



Shenzhen Belling Efficiency Testing Lab Co., Ltd



Report No.: BL220527001-9

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Version 1.0

Total pages 15

Test report of

IES LM-79-08

Approved Method: Electrical and Photometric

Measurements of Solid-State Lighting Products

Applicant:

ARTIKA FOR LIVING INC.

Address:

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

For Product:

Concerto

Model No.:

PDT-COC-XXXXXX

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

Test laboratory: Shenzhen Belling Efficiency Testing Lab Co., Ltd, 1Floor, No.1 Building, Meibaohe Industrial Park, Dalang Street, Longhua District, Shenzhen, Guangdong Prov.518101 China.

Complied by: Sam Chen

Review by: Jason Zhou

Project Engineer

Technical Manager

Note: The test data was only valid for the test sample(s). This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or use in part without prior written consent from Shenzhen Belling Efficiency Testing Lab Co., Ltd. This report must not be used by the customer to claim product certification, approval, or endorsement By NVLAP, NIST, or any agency of the U.S. Government.



1 General

1.1 Product Information

Manufacturer	ZHONGSHAN ODEER ELECTRONICS LIGHTING CO., LTD
Manufacturer Address	No.4, North Industrial Road, xiaolan Town, Zhongshan City, Guangdong.
Brand Name	ARTIKA
Luminaire Type	Concerto
Model Number	PDT-COC-XXXXXX
Rated Inputs	AC 120V, 60Hz
Rated Power	33 W
Color-Tunable Product	CCT setting: 3000K, 4000K, 5000K
Date of Receipt Samples	2022-05-25
Date of test	2022-05-25 to 2022-05-27
Burning Time Before Test	0hour(For New Products)

1.2 Standards or methods

- ANSI C78.377-2017:Specifications for the Chromaticity of Solid State Lighting Products
- ANSI C82.77-10:2014:Harmonic Emission Limits - Related Power Quality Requirements for Lighting Equipment - Solid State
- CIE Publication No.13.3-1995:Method of Measuring and Specifying Color Rendering of Light Sources
- IESNA LM-79-08 Approved Method: Electric & Photometric Measurement of Solid-state Lighting Products



1.3 Equipment list

Device	Manufacture	Model No.	Serial No.	Calibration due date
Goniophotometric System	SENSING	GMS-3000	N.A	2023-04-08
AC Power Source	ALL POWER	APW-105N	970780	2023-04-10
Total Luminous Flux Standard Lamp	SENSING	110V/100W	S13100188	2023-03-30
Total Luminous Flux Standard Lamp	OSRAM	12V/20W	LSD1220173	2023-03-30
Digital Power Meter	YOKOGAWA	WT310	C2QM02030V	2023-04-10
Thermostatic stabilized photometric sphere	SENSING	SPR-600M	N.A	2023-04-08
Digital Power Meter	YOKOGAWA	WT210	91L929742	2023-04-10
Spectral radiometer	SENSING	SPR-3000	S1101108	2023-04-08
Environment Measurer	XUYAO	HS-1	N/A	2023-03-30
Environment Measurer	XUYAO	HS-1	N/A	2023-03-30
Stop watch	KISLO	K610	N/A	2023-04-14
Digital Anemometer	TECMAN	TD8901	026141	2022-09-08

Statement of Traceability: Shenzhen Belling Efficiency Testing Lab Co., Ltd attests that all calibration has been performed using suitable standards traceable to national primary standards and International System of Unit (SI).



2 Test conducted and method

2.1 Ambient Condition

The ambient temperature in which measurements are being taken was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, 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 Integrating Sphere System

The system includes AC power source, digital power meter, DC power supply, spectrophotometer, and integrating sphere. The integrating sphere system is calibrated by standard light source before measurement. The system and standard light source has been calibrated regularly and traceable to the National Primary Standards. 4π geometry was used during measurement. The product was operated in its intended orientation in application and was recorded in this report.

Integrating Sphere Uncertainty: The uncertainty of the light output (luminous flux) measurements is $U=1.8\%$ ($K=2$), at the 95% confidence level. The uncertainty of the correlated color temperature measurements is $U=20\text{K}$ ($K=2$), at the 95% confidence level. The uncertainty of the CRI is $U=1.8(K=2)$, at the 95% confidence level. The uncertainty of power meter AC current $U=0.18\%$ of rdg, AC Voltage $U=0.16\%$ of rdg, Power $U=0.20\%$ ($K=2$), at the 95% confidence level.



2.5 Goniophotometer System

The goniophotometer system is calibrated by standard light source before measurement. The standard light source has been calibrated regularly and traceable to the National Primary Standards.

Type C goniophotometer was used for measuring total luminous flux, luminous intensity distribution, and color spatial uniformity. The product was operated in its intended orientation in application and was recorded in this report. The method according to IESNA LM-79-08 following chapter.

Goniophotometer Uncertainty :The uncertainty of the luminous intensity is $U=1.6\%$ ($K=2$), at the 95% confidence level.



3 Test Result Summary

3.1 Integrating Sphere System (Total operating time for integrating sphere test: 1.0 hour)

3.1.1 Model Number: PDT-COC-XXXXXX

Electrical data

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.04	60	0.265	31.74	0.996

Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
2542.38	80.1	3098

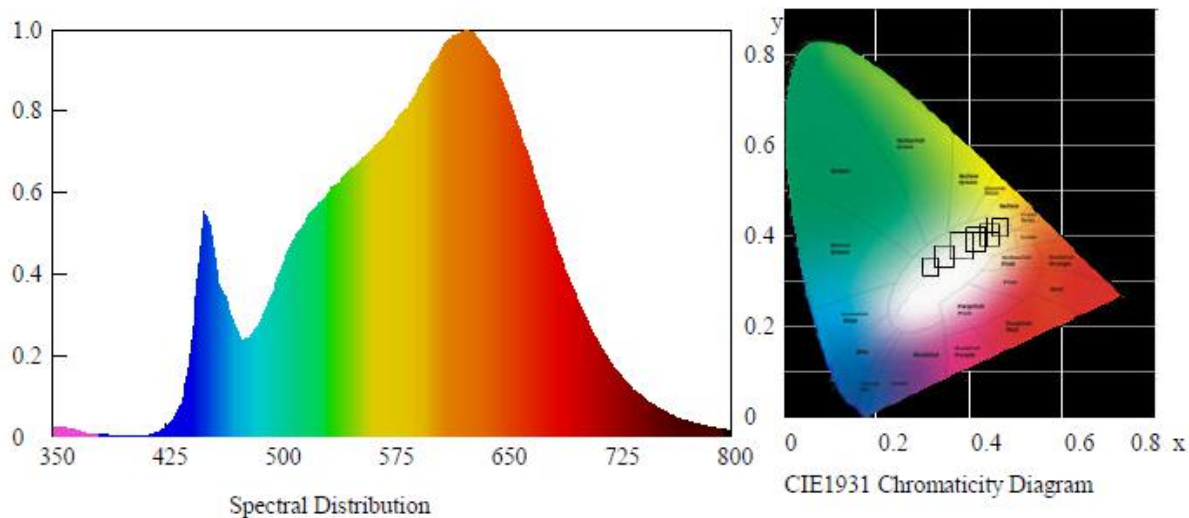
Chromaticity Coordinate

Duv	x	y	u'	v'
+0.00155	0.4323	0.4063	0.2466	0.5216

Color Rendering

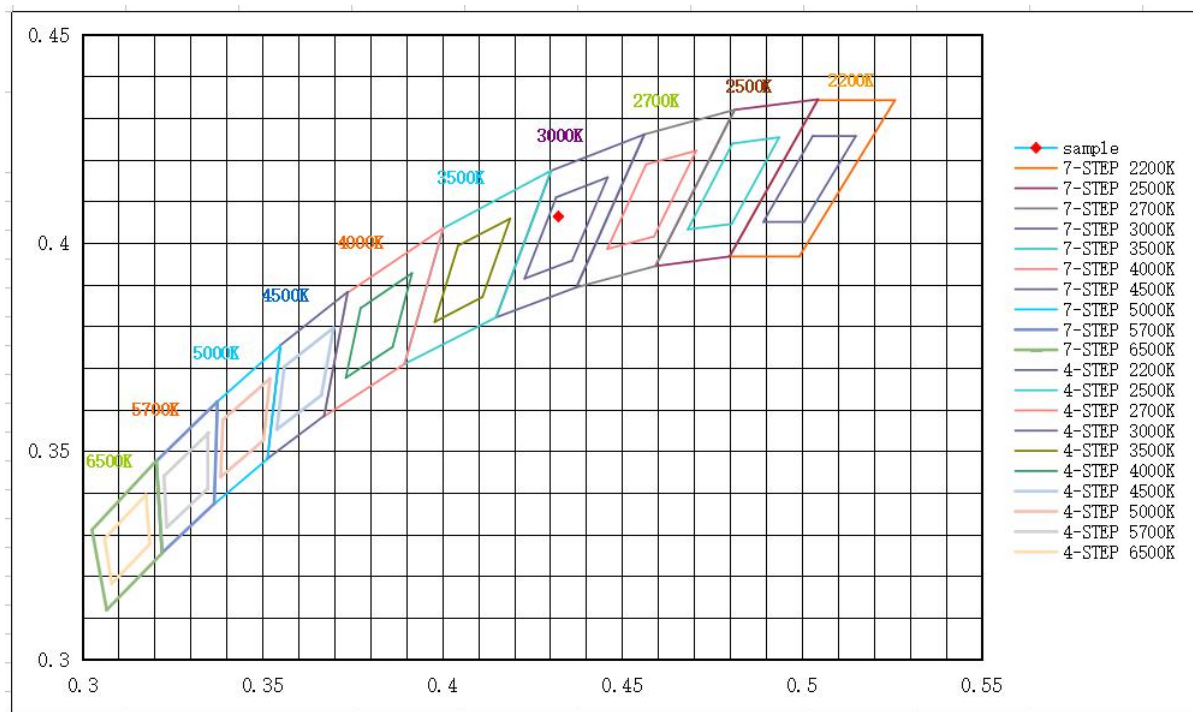
CRI	R9	Rf	Rg	Rcs,h1(%)
94.3	68	92	99	-4

Spectral Distribution





7/4 Step Quadrangle



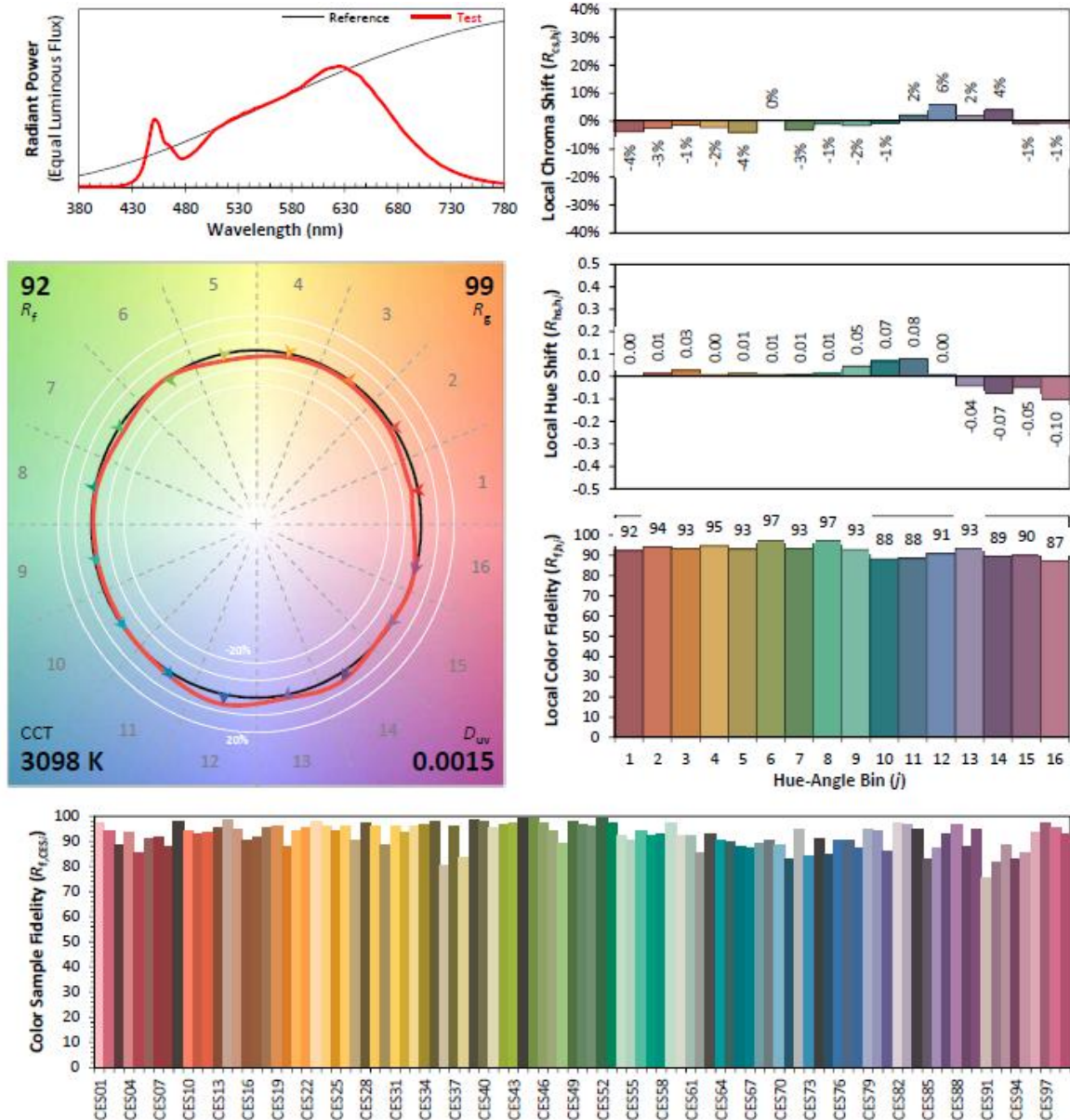
**ANSI/IES TM-30-18 Color Rendition Report**

Source: BL220527001-9

Manufacturer: ARTIKA FOR LIVING INC.

Date: 2022-06-16

Model: PDT-COC-XXXXXX



Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x 0.4323
 y 0.4063
 u' 0.2466
 v' 0.5215

CIE 13.3-1995
(CRI)

R_a 94
 R_g 68

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.



3.2 Goniophotometer System (Total operating time for luminous intensity distribution: 1.0 hour)

3.2.1 Model Number: PDT-COC-XXXXXX

Electrical data

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.08	60	0.2650	31.68	0.9963

Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	Zonal Lumen in 0-60°(%lm)	Zonal Lumen in 0-90°(%lm)
2540.72	80.20	79.58	99.81

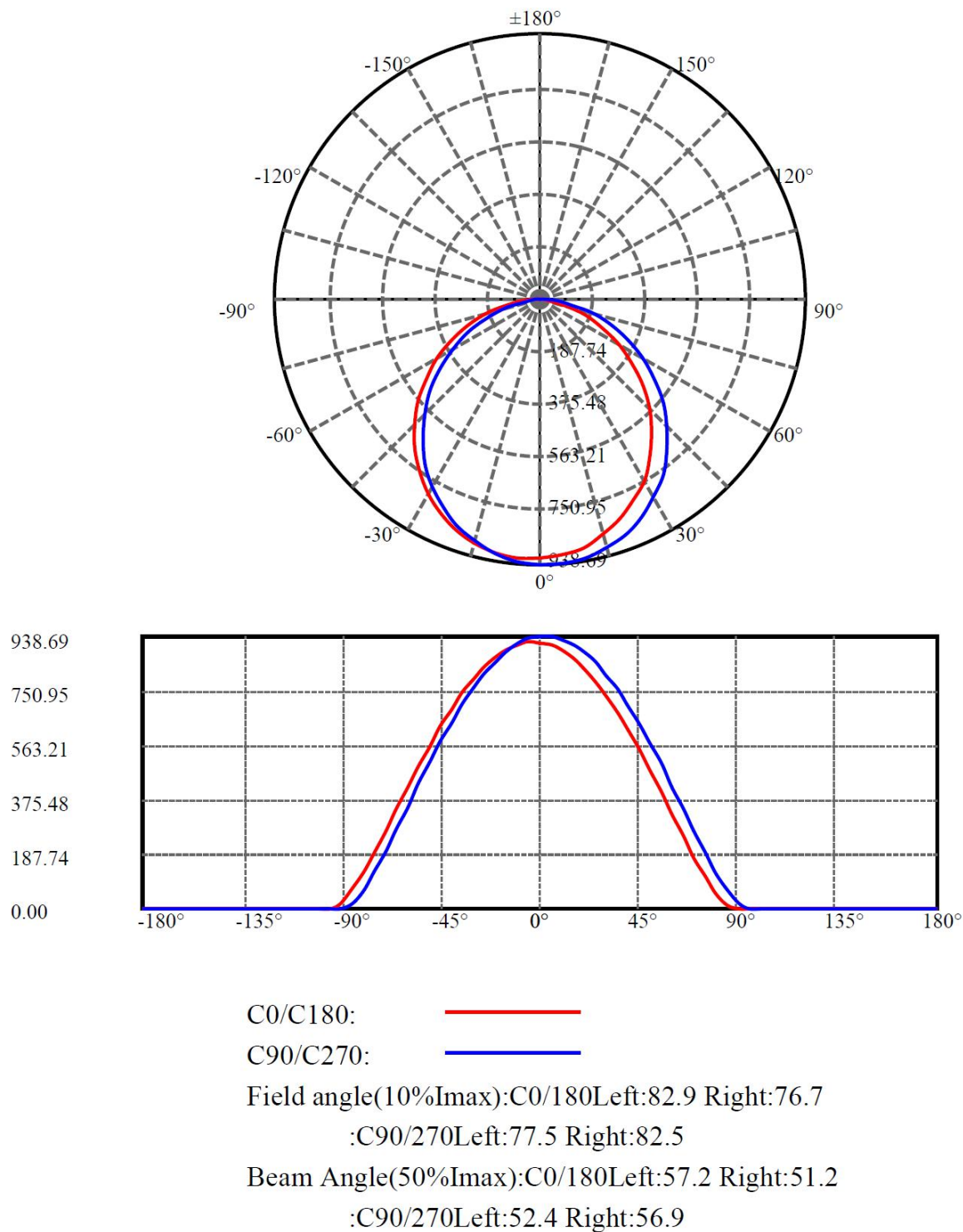
**Zonal Flux Diagram**

Zonal flux distribution table

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	922.282	0.000	0	0.00%	0.00%
5.0	917.836	21.998	21.998	0.00%	0.87%
10.0	904.578	65.194	87.192	0.00%	3.43%
15.0	882.667	106.018	193.21	0.00%	7.60%
20.0	852.473	143.000	336.21	0.00%	13.23%
25.0	814.433	174.828	511.037	0.00%	20.11%
30.0	769.393	200.434	711.472	0.00%	28.00%
35.0	716.666	218.833	930.304	0.00%	36.62%
40.0	658.170	229.381	1159.685	0.00%	45.64%
45.0	594.011	231.851	1391.537	0.00%	54.77%
50.0	524.824	226.077	1617.614	0.00%	63.67%
55.0	452.660	212.537	1830.151	0.00%	72.03%
60.0	377.452	191.878	2022.029	0.00%	79.58%
65.0	301.253	164.994	2187.024	0.00%	86.08%
70.0	226.495	133.629	2320.653	0.00%	91.34%
75.0	155.588	99.870	2420.523	0.00%	95.27%
80.0	91.654	66.155	2486.678	0.00%	97.87%
85.0	39.721	35.698	2522.376	0.00%	99.28%
90.0	9.461	13.466	2535.842	0.00%	99.81%
95.0	0.159	2.634	2538.476	0.00%	99.91%
100.0	0.066	0.061	2538.537	0.00%	99.91%
105.0	0.053	0.032	2538.569	0.00%	99.92%
110.0	0.146	0.052	2538.621	0.00%	99.92%
115.0	0.185	0.084	2538.705	0.00%	99.92%
120.0	0.238	0.103	2538.808	0.00%	99.92%
125.0	0.318	0.128	2538.936	0.00%	99.93%
130.0	0.410	0.158	2539.094	0.00%	99.94%
135.0	0.556	0.195	2539.289	0.00%	99.94%
140.0	0.675	0.228	2539.517	0.00%	99.95%
145.0	0.728	0.234	2539.751	0.00%	99.96%
150.0	0.834	0.230	2539.981	0.00%	99.97%
155.0	0.900	0.219	2540.201	0.00%	99.98%
160.0	0.834	0.182	2540.382	0.00%	99.99%
165.0	0.887	0.142	2540.524	0.00%	99.99%
170.0	0.887	0.105	2540.629	0.00%	100.00%
175.0	0.940	0.065	2540.695	0.00%	100.00%
180.0	1.032	0.024	2540.718	0.00%	100.00%

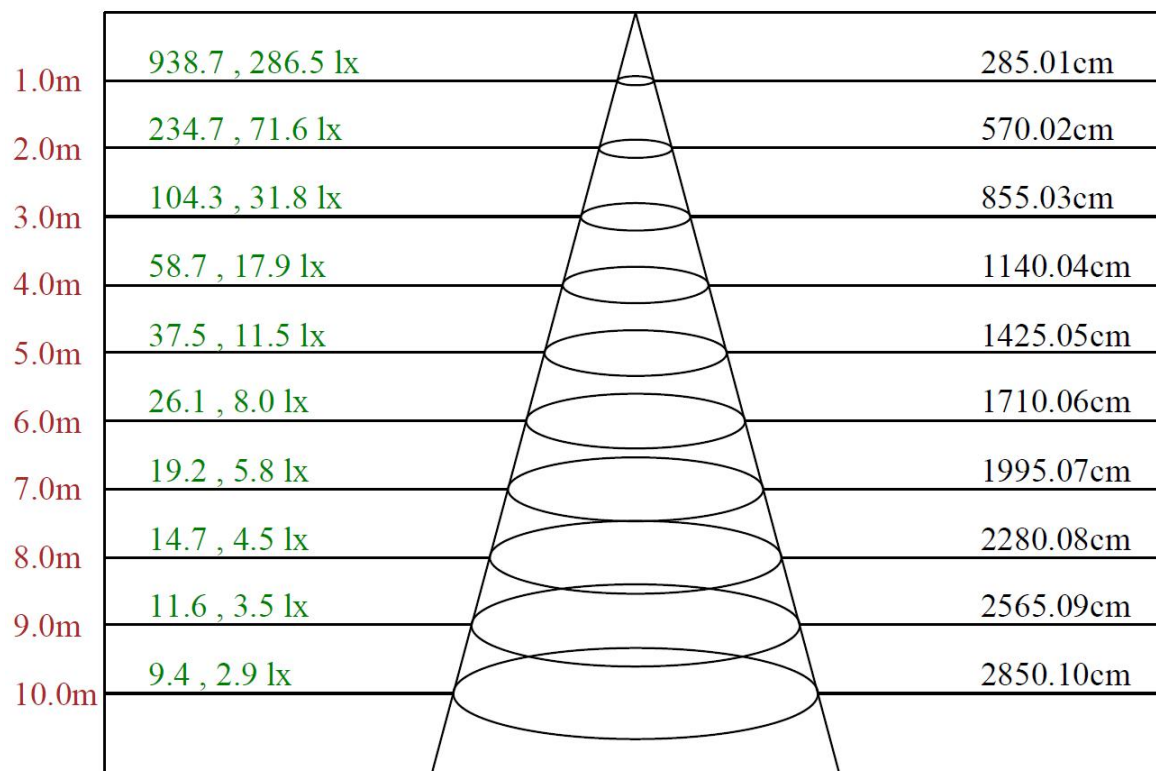
**Luminous Intensity Distribution Diagram**

Light Distribution Curve [Unit:cd]





Lux distance Curve



Max , Ave

Beam angle of C90 plane 109.88

**Luminous Intensity Distribution Data**

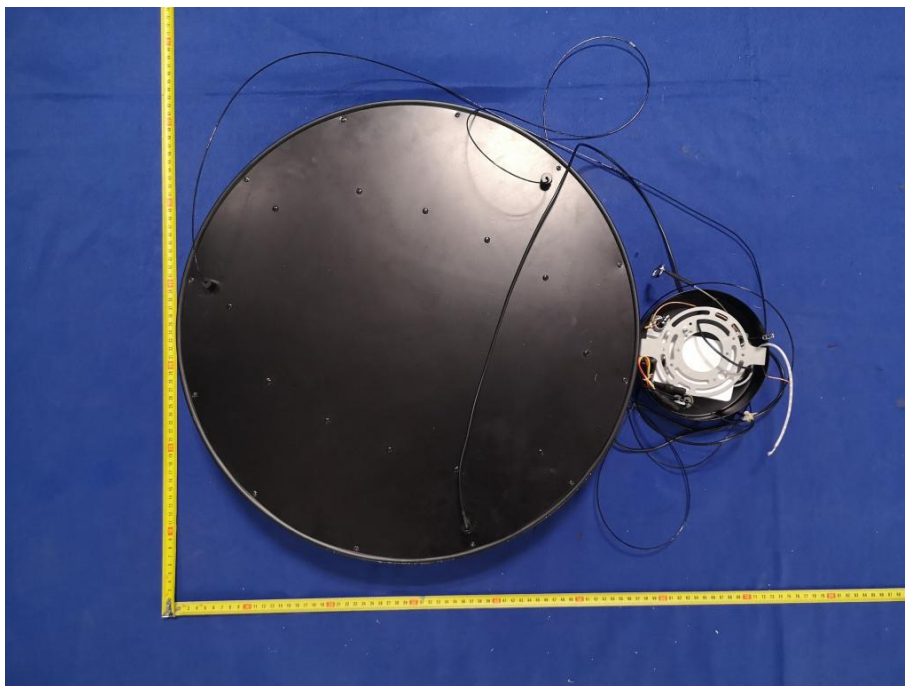
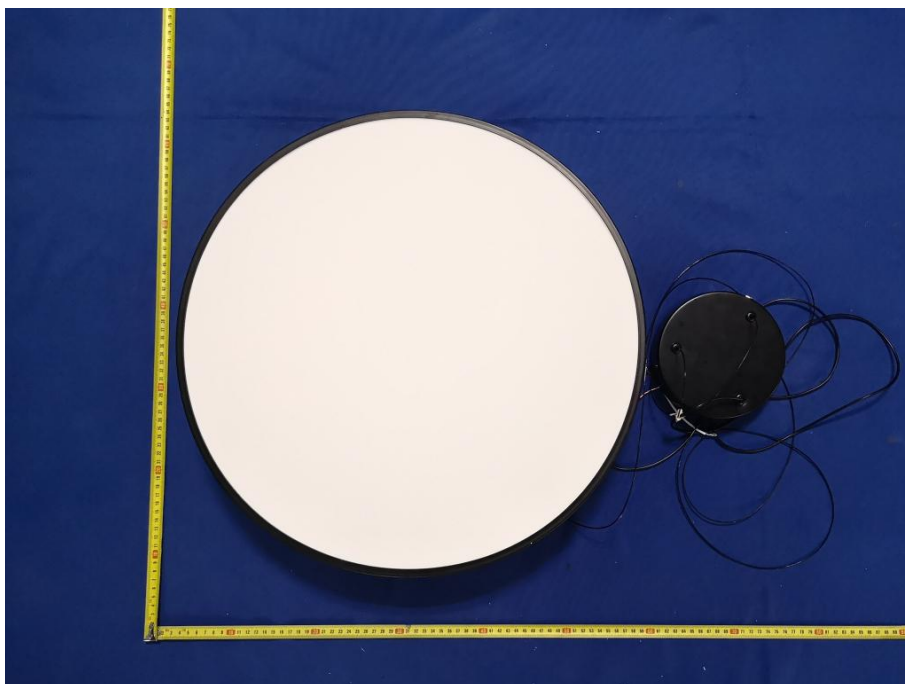
C/ γ (°)	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0
0.0	917.73	908.42	890.21	863.32	828.18	783.51	736.30	678.93	616.69
22.5	915.61	906.09	886.82	859.72	825.64	782.88	733.34	676.60	616.05
45.0	913.50	904.61	887.46	860.78	826.28	785.42	736.30	679.99	618.38
67.5	913.50	905.24	888.52	863.53	829.45	787.75	739.69	685.28	623.68
90.0	938.69	938.48	928.74	910.53	884.28	848.93	806.38	757.90	700.95
112.5	932.13	931.70	922.60	905.24	878.99	845.75	804.05	754.72	698.83
135.0	925.99	925.99	917.94	900.37	873.48	841.09	800.02	750.49	696.08
157.5	921.12	921.54	913.07	895.71	870.52	836.86	795.37	747.73	692.48
180.0	917.73	918.58	910.11	893.17	867.77	833.47	793.04	744.13	688.67
202.5	915.61	915.83	907.57	890.21	864.38	829.87	789.44	740.11	684.86
225.0	913.50	913.50	904.18	887.03	861.21	826.28	786.69	736.94	682.95
247.5	913.50	913.07	904.18	886.61	859.30	826.06	784.36	734.82	679.14
270.0	938.69	930.22	913.07	887.03	852.53	812.09	762.34	706.03	641.25
292.5	932.13	923.02	905.45	880.26	845.54	803.20	755.36	699.04	637.23
315.0	925.99	916.67	899.10	872.21	838.98	796.85	747.10	689.94	629.82
337.5	921.12	912.44	894.23	866.92	833.05	790.92	740.54	684.01	623.68
360.0	917.73	908.42	890.21	863.32	828.18	783.51	736.30	678.93	616.69
C/ γ (°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	548.31	476.75	401.60	327.08	250.23	177.20	111.99	53.35	11.43
22.5	549.37	477.60	403.29	329.20	253.20	180.79	113.90	55.47	13.34
45.0	554.03	482.68	408.37	332.37	258.70	185.66	117.71	58.64	15.03
67.5	557.20	485.65	413.24	336.82	259.97	186.51	121.31	62.03	15.88
90.0	637.86	569.27	499.20	422.56	343.81	265.90	192.65	123.85	63.30
112.5	635.95	570.33	498.14	422.35	346.77	269.29	194.13	125.75	67.11
135.0	633.84	566.73	494.75	421.71	344.65	270.13	195.83	127.45	67.11
157.5	630.87	563.76	495.38	421.08	344.86	268.86	197.10	128.72	70.07
180.0	626.85	560.59	492.00	417.90	344.02	268.23	194.34	126.18	67.53
202.5	625.16	558.90	488.61	414.51	341.48	266.11	193.07	127.87	67.53
225.0	621.35	555.08	486.92	413.88	338.30	267.59	192.01	124.69	64.99
247.5	617.32	552.76	482.05	410.07	335.34	259.34	185.88	119.19	62.03
270.0	577.74	505.76	429.33	350.58	274.16	197.10	125.75	62.88	16.09
292.5	569.27	496.87	423.83	345.92	267.17	193.50	122.58	60.55	13.13
315.0	562.49	490.09	416.42	338.72	259.97	185.03	117.50	57.16	10.59
337.5	556.57	484.38	409.43	334.49	257.43	182.70	113.68	52.71	10.37
360.0	548.31	476.75	401.60	327.08	250.23	177.20	111.99	53.35	11.43
C/ γ (°)	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0
0.0	0.21	0.00	0.00	0.00	0.42	0.42	0.21	0.42	0.42
22.5	0.42	0.21	0.00	0.21	0.21	0.21	0.42	0.21	0.64
45.0	0.64	0.00	0.00	0.21	0.21	0.21	0.42	0.42	0.64
67.5	0.42	0.00	0.21	0.00	0.21	0.42	0.42	0.64	0.64
90.0	17.57	0.42	0.00	0.00	0.00	0.00	0.21	0.21	0.42
112.5	18.00	0.21	0.00	0.00	0.00	0.00	0.00	0.21	0.21
135.0	18.63	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00
157.5	20.75	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.21
180.0	19.27	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00
202.5	19.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
225.0	18.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
247.5	16.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21
270.0	0.64	0.42	0.42	0.42	0.64	0.64	0.85	0.85	1.27
292.5	0.21	0.21	0.42	0.00	0.42	0.42	0.64	0.85	0.64
315.0	0.00	0.21	0.00	0.00	0.21	0.42	0.42	0.64	0.64
337.5	0.21	0.00	0.00	0.00	0.00	0.21	0.21	0.64	0.64
360.0	0.21	0.00	0.00	0.00	0.42	0.42	0.21	0.42	0.42



C/ γ (°)	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0
0.0	0.85	1.06	0.85	1.06	0.85	0.64	1.06	0.85	0.85
22.5	0.85	0.64	0.85	1.06	1.06	0.64	0.85	0.85	0.85
45.0	0.85	0.85	0.85	0.85	1.06	0.85	0.85	0.85	0.64
67.5	0.64	0.85	0.85	0.85	1.06	0.85	1.06	0.85	0.85
90.0	0.42	0.64	0.64	1.06	0.85	1.06	1.06	1.27	1.27
112.5	0.42	0.64	0.64	0.85	0.85	0.85	0.64	0.85	0.85
135.0	0.21	0.21	0.42	0.64	0.85	0.85	0.85	0.85	0.85
157.5	0.21	0.64	0.64	0.64	0.64	0.64	0.64	0.85	0.85
180.0	0.21	0.21	0.64	0.42	0.64	0.64	0.64	0.85	0.64
202.5	0.21	0.42	0.42	0.42	0.64	0.64	0.64	0.85	1.06
225.0	0.42	0.42	0.42	0.64	0.64	0.85	0.85	0.85	0.85
247.5	0.21	0.42	0.42	0.64	0.85	0.85	0.64	0.85	0.85
270.0	1.06	1.27	1.48	1.48	1.48	1.48	1.27	1.27	1.48
292.5	0.64	1.06	0.85	0.85	1.06	0.85	1.06	0.85	1.06
315.0	0.85	0.64	0.85	1.06	1.06	0.85	1.06	0.64	0.85
337.5	0.85	0.85	0.85	0.85	0.85	0.85	1.06	0.85	1.27
360.0	0.85	1.06	0.85	1.06	0.85	0.64	1.06	0.85	0.85
C/ γ (°)	180.0								
0.0	1.06								
22.5	0.85								
45.0	1.06								
67.5	0.85								
90.0	1.48								
112.5	0.85								
135.0	1.06								
157.5	1.06								
180.0	1.06								
202.5	0.85								
225.0	1.06								
247.5	0.85								
270.0	1.48								
292.5	0.85								
315.0	1.06								
337.5	1.06								
360.0	1.06								



Photo Document



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