

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 (100W)

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 (100W,3000K)

IK-SWPM-120WBSGDA1-BRW30/40/50 (100W,4000K)

IK-SWPM-120WBSGDA1-BRW30/40/50 (100W,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 (100W)	
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	100W(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-D1	
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-100WBSGDA1-abc30:1.01875

AST-SWP11M-100WBSGDA1-abc40:1.01875

AST-SWP11M-100WBSGDA1-abc50:1.01875

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 (100W,3000K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC230602	120.0	60	0.858	102.71	0.997	4.74
6E-D1	277.0	60	0.387	100.02	0.934	12.52
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

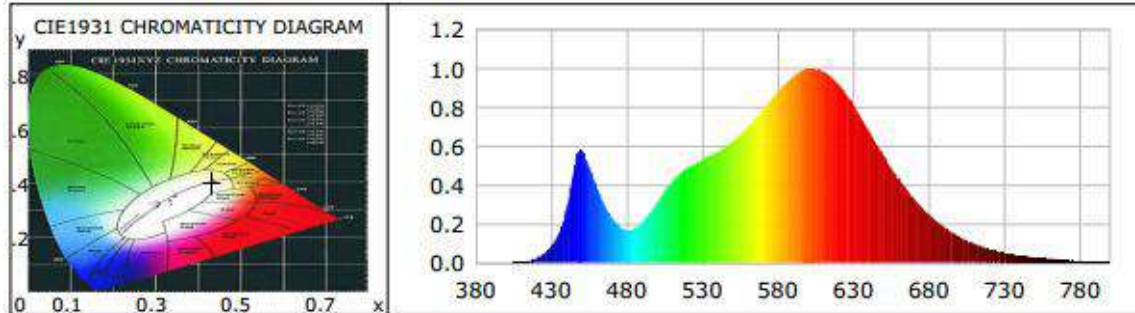
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	80	R9	3
Frequency (Hz)	60	R2	90	R10	76
CCT (K)	3084	R3	96	R11	80
Duv	-0.0004	R4	80	R12	68
Chromaticity (x, y)	x=0.4305 y=0.4007	R5	80	R13	82
Chromaticity (u', v')	u(u')=0.2478 v'=0.5191	R6	87	R14	98
Color Rendering Index (CRI)	82	R7	82	R15	73
R9	3	R8	58	--	--
Rf	84	--	--	--	--
Rg	97	--	--	--	--
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)	14551.3	14297.7	5000-10000(-10%)
0-90° Total Luminous (lm)	13029.5	12801.8	
Luminous Efficacy (lm/W)	141.67	142.95	Premium: >= 120(-3%)
0-90° Luminous Efficacy (lm/W)	126.86	127.99	
Most worst Luminous/Highest	139.20		<=10(+3)
Zonal lumens in the 80-90°/0-90°zone (%)	7.36	--	
Beam Angle (°)	97.5	--	--
Center Beam Candle Power (cd)	5019	--	--

Spectral Power Distribution & Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0006	0.1658	535	0.5090	144.7972	690	0.3290	93.5782
385	0.0003	0.0912	540	0.5288	150.4324	695	0.2854	81.1956
390	0.0002	0.0662	545	0.5492	156.2250	700	0.2471	70.2863
395	0.0006	0.1587	550	0.5715	162.5699	705	0.2145	61.0289
400	0.0007	0.2051	555	0.5936	168.8698	710	0.1835	52.1981
405	0.0016	0.4511	560	0.6218	176.8706	715	0.1583	45.0172
410	0.0042	1.1879	565	0.6570	186.8948	720	0.1347	38.3223
415	0.0105	3.0003	570	0.6955	197.8361	725	0.1150	32.7197
420	0.0226	6.4417	575	0.7394	210.3421	730	0.0981	27.8948
425	0.0454	12.9062	580	0.7841	223.0606	735	0.0838	23.8504
430	0.0853	24.2557	585	0.8332	237.0115	740	0.0717	20.3851
435	0.1505	42.8095	590	0.8815	250.7637	745	0.0617	17.5543
440	0.2701	76.8358	595	0.9201	261.7452	750	0.0513	14.5833
445	0.4771	135.7257	600	0.9585	272.6579	755	0.0437	12.4383
450	0.5838	166.0644	605	0.9855	280.3455	760	0.0374	10.6322
455	0.4944	140.6356	610	0.9996	284.3624	765	0.0319	9.0806
460	0.3929	111.7670	615	0.9994	284.2962	770	0.0268	7.6325
465	0.3007	85.5323	620	0.9854	280.3240	775	0.0223	6.3507
470	0.2323	66.0846	625	0.9605	273.2359	780	0.0205	5.8351
475	0.1887	53.6857	630	0.9192	261.4849	785	0.0156	4.4488
480	0.1682	47.8500	635	0.8695	247.3345	790	0.0136	3.8676
485	0.1743	49.5787	640	0.8119	230.9717	795	0.0120	3.4238
490	0.2049	58.2767	645	0.7492	213.1098	800	0.0105	2.9794
495	0.2521	71.7019	650	0.6829	194.2648			
500	0.3087	87.8153	655	0.6148	174.8855			
505	0.3643	103.6328	660	0.5503	156.5498			
510	0.4146	117.9339	665	0.4877	138.7423			
515	0.4545	129.2910	670	0.4312	122.6755			
520	0.4856	138.1363	675	0.3780	107.5283			
525	0.5090	144.7972	680	0.3290	93.5782			
530	0.5288	150.4324	685	0.2854	81.1956			

TM30

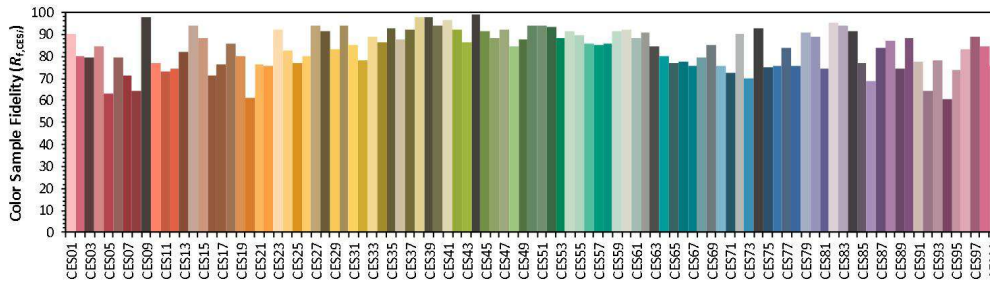
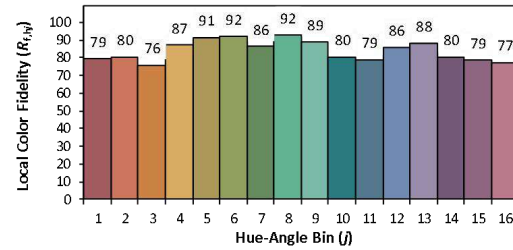
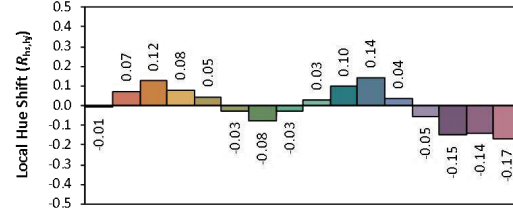
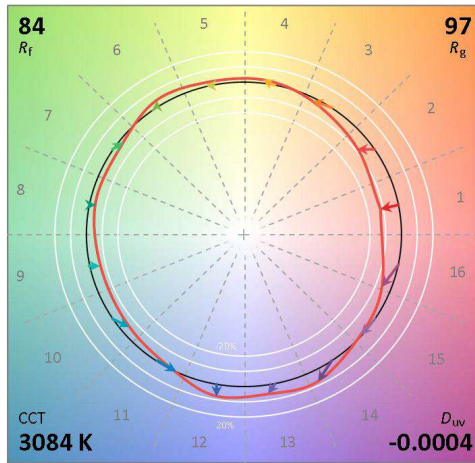
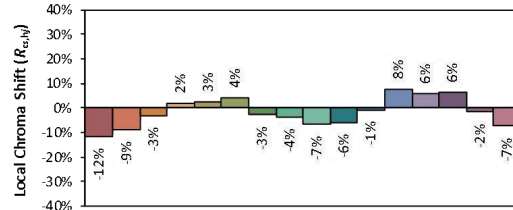
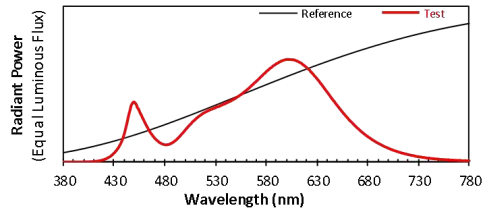
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-3080RC35005A1

Manufacturer: IKIO LED LIGHTING

Date: 2023/7/15

Model: IK-SWPM-120WBSGDA1-BRW30/40/50
(100W,3000K)



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

x 0.4305
 y 0.4007
 u' 0.2478
 v' 0.5191

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

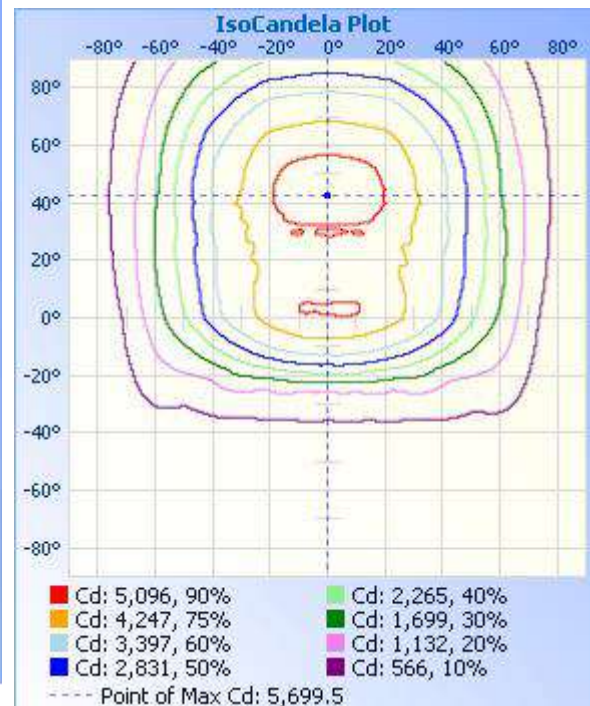
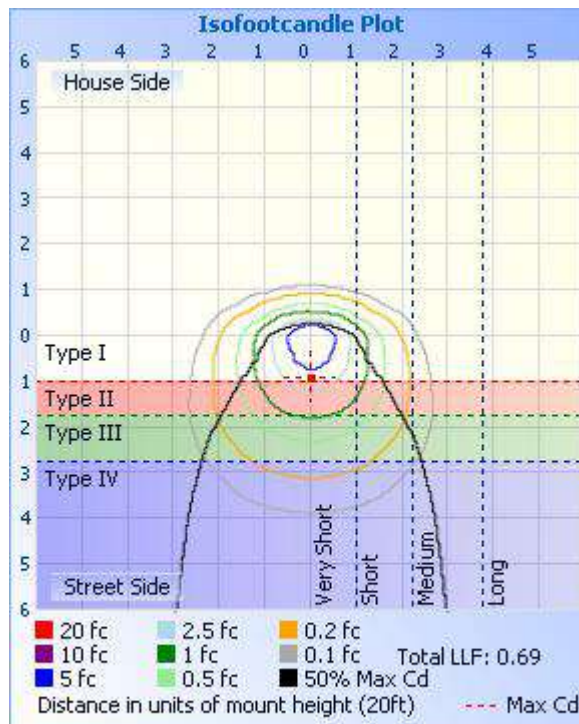
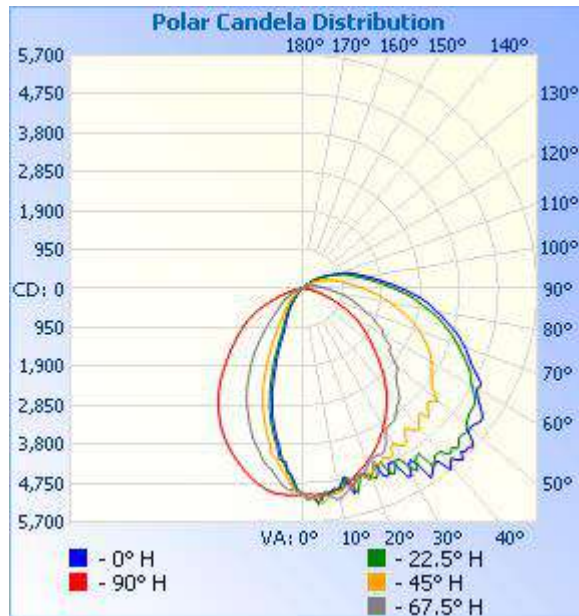
Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0-30	3,269.9	22.5%	22.5%
0-40	5,131.9	35.3%	35.3%
0-60	9,029.3	62.1%	62.1%
60-90	4,000.1	27.5%	27.5%
70-100	2,932.6	20.2%	20.2%
90-120	1,294.4	8.9%	8.9%
0-90	13,029.5	89.5%	89.5%
90-180	1,521.1	10.5%	10.5%
0-180	14,550.6	100%	100%

Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	459.4	3.2%	90-100	633.6	4.4%
10-20	1,199.4	8.2%	100-110	413.8	2.8%
20-30	1,611.2	11.1%	110-120	246.9	1.7%
30-40	1,862.0	12.8%	120-130	124.4	0.9%
40-50	1,980.3	13.6%	130-140	56.0	0.4%
50-60	1,917.1	13.2%	140-150	26.2	0.2%
60-70	1,701.2	11.7%	150-160	12.4	0.1%
70-80	1,339.6	9.2%	160-170	5.9	0%
80-90	959.3	6.6%	170-180	1.8	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	5019	5019	5019	5019	5019	5019	5019	5019	5019	5019	5019	5019	5019	5019	5019	5019	5019
1	5127	5136	5126	5097	5029	4962	4958	4970	4953	4958	4942	4972	5034	5109	5139	5147	5127
2	5104	5124	5137	5107	5024	4957	4957	4910	4872	4920	4954	4937	5052	5161	5165	5144	5104
3	5125	5128	5093	5094	5051	4986	4867	4730	4689	4759	4877	4934	5046	5162	5135	5138	5125
4	5249	5279	5138	5086	5036	4962	4738	4580	4539	4600	4745	4937	5059	5156	5135	5297	5249
5	5095	5171	5266	5055	5031	4913	4610	4506	4457	4519	4610	4893	5052	5124	5273	5196	5095
6	5013	5010	5226	5062	5039	4842	4535	4334	4261	4354	4515	4834	5048	5109	5243	5047	5013
7	5038	5058	5111	5098	5017	4766	4443	4229	4219	4237	4464	4741	5052	5124	5126	5077	5038
8	4975	5028	5055	5141	5017	4675	4303	4178	4067	4206	4332	4662	5045	5165	5020	5047	4975
9	4943	4971	5075	5207	4992	4603	4232	3983	3853	4016	4213	4584	5014	5242	5057	4996	4943
10	5002	4981	5032	5206	4958	4535	4191	3815	3747	3833	4166	4494	5002	5225	5042	4999	5002
11	4843	5015	4993	5134	4954	4468	4100	3714	3604	3726	4109	4448	4974	5182	5004	5021	4843
12	4694	4817	4933	5083	4896	4414	3929	3555	3454	3577	3925	4395	4928	5090	4944	4841	4694
13	4956	4744	4946	5000	4858	4321	3780	3422	3306	3440	3772	4332	4906	4998	4938	4750	4956
14	5155	4971	5015	4914	4820	4227	3667	3277	3153	3319	3688	4246	4855	4919	4990	4988	5155
15	4843	5161	4914	4860	4755	4131	3539	3138	2950	3174	3561	4138	4816	4841	4923	5179	4843
16	4706	4939	4735	4819	4724	4048	3419	2959	2787	3008	3431	4056	4771	4816	4698	4928	4706
17	4796	4728	4703	4767	4653	3991	3299	2794	2616	2812	3304	3983	4715	4800	4681	4741	4796
18	4746	4827	4820	4734	4614	3916	3153	2637	2409	2662	3183	3906	4677	4747	4848	4833	4746
19	4939	4795	4944	4658	4557	3840	3020	2431	2176	2479	3055	3831	4614	4702	4982	4786	4939
20	4869	4862	4918	4581	4506	3741	2885	2228	2003	2282	2925	3724	4568	4640	4883	4898	4869
21	4737	4962	4718	4522	4449	3642	2743	2052	1824	2085	2792	3639	4514	4550	4642	4971	4737
22	4574	4846	4612	4467	4395	3538	2609	1894	1636	1927	2650	3532	4461	4503	4584	4838	4574
23	4939	4644	4655	4453	4348	3436	2458	1711	1429	1732	2489	3439	4404	4492	4663	4644	4939
24	5016	4647	4657	4449	4292	3328	2280	1522	1253	1542	2341	3337	4358	4477	4619	4675	5016
25	4955	4968	4560	4468	4227	3239	2125	1335	1135	1370	2185	3255	4289	4486	4563	5015	4955
26	4742	5033	4591	4443	4168	3153	1978	1202	1049	1233	2031	3155	4240	4453	4620	5068	4742
27	4758	4938	4669	4388	4099	3035	1839	1099	972	1117	1877	3064	4177	4363	4636	4936	4758
28	4983	4766	4591	4277	4039	2904	1709	1020	907	1029	1745	2960	4118	4280	4461	4740	4983

Laboratory: UTEST TECHNICAL LABORATORY A2LA Certificate# 4810.01

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Report Format Number BL-FM-SA-012

29	5253	4758	4421	4127	3962	2787	1554	948	845	964	1623	2860	4047	4140	4347	4757	5253
30	5278	4903	4355	4008	3895	2686	1407	890	789	900	1480	2762	3988	4062	4347	4964	5278
31	4995	5123	4444	3959	3820	2578	1288	837	746	844	1342	2645	3922	4041	4479	5160	4995
32	4934	5237	4531	3939	3753	2475	1181	778	702	787	1230	2527	3835	4054	4553	5222	4934
33	5121	5012	4547	3931	3681	2361	1094	736	664	742	1130	2419	3771	4044	4532	4972	5121
34	5571	4924	4479	3918	3604	2254	1007	698	617	700	1057	2327	3696	4026	4405	4865	5571
35	5483	4926	4321	3896	3526	2159	929	654	569	658	977	2219	3622	3977	4255	4967	5483
36	5387	5322	4226	3828	3456	2055	872	610	529	621	903	2113	3543	3893	4215	5390	5387
37	5300	5361	4285	3756	3381	1950	823	569	490	575	850	2016	3475	3820	4355	5308	5300
38	5362	5188	4406	3697	3292	1827	774	531	451	531	802	1916	3393	3787	4450	5187	5362
39	5693	5188	4435	3643	3207	1711	730	487	417	493	760	1799	3297	3776	4410	5173	5693
40	5585	5189	4381	3616	3117	1607	689	448	389	454	719	1680	3205	3731	4342	5208	5585
41	5497	5348	4294	3574	3032	1506	655	419	363	415	685	1575	3121	3650	4289	5414	5497
42	5625	5383	4201	3483	2939	1414	619	385	332	387	648	1480	3034	3548	4180	5312	5625
43	5699	5311	4176	3390	2856	1322	588	355	305	355	609	1381	2930	3429	4265	5306	5699
44	5538	5413	4362	3284	2756	1240	543	329	282	328	568	1303	2846	3369	4392	5425	5538
45	5601	5360	4320	3205	2657	1144	504	305	253	305	534	1232	2740	3313	4273	5356	5601
46	5583	5267	4213	3138	2568	1054	476	277	235	284	503	1137	2656	3269	4188	5292	5583
47	5652	5256	4134	3083	2476	981	442	257	216	256	465	1042	2561	3244	4158	5271	5652
48	5544	5290	4104	3061	2387	913	414	236	198	240	435	972	2472	3212	4159	5306	5544
49	5328	5284	4173	3039	2295	859	383	212	181	220	409	917	2392	3129	4317	5296	5328
50	5303	5193	4294	2981	2215	795	358	197	165	199	378	854	2316	3058	4180	5188	5303
51	5306	5138	4142	2886	2143	745	332	186	153	185	355	809	2240	2961	4082	5124	5306
52	5352	5102	4010	2769	2069	707	307	170	148	175	325	761	2152	2847	4010	5099	5352
53	5398	5069	3926	2674	1983	669	287	161	145	161	304	720	2079	2772	3952	5081	5398
54	5392	5059	3879	2593	1915	638	271	151	149	146	280	687	2003	2774	3907	5070	5392
55	5331	5050	3827	2568	1844	609	248	140	144	140	262	660	1929	2758	3846	5050	5331
56	5210	5036	3769	2571	1769	576	230	138	142	134	244	628	1861	2660	3809	5026	5210
57	5115	4988	3736	2489	1687	549	214	129	135	131	226	598	1783	2547	3761	4974	5115
58	5019	4917	3690	2378	1620	520	194	125	124	120	209	569	1720	2466	3719	4902	5019
59	4942	4841	3652	2293	1547	499	184	115	116	112	196	543	1656	2417	3672	4831	4942
60	4893	4751	3611	2230	1481	466	167	110	102	106	180	517	1589	2416	3637	4754	4893

Laboratory: UTEST TECHNICAL LABORATORY A2LA Certificate# 4810.01

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Report Format Number BL-FM-SA-012

10 / 22

61	4923	4674	3558	2215	1406	442	159	103	96	96	167	488	1511	2357	3598	4673	4923
62	4906	4616	3513	2180	1311	412	146	94	90	93	156	458	1428	2237	3548	4610	4906
63	4784	4570	3471	2122	1232	392	131	88	79	85	142	428	1348	2138	3506	4566	4784
64	4673	4507	3409	2022	1155	368	122	78	68	77	132	406	1268	2088	3440	4499	4673
65	4568	4418	3345	1945	1076	348	113	66	61	68	122	381	1177	2053	3373	4428	4568
66	4472	4337	3273	1893	989	321	103	65	48	46	106	359	1096	1996	3301	4349	4472
67	4404	4248	3210	1829	904	300	96	52	38	53	98	333	1016	1882	3231	4249	4404
68	4333	4158	3143	1756	826	281	83	40	24	35	87	312	925	1786	3167	4158	4333
69	4267	4082	3076	1664	749	261	76	30	14	29	75	287	839	1724	3109	4091	4267
70	4199	4008	3003	1586	686	238	67	11	13	10	70	268	765	1665	3042	4013	4199
71	4110	3924	2943	1525	617	217	58	12	15	12	65	246	692	1612	2970	3939	4110
72	4035	3853	2860	1473	551	205	54	11	12	10	56	225	629	1550	2903	3864	4035
73	3954	3761	2783	1419	502	186	45	12	10	12	46	208	573	1487	2817	3777	3954
74	3875	3679	2712	1364	449	169	31	10	13	9	40	188	513	1434	2748	3690	3875
75	3780	3589	2631	1312	401	155	28	9	12	8	31	172	458	1387	2674	3608	3780
76	3676	3513	2545	1254	360	141	35	9	13	12	32	158	415	1314	2589	3525	3676
77	3582	3428	2456	1197	324	131	33	11	13	11	30	145	369	1254	2516	3447	3582
78	3502	3347	2387	1134	286	120	23	11	12	7	35	131	329	1190	2433	3353	3502
79	3427	3246	2306	1077	256	108	28	10	14	11	33	123	295	1127	2351	3242	3427
80	3328	3135	2222	1023	229	102	27	10	13	9	28	111	262	1073	2270	3139	3328
81	3244	3034	2146	964	203	90	24	0	16	10	21	105	231	1018	2182	3037	3244
82	3167	2948	2069	911	181	85	23	0	16	0	24	94	202	966	2105	2954	3167
83	3089	2865	1988	861	161	74	25	14	15	11	26	86	178	908	2030	2870	3089
84	2993	2776	1913	810	137	73	21	13	13	9	23	76	158	857	1945	2792	2993
85	2907	2693	1840	763	129	69	22	0	13	8	25	77	137	803	1869	2701	2907
86	2810	2604	1760	717	116	62	21	10	16	10	25	65	124	757	1786	2619	2810
87	2693	2516	1682	671	101	63	22	9	16	8	25	68	106	715	1711	2518	2693
88	2596	2415	1604	635	94	43	20	7	16	11	20	62	99	667	1636	2419	2596
89	2506	2322	1530	596	90	57	22	11	16	11	19	62	91	626	1568	2328	2506
90	2406	2229	1470	559	86	51	21	11	13	12	19	51	81	592	1505	2236	2406
91	2318	2134	1408	531	80	55	23	11	13	10	20	58	82	559	1439	2150	2318
92	2219	2052	1348	505	79	52	18	11	12	11	21	56	80	528	1369	2059	2219

93	2136	1965	1286	481	77	42	20	12	10	12	23	56	75	497	1318	1971	2136
94	2043	1891	1233	457	72	44	16	13	15	11	23	51	79	474	1268	1892	2043
95	1966	1816	1181	434	68	41	19	14	19	9	19	52	74	459	1214	1827	1966
96	1892	1745	1136	413	68	39	18	15	13	0	19	51	74	436	1160	1755	1892
97	1814	1677	1086	400	69	42	14	11	17	13	22	49	74	412	1114	1689	1814
98	1748	1607	1042	378	65	43	16	14	13	13	17	48	75	398	1064	1621	1748
99	1687	1541	999	357	60	42	20	14	17	13	19	44	78	376	1020	1555	1687
100	1614	1483	961	338	71	34	14	12	16	12	19	38	72	359	974	1495	1614
101	1558	1424	919	323	72	35	17	14	15	14	21	44	73	343	938	1435	1558
102	1504	1368	887	306	69	40	17	11	13	9	15	39	77	326	899	1380	1504
103	1452	1324	850	294	63	37	15	12	15	10	17	37	79	309	867	1336	1452
104	1403	1271	815	274	70	33	16	10	15	12	21	36	68	296	827	1292	1403
105	1348	1232	783	262	65	22	17	12	17	8	21	33	76	280	797	1244	1348
106	1303	1188	742	242	65	33	16	16	16	15	19	31	72	264	756	1199	1303
107	1258	1145	709	231	66	31	12	12	14	10	14	37	71	249	721	1156	1258
108	1226	1110	680	218	63	27	15	12	12	11	17	31	72	230	689	1123	1226
109	1178	1069	650	207	65	30	14	15	16	12	13	31	66	220	654	1078	1178
110	1131	1030	618	195	66	31	10	14	17	12	16	30	62	209	627	1043	1131
111	1064	985	586	180	60	29	16	15	13	14	17	29	68	199	591	995	1064
112	983	942	556	167	60	23	12	12	14	17	17	29	72	186	564	959	983
113	916	898	523	161	62	27	12	13	18	12	13	29	62	176	537	913	916
114	858	861	493	154	60	25	15	10	17	14	14	28	66	161	502	871	858
115	799	821	461	142	59	22	11	11	17	12	16	24	62	155	474	832	799
116	747	784	432	138	58	17	16	12	19	16	10	27	56	147	442	793	747
117	701	740	409	131	55	26	16	11	17	9	15	23	56	138	415	751	701
118	664	693	385	126	53	20	12	13	16	13	14	24	51	134	390	710	664
119	625	657	363	116	51	24	13	13	18	13	18	28	57	129	364	670	625
120	595	617	336	117	52	20	10	11	21	0	13	20	57	119	345	632	595
121	569	582	316	103	51	20	13	11	9	16	15	25	52	115	320	596	569
122	530	544	297	106	49	23	14	12	16	15	13	23	50	110	299	560	530
123	497	509	277	95	46	22	15	12	18	12	15	25	49	106	283	517	497
124	464	466	258	90	46	21	12	13	18	14	17	21	43	102	261	474	464

125	437	432	241	85	43	22	12	15	15	13	12	21	38	97	242	438	437
126	410	400	226	77	41	25	16	9	13	11	10	16	40	88	231	406	410
127	381	367	207	78	44	21	0	16	15	12	14	21	44	85	215	373	381
128	354	334	200	78	37	12	11	14	10	9	16	22	38	83	199	347	354
129	326	309	182	73	43	18	11	12	20	13	13	16	43	79	182	312	326
130	304	281	173	66	40	21	11	11	15	13	15	22	40	78	178	286	304
131	275	259	157	67	38	21	13	11	14	16	17	19	39	73	166	261	275
132	253	240	153	65	35	23	14	11	18	12	15	19	36	65	155	236	253
133	237	217	141	63	34	21	13	11	17	13	13	21	34	65	143	220	237
134	219	201	133	60	35	17	18	11	16	11	17	19	37	62	135	201	219
135	202	188	125	53	32	17	14	15	17	14	16	21	34	62	128	186	202
136	188	169	117	55	32	19	14	14	16	17	16	18	33	53	119	175	188
137	172	160	114	36	35	24	11	16	17	17	15	14	35	58	115	160	172
138	161	146	110	53	35	21	18	14	20	20	17	18	33	54	106	148	161
139	155	138	102	45	30	18	14	17	18	17	13	13	29	52	101	139	155
140	143	130	93	35	27	23	12	15	10	17	12	12	25	46	92	126	143
141	130	118	85	43	31	15	14	14	21	16	16	16	31	47	88	123	130
142	120	109	79	43	27	16	13	13	16	19	17	16	29	42	86	111	120
143	115	105	75	37	23	20	14	13	19	18	18	17	27	43	81	106	115
144	101	92	71	39	29	17	15	11	20	18	19	18	26	42	73	96	101
145	104	89	70	38	23	15	13	14	17	16	17	17	24	39	67	89	104
146	93	76	67	35	27	14	15	16	16	17	16	19	25	34	61	86	93
147	85	81	57	24	22	11	17	17	21	21	14	17	29	35	60	78	85
148	69	69	60	33	18	19	16	17	22	20	17	14	19	35	58	73	69
149	71	65	58	18	21	16	19	18	21	16	22	15	22	37	49	67	71
150	65	60	51	26	24	16	11	14	17	19	21	17	26	28	50	65	65
151	64	55	44	29	20	22	15	18	21	11	19	15	21	27	47	61	64
152	57	57	39	21	19	20	16	17	20	16	18	20	20	27	49	58	57
153	58	48	42	16	20	19	20	17	23	18	16	20	21	24	37	53	58
154	55	46	41	16	22	15	20	16	21	17	19	16	20	20	34	50	55
155	47	46	29	20	15	19	15	18	22	21	19	17	17	15	36	44	47
156	50	38	32	22	8	17	17	19	21	19	18	16	18	22	37	44	50

157	45	40	35	18	16	18	17	19	22	21	20	18	23	15	36	41	45
158	40	38	29	18	17	20	13	21	22	18	18	18	19	23	32	42	40
159	42	35	28	16	19	16	17	15	21	14	22	19	18	14	28	32	42
160	33	35	29	18	22	21	18	17	22	21	22	19	21	19	24	35	33
161	36	27	24	21	20	23	16	21	21	21	21	17	21	17	24	33	36
162	30	31	25	15	18	21	19	17	16	21	17	14	13	21	24	32	30
163	31	14	25	18	17	24	17	14	25	18	23	22	20	20	22	31	31
164	31	14	19	17	18	19	18	18	23	17	21	20	16	14	21	29	31
165	28	23	23	18	21	20	21	18	19	22	18	17	15	22	23	25	28
166	30	23	18	17	24	23	19	20	23	16	21	12	17	21	23	21	30
167	27	22	21	19	18	20	19	19	23	22	18	21	22	20	17	22	27
168	23	21	15	18	19	20	17	14	20	18	21	19	20	18	20	20	23
169	21	21	21	18	19	22	20	17	22	21	23	19	23	18	16	21	21
170	21	20	18	21	23	18	20	18	21	24	20	15	20	18	18	20	21
171	21	21	23	17	21	20	22	18	23	21	22	18	20	18	19	14	21
172	17	20	17	17	19	22	20	19	23	18	21	16	22	20	19	19	17
173	18	20	15	18	19	22	19	19	18	21	21	18	20	19	14	19	18
174	20	21	17	17	19	18	21	8	26	20	20	15	19	21	17	19	20
175	21	11	20	19	19	24	18	19	24	16	18	17	18	18	18	18	21
176	17	21	18	15	23	21	15	19	27	17	19	19	21	20	18	18	17
177	20	17	18	21	21	21	17	19	25	18	22	17	21	18	17	18	20
178	18	18	18	17	21	21	18	23	21	13	21	19	19	17	18	14	18
179	20	18	15	21	21	20	20	20	19	17	21	17	19	19	21	14	20
180	22	18	15	17	24	17	20	20	20	20	21	20	22	17	17	15	22

BUG

Lum. Classification System (LCS)

<u>LCS Zone</u>	<u>Lumens</u>	<u>%Lamp</u>	<u>%Lum</u>
FL (0-30)	1996.4	13.7	13.7
FM (30-60)	4732.5	32.5	32.5
FH (60-80)	2840.2	19.5	19.5
FVH(80-90)	934.1	6.4	6.4
BL (0-30)	1273.9	8.8	8.8
BM (30-60)	1028.0	7.1	7.1
BH (60-80)	200.3	1.4	1.4
BVH(80-90)	25.0	0.2	0.2
UL (90-100)	633.5	4.4	4.4
UH (100-180)	887.4	6.1	6.1
Total	14551.3	100.1	100.0
BUG Rating	B3-U4-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 (100W,4000K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC230602	120.0	60	0.825	98.81	0.998	4.67
6E-D1	277.0	60	0.372	96.33	0.934	12.54
DLC Pass Criteria					$\geq 0.9(-3\%)$	$\leq 20(+5)$

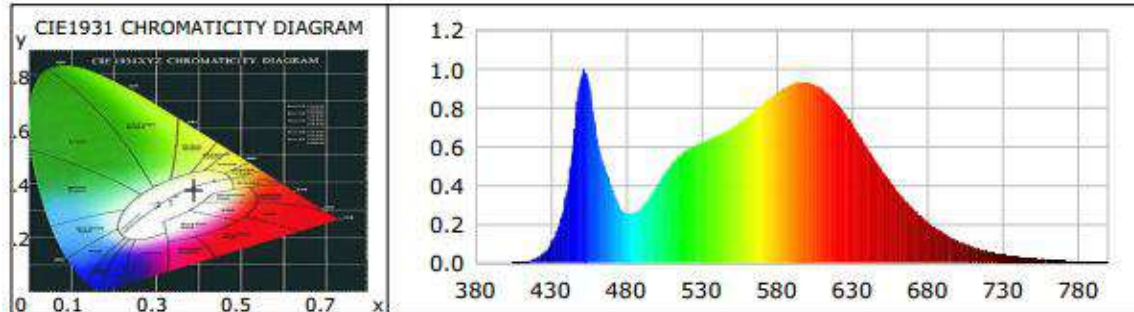
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	83	R9	11
Frequency (Hz)	60	R2	91	R10	78
CCT (K)	3804	R3	96	R11	81
Duv	-0.0019	R4	82	R12	64
Chromaticity (x, y)	x=0.3880 y=0.3773	R5	83	R13	85
Chromaticity (u', v')	u(u')=0.2299 v'=0.5029	R6	87	R14	98
Color Rendering Index (CRI)	84	R7	84	R15	77
R9	11	R8	64	--	--
Rf	84	--	--	--	--
Rg	96	--	--	--	--
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)	15364.0	15069.9	5000-10000(-10%)
Luminous Efficacy (lm/W)	155.49	156.44	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	152.51		

Spectral Power Distribution & Chromaticity Diagram



WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0001	0.0388	535	0.6014	167.2549	690	0.2820	78.4376
385	0.0007	0.1889	540	0.6179	171.8502	695	0.2452	68.1846
390	0.0005	0.1482	545	0.6334	176.1711	700	0.2121	59.0008
395	0.0005	0.1412	550	0.6542	181.9623	705	0.1835	51.0242
400	0.0008	0.2236	555	0.6710	186.6111	710	0.1577	43.8637
405	0.0020	0.5469	560	0.6937	192.9270	715	0.1354	37.6502
410	0.0044	1.2154	565	0.7209	200.4955	720	0.1162	32.3064
415	0.0109	3.0396	570	0.7516	209.0262	725	0.0985	27.4082
420	0.0239	6.6574	575	0.7817	217.4053	730	0.0842	23.4043
425	0.0501	13.9457	580	0.8139	226.3663	735	0.0715	19.8742
430	0.0991	27.5553	585	0.8467	235.4957	740	0.0619	17.2202
435	0.1844	51.2994	590	0.8779	244.1675	745	0.0523	14.5484
440	0.3362	93.5169	595	0.9000	250.3138	750	0.0438	12.1902
445	0.6298	175.1526	600	0.9220	256.4330	755	0.0372	10.3564
450	0.9550	265.6165	605	0.9326	259.3743	760	0.0319	8.8647
455	0.9419	261.9789	610	0.9337	259.6783	765	0.0279	7.7705
460	0.6796	189.0097	615	0.9209	256.1353	770	0.0238	6.6312
465	0.5116	142.2789	620	0.8994	250.1557	775	0.0189	5.2428
470	0.4029	112.0559	625	0.8675	241.2630	780	0.0175	4.8540
475	0.3024	84.0947	630	0.8234	229.0202	785	0.0136	3.7803
480	0.2545	70.7721	635	0.7730	214.9843	790	0.0124	3.4424
485	0.2571	71.5124	640	0.7156	199.0399	795	0.0103	2.8662
490	0.2835	78.8586	645	0.6551	182.1955	800	0.0082	2.2891
495	0.3328	92.5535	650	0.5951	165.5030			
500	0.3943	109.6549	655	0.5346	148.6725			
505	0.4539	126.2330	660	0.4771	132.7072			
510	0.5071	141.0508	665	0.4221	117.3905			
515	0.5470	152.1319	670	0.3712	103.2286			
520	0.5772	160.5251	675	0.3238	90.0663			
525	0.6014	167.2549	680	0.2820	78.4376			
530	0.6179	171.8502	685	0.2452	68.1846			

TM30

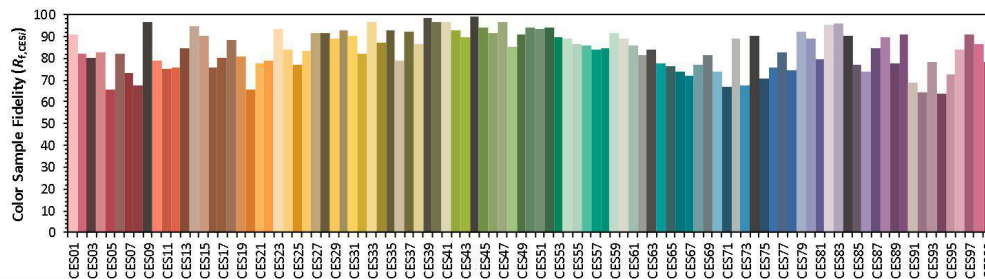
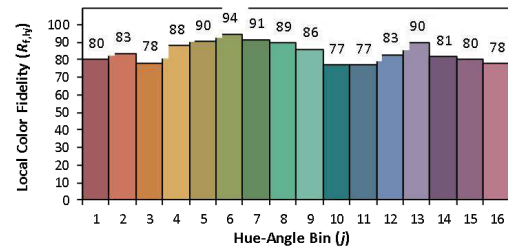
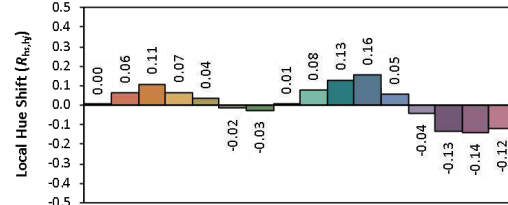
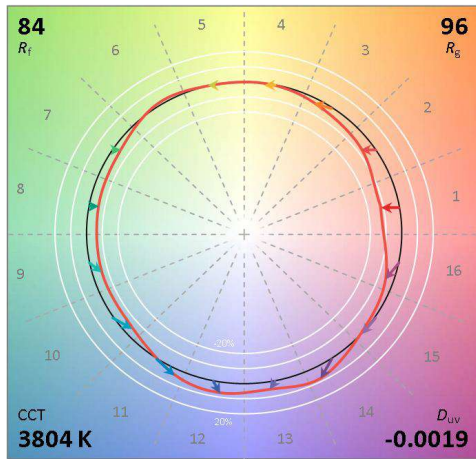
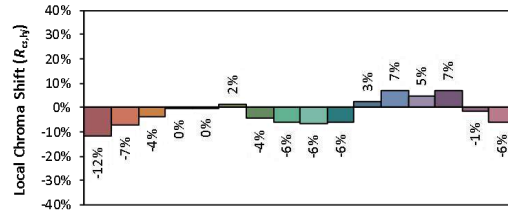
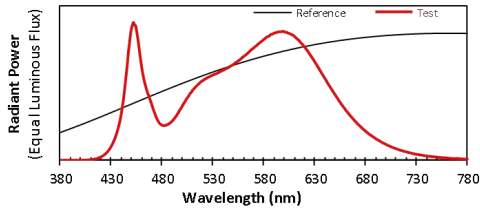
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-3080RC35005A1
L128-5080RC35003P1

Manufacturer: IKIO LED LIGHTING

Date: 2023/7/15

Model: IK-SWPM-120WBSGDA1-BRW30/40/50
(100W,4000K)



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

x 0.3880
 y 0.3772
 u' 0.2299
 v' 0.5029

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 (100W,5000K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTC230602	120.0	60	0.856	102.55	0.998	4.64
6E-D1	277.0	60	0.387	100.15	0.935	12.55
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

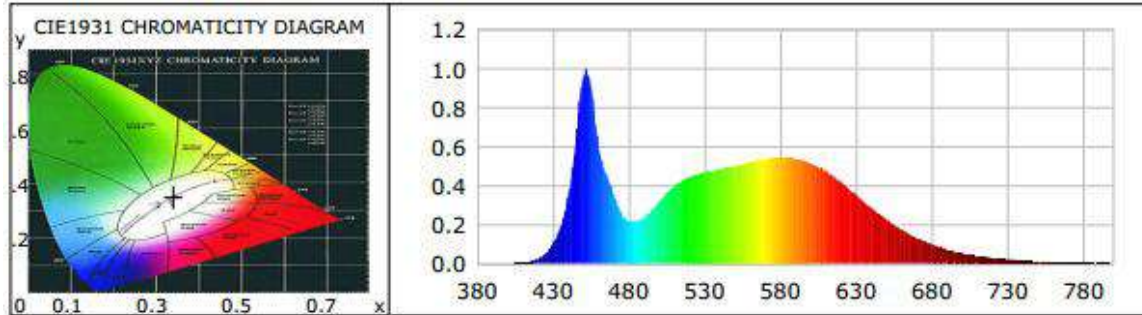
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	80	R9	1
Frequency (Hz)	60	R2	88	R10	71
CCT (K)	5245	R3	92	R11	80
Duv	0.0019	R4	81	R12	59
Chromaticity (x, y)	x=0.3387 y=0.3501	R5	81	R13	82
Chromaticity (u', v')	u(u')=0.2077 'v=0.4830	R6	83	R14	96
Color Rendering Index (CRI)	82	R7	86	R15	75
R9	1	R8	65	--	--
Rf	82	--	--	--	--
Rg	95	--	--	--	--
Rcs,h1(%)	-14	--	--	--	--

Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	14629.8	14413.6	5000-10000(-10%)
Luminous Efficacy (lm/W)	142.66	143.92	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	140.55		

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	0.1302	535	0.4577	189.6939	690	0.1314	54.4682
385	0.0008	0.3333	540	0.4660	193.1329	695	0.1140	47.2654
390	0.0005	0.1937	545	0.4745	196.6720	700	0.0982	40.7173
395	0.0005	0.2269	550	0.4842	200.6958	705	0.0836	34.6543
400	0.0011	0.4468	555	0.4901	203.1151	710	0.0723	29.9556
405	0.0016	0.6671	560	0.4999	207.1801	715	0.0624	25.8587
410	0.0040	1.6561	565	0.5096	211.2181	720	0.0532	22.0479
415	0.0111	4.5812	570	0.5201	215.5612	725	0.0451	18.6842
420	0.0238	9.8747	575	0.5283	218.9637	730	0.0383	15.8812
425	0.0506	20.9673	580	0.5344	221.4838	735	0.0332	13.7411
430	0.1010	41.8760	585	0.5410	224.2369	740	0.0286	11.8685
435	0.1906	79.0060	590	0.5434	225.2311	745	0.0238	9.8753
440	0.3419	141.7165	595	0.5406	224.0630	750	0.0206	8.5525
445	0.6244	258.7807	600	0.5369	222.5319	755	0.0170	7.0438
450	0.9579	397.0019	605	0.5281	218.8606	760	0.0136	5.6459
455	0.9071	375.9736	610	0.5154	213.6123	765	0.0123	5.1091
460	0.6046	250.6059	615	0.4953	205.2898	770	0.0116	4.8107
465	0.4560	189.0122	620	0.4738	196.3791	775	0.0095	3.9323
470	0.3533	146.4196	625	0.4484	185.8314	780	0.0070	2.9204
475	0.2550	105.6905	630	0.4162	172.5022	785	0.0056	2.3259
480	0.2165	89.7442	635	0.3831	158.7891	790	0.0056	2.3241
485	0.2184	90.5098	640	0.3513	145.5868	795	0.0044	1.8129
490	0.2365	98.0128	645	0.3182	131.8714	800	0.0055	2.2704
495	0.2729	113.1122	650	0.2850	118.1314			
500	0.3192	132.3184	655	0.2541	105.3343			
505	0.3604	149.3537	660	0.2250	93.2457			
510	0.3971	164.5895	665	0.1966	81.4733			
515	0.4240	175.7532	670	0.1723	71.4015			
520	0.4423	183.3379	675	0.1504	62.3256			
525	0.4577	189.6939	680	0.1314	54.4682			
530	0.4660	193.1329	685	0.1140	47.2654			

TM30

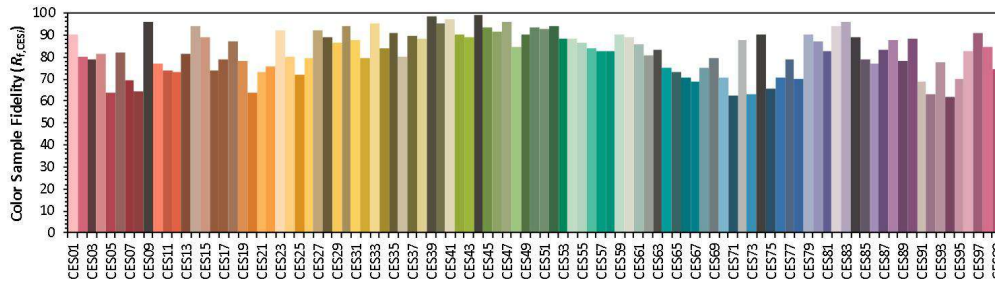
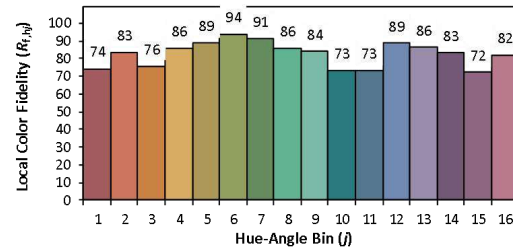
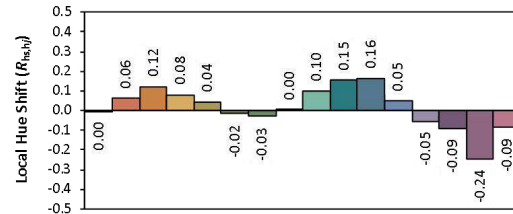
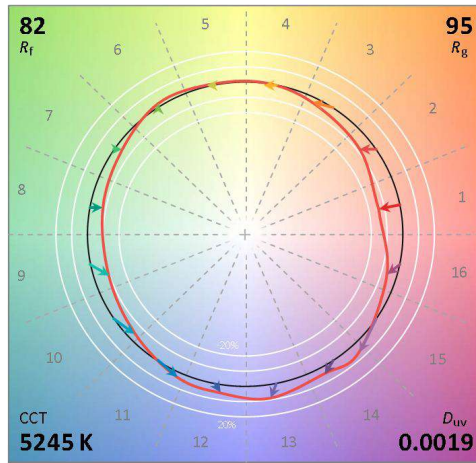
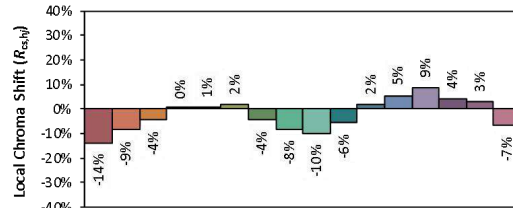
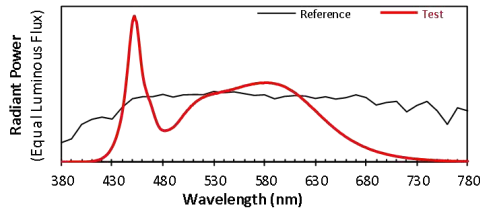
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-5080RC35003P1

Manufacturer: IKIO LED LIGHTING

Date: 2023/7/15

Model: IK-SWPM-120WBSGDA1-BRW30/40/50
(100W,5000K)



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

x 0.3388
 y 0.3501
 u' 0.2077
 v' 0.4830

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 *****