Ningbo TengLi Testing Co., Ltd

2nd floor, Block B, Ningbo Testing and Certification Base, No. 66
Qingyi Road, Ningbo National Hi-Tech Zone, Ningbo, Zhejiang
Tel: 86574-8783 6802
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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, Québec, Canada H8T 2V5

Model name(s): 6FM-BP-XXXXXX

Type of Luminaire:	LED Luminaire
Report Date:	2021-11-10
Prepared By:	Ningbo TengLi Testing Co., Ltd 2nd floor, Block B, Ningbo Testing and Certification Base, No. 66 Qingyi Road, Ningbo National Hi-Tech Zone, Ningbo, Zhejiang

Test & Report By:

Nick Song

Engineer: Nick Song

Review By:

Garman Mo

Manager: Garman Mo

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	6FM-BP-XXXXXX
Remark	"XXXXXX" can be A to Z and/or 0 to 9 and or/blank(commerical code)
Representative (Tested) Model	6FM-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-B1-B3

1.2 Rated Values:		
Rated Voltage / Frequency	120Vac,60 Hz	
Nominal Power	26W	
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 ℃ ±5 ℃. 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 ºC ±1 ºC. 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 ºC ±1 ºC. 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	

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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	⩾ 15,000 hours	50000	Pass
Minimum dimming level	⩽ 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**

Test date	2021-11-03	**Test Ambient:**	25±1 ºC
Test Orientation	As intended	**Stabilization Time (min)**	45
Model Number	6FM-BP-MB		

Electrical Measurement:

Sample No.	**Voltage (Vac)**	**Frequency (Hz)**	**Current (A)**	**Power (W)**	**Power Factor**
STD211036 NB-B1	119.9	60.01	0.2191	25.77	0.9812

Chromaticity Measurement - Sphere-Spectroradiometer Method (Self-absorption:1.0879)(4π geometry):

Parameter	**Result**
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	2955
Duv	-0.0021
Chromaticity (x, y)	x=0.4371 y=0.3989
Chromaticity (u', v')	u'=0.2529 v'=0.5193
Color Rendering Index (CRI)	93.7
R9	65

Goniophotometer Method:

Parameter	**Result**
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1711.4
Luminous Efficacy (lm/W)	66.40

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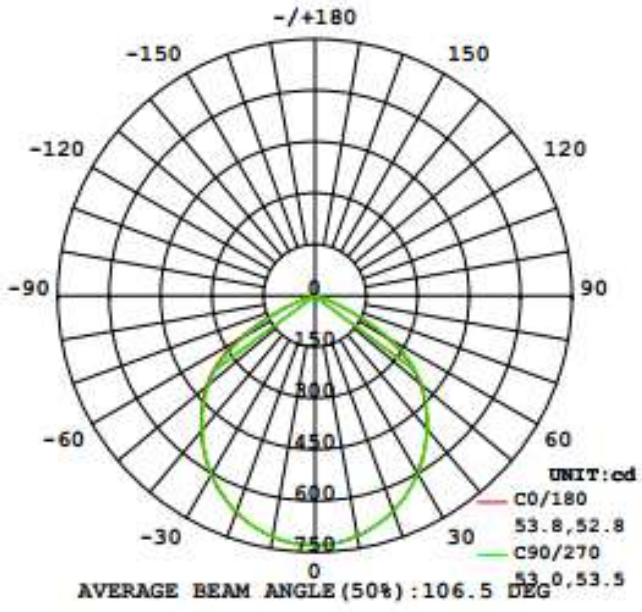
Zonal Lumen Tabulation



Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	559.6	32.7%
0-40	909.0	53.1%
0-60	1,562.3	91.3%
60-90	148.8	8.7%
70-100	10.7	0.6%
90-120	0	0%
0-90	1,711.1	100%
90-180	0	0%
0-180	1,711.1	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	68.9	4.0%	90-100	0	0%
10-20	196.3	11.5%	100-110	0	0%
20-30	294.4	17.2%	110-120	0	0%
30-40	349.4	20.4%	120-130	0	0%
40-50	355.5	20.8%	130-140	0	0%
50-60	297.8	17.4%	140-150	0	0%
60-70	138.2	8.1%	150-160	0	0%
70-80	10.5	0.6%	160-170	0	0%
80-90	0.2	0.0%	170-180	0	0%

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Table--1 UNIT: cd

γ (DEG) \ C (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	729	729	729	729	729	729	729	729	729	729	729	729	729	729	729	729			
5	725	724	724	726	725	724	725	726	727	726	727	726	726	725	726	726			
10	714	712	715	713	714	713	714	715	715	716	717	716	715	714	715	715			
15	694	694	695	696	694	695	696	697	697	698	697	697	696	697	696	697			
20	669	668	670	670	669	670	670	671	674	673	674	673	670	670	671	671			
25	637	637	637	637	638	639	639	640	643	642	642	641	640	640	639	640			
30	597	599	599	600	601	600	601	602	605	605	604	604	603	602	601	601			
35	556	555	555	557	558	558	559	560	563	563	562	560	560	558	558	558			
40	508	508	509	511	512	512	512	513	516	516	515	514	512	511	510	511			
45	457	457	459	460	462	462	462	463	466	466	464	462	461	459	459	460			
50	401	402	405	407	408	409	409	410	414	412	411	408	406	404	404	404			
55	330	334	337	340	342	343	343	343	347	345	341	336	332	333	332	333			
60	232	237	243	248	250	252	253	252	257	252	246	240	235	232	233	237			
65	126	131	136	143	145	148	149	148	152	146	140	133	129	126	126	129			
70	39.4	43.3	45.2	49.2	52.7	55.6	56.0	54.1	56.6	52.6	47.1	42.3	40.0	38.8	37.6	38.8			
75	2.27	2.92	3.73	2.66	3.87	4.67	4.96	4.51	1.93	1.28	0.95	0.88	0.86	0.84	0.84	0.85			
80	0.37	0.38	0.40	0.42	0.44	0.45	0.46	0.46	0.47	0.45	0.42	0.40	0.39	0.38	0.37	0.38			
85	0.09	0.10	0.11	0.12	0.13	0.14	0.14	0.14	0.15	0.14	0.12	0.11	0.10	0.09	0.09	0.09			
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			

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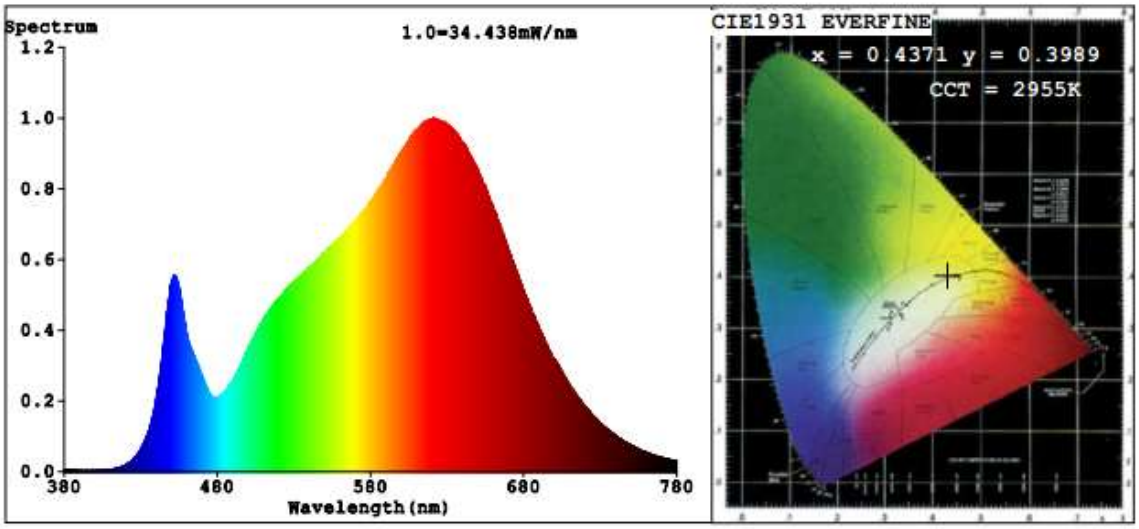
Spectral Power Distribution & Chromaticity Diagram



R1 =95	R2 =97	R3 =98	R4 =94	R5 =94	R6 =96	R7 =92	
R8 =84	R9 =65	R10=92	R11=95	R12=82	R13=95	R14=98	R15=91

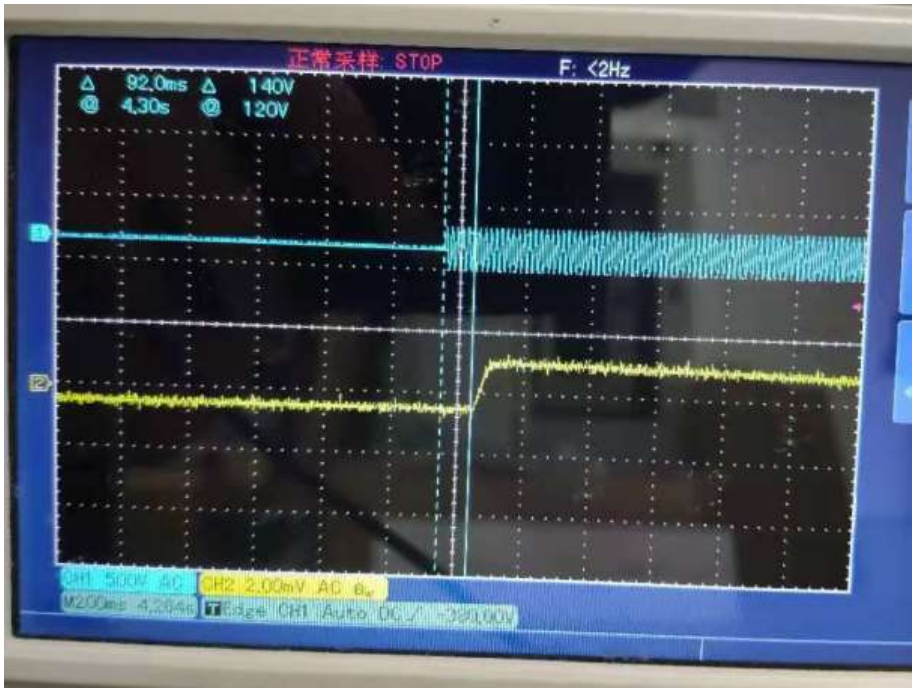
2.3 Start Time Test

Test date	2021-11-03	**Test Ambient:**	25±1 ℃
Test Orientation	As intended	**Stabilization Time (min)**	45
Model Number	6FM-BP-MB		

Electrical Measurement:

Sample No.	Start Time (ms)
STD211036NB-B1	92.0
STD211036NB-B2	89.0
STD211036NB-B3	95.0
Average	92.0

Graph (Start Time):



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2.4 In-Situ Temperature Measurement Test (ISTMT)

Test date	2021-11-03	**Test Ambient:**	25.1 ºC
Test Orientation	As intended	**Stabilization Time (min)**	45
Model Number	6FM-BP-MB		

Electrical Measurement:

Input Vol./Frequency	**120 V / 60 Hz**		**Output Current of Single LED(mA)**	**63.5mA**	
Sample No.	**LED Package Model**	**Maximum Measured LED Ts Point Temperature (℃)**	**Maximum LED Ts Point Temperature Limited (℃)**	**Maximum Measured LED Driver Td Point Temperature (℃)**	**Maximum LED Driver Td Point Temperature Limited (℃)**
STD211036NB-B1	PC35U27	65.4	105	51.6	105
STD211036NB-B2		65.0		51.2	
STD211036NB-B3		65.3		51.5	

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 ℃
Test Orientation	As intended	**Stabilization Time (min)**	45
Model Number	6FM-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-B1	120.0 V / 60 Hz	1619	61.86
STD211036NB-B2	120.0 V / 60 Hz	1611	90.75
STD211036NB-B3	120.0 V / 60 Hz	1609	104.1
		Dimming (100%)	**Dimming (20%)**
Sample No.	**Input**	**Peak Noise Reading (dBA)**	**Peak Noise Reading (dBA)**
STD211036NB-B1	120.0 V / 60 Hz	14.5	14.2
STD211036NB-B2	120.0 V / 60 Hz	14.2	13.9
STD211036NB-B3	120.0 V / 60 Hz	14.4	14.1

Flicker Result:

Dimming Level	100% Dimming Level	20% Dimming Level	Nominal Dimming Level
Percent Flicker (Unfiltered)	38.531%	44.139%	20.421%
Percent Flicker (1000Hz cut-off)	37.927%	44.119%	20.570%
Percent Flicker (400Hz cut-off)	36.404%	44.550%	20.502%
Percent Flicker (200Hz cut-off)	34.223%	38.441%	15.069%
Percent Flicker (90Hz cut-off)	0.623%	5.204%	0.694%
Percent Flicker (40Hz cut-off)	0.337%	5.085%	0.562%

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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 ********