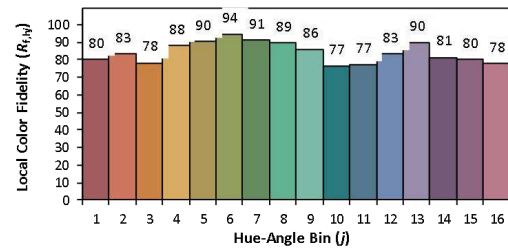
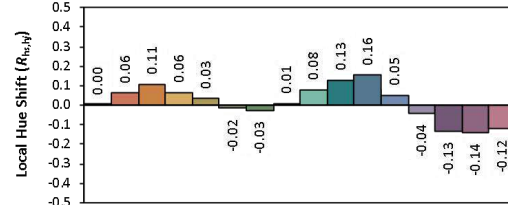
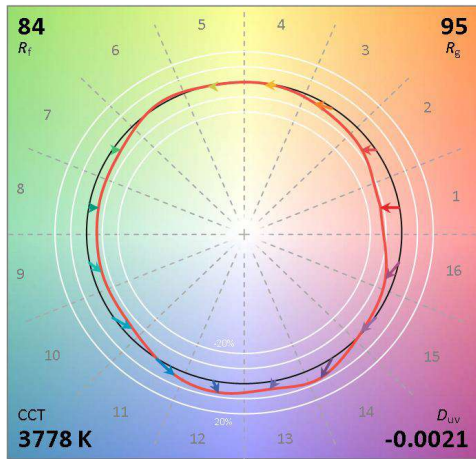
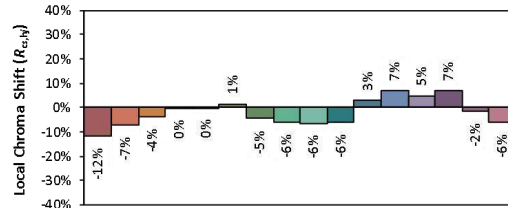
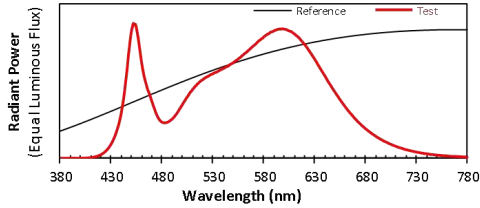
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-3080RC35005A1
L128-5080RC35003P1

Manufacturer: IKIO LED LIGHTING

Date: 2023/7/15

Model: IK-SWPM-120WBSGDA1-BRW30/40/50
(120W,4000K)



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

x 0.3890
 y 0.3773
 u' 0.2305
 v' 0.5031

CIE 13.3-1995
(CRI)

R_a 84
 R_9 11

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

2.3 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2023-07-15	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	IK-SWPM-120WBSGDA1-BRW30/40/50 (120W,5000K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC230602	120.0	60	1.032	123.49	0.997	5.23
6E-E1	277.0	60	0.475	120.55	0.917	11.66
DLC Pass Criteria					$\geq 0.9(-3\%)$	$\leq 20(+5)$

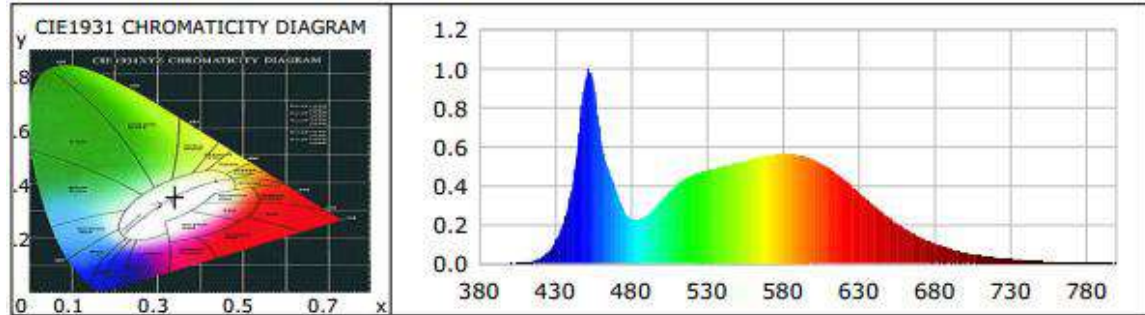
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	80	R9	1
Frequency (Hz)	60	R2	88	R10	72
CCT (K)	5200	R3	93	R11	80
Duv	0.0015	R4	81	R12	59
Chromaticity (x, y)	x=0.3399 y=0.3503	R5	81	R13	83
Chromaticity (u', v')	u(u')=0.2084 v'=0.4833	R6	83	R14	96
Color Rendering Index (CRI)	82	R7	86	R15	75
R9	2	R8	65	--	--
Rf	82	--	--	--	--
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)	17249.1	16963.8	5000-10000(-10%)
Luminous Efficacy (lm/W)	139.68	140.72	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	137.37		

Spectral Power Distribution & Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0003	0.1436	535	0.4657	238.2530	690	0.1386	70.9331
385	0.0006	0.3302	540	0.4775	244.3196	695	0.1199	61.3588
390	0.0002	0.1246	545	0.4863	248.8061	700	0.1031	52.7436
395	0.0005	0.2349	550	0.4969	254.2213	705	0.0896	45.8508
400	0.0013	0.6705	555	0.5041	257.9417	710	0.0770	39.4213
405	0.0027	1.3850	560	0.5136	262.7568	715	0.0666	34.0892
410	0.0054	2.7620	565	0.5261	269.1828	720	0.0569	29.0869
415	0.0124	6.3424	570	0.5364	274.4558	725	0.0481	24.6258
420	0.0272	13.9264	575	0.5465	279.5919	730	0.0413	21.1541
425	0.0560	28.6408	580	0.5532	283.0563	735	0.0354	18.1171
430	0.1086	55.5677	585	0.5593	286.1743	740	0.0304	15.5504
435	0.1982	101.3837	590	0.5632	288.1609	745	0.0255	13.0395
440	0.3439	175.9496	595	0.5594	286.2105	750	0.0215	11.0136
445	0.6071	310.6327	600	0.5569	284.9438	755	0.0187	9.5512
450	0.9393	480.5915	605	0.5481	280.4295	760	0.0157	8.0457
455	0.9410	481.4482	610	0.5338	273.1053	765	0.0136	6.9407
460	0.6510	333.0610	615	0.5152	263.5856	770	0.0120	6.1642
465	0.4855	248.3784	620	0.4922	251.8193	775	0.0098	4.9923
470	0.3798	194.3444	625	0.4653	238.0750	780	0.0082	4.2144
475	0.2771	141.7622	630	0.4335	221.7756	785	0.0079	4.0310
480	0.2305	117.9556	635	0.3997	204.5265	790	0.0055	2.8137
485	0.2297	117.5493	640	0.3651	186.8013	795	0.0060	3.0618
490	0.2461	125.8953	645	0.3310	169.3489	800	0.0035	1.7999
495	0.2802	143.3494	650	0.2977	152.3069			
500	0.3248	166.1588	655	0.2654	135.7644			
505	0.3660	187.2501	660	0.2353	120.3736			
510	0.4035	206.4461	665	0.2067	105.7690			
515	0.4311	220.5524	670	0.1814	92.8098			
520	0.4515	230.9866	675	0.1588	81.2413			
525	0.4657	238.2530	680	0.1386	70.9331			
530	0.4775	244.3196	685	0.1199	61.3588			

TM30

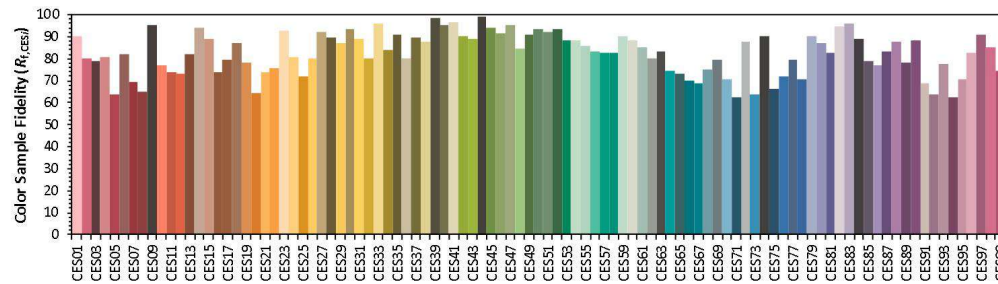
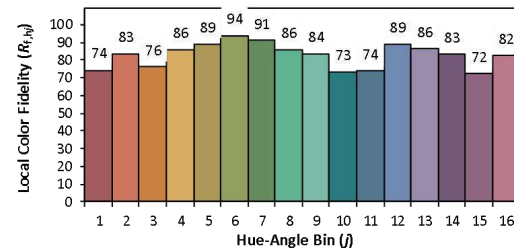
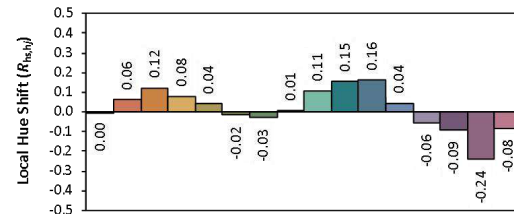
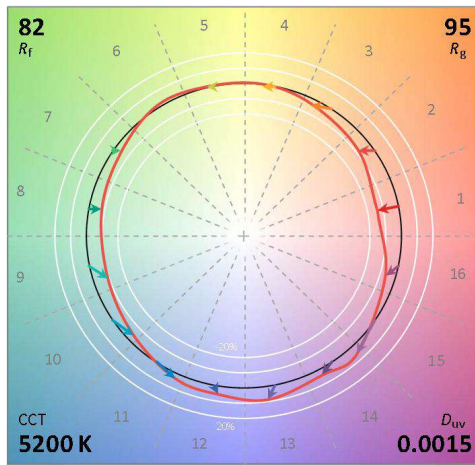
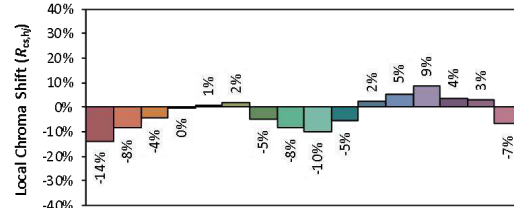
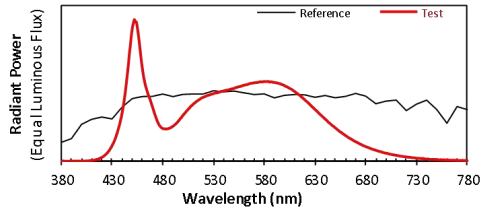
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-5080RC35003P1

Manufacturer: IKIO LED LIGHTING

Date: 2023/7/15

Model: IK-SWPM-120WBSGDA1-BRW30/40/50
(120W,5000K)



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

x 0.3399
 y 0.3503
 u' 0.2084
 v' 0.4833

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 *****