Certificate#4810.01

LM-79-08 Test Report

For

IKIO LED LIGHTING, LLC

(Brand Name: IKIO)

8470 Allison Pointe Blvd, Suite 128 Indianapolis, IN 46250

Fuel Pump Canopy Luminaires

Model name(s): IK-CPSL-0060W-30/40/50K-MV-DLB-BRP1

Remark: “a” can be any two letters to represent Housing colors; "b" can be "P" for Photocell, "P1" for Photocell and CCT adjustment integrated controller or blank for no Photocell provided; “c” can be "M” or blank for microwave sensor or no sensor provided. “e” can be any two digits to represent CCT.

Representative (Tested) Model:

IK-CPSL-0060W-30/40/50K-MV-DLB-BRP1 (60W,3000K)
IK-CPSL-0060W-30/40/50K-MV-DLB-BRP1 (60W,4000K)
IK-CPSL-0060W-30/40/50K-MV-DLB-BRP1 (60W,5000K)

Test & Report By:

Sophie Yang

Engineer: Sophie Yang

Date: 2021-02-01

Review By:

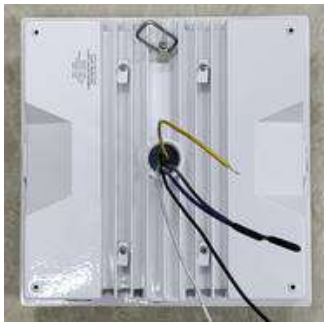
Jason Luo

Manager: Jason Luo

1.1 Product Information:

Organization Name	IKIO LED LIGHTING, LLC	
Brand Name	IKIO	
Model Number	IK-CPSL-0060W-30/40/50K-MV-DLB-BRP1	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Fuel Pump Canopy Luminaires	
Rated Voltage / Frequency	120-277Vac, 50/60 Hz	
Nominal Power	60W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K,4000K,5000K(Color Selectable)	
LED Manufacturer	Bridgelux Inc.	
LED Model	BXEM-30E-12H-6C-00-0-0 BXEM-50E-12H-6C-00-0-0	
Sample Number	BLC2101014E-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	2021-01-12
Date of Test	2021-01-14
Test item	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 Premium	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° C ± 1° 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 25º C ± 1º 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 25º C ± 1º C. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.

2.1 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2021-01-14	Test Ambient:	25.2 º C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	IK-CPSL-0060W-30/40/50K-MV-DLB-BRP1 (60W, 3000K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC210101 4E-D1	120.0	60	0.501	59.83	0.996	7.17
	277.0	60	0.224	58.95	0.951	7.83
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

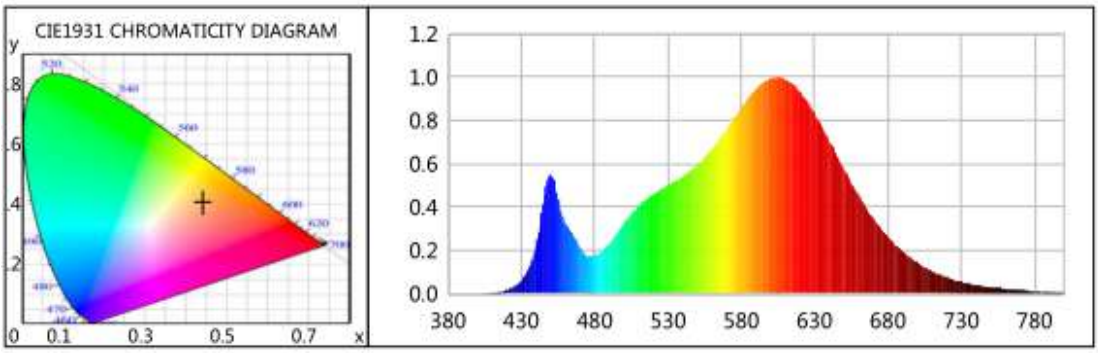
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	2973
Duv	0.0001
Chromaticity (x, y)	x=0.4389 y=0.4049
Chromaticity (u', v')	u(u')=0.2515 v'=0.5220
Color Rendering Index (CRI)	83
R9	7
Rf	85
Rg	96
Rcs,h1 (%)	-11

Special Color Rendering Indices			
R1	81	R9	7
R2	91	R10	80
R3	97	R11	81
R4	82	R12	72
R5	82	R13	83
R6	90	R14	99
R7	82	R15	73
R8	59	--	--
--	--	--	--
--	--	--	--
--	--	--	--

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)	7650.1	7514.1	5000-10000lm (-10%)
Luminous Efficacy (lm/W)	127.86	127.47	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	125.59		
Zonal lumens in the 0-40° zone (%)	43.3	--	>=40(-3)
Zonal lumens in the 40-70° zone (%)	43.5		>=40(-3)
Beam Angle (°)	112.1	--	--
Center Beam Candle Power (cd)	2325	--	--

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	0.0368	525	0.4801	76.3286	670	0.3478	55.2903
385	0.0002	0.0367	530	0.4989	79.3169	675	0.3022	48.0516
390	0.0001	0.0131	535	0.5193	82.5618	680	0.2614	41.5587
395	0.0003	0.0534	540	0.5407	85.9616	685	0.2258	35.9015
400	0.0006	0.1021	545	0.5651	89.8444	690	0.1939	30.8268
405	0.0017	0.2716	550	0.5937	94.3998	695	0.1670	26.5458
410	0.0033	0.5248	555	0.6276	99.7849	700	0.1419	22.5546
415	0.0077	1.2320	560	0.6667	106.0073	705	0.1218	19.3718
420	0.0162	2.5714	565	0.7094	112.7967	710	0.1038	16.5072
425	0.0319	5.0789	570	0.7568	120.3261	715	0.0879	13.9712
430	0.0608	9.6725	575	0.8075	128.3911	720	0.0752	11.9606
435	0.1135	18.0462	580	0.8590	136.5683	725	0.0645	10.2591
440	0.2183	34.7040	585	0.9039	143.7113	730	0.0543	8.6353
445	0.4166	66.2322	590	0.9438	150.0632	735	0.0461	7.3311
450	0.5499	87.4250	595	0.9745	154.9402	740	0.0399	6.3464
455	0.4319	68.6764	600	0.9947	158.1536	745	0.0340	5.4022
460	0.3203	50.9223	605	0.9997	158.9536	750	0.0291	4.6319
465	0.2749	43.7109	610	0.9919	157.7120	755	0.0254	4.0388
470	0.2118	33.6791	615	0.9692	154.0982	760	0.0218	3.4721
475	0.1740	27.6702	620	0.9340	148.4960	765	0.0184	2.9297
480	0.1769	28.1184	625	0.8858	140.8289	770	0.0165	2.6203
485	0.1962	31.1996	630	0.8306	132.0528	775	0.0130	2.0615
490	0.2281	36.2663	635	0.7693	122.3124	780	0.0114	1.8112
495	0.2747	43.6771	640	0.7040	111.9375	785	0.0085	1.3570
500	0.3235	51.4278	645	0.6376	101.3728	790	0.0084	1.3301
505	0.3676	58.4539	650	0.5736	91.1915	795	0.0069	1.0968
510	0.4041	64.2492	655	0.5113	81.2917	800	0.0065	1.0336
515	0.4346	69.1061	660	0.4516	71.7993			
520	0.4591	73.0010	665	0.3966	63.0616			

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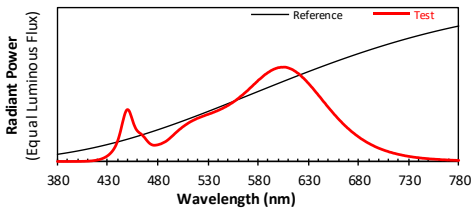
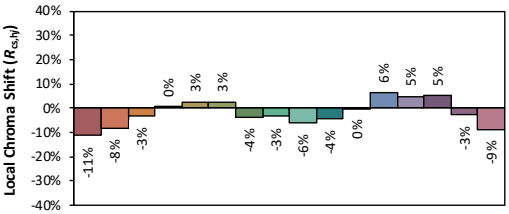
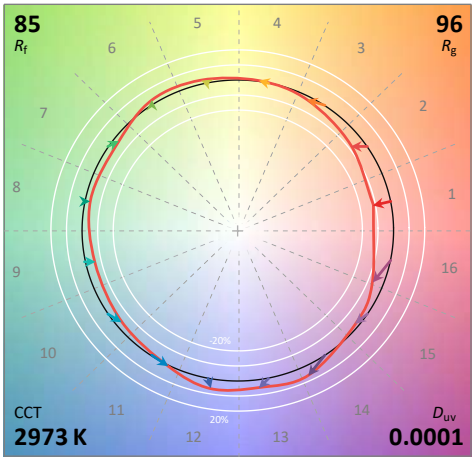
TM30

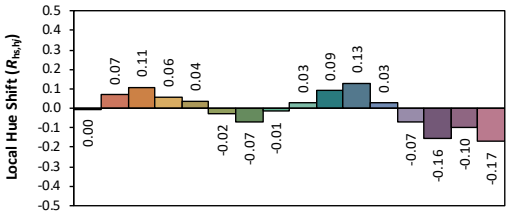
ANSI/IES TM-30-18 Color Rendition Report

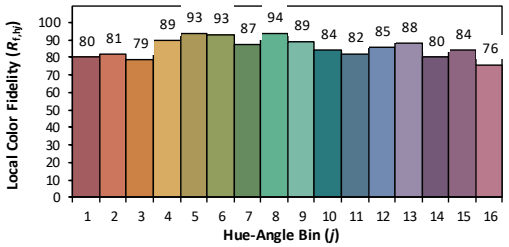
Source:	BXEM-30E-12H-6C-00-0-0 BXEM-50E-12H-6C-00-0-0	**Manufacturer:**	IKIO LED LIGHTING
Date:	2021/1/14	**Model:**	IK-CPSL-0060W-30/40/50K-MV-DLB-BRP1 (60W, 3000K)

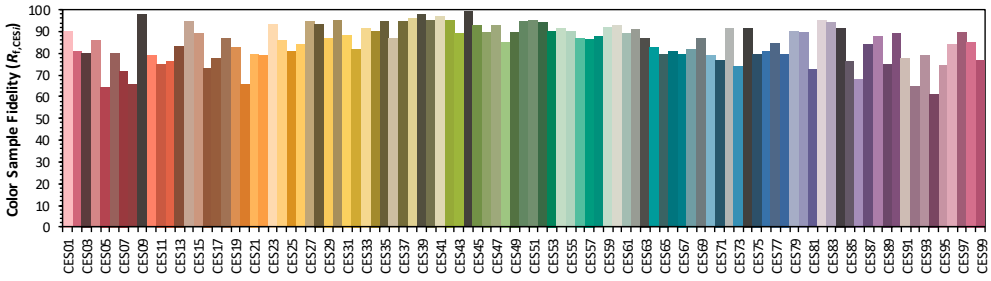












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.4389
y	0.4049
u'	0.2515
v'	0.5220

CIE 13.3-1995 (CRI)

R_a	83
R_9	7

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

Zonal Lumen Tabulation

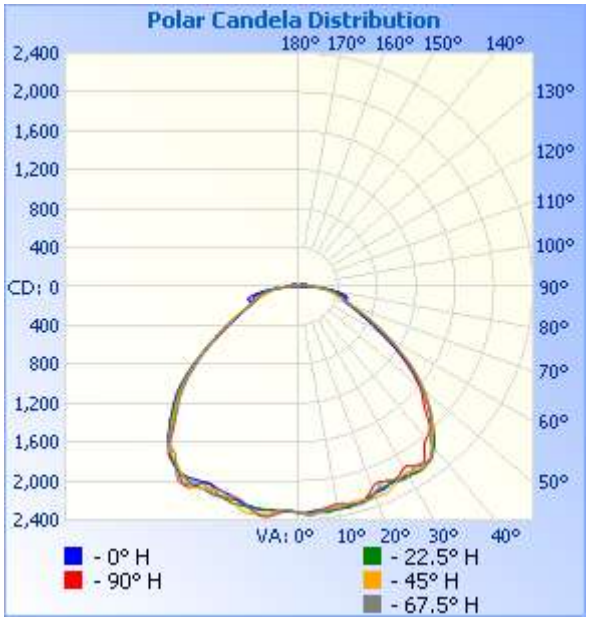
Zonal Lumen Summary

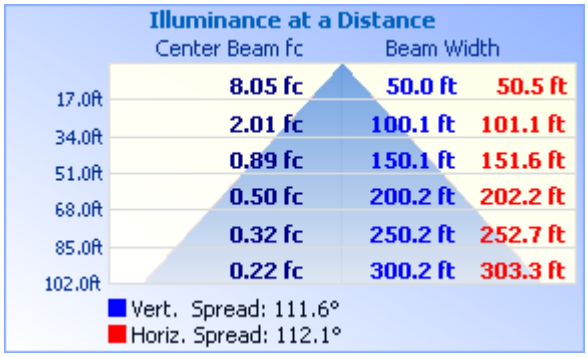
Zone	Lumens	% Lamp	% Luminaire
0-30	1,921.6	25.1%	25.1%
0-40	3,312.6	43.3%	43.3%
0-60	5,906.9	77.2%	77.2%
60-90	1,500.9	19.6%	19.6%
70-100	861.0	11.3%	11.3%
90-120	196.0	2.6%	2.6%
0-90	7,407.8	96.8%	96.8%
90-180	241.7	3.2%	3.2%
0-180	7,649.5	100%	100%

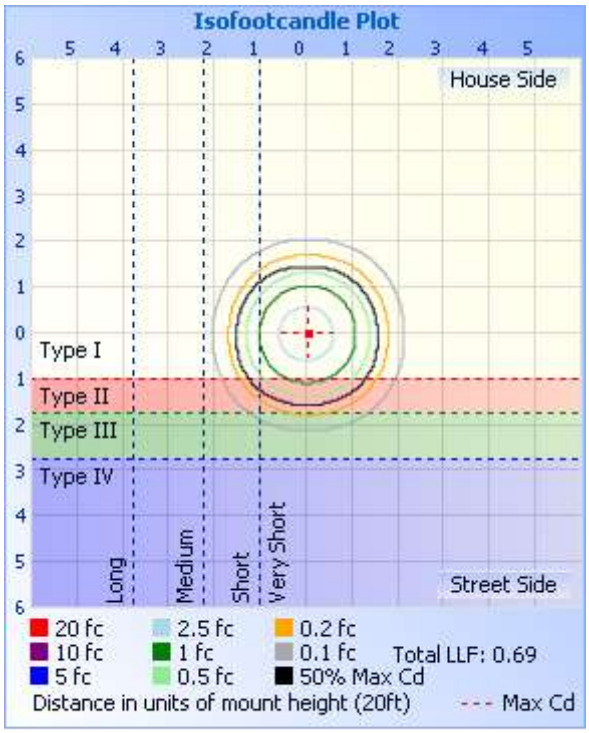
Lumens Per Zone

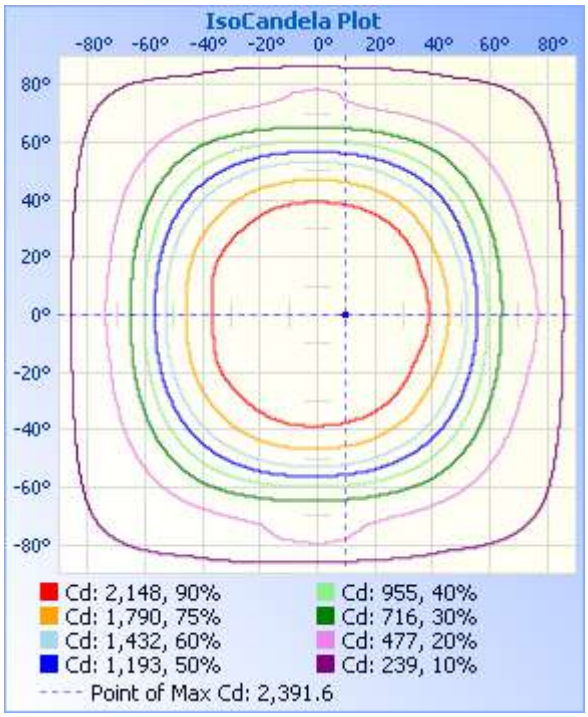
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	221.8	2.9%	90-100	95.5	1.2%
10-20	653.3	8.5%	100-110	56.6	0.7%
20-30	1,046.5	13.7%	110-120	44.0	0.6%
30-40	1,391.0	18.2%	120-130	25.1	0.3%
40-50	1,436.0	18.8%	130-140	10.8	0.1%
50-60	1,158.3	15.1%	140-150	5.2	0.1%
60-70	735.3	9.6%	150-160	2.6	0%
70-80	484.1	6.3%	160-170	1.5	0%
80-90	281.5	3.7%	170-180	0.5	0%

Photometric Data









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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	2325	2325	2325	2325	2325	2325	2325	2325	2325	2325	2325	2325	2325	2325	2325	2325	2325
1	2331	2334	2336	2337	2334	2330	2325	2320	2316	2314	2313	2316	2318	2321	2324	2327	2331
2	2326	2335	2342	2348	2340	2333	2325	2318	2311	2302	2301	2307	2312	2318	2318	2320	2326
3	2316	2328	2342	2354	2340	2330	2329	2324	2311	2299	2295	2304	2312	2316	2310	2308	2316
4	2310	2323	2333	2349	2329	2321	2332	2332	2316	2303	2298	2310	2318	2318	2304	2299	2310
5	2310	2325	2323	2334	2315	2311	2331	2337	2319	2311	2308	2325	2333	2326	2303	2296	2310
6	2314	2332	2315	2318	2300	2298	2322	2331	2315	2317	2321	2348	2354	2343	2312	2301	2314
7	2318	2339	2311	2303	2291	2283	2309	2321	2313	2318	2337	2367	2376	2362	2327	2310	2318
8	2316	2337	2307	2290	2282	2272	2301	2316	2316	2317	2351	2381	2388	2377	2348	2314	2316
9	2315	2323	2302	2276	2274	2266	2299	2322	2322	2317	2362	2384	**2392**	2381	2367	2313	2315
10	2318	2310	2300	2269	2271	2265	2296	2334	2326	2320	2369	2376	2387	2379	2379	2313	2318
11	2322	2309	2298	2270	2277	2271	2288	2337	2324	2326	2377	2364	2372	2368	2380	2317	2322
12	2324	2318	2293	2280	2290	2281	2279	2330	2315	2331	2385	2345	2351	2350	2373	2324	2324
13	2322	2323	2286	2294	2302	2294	2273	2317	2309	2330	2387	2323	2326	2328	2369	2335	2322
14	2318	2321	2279	2310	2309	2301	2276	2307	2306	2326	2380	2299	2301	2303	2365	2345	2318
15	2315	2309	2279	2319	2309	2303	2284	2300	2301	2325	2363	2276	2282	2281	2356	2347	2315
16	2315	2299	2287	2321	2301	2301	2291	2290	2288	2330	2342	2263	2279	2270	2340	2343	2315
17	2310	2293	2297	2316	2288	2297	2296	2275	2272	2332	2322	2262	2285	2272	2320	2343	2310
18	2297	2285	2308	2307	2267	2288	2298	2259	2257	2323	2299	2270	2296	2283	2300	2349	2297
19	2279	2272	2309	2292	2236	2267	2301	2246	2252	2308	2277	2286	2308	2298	2283	2354	2279
20	2264	2257	2305	2270	2199	2237	2306	2241	2251	2299	2262	2303	2310	2310	2270	2348	2264
21	2259	2242	2305	2234	2175	2207	2305	2239	2248	2301	2257	2312	2299	2315	2266	2332	2259
22	2259	2235	2307	2204	2169	2189	2296	2233	2240	2309	2263	2310	2278	2310	2268	2316	2259
23	2256	2234	2304	2186	2177	2186	2282	2222	2229	2312	2272	2296	2254	2295	2281	2310	2256
24	2245	2231	2293	2183	2193	2198	2268	2214	2225	2308	2282	2277	2231	2271	2300	2314	2245
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26	2230	2220	2254	2217	2214	2242	2238	2217	2236	2298	2306	2254	2245	2233	2329	2312	2230
27	2236	2218	2234	2241	2210	2256	2222	2225	2243	2304	2323	2264	2285	2238	2332	2305	2236
28	2242	2222	2216	2257	2194	2259	2211	2235	2250	2307	2333	2288	2327	2264	2331	2302	2242
29	2244	2229	2207	2259	2170	2251	2211	2246	2258	2303	2333	2318	2354	2306	2326	2304	2244

30	2246	2237	2208	2250	2152	2230	2217	2255	2266	2296	2318	2344	2358	2340	2318	2300	2246
31	2251	2246	2216	2230	2152	2204	2226	2263	2272	2292	2296	2357	2341	2363	2304	2289	2251
32	2257	2253	2230	2208	2173	2184	2235	2269	2270	2287	2273	2347	2306	2365	2286	2277	2257
33	2262	2260	2243	2194	2204	2177	2245	2271	2264	2274	2251	2312	2265	2342	2268	2269	2262
34	2260	2262	2249	2196	2225	2187	2254	2267	2253	2256	2231	2261	2229	2301	2253	2264	2260
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36	2240	2253	2250	2233	2195	2221	2229	2235	2212	2209	2190	2159	2210	2192	2232	2239	2240
37	2224	2237	2234	2242	2139	2211	2195	2210	2184	2184	2171	2129	2206	2164	2224	2221	2224
38	2198	2213	2203	2225	2087	2175	2156	2178	2154	2153	2147	2115	2178	2152	2209	2202	2198
39	2167	2184	2163	2179	2051	2118	2115	2138	2122	2116	2114	2099	2124	2144	2186	2177	2167
40	2134	2151	2121	2116	2032	2051	2080	2098	2086	2077	2074	2070	2055	2120	2146	2145	2134
41	2098	2109	2085	2050	2024	2002	2045	2058	2045	2039	2022	2017	1986	2073	2095	2098	2098
42	2060	2066	2048	2004	2008	1968	2010	2017	1996	1991	1966	1948	1922	2004	2039	2054	2060
43	2012	2018	2014	1970	1969	1944	1974	1969	1952	1941	1913	1870	1873	1928	1983	2006	2012
44	1964	1976	1977	1947	1912	1919	1931	1925	1905	1890	1858	1810	1837	1860	1924	1961	1964
45	1919	1923	1935	1921	1849	1885	1888	1881	1850	1837	1809	1762	1798	1802	1877	1909	1919
46	1867	1877	1888	1880	1789	1836	1839	1836	1803	1789	1763	1721	1754	1761	1830	1854	1867
47	1817	1829	1837	1829	1746	1777	1786	1782	1758	1739	1714	1681	1695	1723	1784	1802	1817
48	1765	1782	1785	1760	1709	1718	1733	1730	1711	1688	1665	1632	1631	1679	1737	1752	1765
49	1712	1734	1732	1703	1670	1660	1676	1677	1659	1637	1606	1577	1576	1619	1681	1700	1712
50	1660	1682	1678	1652	1625	1613	1627	1623	1596	1575	1548	1517	1523	1561	1626	1646	1660
51	1603	1627	1623	1606	1567	1564	1574	1558	1532	1512	1485	1452	1468	1489	1561	1584	1603
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Certificate#4810.01

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179	5	5	6	5	4	4	5	5	6	6	5	6	4	5	5	5	5
180	5	5	6	6	4	4	5	5	5	5	5	6	4	5	5	5	5

BUG

Lum. Classification System (LCS)

LCS Zone	Lumens	%Lamp	%Lum
FL (0-30)	961.7	12.6	12.6
FM (30-60)	2019.0	26.4	26.4
FH (60-80)	622.7	8.1	8.1
FVH (80-90)	144.7	1.9	1.9
BL (0-30)	959.8	12.5	12.5
BM (30-60)	1967.1	25.7	25.7
BH (60-80)	596.6	7.8	7.8
BVH (80-90)	136.7	1.8	1.8
UL (90-100)	95.4	1.2	1.2
UH (100-180)	146.2	1.9	1.9
Total	7649.9	99.9	100.0
BUG Rating	**B2-U3-G2**		

2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2021-01-14	Test Ambient:	25.2 º C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	IK-CPSL-0060W-30/40/50K-MV-DLB-BRP1 (60W, 4000K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC210101 4E-D1	120.0	60	0.481	57.45	0.995	7.47
	277.0	60	0.216	56.79	0.951	8.07
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	3716
Duv	-0.0004
Chromaticity (x, y)	x=0.3935 y=0.3835
Chromaticity (u', v')	u(u')=0.2309 v'=0.5064
Color Rendering Index (CRI)	84
R9	10
Rf	85
Rg	96
Rcs,h1(%)	-12

Special Color Rendering Indices			
R1	82	R9	10
R2	91	R10	78
R3	96	R11	82
R4	83	R12	65
R5	83	R13	84
R6	87	R14	98
R7	85	R15	76
R8	64	--	--
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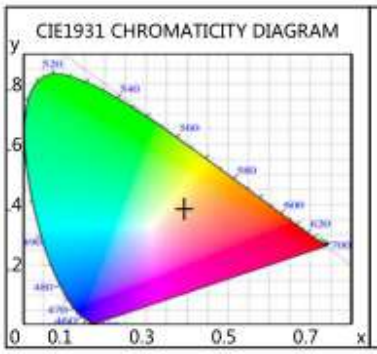
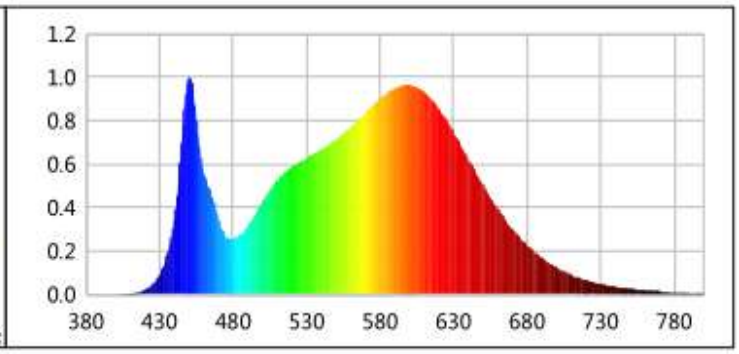
Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	8328.9	8119.3	5000-10000(-10%)
Luminous Efficacy (lm/W)	144.98	142.97	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	141.33		

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	0.0929	525	0.6105	95.5631	670	0.2999	46.9439
385	0.0002	0.0379	530	0.6277	98.2613	675	0.2611	40.8696
390	0.0003	0.0425	535	0.6489	101.5715	680	0.2259	35.3658
395	0.0005	0.0755	540	0.6671	104.4168	685	0.1941	30.3825
400	0.0008	0.1254	545	0.6882	107.7285	690	0.1671	26.1491
405	0.0017	0.2684	550	0.7133	111.6563	695	0.1436	22.4723
410	0.0041	0.6345	555	0.7396	115.7751	700	0.1229	19.2357
415	0.0100	1.5688	560	0.7717	120.7944	705	0.1056	16.5255
420	0.0214	3.3462	565	0.8020	125.5390	710	0.0898	14.0598
425	0.0442	6.9129	570	0.8348	130.6728	715	0.0770	12.0454
430	0.0901	14.0994	575	0.8694	136.0812	720	0.0654	10.2341
435	0.1767	27.6541	580	0.9030	141.3471	725	0.0560	8.7589
440	0.3451	54.0170	585	0.9297	145.5190	730	0.0465	7.2836
445	0.6964	109.0136	590	0.9498	148.6646	735	0.0394	6.1716
450	0.9997	156.4763	595	0.9605	150.3486	740	0.0352	5.5173
455	0.8082	126.5138	600	0.9633	150.7849	745	0.0294	4.6038
460	0.5557	86.9795	605	0.9540	149.3268	750	0.0243	3.8097
465	0.4639	72.6178	610	0.9321	145.9026	755	0.0223	3.4928
470	0.3484	54.5284	615	0.8996	140.8173	760	0.0191	2.9883
475	0.2666	41.7338	620	0.8573	134.1922	765	0.0157	2.4502
480	0.2578	40.3586	625	0.8035	125.7716	770	0.0138	2.1543
485	0.2766	43.2970	630	0.7459	116.7630	775	0.0119	1.8636
490	0.3120	48.8355	635	0.6855	107.3075	780	0.0092	1.4408
495	0.3675	57.5192	640	0.6238	97.6424	785	0.0085	1.3302
500	0.4269	66.8204	645	0.5620	87.9709	790	0.0077	1.2004
505	0.4800	75.1396	650	0.5034	78.7920	795	0.0063	0.9858
510	0.5248	82.1546	655	0.4462	69.8382	800	0.0050	0.7835
515	0.5597	87.6131	660	0.3925	61.4353			
520	0.5890	92.2018	665	0.3446	53.9342			

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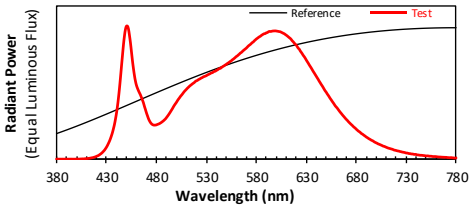
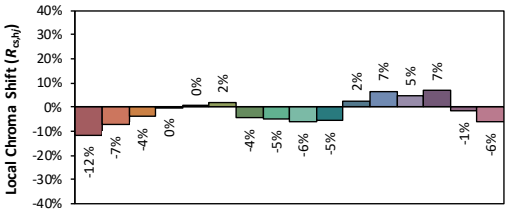
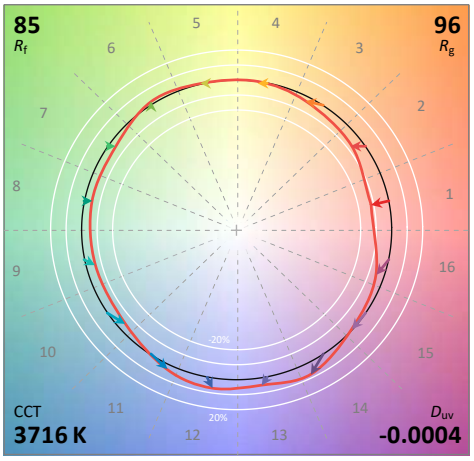
TM30

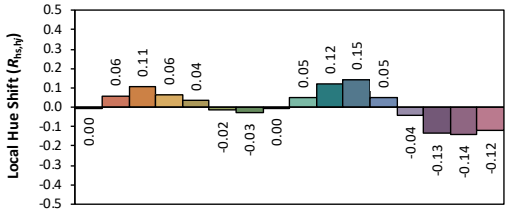
ANSI/IES TM-30-18 Color Rendition Report

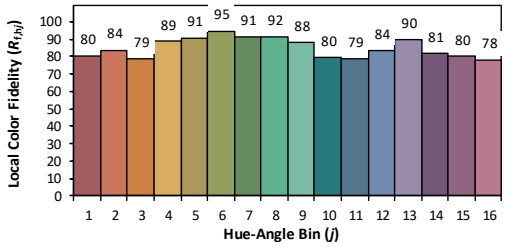
Source:	BXEM-30E-12H-6C-00-0-0 BXEM-50E-12H-6C-00-0-0	**Manufacturer:**	IKIO LED LIGHTING
Date:	2021/1/14	**Model:**	IK-CPSL-0060W-30/40/50K-MV-DLB-BRP1 (60W, 4000K)

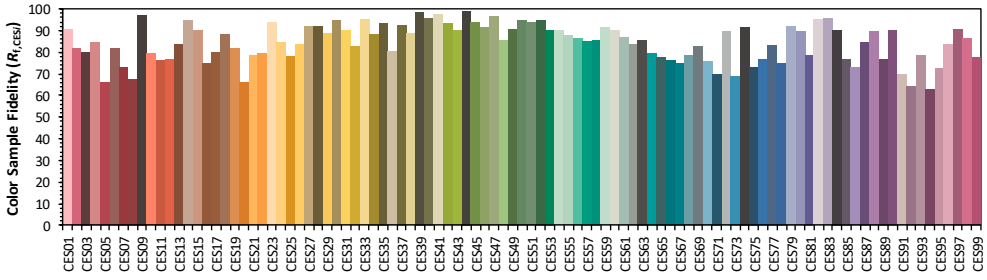












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.3935
y	0.3835
u'	0.2309
v'	0.5064

CIE 13.3-1995 (CRI)	
R_a	84
R_9	10

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	2021-01-14	Test Ambient:	25.2 º C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	IK-CPSL-0060W-30/40/50K-MV-DLB-BRP1 (60W, 5000K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
BLC210101 4E-D1	120.0	60	0.501	59.76	0.995	6.73
	277.0	60	0.224	58.9	0.951	7.69
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

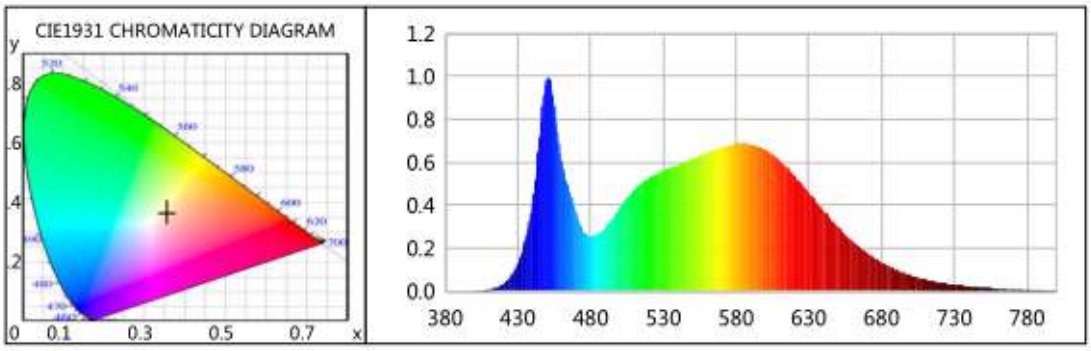
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	4756
Duv	0.0034
Chromaticity (x, y)	x=0.3533 y=0.3649
Chromaticity (u', v')	u(u')=0.2118 v'=0.4922
Color Rendering Index (CRI)	81
R9	-3
Rf	83
Rg	95
Rcs,h1(%)	-14

Special Color Rendering Indices			
R1	78	R9	-3
R2	87	R10	70
R3	94	R11	78
R4	79	R12	56
R5	79	R13	81
R6	82	R14	97
R7	86	R15	72
R8	63	--	--
--	--	--	--
--	--	--	--
--	--	--	--

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)	8259.6	8144.4	5000-10000(-10%)
Luminous Efficacy (lm/W)	138.21	138.28	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	136.29		

Spectral Power Distribution & Chromaticity Diagram

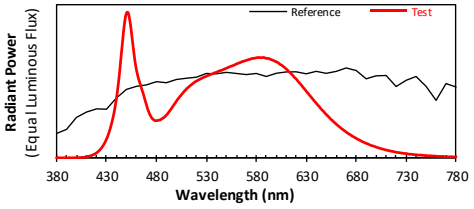


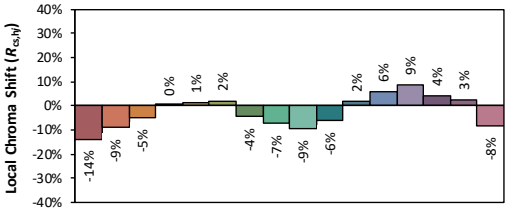
WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0004	0.0700	525	0.5447	106.7465	670	0.1773	34.7381
385	0.0003	0.0490	530	0.5600	109.7484	675	0.1543	30.2463
390	0.0008	0.1558	535	0.5744	112.5686	680	0.1342	26.2944
395	0.0004	0.0815	540	0.5878	115.2007	685	0.1156	22.6630
400	0.0013	0.2540	545	0.6011	117.7932	690	0.0996	19.5252
405	0.0030	0.5819	550	0.6154	120.6032	695	0.0856	16.7660
410	0.0069	1.3510	555	0.6298	123.4181	700	0.0738	14.4560
415	0.0163	3.1912	560	0.6446	126.3303	705	0.0620	12.1509
420	0.0340	6.6591	565	0.6575	128.8507	710	0.0540	10.5841
425	0.0679	13.3158	570	0.6690	131.1104	715	0.0463	9.0729
430	0.1281	25.1092	575	0.6799	133.2314	720	0.0391	7.6567
435	0.2330	45.6675	580	0.6869	134.6104	725	0.0341	6.6736
440	0.4091	80.1654	585	0.6869	134.6217	730	0.0300	5.8839
445	0.7225	141.5895	590	0.6837	133.9872	735	0.0253	4.9536
450	0.9916	194.3262	595	0.6739	132.0626	740	0.0212	4.1500
455	0.8611	168.7573	600	0.6591	129.1574	745	0.0195	3.8240
460	0.6047	118.4984	605	0.6380	125.0281	750	0.0160	3.1259
465	0.4790	93.8733	610	0.6101	119.5632	755	0.0139	2.7207
470	0.3643	71.3826	615	0.5773	113.1248	760	0.0116	2.2822
475	0.2778	54.4385	620	0.5408	105.9811	765	0.0095	1.8595
480	0.2557	50.1039	625	0.5004	98.0624	770	0.0088	1.7327
485	0.2661	52.1484	630	0.4581	89.7688	775	0.0076	1.4814
490	0.2941	57.6323	635	0.4165	81.6143	780	0.0063	1.2365
495	0.3385	66.3398	640	0.3761	73.6955	785	0.0043	0.8338
500	0.3888	76.1870	645	0.3354	65.7270	790	0.0056	1.0979
505	0.4330	84.8613	650	0.2985	58.5042	795	0.0035	0.6850
510	0.4727	92.6279	655	0.2634	51.6088	800	0.0032	0.6205
515	0.5018	98.3340	660	0.2314	45.3567			
520	0.5268	103.2438	665	0.2028	39.7512			

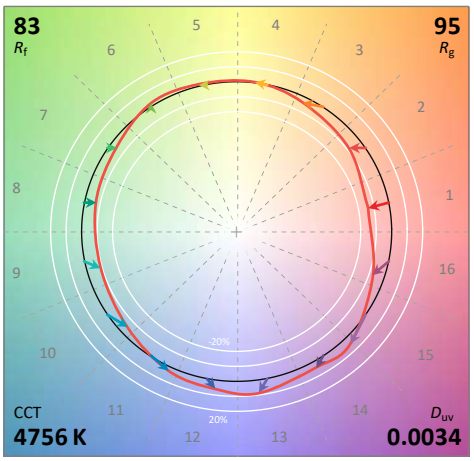
TM30

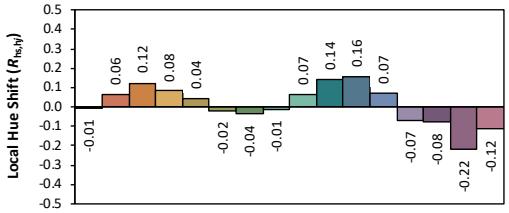
ANSI/IES TM-30-18 Color Rendition Report

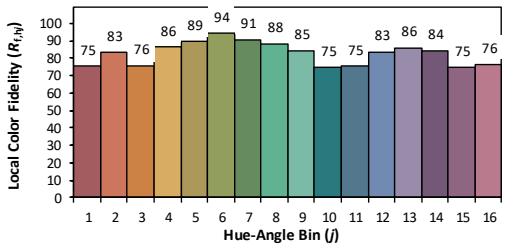
Source:	BXEM-30E-12H-6C-00-0-0 BXEM-50E-12H-6C-00-0-0	**Manufacturer:**	IKIO LED LIGHTING
Date:	2021/1/14	**Model:**	IK-CPSL-0060W-30/40/50K-MV-DLB-BRP1 (60W, 5000K)

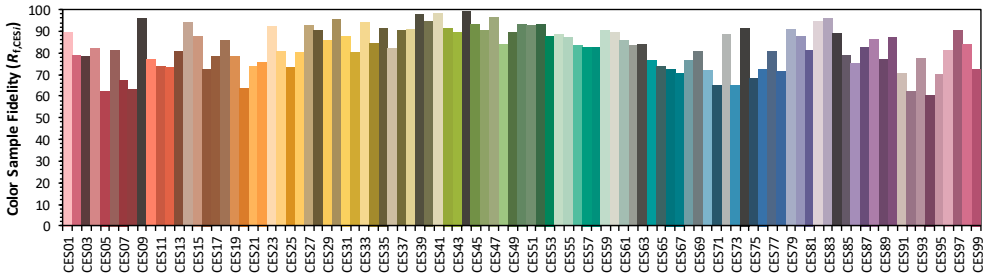












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x	0.3533
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u'	0.2118
v'	0.4922

CIE 13.3-1995 (CRI)

R_a	81
R_9	-3

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3. Test Equipment

Equipment Name	Model No.	Serial No.	Next Calibration Date
Goniophotometeric System	GPM-3000	DYHXF120001	2021-02-26
AC Power Source	CHP-500C	N/A	2021-03-29
Total Luminous Flux Premium Lamp	24V/150W	DYJYR040040	2021-03-01
Digital Power Meter	WT500	DYDWQ200006	2021-03-29
Integral Sphere (2M)	2M	DYJCE120067	2021-02-26
Digital Power Meter	WT500	DYDWQ200006	2021-03-29
Optical Color and Electrical Measurement System	CMS-3000S	DYJCE120067	2021-02-26
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 ********