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, Montréal (Lachine), Québec, Canada H8T 2V5

For products:

Concerto FM

Models No.:

FM-COC-******(Black)

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

Test Date:	Aug. 31, 2022 to Sep. 1, 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.1.4
Test Note:	*FM-COC-BLJ was selected for the test.*

Complied by:	**Reviewed by:**
Kargel Yuan	**Lin Qiu**
Sep. 7, 2022	**Sep. 7, 2022**

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1. General

1.1 Product Information

Brand Name	ARTIKA
Product Type	Concerto FM
Model Number	FM-COC-******(Black)
Rated Inputs	120VAC, 60Hz
Rated Power	17W
Rated Light output	1100lm
Declared CCT	3000K, 4000K, 5000K
Power Supply	LED driver
LED Package, Array or Module	Model: 2835S Series, manufactured by EVERLIGHT ELECTRONICS CO., LTD
Receipt Samples	1 unit
Sample Code of lab.	220826109002
Date of Receipt Samples	Aug. 26, 2022
Note	This is a color tunable product, 3000K was 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	2022-07-01	2023-06-30
Photometric colorimetric electric system[1]	LC-I-956	HAAS-2000	Before use	Before use
Standard lamp[2]	LC-I-PL-030	D204C	2022-07-12	2023-07-11
Luminous flux lamp[3]	LC-I-PL-031	AC220V/200W	2022-07-21	2023-07-20
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, Incandescent lamp, 200W, 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 (60 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(Sphere)	Result(Goniophotometer)
Input Voltage & Frequency	120.02 V~60Hz	120.08 V~60Hz
Input Current(A)	0.151	0.151
Total Power(W)	17.87	17.89
Power Factor	0.989	0.989
I-THD	-	-

3.2 Photometric data

Criteria Item	Result(Sphere)	Result(Goniophotometer)
Total Lumens(lm)	-	1138.72
Luminaire Efficacy(Lm/W)	-	63.65
Correlated Color Temperature (CCT)(K)	3010	-
Color Rendering Index (CRI)	93.2	-
R9	60	-
Chromaticity Coordinate (x,y)	x = 0.4378 y = 0.4071	-
Chromaticity Coordinate (u,v)	u = 0.2498 v = 0.3485	-
Chromaticity Coordinate (u',v')	u' = 0.2498 v' = 0.5227	-
Duv	0.0011	-
Zone Lumens between 0-60 °	-	77.43%
Beam Angle(50%Imax)	-	C0/180=112.2° C90/270=111.6°

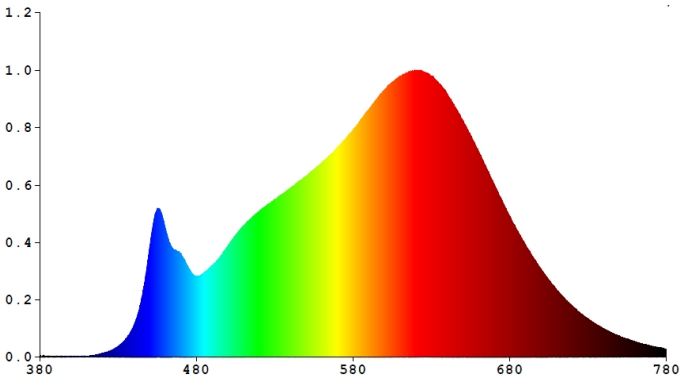
3.3 Color Rendering Details

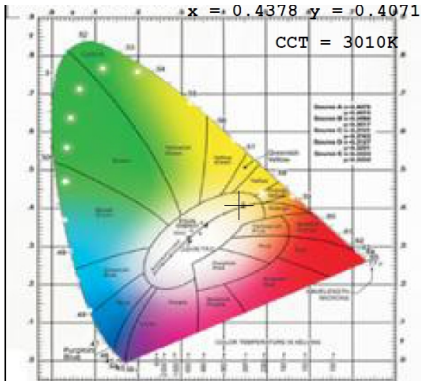
R1	R2	R3	R4	R5	R6	R7	R8
94	98	98	92	93	97	91	82
R9	R10	R11	R12	R13	R14	R15	-
60	95	94	80	95	100	89	-

Note: N/A

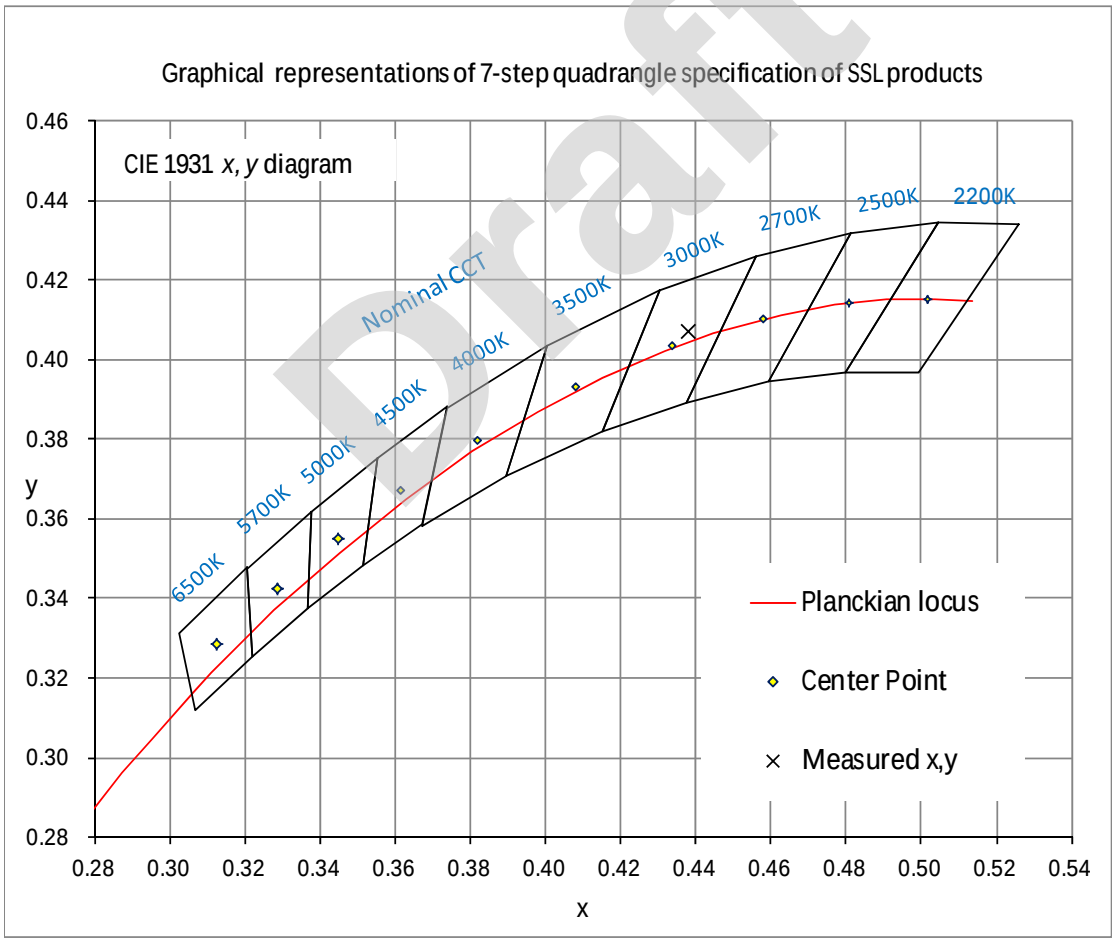
4. Test Data

4.1 Spectral Distribution





4.2 ANSI Chromaticity Quadrangles Diagram



4.3 Goniometry Test Data

CIE Type	Direct	Basic Luminous Shape	Circular
Spacing Criteria (0-180)	1.26	Luminous Length	0.30 m (Diameter)
Spacing Criteria (90-270)	1.26	Luminous Width	0.30 m (Diameter)
Spacing Criteria (Diagonal)	1.38	Luminous Height	0.00 m
Test Distance	29.75 m		

4.4 Zonal Lumen Summary

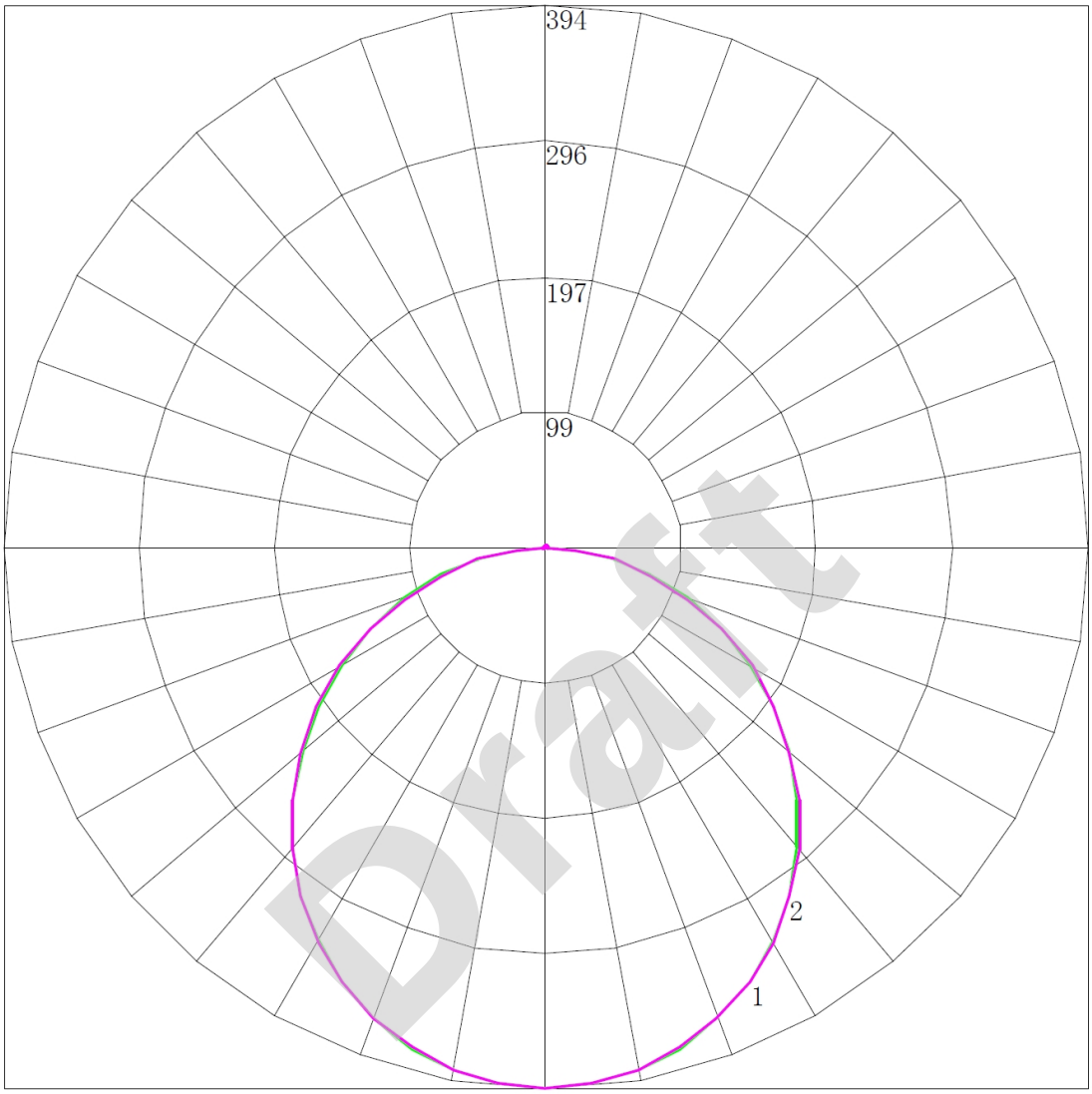
Zone	Lumens	%Lamp	%Fixt
0-20	143.94	12.60	12.60
0-30	305.31	26.80	26.80
0-40	499.33	43.90	43.80
0-60	881.69	77.40	77.40
0-80	1105.72	97.10	97.10
0-90	1131.68	99.40	99.40
10-90	1094.4	96.10	96.10
20-40	355.39	31.20	31.20
20-50	556.24	48.80	48.80
40-70	522.22	45.90	45.90
60-80	224.03	19.70	19.70
70-80	84.16	7.40	7.40
80-90	25.96	2.30	2.30
90-110	1.88	0.20	0.20
90-120	2.66	0.20	0.20
90-130	3.54	0.30	0.30
90-150	5.48	0.50	0.50
90-180	7.04	0.60	0.60
110-180	5.16	0.50	0.50
0-180	1138.72	100.00	100.00

Total Luminaire Efficiency = 100.00%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	37.29
10-20	106.66
20-30	161.36
30-40	194.03
40-50	200.85
50-60	181.50
60-70	139.87
70-80	84.16
80-90	25.96
90-100	1.16
100-110	0.71
110-120	0.78
120-130	0.88
130-140	0.95
140-150	0.99
150-160	0.88
160-170	0.55
170-180	0.14

4.5 Polar Curves

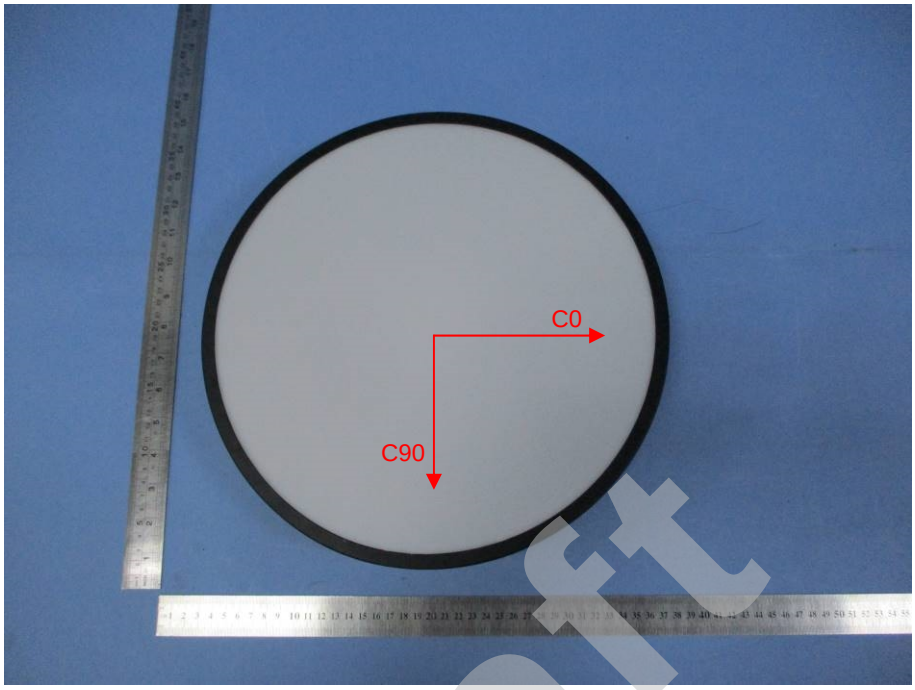


Maximum Candela = 394.214 Located At Horizontal Angle = 0, Vertical Angle = 0
1 - Vertical Plane Through Horizontal Angles (0 - 180)
2 - Vertical Plane Through Horizontal Angles (90 - 270)

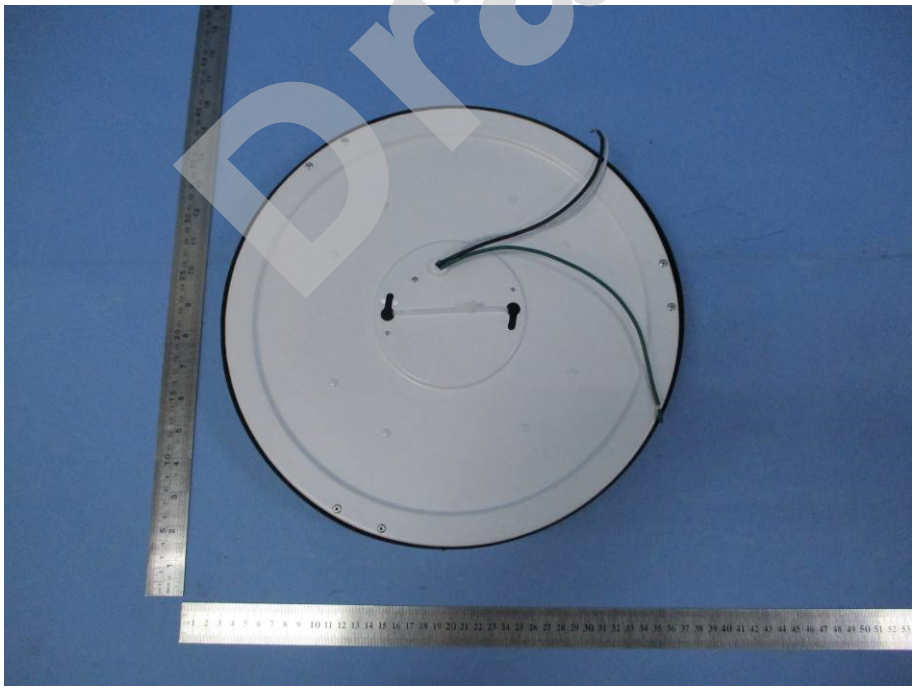
4.6 Candela Tabulation

	0	15	30	45	60	75	90
0	394.214	394.214	394.214	394.214	394.214	394.214	394.214
5	392.398	392.510	392.554	392.465	392.488	392.202	392.317
10	386.906	386.999	387.064	386.976	387.088	386.783	386.845
15	378.180	377.859	377.877	377.921	378.036	377.915	377.756
20	365.866	365.553	365.702	365.990	365.731	365.750	365.224
25	350.098	349.685	349.963	350.184	350.128	349.958	350.310
30	331.051	331.205	331.456	331.390	334.151	331.579	332.086
35	309.923	309.626	309.895	310.183	310.113	310.303	310.509
40	285.872	285.701	286.031	286.164	286.719	286.770	286.725
45	259.561	259.386	259.688	263.296	260.604	261.070	260.338
50	231.568	231.544	231.796	232.061	232.828	232.671	232.540
55	202.024	202.330	202.818	203.062	203.658	203.632	203.638
60	171.107	171.213	175.347	172.026	172.962	172.955	173.191
65	140.367	140.427	140.614	141.079	141.534	141.925	141.377
70	109.671	109.265	109.622	110.286	110.240	110.564	110.136
75	78.577	81.777	78.719	79.228	79.365	80.020	79.690
80	49.255	48.912	49.166	49.631	49.642	50.007	50.347
85	21.261	21.402	21.340	21.606	21.778	21.675	21.401
90	3.366	2.921	2.878	2.612	2.768	2.988	1.853
95	0.399	0.421	0.465	0.443	0.487	0.420	0.397
100	0.620	0.598	0.620	0.642	0.575	0.531	0.485
105	0.620	0.664	0.775	0.797	0.730	0.597	0.574
110	0.709	0.708	0.708	0.797	0.819	0.663	0.618
115	0.709	0.730	0.775	0.819	0.819	0.774	0.750
120	0.797	0.752	0.885	0.908	0.907	0.907	0.838
125	0.974	0.930	1.040	0.996	1.018	0.929	0.971
130	1.019	1.062	1.151	1.129	1.151	1.128	1.103
135	1.196	1.129	1.173	1.218	1.306	1.260	1.280
140	1.329	1.284	1.306	1.350	1.416	1.504	1.456
145	1.550	1.461	1.527	1.505	1.637	1.703	1.809
150	1.860	1.682	1.727	1.727	1.792	1.836	2.030
155	1.993	1.771	1.837	1.882	1.925	2.035	2.074
160	1.905	1.859	1.992	2.059	2.080	2.057	1.986
165	1.860	1.881	1.926	2.059	1.992	1.946	1.986
170	1.772	1.793	1.660	1.594	1.749	1.836	1.853
175	1.373	1.394	1.461	1.395	1.439	1.460	1.324
180	0.692	0.692	0.692	0.692	0.692	0.692	0.692

Appendix A Product Photo



Picture 1



Picture 2

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