

Visual Comfort and Company

TEST REPORT

SCOPE OF WORK

LM-79 testing report

REPORT NUMBER

230707018GZU-002

ISSUE DATE

01-August-2023

REVISION DATE

None

NUMBER OF PAGES

13

DOCUMENT CONTROL NUMBER

Report format for LM-79:2008_F
© 2021 INTERTEK



Report No.: 230707018GZU-002

TEST REPORT

TEST OF ONE LED LUMINAIRE

MODEL NO. CDFM18027**

(Remark: “**” are denoted finish color)

RENDERED TO

Visual Comfort and Company

Contact Name: Tess Gallagher

7400 LINDER AVE. SKOKIE, IL, 60077

Email: Tgallagher@visualcomfortco.com
Phone No.: 8474104774

<u>TEST:</u>	Electrical and Photometric as required to the IES LM-79 test standard.
<u>STATEMENT OF LIMITATION:</u>	The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.
<u>AUTHORIZATION:</u>	The testing performed was authorized by signed quote number: QGZ230703012.
<u>STANDARDS USED:</u>	The following American National Standards or Illuminating Engineering Society of North America Test Guides were used in part or totally to test each specimen: IES LM-79: 2008; Approved Method for the Electrical and Photometric IES LM-79: 2019 Measurements of Solid-State Lighting Products ANSI C78.377:2017 Specifications of the Chromaticity of Solid State Lighting Products
<u>DESCRIPTION OF SAMPLE:</u>	The client submitted one sample of model CDFM18027**. The sample was received in undamaged condition. The sample designation was S230707018-002.
<u>DATES OF TESTS:</u>	17-July-2023
<u>ISSUED BY:</u>	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
<u>TEST LOCATION:</u>	Room101/301/401/102/202/302/402/502/602/702/802, No. 7-2, Caipin Road, Huangpu Science City, Guangzhou, Guangdong, China

***** End of Page *****

TEST REPORT

SUMMARY

Model Number:	CDFM18027**
Description:	LED Luminaries
Brand Name:	--

Test Condition: 120V, 60Hz For CDFM18027**

Criteria	Result
Total Lumen Output	2955.4 lm
Total Power	34.9 W
Luminaire Efficacy	84.7 lm/W
S/MH(C0/180)	1.25
S/MH(C90/270)	1.24
Correlated Color Temperature (CCT)	2768 K
Color Rendering Index (CRI)	93
R9	71
Chromaticity Coordinate (x)	0.4576
Chromaticity Coordinate (y)	0.4152
Chromaticity Coordinate (u')	0.2590
Chromaticity Coordinate (v')	0.5288

Remark:

Measurement uncertainty for applicable tests has been established.

***** End of Page *****

TEST REPORT

EQUIPMENT LIST

Equipment Used	Model Number	Control Number
Goniophotometer System	Go-R5000	SA063-16
KONICA MINOLTA - Illuminance meter	CX-2B_WL	SA063-16-01
Standard Lamp	D215S	SA063-16-06
Digital Power Meter	PLM3000	SA063-16-09
AC power source for Goniophotometer	PCR-1000WH	SA063-16-10
Temperature Meter	RC-HT601A	SA047-62

GENERAL REMARK

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

When determining for test conclusion, measurement uncertainty of tests has been considered.

Throughout this report a ☐ comma ☒ point is used as the decimal separator.

***** End of Page *****

TEST REPORT

TEST METHOD

Seasoning in Sample Orientation – LED Products

No seasoning was performed in accordance with IES LM-79

Light Distribution and Output Measurements

Light Distribution and total light output (luminous flux) were measured using a Go-R5000 Type-C Rotating Mirror Goniophotometer. Temperature 25°C and relative humidity of 60% was measured at a position in the testing laboratory.

The lamp rotates only around the fixed vertical axle in the prescribed burning position. The lamp and mirror permit the measurement of luminous intensity at the direction of any horizontal or vertical angle without tilting the lamp. The lamp was allowed to stabilize before measurements were made.

Chromaticity Measurements

Chromaticity was measured using a 2 meters integrating sphere spectral lamp measurement system, 4 π geometry, with an interior coating reflectance no less than 95 %. Temperature was measured at a position inside the sphere shielded from direct light. Relative humidity of 65% was measured at a position in the testing laboratory.

Spectral radiant flux measurements were made using spectroradiometer attached to the detector port of the integrating sphere. Each lamp was allowed to stabilise before measurements were made. The calibration of the integrating sphere spectroradiometer system is by the reference/standard lamps which are traceable to National Institute of Metrology P.R. CHINA. Lamp efficacy (lumens per watt) for each lamp model was then computed based on the luminous flux result. Electrical measurements including voltage, power and power factor were measured using EVERFINE - Digital Power Meter., model PLM3000.

Correction factor (self-absorption) has been considered when doing measurement.

Standard lamp used for Goniophotometer method:

Model: D215S

Current: 4.809A DC

Standard lamp used for integrating sphere:

Model: D204

Current: 3.9480A DC

***** End of Page *****

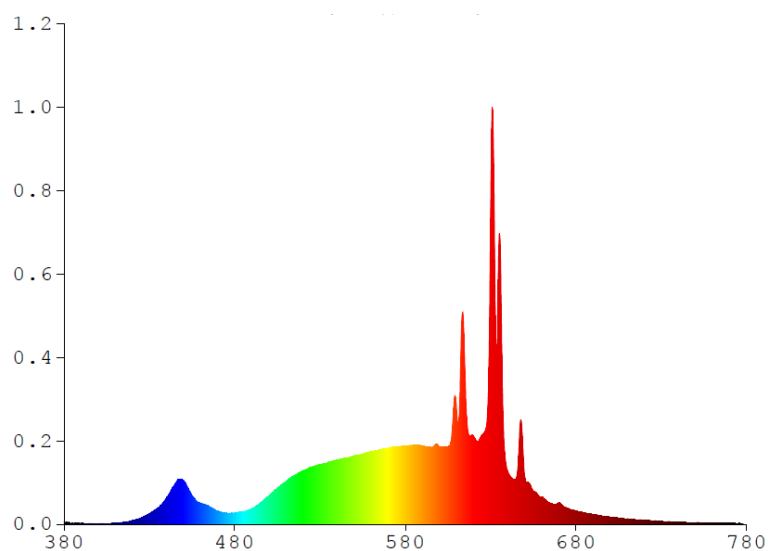
TEST REPORT

RESULTS OF TESTS

Test Condition: 120V, 60Hz For CDFM18027**

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
380	0.2846	480	1.1153	580	7.7054	680	1.3186	780	0.0000
385	0.0842	485	1.2263	585	7.8254	685	1.1346		
390	0.0598	490	1.5326	590	7.7183	690	0.9715		
395	0.0345	495	2.1054	595	7.5964	695	0.8345		
400	0.0463	500	2.8073	600	7.6612	700	0.7191		
405	0.0707	505	3.5719	605	7.6793	705	0.6150		
410	0.0964	510	4.2277	610	10.8310	710	0.5374		
415	0.1873	515	4.7982	615	13.9660	715	0.4512		
420	0.3610	520	5.2529	620	8.6838	720	0.3944		
425	0.6207	525	5.6351	625	8.8138	725	0.3432		
430	1.0577	530	5.8895	630	32.0070	730	0.2885		
435	1.6222	535	6.1099	635	28.5670	735	0.2540		
440	2.6002	540	6.3250	640	5.1610	740	0.2194		
445	3.9928	545	6.5336	645	4.5627	745	0.1846		
450	4.3178	550	6.7342	650	4.5835	750	0.1631		
455	2.8147	555	6.9304	655	3.2797	755	0.1402		
460	2.0722	560	7.1417	660	2.6854	760	0.1247		
465	1.7437	565	7.3712	665	2.0791	765	0.1095		
470	1.3142	570	7.5285	670	2.1323	770	0.0927		
475	1.1273	575	7.6301	675	1.5083	775	0.0816		



***** End of Page *****

TEST REPORT

RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For CDFM18027**

Total operation burning time: 60 minutes

Stabilization time: 45 minutes

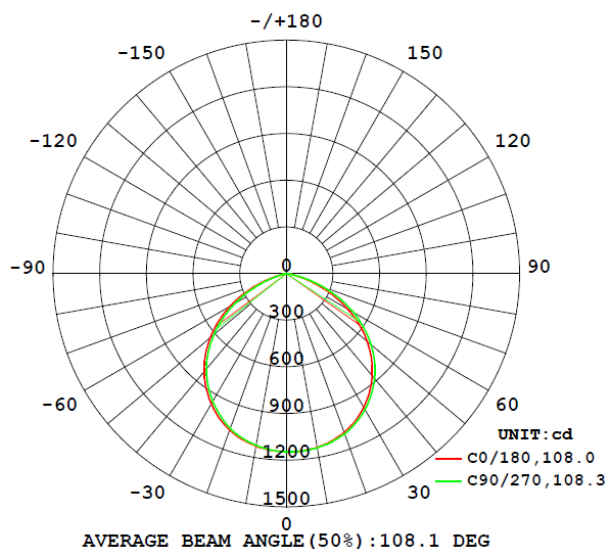
Photometric Measurements at 25°C – Distribution Method

Intertek Sample No.	Base Orientation	Correlated Color Temperatur e (K)	CRI	R9	CIE 31'	CIE 31'	CIE 76'	CIE 76'
					Chromaticit y	Chromaticit y	Chromaticit y	Chromaticit y
					Coordinate (x)	Coordinate (y)	Coordinate (u')	Coordinate (v')
CDFM18027**								
S2307070 18-002	--	2768	93	71	0.4576	0.4152	0.2590	0.5288

Photometric and Electrical Measurements at 25°C – Distribution Method

Intertek Sample No.	Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (Watts)	Input Power Factor	Absolute Luminous Flux (Lumens)	Lumen Efficacy (Lumens Per Watt)
CDFM18027**							
S2307070 18-002	--	120.1	292.0	34.9	0.994	2955.4	84.7

Intensity (Candlepower) Summary at 25°C – Candelas



***** End of Page *****

TEST REPORT

RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For CDFM18027**

Intensity (Candlepower) Summary at 25°C - Candelas

V \ H(°)	0	22.5	45	67.5	90
0	1146.4	1146.8	1147.0	1145.2	1146.1
5	1144.3	1145.9	1147.3	1147.7	1144.9
10	1134.3	1138.2	1139.5	1139.8	1138.0
15	1115.0	1119.6	1122.9	1122.4	1120.8
20	1087.1	1093.1	1096.6	1097.1	1097.0
25	1046.7	1054.6	1060.4	1061.9	1058.8
30	993.5	1003.3	1010.6	1011.6	1009.5
35	931.9	942.1	951.1	953.8	950.8
40	857.4	870.7	881.2	884.4	880.8
45	773.9	789.3	800.1	803.9	801.5
50	677.9	694.9	707.5	712.5	711.0
55	571.5	590.7	604.0	610.6	608.1
60	455.2	475.8	490.1	497.6	495.6
65	332.8	353.9	369.9	377.7	375.1
70	209.6	230.3	246.3	253.7	250.5
75	94.0	112.3	126.0	131.8	128.1
80	11.7	19.5	30.5	33.6	31.8
85	2.5	3.2	3.8	4.0	3.8
90	0.3	0.6	0.8	0.9	0.9
95	0.2	0.2	0.2	0.2	0.2
100	0.2	0.2	0.2	0.2	0.2
105	0.2	0.2	0.2	0.2	0.2
110	0.3	0.3	0.3	0.3	0.3
115	0.3	0.3	0.3	0.3	0.3
120	0.4	0.4	0.4	0.4	0.4
125	0.6	0.6	0.6	0.6	0.6
130	0.8	0.8	0.8	0.8	0.8
135	1.0	1.0	1.0	1.0	1.0
140	1.2	1.2	1.2	1.2	1.2
145	1.4	1.4	1.4	1.4	1.4
150	1.5	1.5	1.5	1.5	1.5
155	1.6	1.6	1.6	1.6	1.6
160	1.7	1.7	1.7	1.7	1.7
165	1.8	1.8	1.8	1.8	1.8
170	1.7	1.7	1.7	1.7	1.7
175	1.7	1.7	1.7	1.7	1.7
180	1.7	1.7	1.7	1.7	1.7

***** End of Page *****

TEST REPORT

RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For CDFM18027**

Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens (lm)	% Luminaire (%)
CDFM18027**		
0-30	898.3	30.4
0-40	1470.6	49.8
0-60	2543.9	86.1
0-90	2951.7	99.9
60-90	407.8	13.8
0-180	2955.4	100.0

Beam Angle

Total Beam Angle (°)

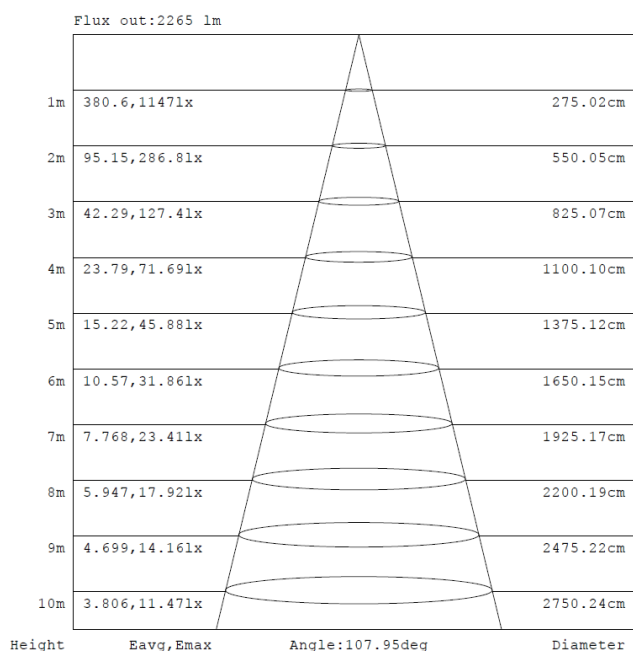
108.1

Illumination Plots

Model No.: CDFM18027**

Mount Height: 2.5 m

Illuminance - Cone of Light



Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

***** End of Page *****

TEST REPORT

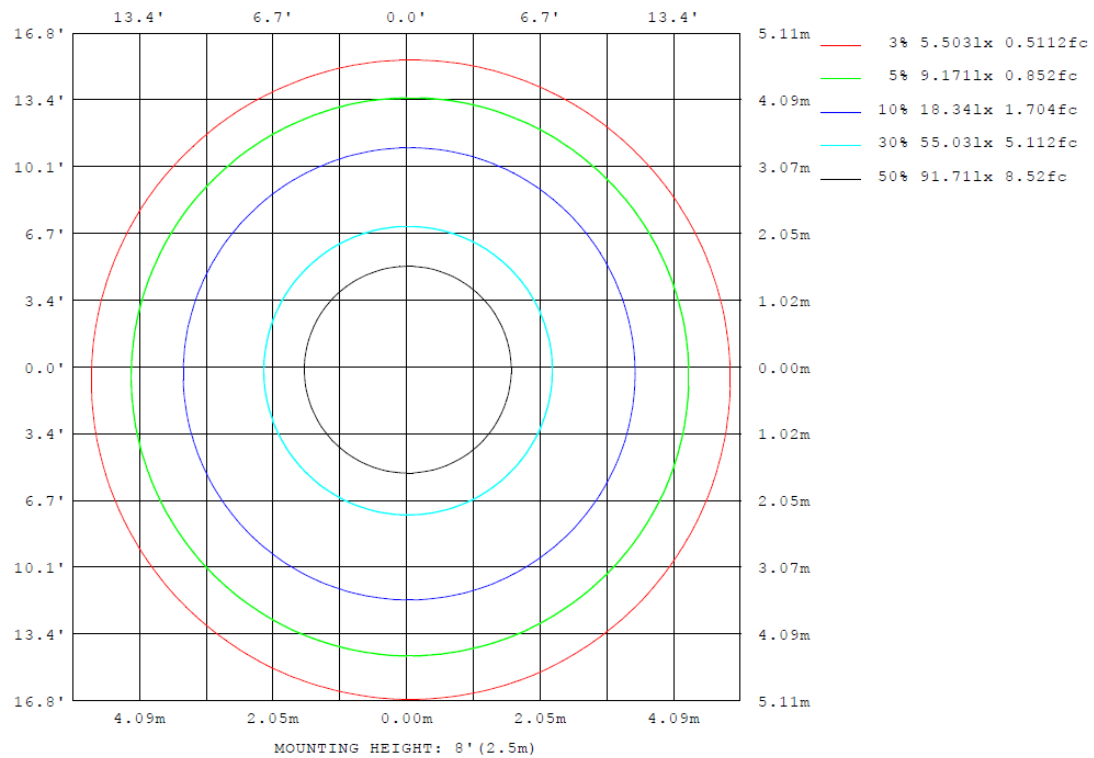
RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For CDFM18027**

Model No.: CDFM18027**

Mount Height: 2.5 m

Isoillumination Plot



***** End of Page *****

TEST REPORT

RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For CDFM18027**

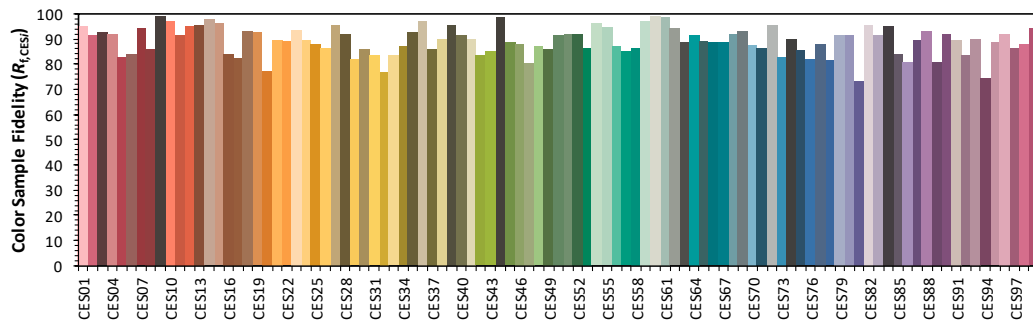
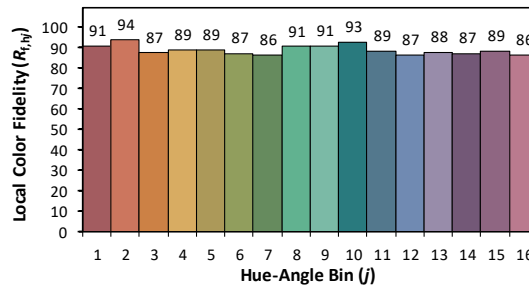
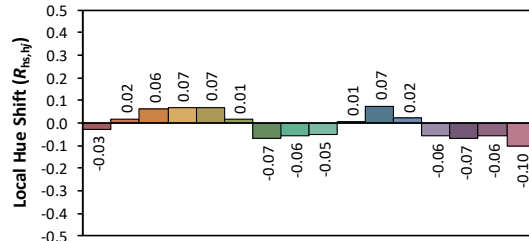
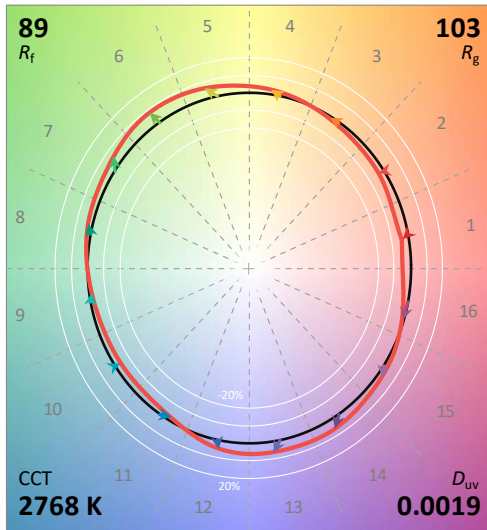
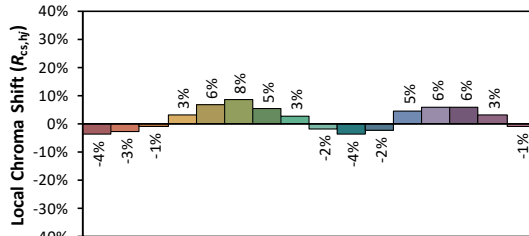
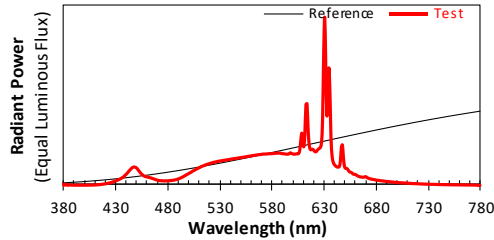
ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD

Manufacturer: Visual Comfort and Company

Date: 2023/7/17

Model: CDFM18027**



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

x 0.4576
 y 0.4152
 u' 0.2590
 v' 0.5288

CIE 13.3-1995
(CRI)

R_a 93

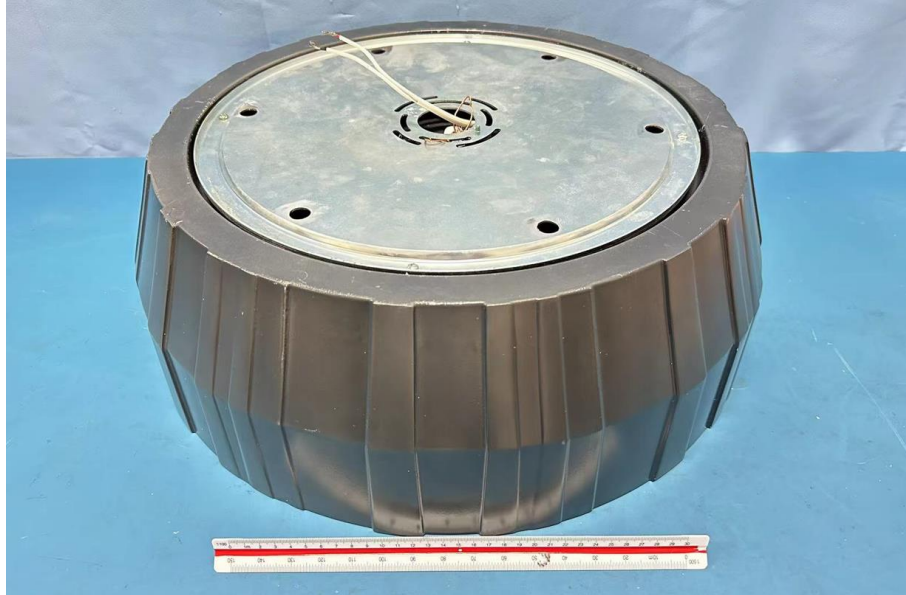
R_g 71

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

***** End of Page *****

TEST REPORT

PRODUCT PICTURE (not to scale)



External view of LED luminaire CDFM18027**

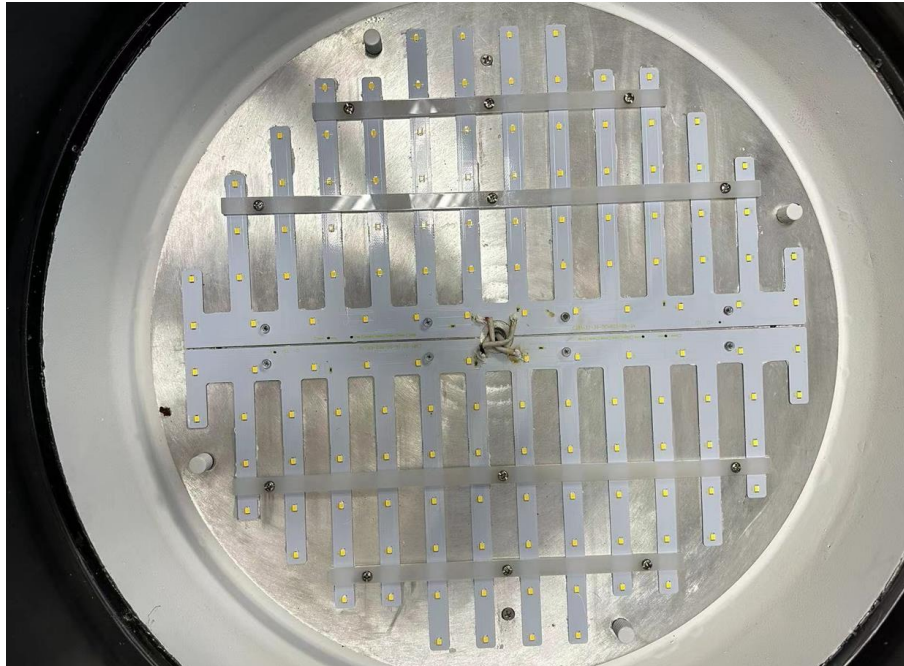


External view of LED luminaire CDFM18027**

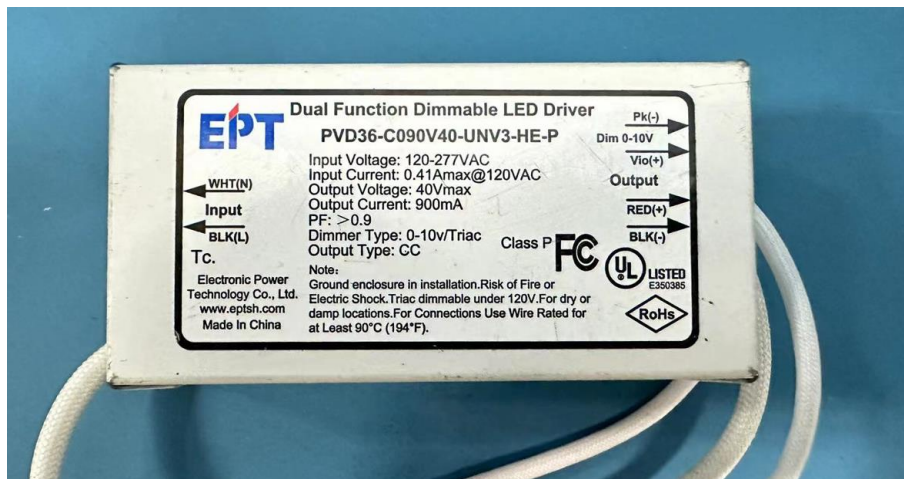
***** End of Page *****

TEST REPORT

PRODUCT PICTURE (not to scale)



View of LED board



View of LED driver PVD36-C090V40-UNV3-HE-P

In Charge Of Tests:

Done Ye

Done Ye
Engineer

Report Reviewed By

Shelley Ying

Shelley Ying
Reviewer

Attachment: None

***** End of Report *****