

Visual Comfort and Company

TEST REPORT

SCOPE OF WORK

LM-79 testing report

REPORT NUMBER

220601181GZU-001

ISSUE DATE

23 June 2022

REVISION DATE

None

NUMBER OF PAGES

13

DOCUMENT CONTROL NUMBER

Report format for LM-79:2008_F
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Report No.: 220601181GZU-001

TEST REPORT

TEST OF ONE LED LUMINAIRE

MODEL NO. 700OPKLM927xxUNV

RENDERED TO

Visual Comfort and Company

Contact Name: Tess Gallagher

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TEST: Electrical and Photometric as required to the IES LM-79 test standard.

STATEMENT OF LIMITATION: 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.

AUTHORIZATION: The testing performed was authorized by signed quote number: QGZ210406068.

STANDARDS USED: 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

DESCRIPTION OF SAMPLE: The client submitted one sample of model 700OPKLM927xxUNV. The sample was received, in undamaged condition. The sample designation was S220601181-002.

DATES OF TESTS: 14 June 2022

ISSUED BY: Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

TEST LOCATION: 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:	700OPKLM927xxUNV (Remark: "XX" denote other appearance colors for the characters that change)
Description:	LED Luminaries
Brand Name:	--

Test Condition: 120V, 60Hz For 700OPKLM927xxUNV

Criteria	Result
Total Lumen Output	197.02 lm
Total Power	7.48 W
Luminaire Efficacy	26.34 lm/W
S/MH(C0/180)	1.14
S/MH(C90/270)	0.71
Correlated Color Temperature (CCT)	2718 K
Color Rendering Index (CRI)	92
R9	59
Chromaticity Coordinate (x)	0.4562
Chromaticity Coordinate (y)	0.4063
Chromaticity Coordinate (u')	0.2621
Chromaticity Coordinate (v')	0.5252

Remark:

Measurement uncertainty for applicable tests has been established.

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TEST REPORT

EQUIPMENT LIST

Equipment Used	Model Number	Control Number
Temperature Meter	RS210	SA047-126
Sensing - DC Power Supply	IT6122	SA063-12-09
Sensing- AC power source for Integrating Sphere System	APW-105N	SA063-12-05
Everfine - AC power source for Goniophotometer System	DPS1060	SA063-16-03
Two meter integrating sphere unit	Sensing – 2M	SA063-12-01
YOKOGAWA – Digital Power Meter	WT-210	SA011-122
Everfine – Goniophotometer	Go-R5000	SA063-16
KONICA MINOLTA - Illuminance meter	CX-2B_WL	SA063-16-01
Standard lamp	S82134	SA063-12-13
Standard lamp	S1320039	SA063-12-24
Standard lamp	D908S	SA063-16-05
Standard lamp	D215S	SA063-16-06

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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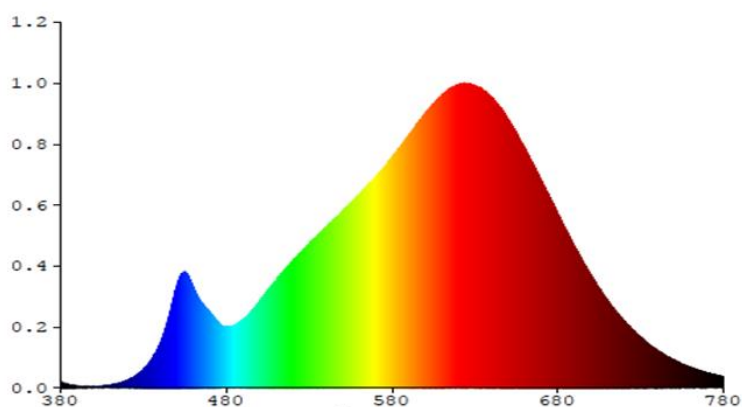
TEST REPORT

RESULTS OF TESTS

Test Condition: 120V, 60Hz For 700OPKLM927xxUNV

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
380	0.0348	480	0.5332	580	2.0114	680	1.5212	780	0.1009
385	0.0288	485	0.5482	585	2.1014	685	1.3807		
390	0.0189	490	0.5957	590	2.1987	690	1.2388		
395	0.0141	495	0.6679	595	2.3062	695	1.1093		
400	0.0155	500	0.7562	600	2.4008	700	0.9861		
405	0.0195	505	0.8489	605	2.4762	705	0.8708		
410	0.0285	510	0.9362	610	2.5496	710	0.7668		
415	0.0417	515	1.0290	615	2.6131	715	0.6722		
420	0.0687	520	1.1066	620	2.6411	720	0.5878		
425	0.1038	525	1.1828	625	2.6496	725	0.5116		
430	0.1622	530	1.2572	630	2.6324	730	0.4434		
435	0.2472	535	1.3273	635	2.5977	735	0.3834		
440	0.3845	540	1.4001	640	2.5346	740	0.3307		
445	0.5992	545	1.4719	645	2.4544	745	0.2863		
450	0.8771	550	1.5431	650	2.3399	750	0.2472		
455	1.0136	555	1.6122	655	2.2238	755	0.2118		
460	0.8838	560	1.6838	660	2.0979	760	0.1826		
465	0.7467	565	1.7595	665	1.9609	765	0.1567		
470	0.6620	570	1.8366	670	1.8134	770	0.1341		
475	0.5818	575	1.9199	675	1.6393	775	0.1167		



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TEST REPORT

RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For 7000PKLM927xxUNV

Total operation burning time: 60 minutes

Stabilization time: 45 minutes

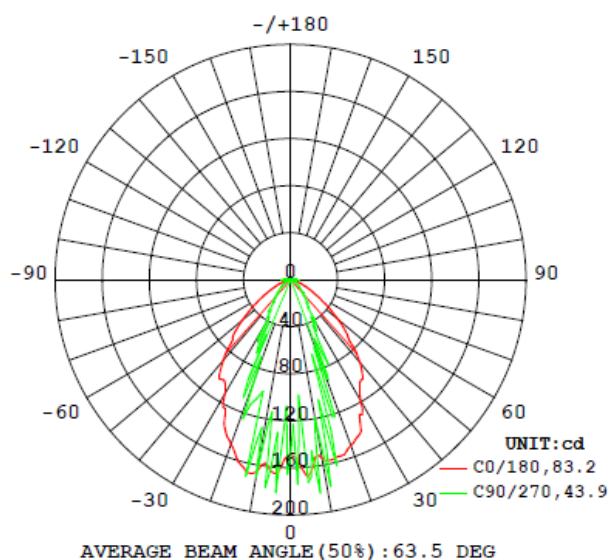
Photometric Measurements at 25°C – Integrating Sphere Method

Intertek Sample No.	Base Orientation	Correlated Color Temperatur e (K)	CRI	R9	CIE 31'	CIE 31'	CIE 76'	CIE 76'
					Chromaticit	Chromaticit	Chromaticit	Chromaticit
					y	y	y	y
					Coordinate	Coordinate	Coordinate	Coordinate
					(x)	(y)	(u')	(v')
7000PKLM927xxUNV								
S2206011 81-002	--	2718	92	59	0.4562	0.4063	0.2621	0.5252

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)
7000PKLM927xxUNV							
S2206011 81-002	--	120.0	63.5	7.48	0.981	197.02	26.34

Intensity (Candlepower) Summary at 25°C – Candelas



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TEST REPORT

RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For 7000PKLM927xxUNV

Intensity (Candlepower) Summary at 25°C - Candelas

V \ H(°)	0	22.5	45	67.5	90
0	149.7	148.6	148.5	149.0	148.5
5	168.2	190.0	98.5	161.7	172.8
10	153.8	101.7	162.7	123.8	118.5
15	155.7	163.5	166.5	165.0	133.2
20	149.9	165.7	154.4	89.8	89.4
25	141.8	91.6	107.3	76.2	51.5
30	119.7	99.2	69.1	49.4	43.9
35	104.2	75.8	47.7	26.9	23.5
40	91.3	63.9	30.1	23.1	18.2
45	69.0	41.2	22.1	18.0	13.7
50	52.7	35.1	16.5	11.9	9.9
55	36.4	21.1	12.4	9.0	7.6
60	23.6	16.1	8.3	6.3	5.5
65	14.6	8.8	5.9	4.4	3.5
70	8.7	4.8	3.8	2.7	2.1
75	4.6	2.8	1.9	1.3	1.0
80	0.9	0.9	0.7	0.5	0.3
85	0.9	0.8	1.5	3.1	3.6
90	0.7	1.9	4.1	6.1	5.9
95	0.7	2.2	4.7	6.8	6.4
100	0.6	1.9	4.2	4.2	4.3
105	0.2	1.8	2.7	3.3	3.5
110	0.3	1.6	2.1	2.6	2.5
115	0.4	1.3	1.8	2.1	1.9
120	0.5	1.1	1.6	1.8	1.6
125	0.4	1.1	1.4	1.4	1.2
130	0.4	1.2	1.2	1.0	0.7
135	0.4	1.2	1.3	1.1	0.6
140	0.5	1.2	1.4	1.3	0.7
145	0.6	1.4	1.5	1.5	0.9
150	0.7	1.4	1.6	1.4	1.1
155	0.7	1.3	1.7	1.6	1.2
160	0.8	0.9	1.5	1.6	1.1
165	0.8	0.4	1.2	1.2	1.0
170	0.7	0.2	0.6	0.7	0.6
175	0.3	0.2	0.1	0.1	0.1
180	0.1	0.1	0.1	0.1	0.1

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TEST REPORT

RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For 700PKLM927xxUNV

Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens (lm)	% Luminaire (%)
700PKLM927xxUNV		
0-30	96.9	49.2
0-40	132.7	67.4
0-60	172.8	87.7
0-90	184.8	93.8
60-90	12.0	6.1
0-180	197.0	100

Beam Angle

Total Beam Angle (°)

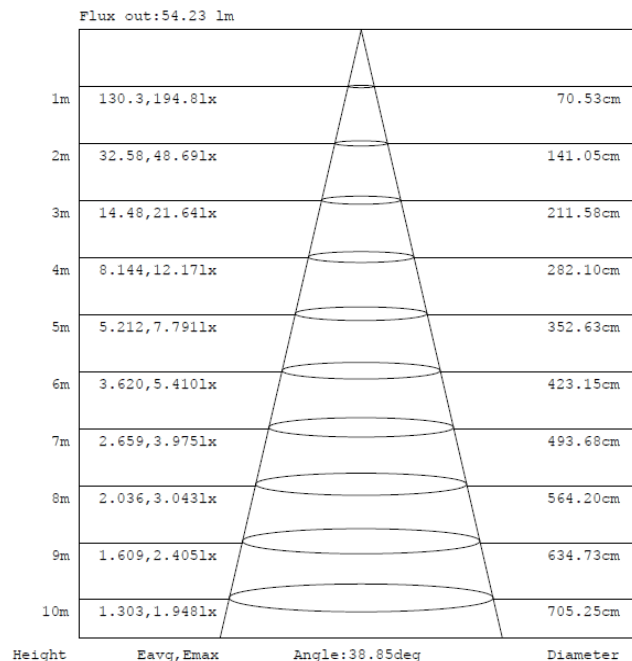
63.5

Illumination Plots

Model No.: 700PKLM927xxUNV

Mount Height: 2.5 m

Illuminance - Cone of Light



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TEST REPORT

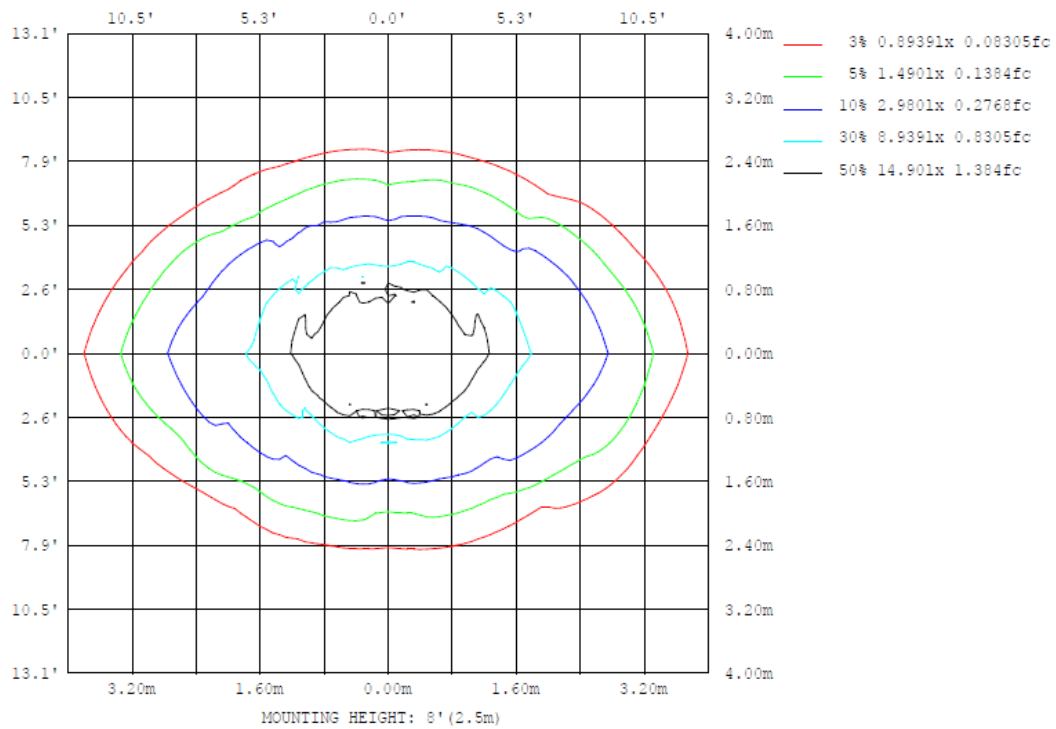
RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For 7000PKLM927xxUNV

Model No.: 7000PKLM927xxUNV

Mount Height: 2.5 m

Isoillumination Plot



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TEST REPORT

RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For 7000PKLM927xxUNV

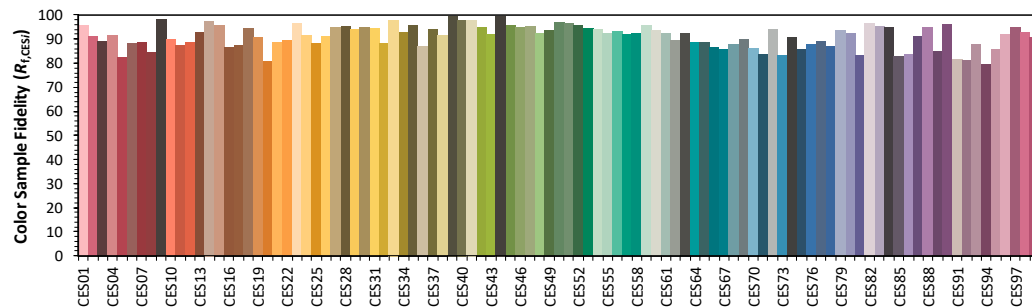
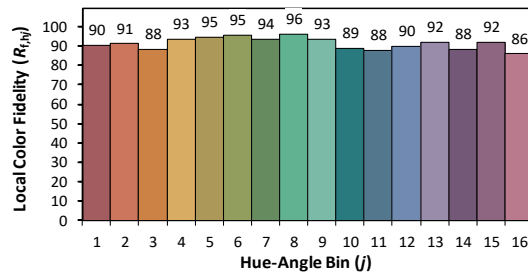
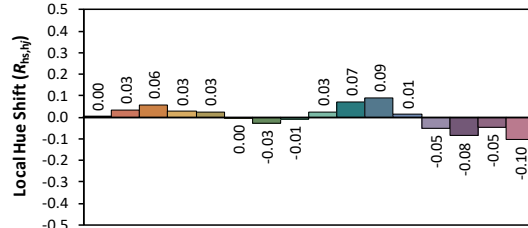
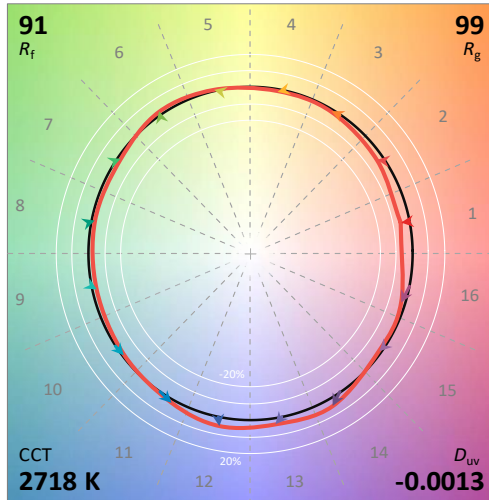
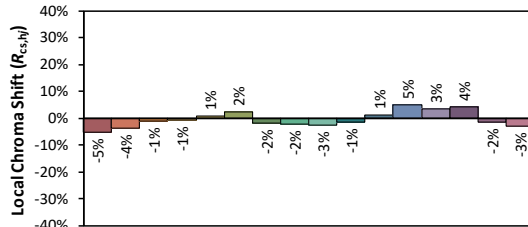
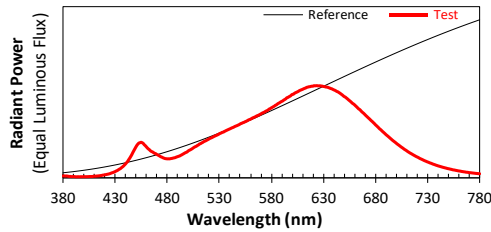
ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD

Manufacturer: Visual Comfort and Company

Date: 2022/6/14

Model: 7000PKLM927xxUNV



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

x 0.4562
 y 0.4063
 u' 0.2621
 v' 0.5252

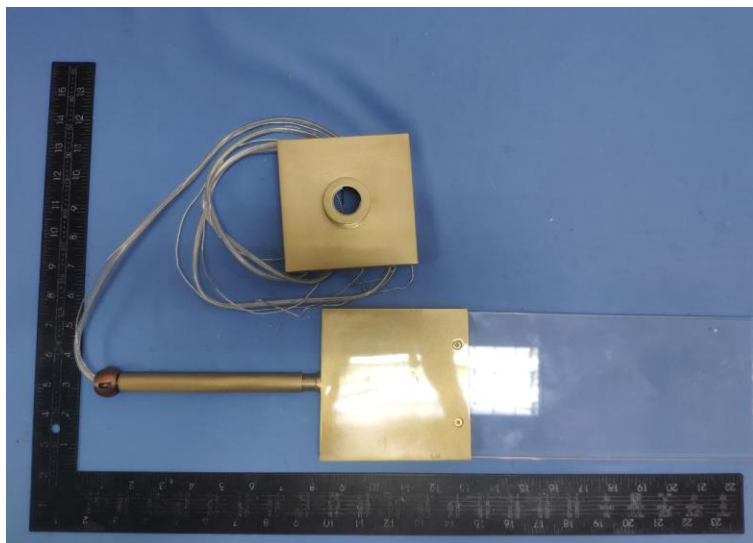
CIE 13.3-1995
(CRI)
 R_a 92
 R_g 59

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

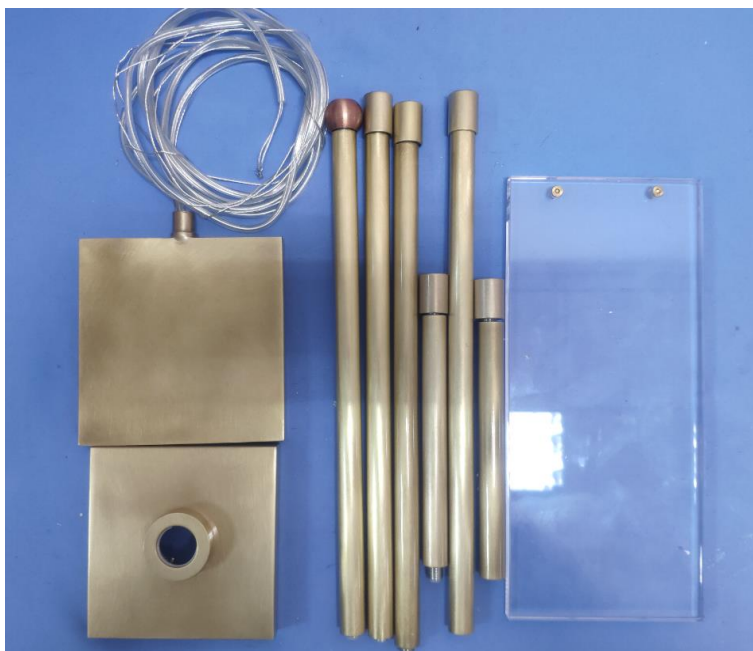
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TEST REPORT

PRODUCT PICTURE (not to scale)



External view of 700OPKLM927xxUNV



External view of 700OPKLM927xxUNV

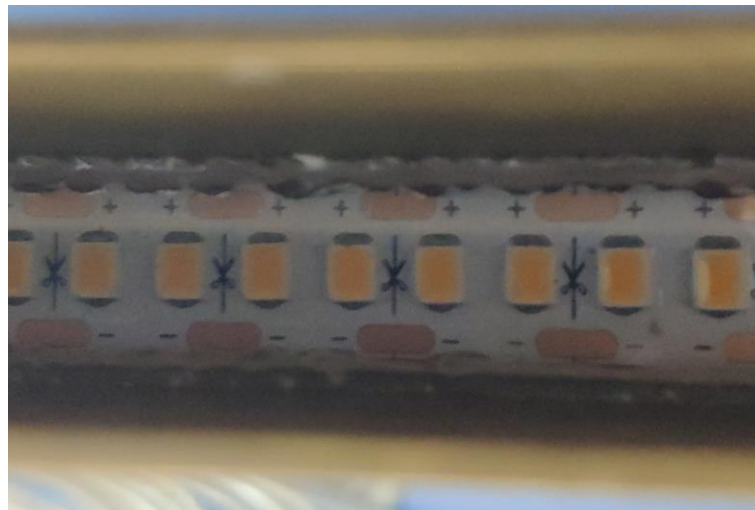
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TEST REPORT

PRODUCT PICTURE (not to scale)



View of LED Driver 700PKLM927xxUNV



View of LED

In Charge Of Tests:

Done Ye

Report Reviewed By

Shelley Ying

Done Ye
Engineer

Shelley Ying
Reviewer

Attachment: None

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