

Visual Comfort and Company

TEST REPORT

SCOPE OF WORK

LM-79 testing report

REPORT NUMBER

220706027GZU-013

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None

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Report No.: 220706027GZU-013

TEST REPORT

TEST OF ONE LED LUMINAIRE

MODEL NO. 700FMPUL20xx-LED930

RENDERED TO

Visual Comfort and Company

Contact Name: Tess Gallagher

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<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: QGZ220704064.
<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 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 700FMPUL20xx-LED930. The sample was received, in undamaged condition. The sample designation was S220706027-001.
<u>DATES OF TESTS:</u>	10 August 2022
<u>ISSUED BY:</u>	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
<u>TEST LOCATION:</u>	Room 02, & 101/E201/E301/E401/E501/E601/E701/E801 of Room 01 1-8/F., No. 7-2. Caipin Road, Science City, GETDD, Guangzhou, Guangdong, China

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TEST REPORT

SUMMARY

Model Number:	700FMPUL20xx-LED930 (Remark: "XX" denote other appearance colors for the characters that change)
Description:	LED Luminaries
Brand Name:	--

Test Condition: 120V, 60Hz For 700FMPUL20xx-LED930

Criteria	Result
Total Lumen Output	2085.1 lm
Total Power	24.79 W
Luminaire Efficacy	84.10 lm/W
S/MH(C0/180)	1.27
S/MH(C90/270)	1.19
Correlated Color Temperature (CCT)	2748 K
Color Rendering Index (CRI)	94
R9	64
Chromaticity Coordinate (x)	0.4540
Chromaticity Coordinate (y)	0.4061
Chromaticity Coordinate (u')	0.2607
Chromaticity Coordinate (v')	0.5248

Remark:

Measurement uncertainty for applicable tests has been established.

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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	DS215S	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

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

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

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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 YOKOGAWA - Digital Power Meter., model WT210.

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

Standard lamp used for Goniophotometer method:

Model: D908S

Current: 7.255A

Standard lamp used for integrating sphere:

Model: S82134

Current: 1.830

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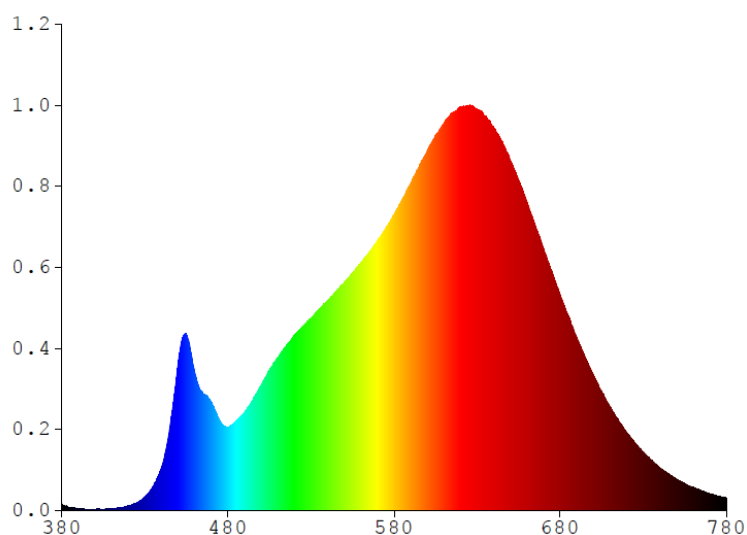
TEST REPORT

RESULTS OF TESTS

Test Condition: 120V, 60Hz For 700FMPUL20xx-LED930

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
380	0.0634	480	0.7098	580	2.5187	680	1.8338	780	0.1080
385	0.0266	485	0.7663	585	2.6464	685	1.6482		
390	0.0174	490	0.8371	590	2.7775	690	1.4705		
395	0.0122	495	0.9415	595	2.9192	695	1.3059		
400	0.0104	500	1.0682	600	3.0589	700	1.1546		
405	0.0123	505	1.1958	605	3.1879	705	1.0097		
410	0.0165	510	1.3063	610	3.2927	710	0.8840		
415	0.0236	515	1.3963	615	3.3790	715	0.7686		
420	0.0404	520	1.4919	620	3.4335	720	0.6652		
425	0.0664	525	1.5677	625	3.4419	725	0.5762		
430	0.1182	530	1.6385	630	3.4143	730	0.4981		
435	0.2072	535	1.7171	635	3.3565	735	0.4269		
440	0.3720	540	1.7867	640	3.2556	740	0.3646		
445	0.7075	545	1.8612	645	3.1355	745	0.3146		
450	1.2515	550	1.9389	650	2.9759	750	0.2689		
455	1.4928	555	2.0202	655	2.8062	755	0.2292		
460	1.1733	560	2.1098	660	2.6244	760	0.1978		
465	0.9913	565	2.1985	665	2.4259	765	0.1678		
470	0.9222	570	2.2953	670	2.2265	770	0.1433		
475	0.7662	575	2.4038	675	1.9900	775	0.1239		



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TEST REPORT

RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For 700FMPUL20xx-LED930

Total operation burning time: 60 minutes

Stabilization time: 45 minutes

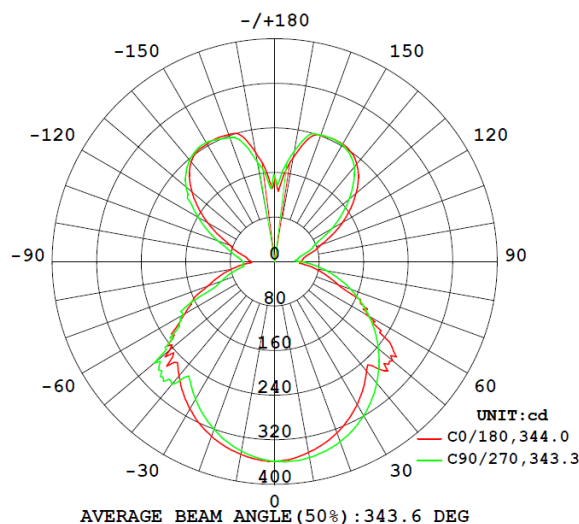
Photometric Measurements at 25°C – Integrating Sphere Method

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')
700FMPUL20xx-LED930								
S2207060 27-001	--	2748	94	64	0.4540	0.4061	0.2607	0.5248

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	Lumen
						Luminous Flux (Lumens)	Efficacy (Lumens Per Watt)
700FMPUL20xx-LED930							
S2207060 27-001	--	120.0	208.3	24.79	0.990	2085.1	84.10

Intensity (Candlepower) Summary at 25°C – Candelas



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TEST REPORT

RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For 700FMPUL20xx-LED930

Intensity (Candlepower) Summary at 25°C - Candelas

V \ H(°)	0	22.5	45	67.5	90
0	358.3	358.3	358.3	358.3	358.3
5	355.6	356.3	357.6	358.2	359.6
10	347.7	349.4	352.3	354.6	357.0
15	339.0	341.8	345.2	348.0	352.1
20	326.9	330.8	335.4	339.2	343.8
25	312.6	317.6	323.2	327.3	333.2
30	296.3	301.8	307.9	312.8	319.8
35	277.4	283.8	290.4	296.2	303.4
40	256.9	264.2	271.2	277.2	285.3
45	276.8	245.6	250.3	256.5	265.0
50	276.7	259.3	234.6	234.2	243.0
55	252.1	244.4	220.1	212.9	219.9
60	190.0	192.0	189.4	186.8	195.7
65	169.1	157.8	159.9	161.8	170.6
70	120.7	126.1	132.0	136.9	145.1
75	96.1	102.0	107.2	111.6	119.5
80	74.1	78.5	83.1	86.8	94.1
85	50.3	54.8	59.1	62.5	69.4
90	47.3	42.3	38.1	38.8	45.5
95	50.8	46.7	43.0	41.0	38.2
100	56.6	50.6	47.2	46.5	44.5
105	71.8	65.8	60.5	59.0	55.9
110	88.7	81.9	75.6	74.1	72.6
115	113.7	106.3	98.5	93.9	87.0
120	140.6	133.0	129.0	124.2	117.5
125	166.1	158.0	157.9	152.2	146.4
130	190.6	182.6	181.6	179.8	174.2
135	212.6	205.4	204.6	205.3	200.1
140	229.3	222.2	222.5	223.0	222.4
145	239.9	234.2	234.6	235.2	235.5
150	244.1	239.7	240.2	241.1	242.2
155	243.8	241.8	241.6	242.5	243.7
160	241.7	240.7	241.1	240.5	241.6
165	227.1	228.0	229.3	229.2	235.0
170	189.0	190.6	189.8	191.0	200.5
175	146.8	148.8	151.3	151.0	162.9
180	153.0	156.5	160.4	154.9	151.7

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TEST REPORT

RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For 700FMPUL20xx-LED930

Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens (lm)	% Luminaire (%)
700FMPUL20xx-LED930		
0-30	276.72	13.27
0-40	454.71	21.81
0-60	864.18	41.44
0-90	1194.19	57.27
60-90	330.01	15.83
0-180	2085.14	100.00

Beam Angle

Total Beam Angle (°)

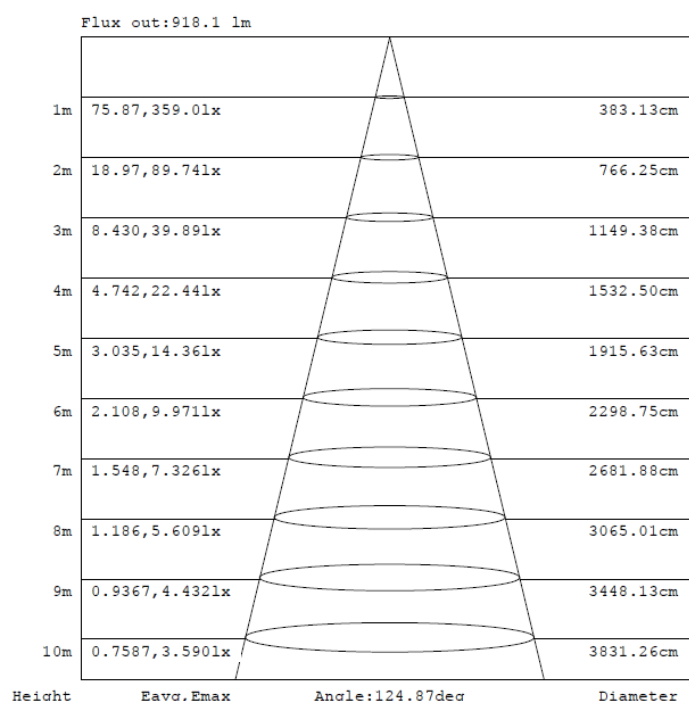
343.6

Illumination Plots

Model No.: 700FMPUL20xx-LED930

Mount Height: 2.5 m

Illuminance - Cone of Light



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TEST REPORT

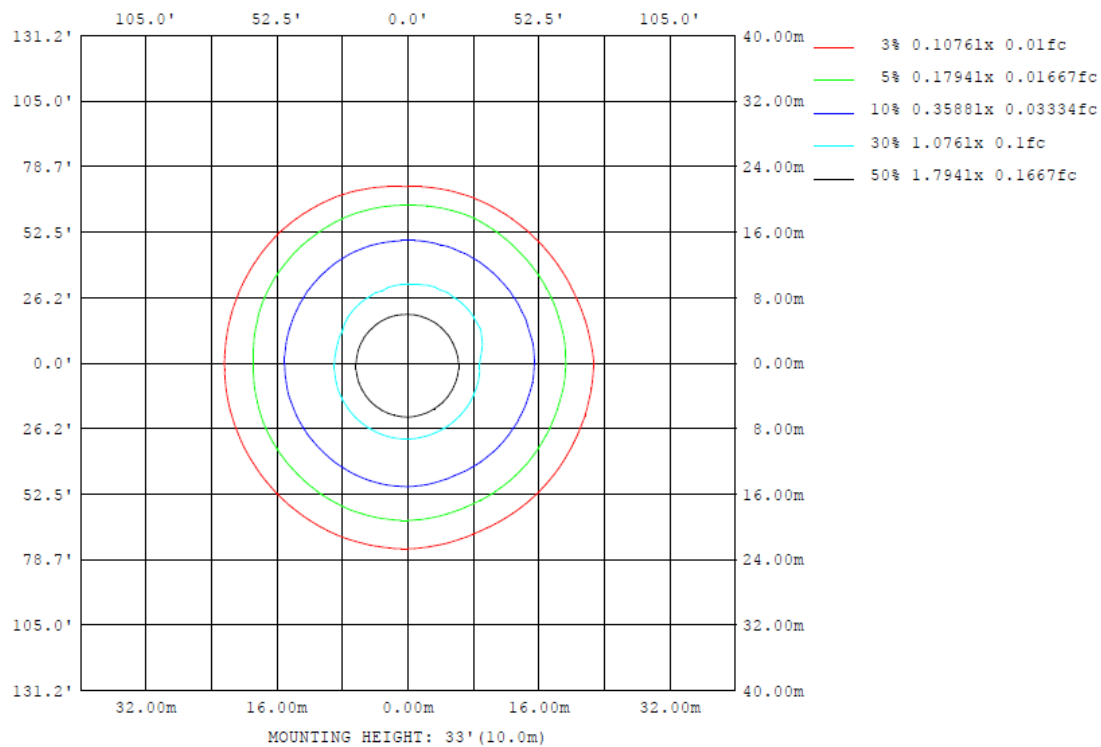
RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For 700FMPUL20xx-LED930

Model No.: 700FMPUL20xx-LED930

Mount Height: 2.5 m

Isoillumination Plot



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TEST REPORT

RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For 700FMPUL20xx-LED930

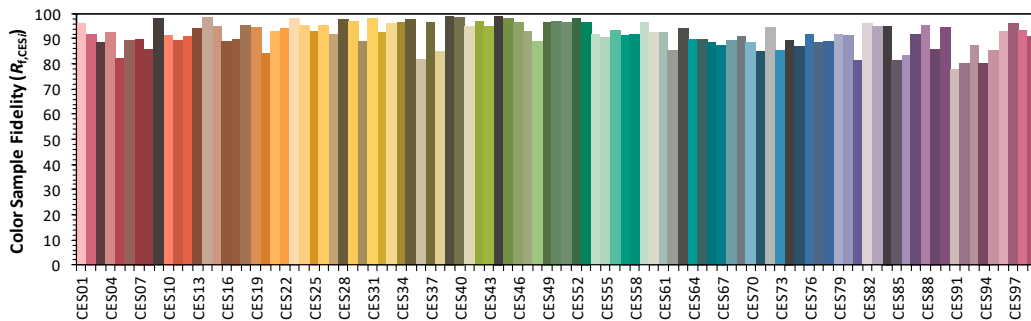
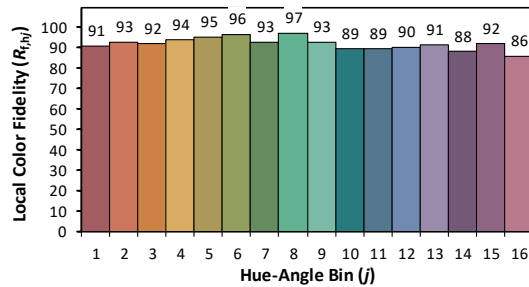
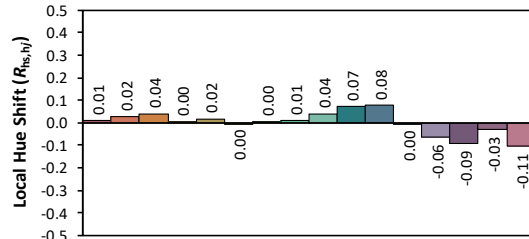
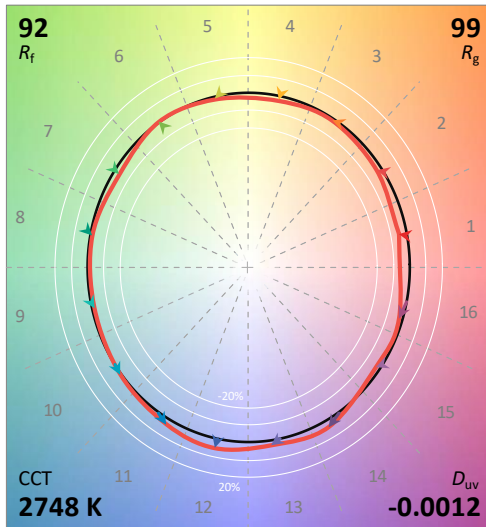
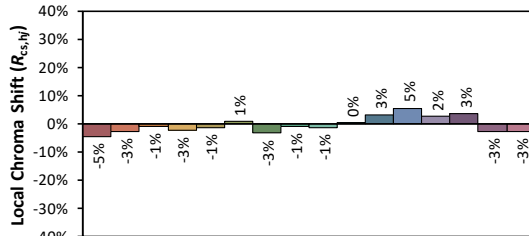
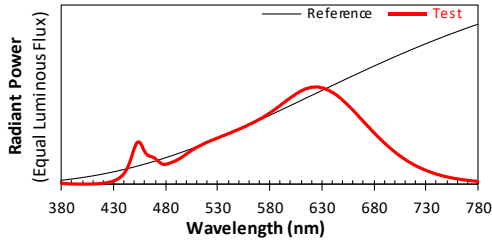
ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD

Manufacturer: Visual Comfort and Company

Date: 2022/8/10

Model: 700FMPUL20xx-LED930



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

x 0.4540
 y 0.4061
 u' 0.2607
 v' 0.5248

CIE 13.3-1995
(CRI)

R_a 94

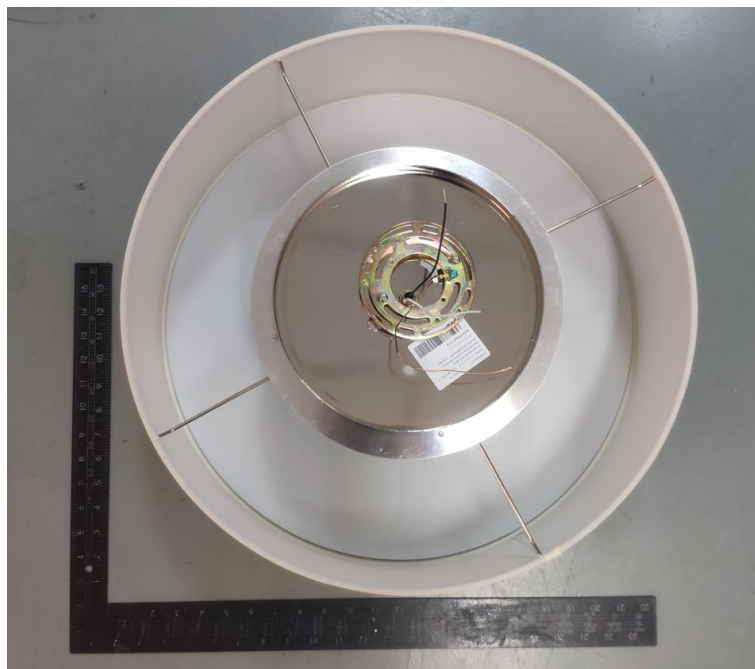
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Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.

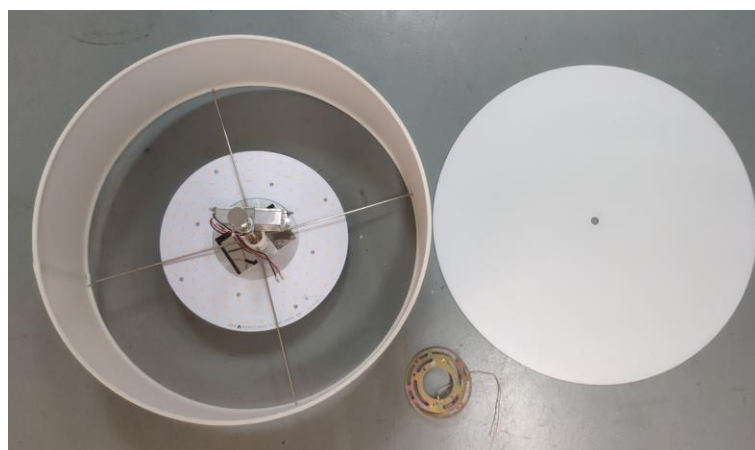
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TEST REPORT

PRODUCT PICTURE (not to scale)



External view of 700FMPUL20xx-LED930



External view of 700FMPUL20xx-LED930

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

TEST REPORT

PRODUCT PICTURE (not to scale)



View of LED Driver DA25W600C2742-3001



View of LED

In Charge Of Tests:

Done Ye

Done Ye
Engineer

Report Reviewed By

Shelley Ying

Shelley Ying
Reviewer

Attachment: None

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