



Report No.: GZE161654-L

LM-79-08 Test Report

For

IKIO LED LIGHTING

(Brand Name: IKIO)

8470 Allison Pointe Blvd, Suite 128 Indianapolis, IN 46250

Replacement Lamps for Outdoor Pole/Arm-mounted Decorative Luminares (Type B)

Model name(s): IK-CRA-L120-0060-E(X)39XX

Representative (Tested) Model: IK-CRA-L120-0060-E(X)3927
IK-CRA-L120-0060-E(X)3957

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

Test & Report By:

Garman Mo

Engineer: Garman Mo

Date: June.23,2016

Review By:

Tommy Liang

Manager: Tommy Liang

Note: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Laboratory: Standard-Tech Co. Ltd Testing Center
NVLAP CODE: 201011-0

Report Format Number STD/QR4909-A/2


Address: Standard-Tech Building, No.6 Guanhong Road, Guangzhou Science City, Guangzhou 510663, China

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<http://www.standard-tech.com>

1.1 Product Information:

Organization Name	IKIO LED LIGHTING	
Brand Name	IKIO	
Model Number	IK-CRA-L120-0060-E(X)39XX	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Replacement Lamps for Outdoor Pole/ Arm-mounted Decorative Luminaires (Type B)	
Rated Voltage / Frequency	120 -277Vac, 50/60 Hz	
Nominal Power	60W	
Rated Initial Lamp Lumen	--	
Declared CCT	2700K,3000K,3500K,4000K,4500K,5000K,5700K	
LED Manufacturer	Guangzhou Hongli Opto-Electronic Co., Ltd.	
LED Model	HL-A-2835DW-S1-08-HR3	
Sample Number	GZE161654-L1(2700K), L2(5700K)	
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	May.18,2016
Date of Test	May.22,2016
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	QD25

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.

2.1 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction QD25)

Test date	2016-06-22	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	IK-CRA-L120-0060-E(X)39XX(2700K)		

Electrical Measurement in LEXALITE LINDY MODEL 424:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE161654-L1	120.0	60	0.5029	59.06	0.9786	9.66
	277.0	60	0.2342	58.90	0.9078	20.70
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

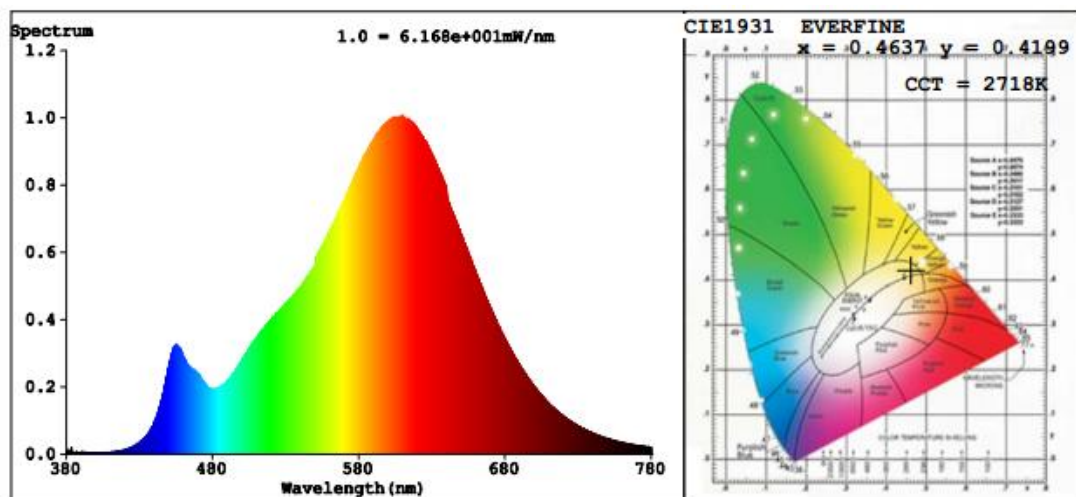
Chromaticity Measurement - Sphere-Spectroradiometer Method in LEXALITE LINDY MODEL 424:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	80	R9	10
Frequency (Hz)	60	R2	91	R10	80
CCT (K)	2718	R3	96	R11	77
Duv	0.0031	R4	79	R12	71
Chromaticity (x, y)	x=0.4637 y=0.4199	R5	80	R13	83
Chromaticity (u', v')	u'=0.2608 v'=0.5314	R6	90	R14	99
Color Rendering Index (CRI)	82.3	R7	83	R15	73
R9	10	R8	59	--	--

Photometric Measurement – Goniophotometer Method in LEXALITE LINDY MODEL 424:

Parameter	Result		DLC V4.0 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	5729.1	5583.2	In luminaire: 5000-10000 (-10%)
Luminous Efficacy (lm/W)	97.00	94.79	In luminaire: >= 90(-3%)
Zonal lumens in the 0-90 °zone (%)	88.4	--	>= 65(-3)
Beam Angle (°)	183.3	--	--
Center Beam Candle Power (cd)	254	--	--

Spectral Power Distribution & Chromaticity Diagram

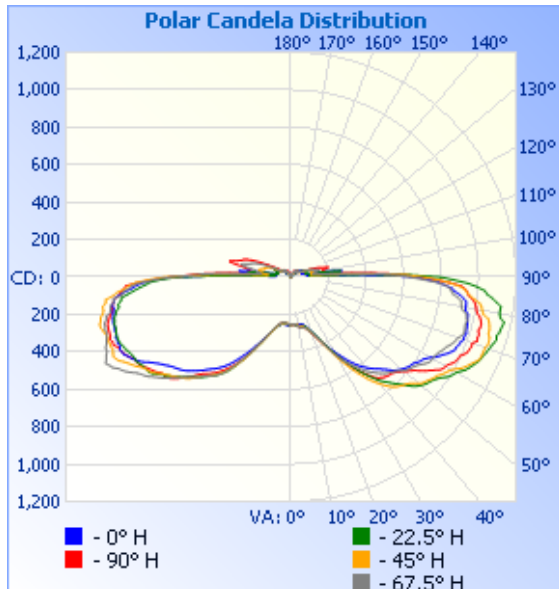


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	287.0	5%
0-40	663.9	11.6%
0-60	2,035.6	35.5%
60-90	3,030.0	52.9%
70-100	2,331.6	40.7%
90-120	555.8	9.7%
0-90	5,065.6	88.4%
90-180	663.7	11.6%
0-180	5,729.4	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	24.3	0.4%	90-100	292.2	5.1%
10-20	79.2	1.4%	100-110	159.8	2.8%
20-30	183.5	3.2%	110-120	103.8	1.8%
30-40	376.9	6.6%	120-130	47.6	0.8%
40-50	583.2	10.2%	130-140	31.9	0.6%
50-60	788.6	13.8%	140-150	18.3	0.3%
60-70	990.6	17.3%	150-160	7.7	0.1%
70-80	1,073.7	18.7%	160-170	2.1	0%
80-90	965.7	16.9%	170-180	0.3	0%

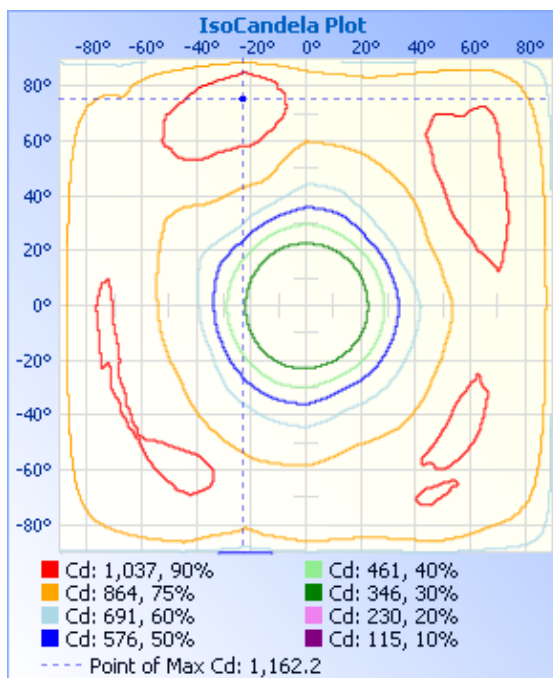
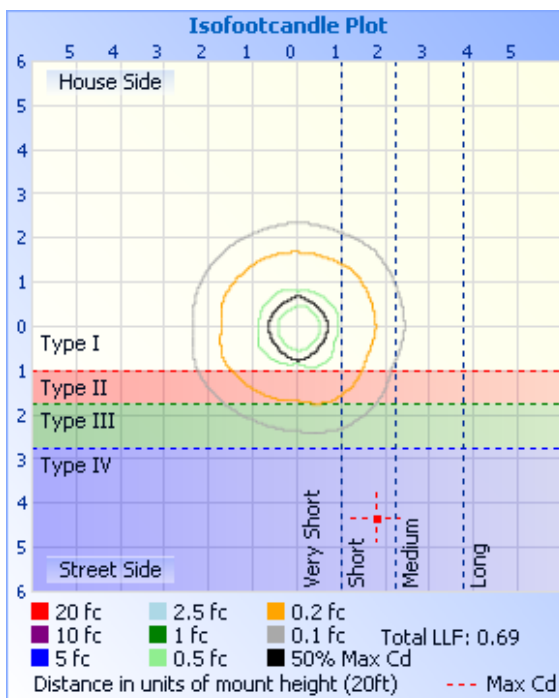
Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width
17.0ft	0.88 fc	22.3 ft
34.0ft	0.22 fc	44.6 ft
51.0ft	0.10 fc	66.9 ft
68.0ft	0.06 fc	89.2 ft
85.0ft	0.04 fc	111.5 ft
102.0ft	0.02 fc	133.8 ft

■ Beam Spread: 66.5°



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Table--1

UNIT: °

C (DEG) γ (DEG)	0	23	45	68	90	113	135	158	180	203	225	248	270	293	315	338
0	254	254	254	254	254	254	254	254	254	254	254	254	254	254	254	254
5	252	251	252	254	255	255	252	252	254	256	257	261	256	252	247	247
10	248	249	249	251	257	267	265	272	270	267	262	258	255	255	249	247
15	268	266	267	265	267	271	279	280	278	278	275	274	271	271	269	265
20	315	311	310	307	306	308	314	316	318	316	315	312	312	318	318	313
25	392	394	392	380	375	374	383	381	382	384	382	376	380	397	401	393
30	499	510	512	477	459	474	501	485	477	488	484	465	469	507	510	501
35	600	638	632	569	553	596	629	579	598	619	590	567	567	624	618	622
40	673	725	726	667	633	714	748	662	702	726	675	667	640	693	688	688
45	750	808	760	698	697	808	823	724	741	772	745	710	707	755	766	753
50	842	876	807	739	768	900	885	778	783	837	798	757	769	823	823	837
55	881	956	879	814	801	948	934	821	873	917	874	817	819	898	892	926
60	935	1039	936	885	859	1019	989	871	952	950	973	906	907	929	953	1011
65	977	1129	998	923	944	1089	1078	903	995	991	1063	960	981	952	1032	1091
70	1012	1111	1027	954	979	1124	1102	949	1030	1035	1072	962	985	981	1030	1048
75	1012	1093	1032	957	974	1150	1096	964	1044	1020	1039	923	980	976	1050	1025
80	970	1060	992	917	946	1130	1036	924	1004	971	1001	870	959	932	1016	979
85	911	1006	905	842	877	1050	943	859	945	909	920	781	888	842	930	898
90	642	716	645	622	677	799	712	640	691	652	639	528	637	612	674	644
95	243	235	129	130	86.6	118	145	221	258	209	123	152	140	147	133	211
100	232	243	167	119	143	143	109	125	162	169	141	102	135	129	160	187
105	337	358	166	92.9	63.2	79.9	113	151	206	207	138	91.8	67.6	72.8	162	272
110	272	273	126	92.2	62.0	87.5	112	121	144	167	116	111	80.0	78.9	144	215
115	194	181	90.8	83.2	89.7	75.5	73.1	77.8	82.7	94.7	79.5	98.1	94.0	93.5	119	147
120	111	87.7	62.8	61.2	65.1	58.4	50.1	55.5	60.4	58.2	55.1	63.3	70.1	69.8	65.9	82.3
125	65.7	53.5	57.5	50.6	52.1	49.8	46.3	43.2	47.8	44.2	51.6	48.9	51.9	51.6	54.0	52.1
130	49.9	46.7	51.3	43.2	45.6	43.3	44.6	39.5	42.9	42.2	48.0	41.1	47.6	44.6	47.9	45.4
135	52.0	49.1	44.1	39.0	27.3	36.0	39.4	44.6	47.7	47.1	42.7	36.5	29.2	35.9	40.8	47.9
140	50.7	47.1	36.2	30.3	27.5	28.2	32.6	45.0	47.5	45.3	35.5	28.9	26.5	27.2	32.6	44.0
145	43.1	41.0	28.2	21.8	19.7	19.2	26.1	39.2	42.2	39.9	28.2	18.0	13.5	15.7	23.9	36.9
150	34.8	32.8	22.5	15.4	7.53	14.8	21.5	32.3	33.4	31.5	23.6	14.9	9.95	12.6	17.1	28.0
155	25.3	23.5	17.1	11.8	7.94	10.3	16.6	23.7	23.1	22.0	17.8	11.9	8.69	7.86	13.0	20.1
160	16.0	14.6	11.8	9.10	7.73	8.02	11.0	12.9	12.2	12.7	11.5	8.43	7.36	7.20	9.35	13.9
165	9.17	8.17	6.93	5.94	5.61	5.95	5.44	6.14	5.64	5.65	6.01	5.01	5.10	6.20	7.78	9.14
170	6.18	5.59	4.60	3.36	2.70	3.62	4.02	4.43	3.20	3.25	4.67	4.09	4.26	3.84	5.10	6.46
175	3.25	3.50	2.33	2.09	2.42	3.25	3.59	3.69	3.16	3.08	2.75	2.58	3.01	2.94	3.09	3.39
180	3.00	2.83	3.25	3.26	3.51	3.60	3.76	2.69	2.91	3.08	2.67	2.68	2.93	3.19	3.18	2.86

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2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction QD25)

Test date	2016-06-22	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	IK-CRA-L120-0060-E(X)39XX(5700K)		

Electrical Measurement in LEXALITE LINDY MODEL 424:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE161654-	120.0	60	0.5226	62.18	0.9915	8.29
L2	277.0	60	0.2434	62.01	0.9197	21.37
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

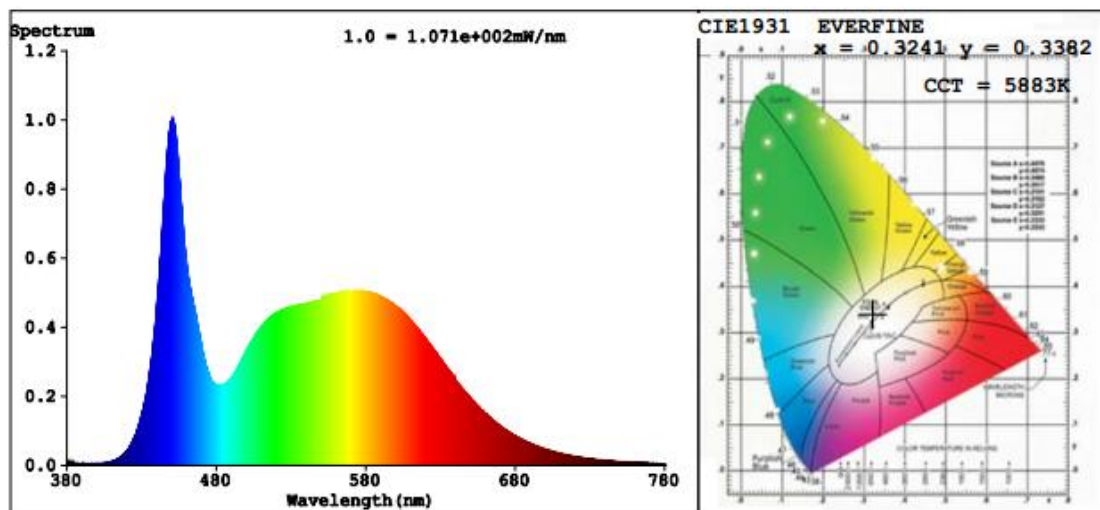
Chromaticity Measurement - Sphere-Spectroradiometer Method in LEXALITE LINDY MODEL 424:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	80	R9	2
Frequency (Hz)	60	R2	87	R10	69
CCT (K)	5883	R3	91	R11	82
Duv	0.0024	R4	82	R12	59
Chromaticity (x, y)	x=0.3241 y=0.3382	R5	82	R13	82
Chromaticity (u', v')	u'=0.2022 v'=0.4748	R6	82	R14	96
Color Rendering Index (CRI)	82.4	R7	87	R15	75
R9	2	R8	67	--	--

Photometric Measurement – Sphere-Spectroradiometer Method in LEXALITE LINDY MODEL 424:

Parameter	Result		DLC V4.0 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	6819	6645	In luminaire: 5000-10000 (-10%)
Luminous Efficacy (lm/W)	109.67	107.16	In luminaire: >= 90(-3%)

Spectral Power Distribution & Chromaticity Diagram



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3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-336	2 meter Integrating Sphere	2015-07-01	2016-06-30
ST-R-331	Spectral analysis system HAAS-2000	2015-07-01	2016-06-30
D204	Standard Lamp	2015-07-01	2016-06-30
PF2010	Power Meter for Integrating Sphere	2015-07-01	2016-06-30
EE-09	Goniophotometer system	2015-07-01	2016-06-30
D908S	Standard Lamp	2015-07-01	2016-06-30
PF210	Power Meter for Goniophotometer	2015-07-01	2016-06-30
ST-R-181A	Temperature Tester	2015-07-01	2016-06-30
Uncertainty: Photometric Measurement (Sphere):1.74% Chromaticity Measurement(Sphere):14.3K Photometric Measurement(Goniophotometer):1.62%			

******* END OF REPORT *******