LCTECH

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Test report of

IES LM-79-08

Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Rendered to:

ARTIKA FOR LIVING INC
1756 50th avenue, Lachine, Qc, CanadaH8T 2V5

For products:

21053-B01A

Models No.:

OUT-WIC-******

("******" can be A to Z and/or 0 to 9 and/or blank (commercial code).)

Test Date:	May. 4, 2022
Test Lab.:	**LCTECH Guangdong Testing Services Co., Ltd.** 2/F., Technology and Enterprise Development Center, Guangyuan Road, Xiaolan, Zhongshan, Guangdong, China Tel:+86-760-22833366 E-mail:Service@lccert.com http://www.lccert.com
Test Sites:	1/F., Building I, Technology and Enterprise Development Center, Guangyuan Road, Xiaolan, Zhongshan, Guangdong, China
Template No.:	LC-RT-PL-001 Rev.2.0
Test Note:	*N/A*

Complied by:		**Reviewed by:**	
Kargel Yuan	Kargel Yuan	**Lin Qiu**	Lin Qiu
May. 10, 2022		**May. 10, 2022**	

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1. General

1.1 Product Information

Brand Name	ARTIKA
Product Type	21053-B01A
Model Number	OUT-WIC-******
Rated Inputs	120VAC, 60Hz
Rated Power	14W
Rated Light output	750lm
Declared CCT	3000K, 4000K, 5000K
Power Supply	LED Driver
LED Package, Array or Module	Model: BXEN-30G-13H-99, manufactured by Bridgelux Inc.
Receipt Samples	1 unit
Sample Code of lab.	220429111002
Date of Receipt Samples	Apr. 29, 2022
Note	This is a color tunable product, 3000K, 4000K and 5000K were selected for the test.

1.2 Standards or methods

The following standards are partly or totally used or referenced for test:

No.	Name
ANSI/NEMA/ ANSLG C78.377- 2017	Specifications for the Chromaticity of Solid State Lighting Products
ANSI C82.77-2002	Harmonic Emission Limits—Related Power Quality Requirements for Lighting Equipment
CIE Pub. No. 13.3-1995	Method of Measuring and Specifying Color Rendering of Light Sources
CIE Pub. No. 15:2004	Colorimetry
IES LM-79-08	Electrical and Photometric Measurements of Solid-State Lighting Products

1.3 Equipment list

Instrument	ID	Model name	Cal. date	Next cal. Date
AC Power supply	LC-I-987	APW-120N	2021-12-16	2022-12-15
AC Power supply	LC-I-989	APW-120N	2021-12-16	2022-12-15
Power analyzer	LC-I-PL-024	WT310E	2022-03-01	2023-02-28
Power analyzer	LC-I-954	WT210	2021-12-20	2022-12-19
Multimeter	LC-I-972	Fluke 17B	2021-07-19	2022-07-18
Photometric colorimetric electric system[1] (2 meter sphere)	LC-I-956	HAAS-2000	Before use	Before use
Standard lamp[2]	LC-I-PL-030	D204C	2021-07-09	2022-07-08
Luminous Flux Standard Lamp[3]	LC-I-PL-027	24V/100W	2021-07-09	2022-07-08
Goniophotometer(with mirror)	LC-I-902	GMS2000	2022-04-21	2023-04-20
Wireless temperature transmitter	LC-I-PL-009	DWLR-DLR	2021-12-16	2022-12-15
Wireless temperature transmitter	LC-I-PL-008	DWLR-DLR	2021-12-16	2022-12-15

Note:

1, Bandwidth of spectroradiometer is 1 nm.

2, halogen lamp, 100W, omni-directional type, and its traceability to NIM.

3, halogen lamp, 100W, omni-directional type, and its traceability to NIM.

2. Test conducted and method

The luminaire was operated at least 2 hours to reach stabilization and temperature equilibrium before test.

2.1 Ambient Condition

The ambient temperature in which measurements are being taken was maintained at 25°C ± 1°C; the air flow around the sample(s) being tested did not affect the performance.

2.2 Power Supply Characteristics

The AC power supply had a sinusoidal voltage wave shape at the prescribed frequency (50 Hz) such that the RMS summation of the harmonic components does not exceed 3 percent of the fundamental during operation of the test item.

The voltage of AC power supply (RMS voltage) applied to the device under test was regulated to within±0.2 percent under load.

2.3 Seasoning and Stabilization

No seasoning was performed in accordance with IESNA LM-79-08. And before the measurement, the sample was stabilized until the light output and power variations were less than 0.5% in 30 minutes intervals (3 readings, 15 minutes apart).

2.4 Electrical Instrumentation

The calibration uncertainties of the instruments for AC voltage and current were less than 0.2 percent, and the calibration uncertainty of the AC power meter was less than 0.5 percent(95 % confidence interval, k=2).

2.5 Color Measurement Method

Spectral radiant flux was measured by a sphere (2 meter)-spectroradiometer system, and the color characteristics (Color rendering index, correlated color temperature, chromaticity coordinate) were calculated from these by software automatically.

2.6 Total Luminous Flux Measurement Method

Total luminous flux was measured by type C goniophotometer system.

Light intensity distribution was measured by a type C goniophotometer (with mirror) which can keep the sample in burn position when the tests conduct, and the total luminous flux was calculated from the intensity data by software automatically.

2.7 Luminous Intensity Distribution Measurement Method

Luminous intensity distribution was measured by a mirror-type goniophotometer (Type C) which can keep the sample in burn position when the tests conduct, and the kinds of graph were generated by software automatically.

2.8 Spatial Non-uniformity of Chromaticity

The customer did not require this measurement.

3. Test Result Summary

3.1 Electrical data

Criteria Item	Result		
	3000K	4000K	5000K
Input Voltage & Frequency	120.01 V~60Hz	120.00 V~60Hz	119.99 V~60Hz
Input Current(A)	0.120	0.122	0.120
Total Power(W)	13.24	13.53	13.31
Power Factor	0.921	0.926	0.922
I-THD	-	-	-
Off-state Power(W)	-	-	-

3.2 Photometric data

Criteria Item	Result		
	3000K	3500K	4000K
Total Lumens(lm)	751.99	839.60[1]	796.17[1]
Luminaire Efficacy(lm/W)	56.80	62.05	59.82
Correlated Color Temperature (CCT)(K)	3047	3854	4922
Color Rendering Index (CRI)	95.9	97.2	94.5
R9	81	91	81
Chromaticity Coordinate (x,y)	0.4365, 0.4090	0.3876, 0.3826	0.3482, 0.3614
Chromaticity Coordinate (u,v)	0.2482, 0.3489	0.2275, 0.3368	0.2097, 0.3265
Chromaticity Coordinate (u',v')	0.2482, 0.5233	0.2275, 0.5052	0.2097, 0.4898
Duv	0.002	0.0007	0.0036
Zone Lumens between 0-60º	74.16%	-	-
Beam Angle(50%Imax)	C0/180=103.2° C90/270=101.6°	-	-

Note:

1, Self-absorption is 1.092.

3.3 Color Rendering Details

3000K:

R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
99	96	90	98	97	96	98	94	81	87	97	77	98	93	96

4000K:

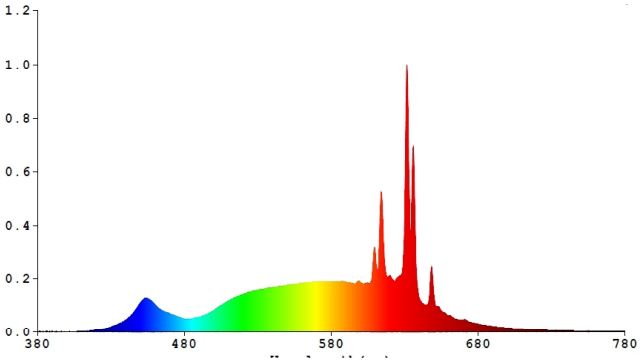
R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
99	98	93	99	97	96	99	98	91	91	97	73	99	95	98

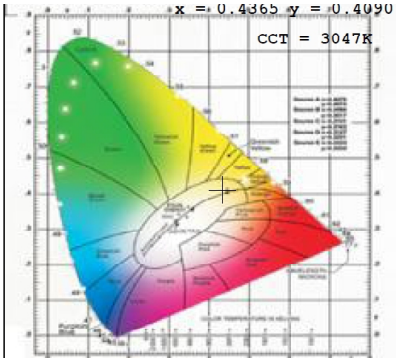
5000K:

R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
96	95	93	95	93	92	98	94	81	86	94	66	95	95	94

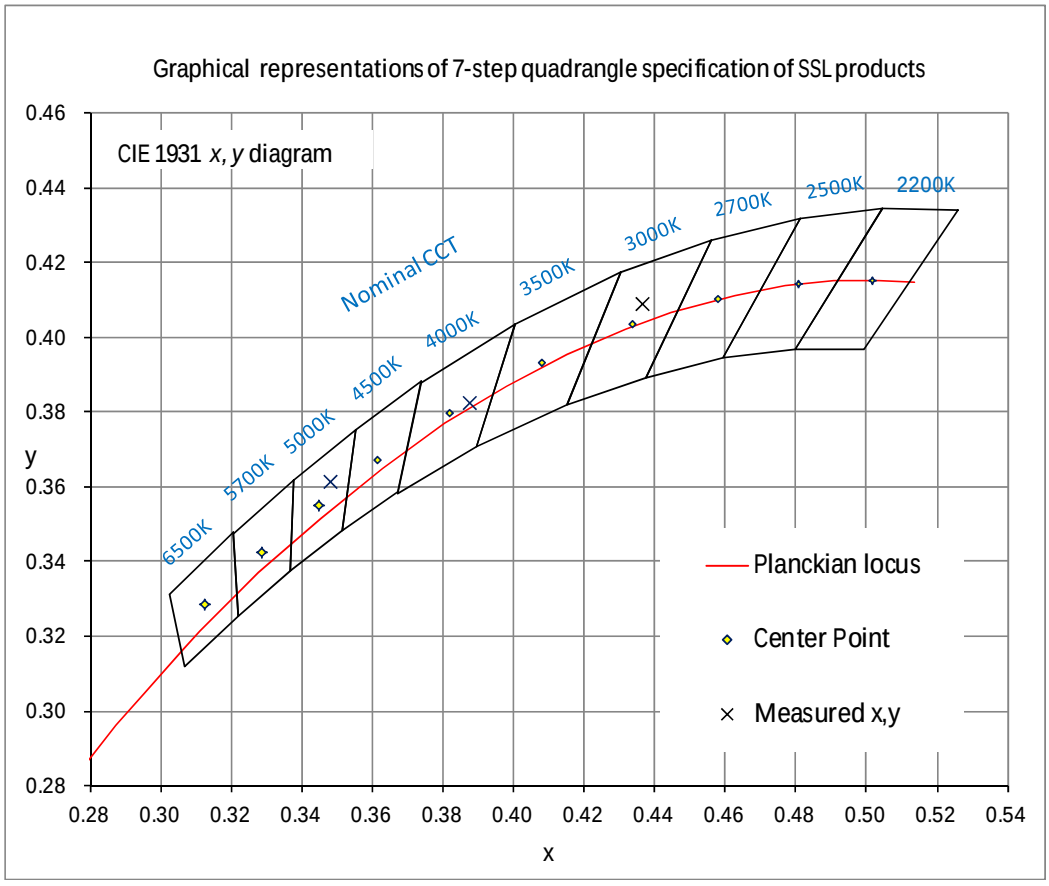
4. Test Data

4.1 Spectral Distribution of 3000K





4.2 ANSI Chromaticity Quadrangles Diagram



4.3 Goniometry Test Data of 3000K

CIE Type	Direct	Basic Luminous Shape	Rectangular
Spacing Criteria (0-180)	1.16	Luminous Length	0.16 m
Spacing Criteria (90-270)	1.20	Luminous Width	0.05 m
Spacing Criteria (Diagonal)	1.30	Luminous Height	0.00 m
Test Distance	29.75 m		

4.4 Zonal Lumen Summary of 3000K

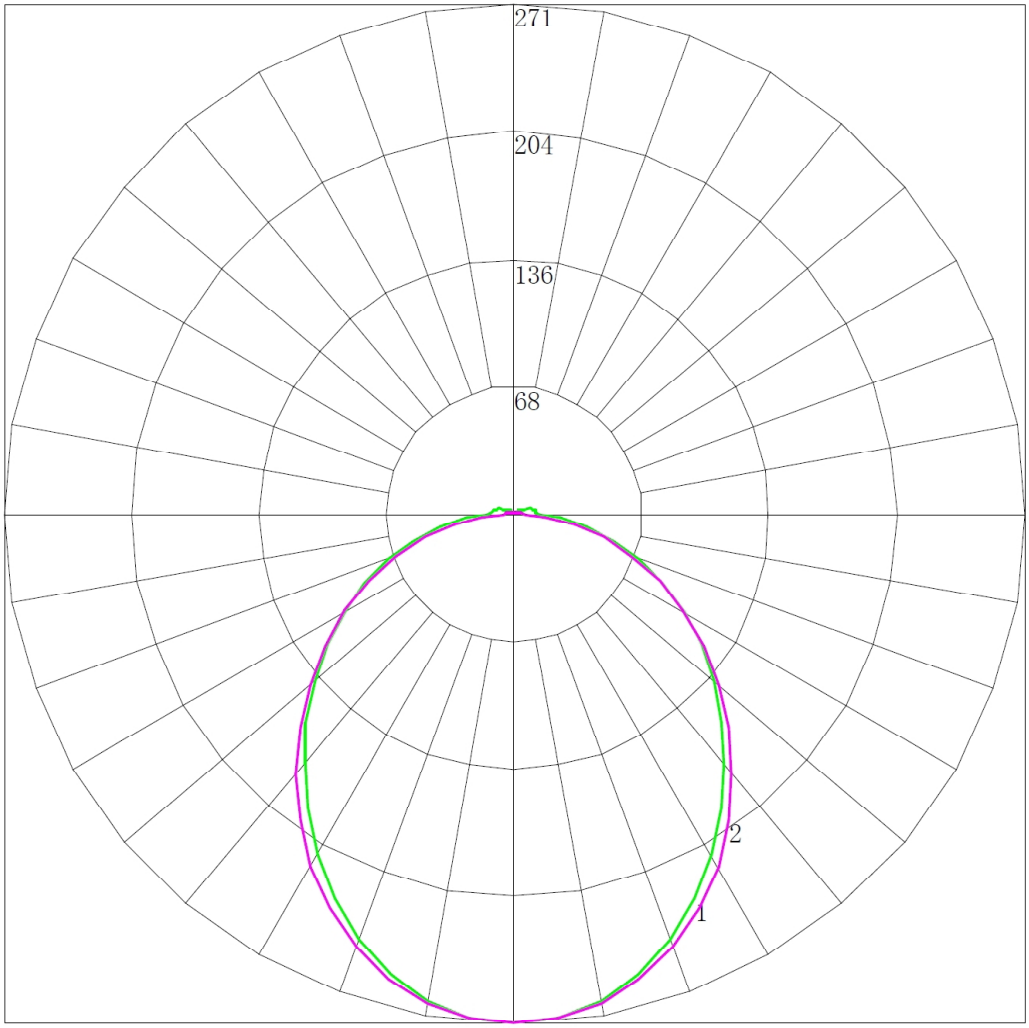
Zone	Lumens	%Lamp	%Fixt
0-20	97.58	13.00	13.00
0-30	203.25	27.00	27.00
0-40	325.57	43.30	43.30
0-60	557.70	74.20	74.20
0-80	700.14	93.10	93.10
0-90	725.38	96.50	96.50
10-90	699.81	93.10	93.10
20-40	227.99	30.30	30.30
20-50	350.69	46.60	46.60
40-70	318.14	42.30	42.30
60-80	142.44	18.90	18.90
70-80	56.42	7.50	7.50
80-90	25.25	3.40	3.40
90-110	17.44	2.30	2.30
90-120	21.85	2.90	2.90
90-130	24.41	3.20	3.20
90-150	26.15	3.50	3.50
90-180	26.61	3.50	3.50
110-180	9.17	1.20	1.20
0-180	751.99	100.00	100.00

Total Luminaire Efficiency = 100.00%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	25.57
10-20	72.01
20-30	105.66
30-40	122.33
40-50	122.70
50-60	109.43
60-70	86.01
70-80	56.42
80-90	25.25
90-100	10.02
100-110	7.42
110-120	4.41
120-130	2.55
130-140	1.25
140-150	0.49
150-160	0.23
160-170	0.17
170-180	0.06

4.5 Polar Curves of 3000K

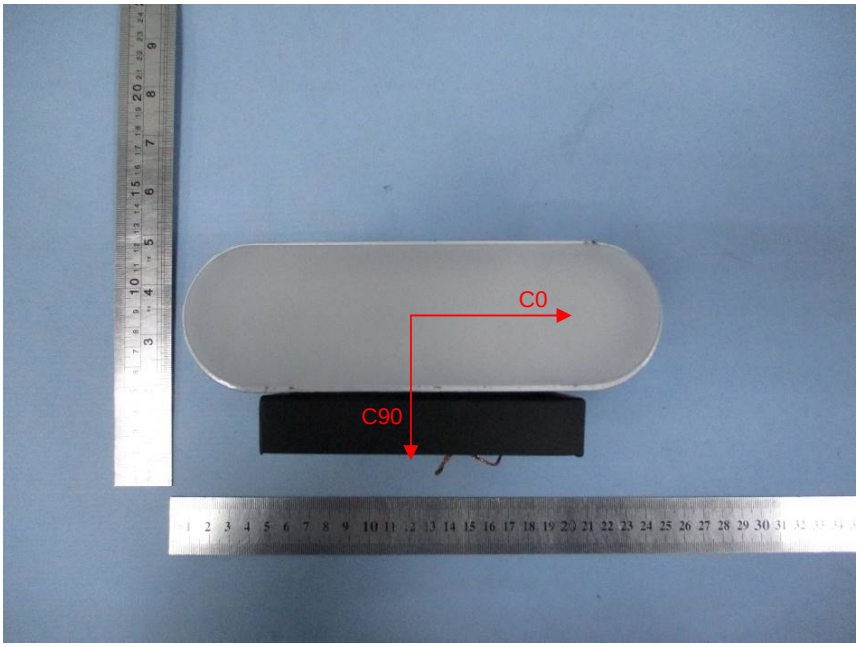


Maximum Candela = 271.353 Located At Horizontal Angle = 0, Vertical Angle = 0
1 - Vertical Plane Through Horizontal Angles (0 - 180)
2 - Vertical Plane Through Horizontal Angles (90 - 270)

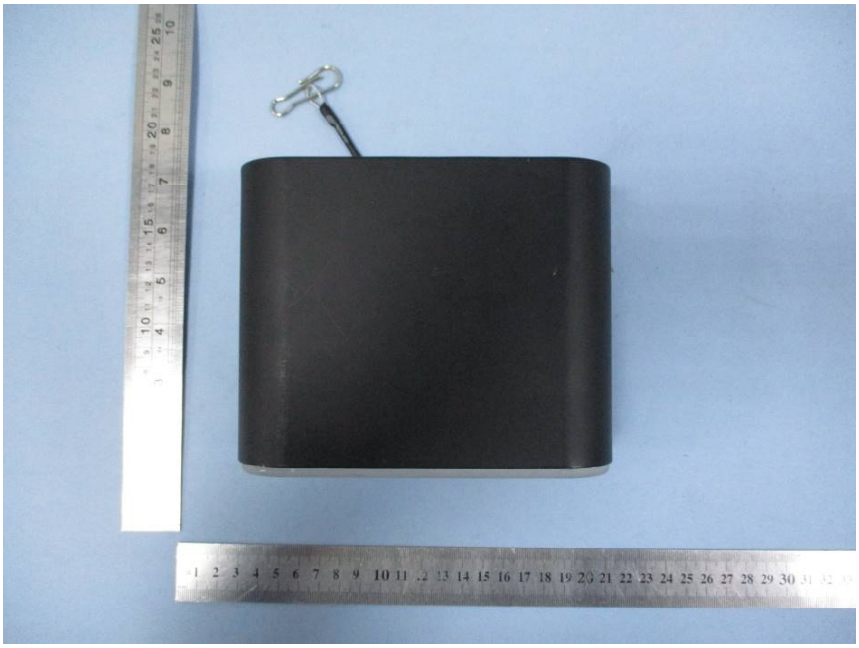
4.6 Candela Tabulation of 3000K

	0	15	30	45	60	75	90
0	271.353	271.353	271.353	271.353	271.353	271.353	271.353
5	269.718	269.694	269.693	269.560	269.735	269.712	269.639
10	263.798	264.121	264.225	264.247	264.614	264.701	264.584
15	254.388	254.855	255.215	255.503	256.258	256.542	256.366
20	241.443	242.249	243.128	243.881	245.042	245.499	245.422
25	226.201	226.724	227.876	229.536	231.144	231.885	231.885
30	209.368	209.718	210.964	213.244	217.180	216.141	216.678
35	191.608	192.003	193.033	195.070	197.674	199.002	199.010
40	173.759	174.090	174.969	176.585	179.010	180.687	180.550
45	156.353	156.398	156.883	160.314	160.036	161.818	161.388
50	138.416	138.839	138.953	139.528	141.173	142.217	141.917
55	121.495	121.722	121.774	121.996	122.377	123.303	122.711
60	104.309	104.317	106.102	104.087	104.024	104.146	103.548
65	87.609	87.554	87.152	86.776	86.313	85.876	85.089
70	70.820	71.056	70.550	69.842	69.046	68.005	66.717
75	55.181	56.748	54.589	53.549	52.444	50.932	49.181
80	39.894	39.785	39.249	37.832	36.396	34.613	32.699
85	25.006	24.526	23.863	22.801	21.124	18.892	16.877
90	14.403	13.955	13.304	12.064	10.285	7.873	5.538
95	11.575	11.411	10.692	9.497	7.736	5.345	3.824
100	11.089	10.947	10.183	8.766	6.583	4.435	3.472
105	10.559	10.416	9.386	7.261	5.142	3.748	3.208
110	9.234	8.603	6.774	5.401	4.345	3.083	2.813
115	5.788	5.684	5.269	4.538	3.502	2.484	2.373
120	4.904	4.799	4.449	3.697	2.771	1.973	1.934
125	4.109	3.937	3.586	2.900	2.106	1.596	1.582
130	3.225	3.096	2.789	2.169	1.485	1.264	1.275
135	2.430	2.322	1.992	1.505	0.931	0.998	0.967
140	1.723	1.614	1.350	0.930	0.731	0.710	0.747
145	1.193	1.062	0.841	0.531	0.598	0.532	0.527
150	0.707	0.619	0.443	0.443	0.421	0.488	0.483
155	0.442	0.420	0.443	0.443	0.465	0.488	0.483
160	0.530	0.553	0.576	0.553	0.532	0.554	0.571
165	0.574	0.641	0.553	0.598	0.643	0.621	0.615
170	0.619	0.641	0.642	0.642	0.665	0.665	0.659
175	0.707	0.686	0.686	0.664	0.709	0.710	0.703
180	0.354	0.354	0.354	0.354	0.354	0.354	0.354

Appendix A Product Photo



Picture 1



Picture 2

****End of test report****