

CEC Title 24 (CEC-400-2018-021-CMF 2019

REFERENCE APPENDICES JA8 and JA10) Test Report

For

ARTIKA FOR LIVING INC

(Brand Name: ARTIKA)

1756 50th avenue, Lachine, Qu ébec, Canada H8T 2V5

Model name(s):

8FM-BP-XXXXXX

**Type of
Luminaire:**

LED Luminaire

Report Date:

2021-11-10

Ningbo TengLi Testing Co., Ltd

Prepared By:

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Garman Mo

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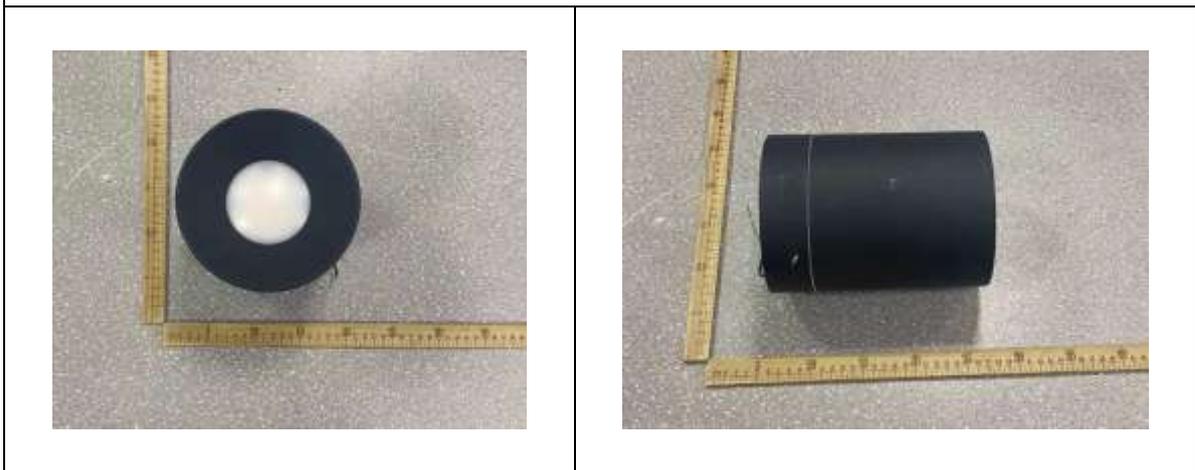
Note: 1. The results contained in this report pertain only to the tested samples.

2. This report does not imply product certification, approval, or endorsement by any agency of the Federal Government.

1.1 Product Information:	
Model Number	8FM-BP-XXXXXX
Remark	"XXXXXX" can be A to Z and/or 0 to 9 and or/blank(commerical code)
Representative (Tested) Model	8FM-BP-MB
SKU (if available)	N/A
Type of Lamp	LED Luminaire
LED Manufacturer	Lextar Electronics Corp
LED Model	PC35U27
Dimming	Dimmable
Sample Number	STD211036NB-C1-C3

1.2 Rated Values:		
Rated Voltage / Frequency	120Vac,60 Hz	
Nominal Power	28W	
Rated Initial Lamp Lumen	--	
Dimming range	10%-100%	
Target Replacement Wattage	--	
Declared CCT	3000K	
Luminaire Aperture (for Downlight Retrofits)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Product Photo



1.3 Test Specifications:

Date of Receipt	Nov.01,2021
Date of Test	Nov.03,2021
1.Test Method according to 10 CFR 430 Appendix BB to Subpart B, Uniform Test Method for Measuring the Input Power, Lumen Output, Lamp Efficacy, Correlated Color Temperature (CCT), Color Rendering Index (CRI), Power Factor, Time to Failure, and Standby Mode Power of Integrated Light-Emitting Diode (LED) Lamps	
2.Standards used: IES LM-84-14 Approved Method for Measuring Luminous Flux and Color Maintenance of LED Downlight Retrofits, Light Engines, and Luminaires	
3.The ambient temperature during maintenance test of the DUT between photometric measurements shall be maintained at 25 °C ±5 °C. Humidity: < 65 RH. Airflow shall be minimized.	
4. Supply rated input voltage (e.g. 120V) and frequency (60Hz) to the samples. Branch circuit input voltage shall be regulated to within ≤ 2% of the rated rms value. The input voltage to each DUT or driver shall be verified periodically.	
5. Conduct minimum 6000 hours life test, conduct LM-79 test measurement in 1000-hour interval.	
6. At each measurement interval, the DUT shall be taken off the test racks and measured per IES LM-79-08 for electrical, photometric, and colorimetric characteristics. After measurement, the DUT shall be placed back on the test rack for the next cycle if required.	
7. Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25 °C ± 1 °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.	
8. Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at 25 °C ± 1 °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.	
9. Off state power measurement – accordance to IEC 62301	

2.1 Summary of Test Result

Criteria Item	Requirement	Measured Value	Status
Light Source Type	LED, OLED, Fluorescent, HID, Incandescent, Other	LED	Pass
Product type	Omnidirectional lamp, Directional lamp, Decorative lamp, LED light engine, inseparable SSL luminaire, T20 lamp, other	LED Luminaire	Pass
Luminous Efficacy	≥ 45 lumens/Watt	66.40lm/W	Pass
Power Factor	≥ 0.90	0.9812	Pass
Start time	≤ 0.5 sec	92.0ms	Pass
Correlated Color Temperature (CCT)	≤ 4000 Kelvin	2955	Pass
Color Rendering Index (CRI)	≥ 90 for all products other than T20 lamps, ≥ 82 for T20 lamps	93.7	Pass
Color Rendering R9 (red)	≥ 50 for all products other than T20 lamps	65	Pass
Rated life	$\geq 15,000$ hours	50000	Pass
Minimum dimming level	$\leq 10\%$	3.82%	Pass
Flicker	<30% for frequencies of 200 Hz or below, at 100% and 20% light output	See Below Test Data	Pass
Audible Noise	≤ 24 dBA	14.5	Pass

2.2 Initial Electrical and Light Output Measurement (Refer to Work Instruction QD25)	[✓] IES LM-79 (2008) [✓] ANSI C82.2:2002
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Test date	2021-11-03	Test Ambient:	25±1 °C
Test Orientation	As intended	Stabilization Time (min)	45
Model Number	8FM-BP-MB		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
STD211036 NB-C1	120.0	60.01	0.2234	26.50	0.9862

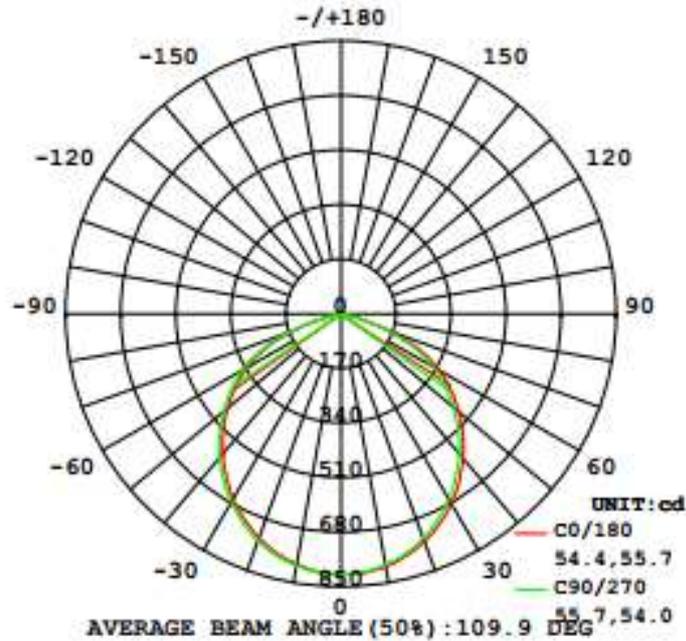
**Chromaticity Measurement - Sphere-Spectroradiometer
 Method (Self-absorption:1.1482)(4π geometry):**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	2948
Duv	0.0001
Chromaticity (x, y)	x=0.4408 y=0.4055
Chromaticity (u', v')	u'=0.2524 v'=0.5225
Color Rendering Index (CRI)	93.6
R9	63

Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	2109.6
Luminous Efficacy (lm/W)	79.26

Zonal Lumen Tabulation



Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	624.3	29.6%
0-40	1,016.4	48.2%
0-60	1,781.0	84.4%
60-90	328.4	15.6%
70-100	70.1	3.3%
90-120	0	0%
0-90	2,109.4	100%
90-180	0	0%
0-180	2,109.4	100%

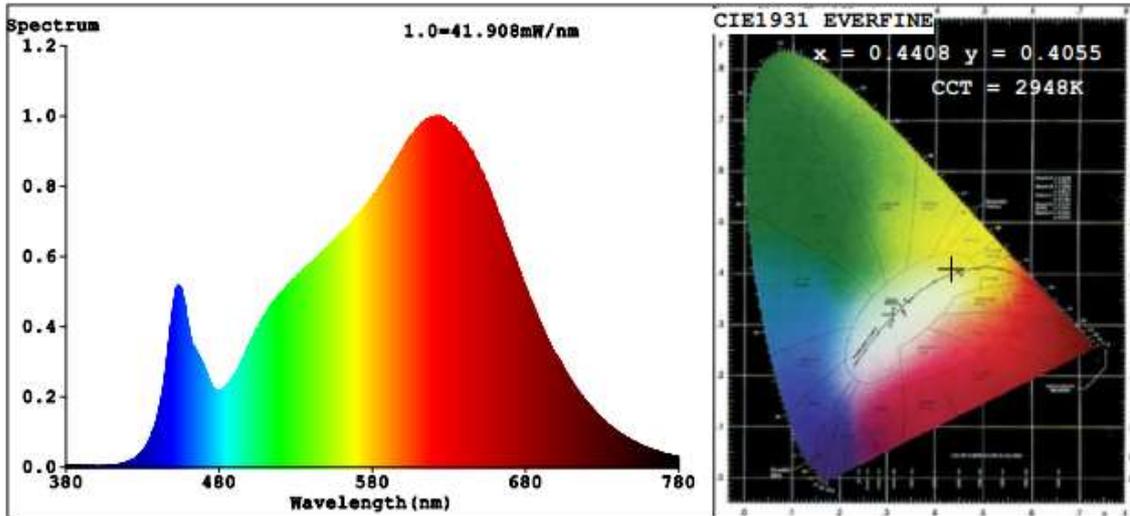
Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	76.7	3.6%	90-100	0	0%
10-20	218.8	10.4%	100-110	0	0%
20-30	328.8	15.6%	110-120	0	0%
30-40	392.1	18.6%	120-130	0	0%
40-50	402.6	19.1%	130-140	0	0%
50-60	362.0	17.2%	140-150	0	0%
60-70	258.3	12.2%	150-160	0	0%
70-80	69.9	3.3%	160-170	0	0%
80-90	0.2	0.0%	170-180	0	0%

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Table--1 UNIT: cd

C (DEG) y (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	812	812	812	812	812	812	812	812	812	812	812	812	812	812	812	812			
5	810	809	808	809	807	808	804	808	805	807	808	808	809	810	809	812			
10	800	798	797	796	794	793	792	793	792	792	795	796	798	801	800	803			
15	780	779	776	776	771	770	769	770	771	771	774	778	777	780	782	786			
20	754	752	750	747	743	744	740	742	742	743	746	748	750	754	756	759			
25	722	718	715	712	708	706	703	704	707	708	712	714	718	722	723	726			
30	681	678	674	671	667	665	662	665	666	666	670	674	677	682	683	687			
35	637	632	627	623	619	618	616	616	618	620	625	630	633	636	639	642			
40	586	581	575	571	567	565	563	566	568	571	574	579	582	588	589	592			
45	532	527	520	515	512	510	509	512	514	517	521	527	530	534	536	537			
50	474	468	462	457	454	452	452	453	457	461	465	470	473	476	479	481			
55	413	407	401	396	393	393	393	395	398	402	407	413	414	419	418	421			
60	351	343	337	332	329	328	328	331	337	341	345	351	354	357	357	358			
65	272	265	257	252	249	249	251	255	262	266	271	277	278	280	281	281			
70	169	163	156	149	146	149	153	155	163	170	176	179	180	182	183	180			
75	59.1	53.6	48.5	45.6	44.1	43.7	46.0	49.7	56.6	60.9	65.4	69.0	70.1	70.9	70.6	68.0			
80	3.39	2.60	0.32	0.34	0.31	0.29	0.31	0.37	0.31	0.32	0.36	0.47	0.53	0.49	0.56	0.34			
85	0.10	0.10	0.10	0.09	0.09	0.09	0.09	0.10	0.11	0.11	0.12	0.12	0.12	0.12	0.12	0.11			
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
135	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
140	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
145	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
150	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
160	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
170	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			

Spectral Power Distribution & Chromaticity Diagram



R1 =94	R2 =97	R3 =98	R4 =94	R5 =93	R6 =96	R7 =93	
R8 =84	R9 =63	R10=91	R11=95	R12=80	R13=95	R14=98	R15=90

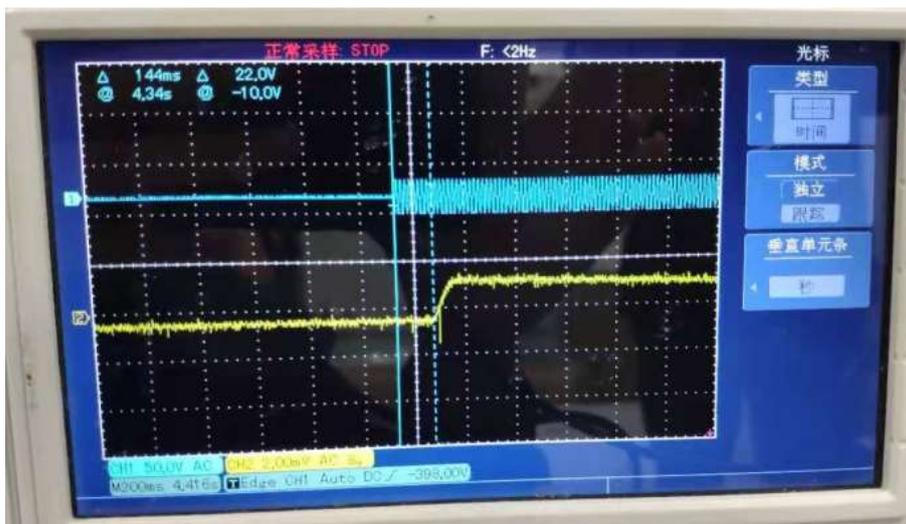
2.3 Start Time Test

Test date	2021-11-03	Test Ambient:	25±1 °C
Test Orientation	As intended	Stabilization Time (min)	45
Model Number	8FM-BP-MB		

Electrical Measurement:

Sample No.	Start Time (ms)
STD211036NB-C1	144
STD211036NB-C2	141
STD211036NB-C3	147
Average	144

Graph (Start Time):



2.4 In-Situ Temperature Measurement Test (ISTMT)

Test date	2021-11-03	Test Ambient:	25.1 °C
Test Orientation	As intended	Stabilization Time (min)	45
Model Number	8FM-BP-MB		

Electrical Measurement:

Input Vol./Frequency	120 V / 60 Hz		Output Current of Single LED(mA)	48.7mA	
Sample No.	LED Package Model	Maximum Measured LED Ts Point Temperature (°C)	Maximum LED Ts Point Temperature Limited (°C)	Maximum Measured LED Driver Td Point Temperature (°C)	Maximum LED Driver Td Point Temperature Limited (°C)
STD211036NB-C1	PC35U2 7	60.5	105	55.8	105
STD211036NB-C2		60.1		55.5	
STD211036NB-C3		60.4		55.4	

Results

Time (t) at which to estimate lumen maintenance (hours):	50,000
Lumen maintenance at time (t) (%):	78.94%
Reported L70 (hours):	>60000

2.5 Dimming, Reduced Flicker Operation and Audible Noise

Test date	2021-11-03	Test Ambient:	25±1 °C
Test Orientation	As intended	Stabilization Time (min)	45
Model Number	8FM-BP-MB		

Electrical Measurement:

Dimmer Model	LEVITON MFG CO INC (E31373), Cat. No. 6681		
Sample No.	Input	Dimming (100%)	Dimming (<10%)
		Luminous flux (lm)	Luminous flux (lm)
STD211036NB-C1	120.0 V / 60 Hz	2030	58.39
STD211036NB-C2	120.0 V / 60 Hz	2021	59.99
STD211036NB-C3	120.0 V / 60 Hz	2004	79.69
		Dimming (100%)	Dimming (20%)
Sample No.	Input	Peak Noise Reading (dBA)	Peak Noise Reading (dBA)
STD211036NB-C1	120.0 V / 60 Hz	14.1	14.4
STD211036NB-C2	120.0 V / 60 Hz	13.9	14.2
STD211036NB-C3	120.0 V / 60 Hz	13.8	14.1

Flicker Result:

Dimming Level	100% Dimming Level	20% Dimming Level	Nominal Dimming Level
Percent Flicker (Unfiltered)	27.019%	31.544%	11.928%
Percent Flicker (1000Hz cut-off)	26.632%	31.324%	11.537%
Percent Flicker (400Hz cut-off)	25.703%	31.714%	11.584%
Percent Flicker (200Hz cut-off)	24.303%	27.201%	8.566%
Percent Flicker (90Hz cut-off)	0.288%	5.324%	0.426%
Percent Flicker (40Hz cut-off)	0.121%	4.986%	0.334%

3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-702	2 meter Integrating Sphere	Verified by D204 standard lamp	
ST-R-701	Spectral analysis system HAAS-1200	Verified by D204 standard lamp	
ST-R-703	Standard Lamp D204	2021-02-21	2022-02-20
ST-R-704	Power Meter for Integrating Sphere	2021-01-04	2022-01-03
ST-R-714	Goniophotometer system	Verified by D908S standard lamp	
ST-R-710	Standard Lamp D908S	2021-02-21	2022-02-20
ST-R-711	Power Meter for Goniophotometer	2021-01-04	2022-01-03
ST-R-725	LFA-3000	2021-01-04	2022-01-03
Uncertainty(K=2): Photometric Measurement (Sphere):3.94% Chromaticity Measurement(Sphere):48.2K Photometric Measurement(Goniophotometer):3.96%			

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