

Visual Comfort and Company

TEST REPORT

SCOPE OF WORK

LM-79 testing report

REPORT NUMBER

220401100GZU-011

ISSUE DATE

12 April 2022

REVISION DATE

None

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12

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Report No.: 220401100GZU-011

TEST REPORT

TEST OF ONE LED LUMINAIRE

MODEL NO. 700BCKAL24x-LED930

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: QGZ220329042.

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 700BCKAL24x-LED930. The sample was received, in undamaged condition. The sample designation was S220401100-011.

DATES OF TESTS: 12 April 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:	700BCKAL24x-LED930 (Remark: "XX" denote other appearance colors for the characters that change)
Description:	LED Luminaries
Brand Name:	--

Test Condition: 120V, 60Hz For 700BCKAL24x-LED930

Criteria	Result
Total Lumen Output	1152.4 lm
Total Power	19.8 W
Luminaire Efficacy	58.14 lm/W
S/MH(C0/180)	1.26
S/MH(C90/270)	1.22
Correlated Color Temperature (CCT)	2879 K
Color Rendering Index (CRI)	93
R9	63
Chromaticity Coordinate (x)	0.4440
Chromaticity Coordinate (y)	0.4035
Chromaticity Coordinate (u')	0.2554
Chromaticity Coordinate (v')	0.5222

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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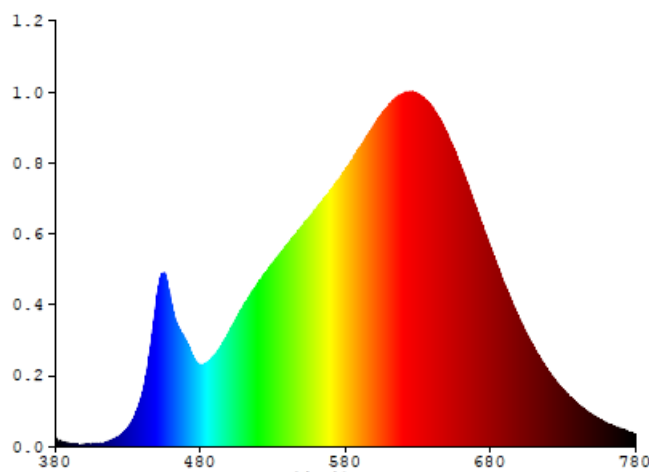
TEST REPORT

RESULTS OF TESTS

Test Condition: 120V, 60Hz For 700BCKAL24x-LED930

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
380	0.1655	480	1.5945	580	5.4426	680	3.9058	780	0.2203
385	0.0630	485	1.6592	585	5.6518	685	3.5367		
390	0.0450	490	1.7983	590	5.8862	690	3.1640		
395	0.0459	495	1.9999	595	6.1237	695	2.8225		
400	0.0289	500	2.2634	600	6.3373	700	2.5017		
405	0.0405	505	2.5318	605	6.5410	705	2.2058		
410	0.0526	510	2.7808	610	6.7136	710	1.9363		
415	0.0834	515	3.0228	615	6.8536	715	1.6913		
420	0.1336	520	3.2230	620	6.9459	720	1.4795		
425	0.2144	525	3.4161	625	6.9637	725	1.2827		
430	0.3614	530	3.6082	630	6.9259	730	1.1125		
435	0.6113	535	3.7909	635	6.8155	735	0.9601		
440	1.0435	540	3.9625	640	6.6653	740	0.8340		
445	1.8147	545	4.1549	645	6.4472	745	0.7201		
450	2.9088	550	4.3317	650	6.1554	750	0.6204		
455	3.4108	555	4.5098	655	5.8375	755	0.5329		
460	2.8007	560	4.6854	660	5.4723	760	0.4578		
465	2.3231	565	4.8723	665	5.0986	765	0.3935		
470	2.0750	570	5.0464	670	4.7017	770	0.3389		
475	1.7559	575	5.2338	675	4.2198	775	0.2919		



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TEST REPORT

RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For 700BCKAL24x-LED930

Total operation burning time: 60 minutes

Stabilization time: 45 minutes

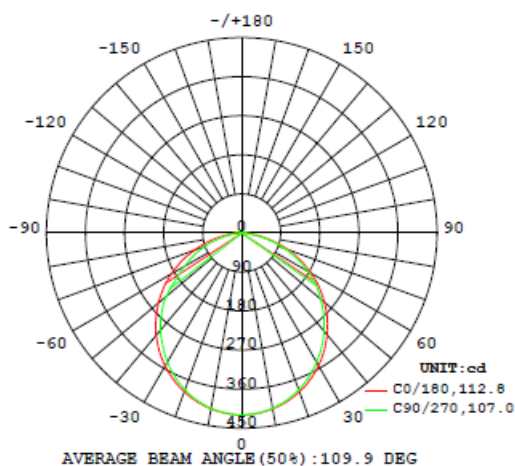
Photometric Measurements at 25°C – Integrating Sphere Method

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')
700BCKAL24x-LED930								
S2204011 00-011	--	2879	93	63	0.4440	0.4035	0.2554	0.5222

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)
700BCKAL24x-LED930							
S2204011 00-011	--	120.0	166.5	19.8	0.992	1152.4	58.14

Intensity (Candlepower) Summary at 25°C - Candelas



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TEST REPORT

RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For 700BCKAL24x-LED930

Intensity (Candlepower) Summary at 25°C - Candelas

V \ H(°)	0	22.5	45	67.5	90
0	418.8	418.6	418.9	418.8	418.6
5	416.9	416.8	416.8	416.4	416.5
10	411.3	410.8	410.4	410.0	409.8
15	402.0	401.0	400.1	399.2	399.0
20	389.2	387.7	386.5	384.7	384.1
25	372.8	371.1	368.7	366.4	365.8
30	353.3	351.3	348.1	345.3	344.5
35	331.3	328.6	324.7	321.5	320.6
40	306.0	303.1	298.9	295.4	294.9
45	278.6	275.4	271.1	267.2	266.8
50	248.9	245.6	241.2	237.8	238.0
55	217.4	213.9	209.9	207.7	208.2
60	183.8	180.8	178.2	175.9	175.2
65	148.9	146.4	146.0	140.7	140.1
70	112.9	111.7	109.6	104.3	104.0
75	76.8	79.0	72.5	68.2	68.2
80	42.4	43.2	37.7	33.8	34.0
85	13.9	12.9	9.7	9.5	10.2
90	0.2	0.3	0.4	0.9	1.4
95	0.2	0.2	0.2	0.3	0.3
100	0.2	0.2	0.2	0.2	0.2
105	0.2	0.1	0.2	0.2	0.2
110	0.2	0.1	0.2	0.2	0.2
115	0.2	0.2	0.2	0.2	0.2
120	0.3	0.2	0.2	0.2	0.2
125	0.3	0.3	0.3	0.3	0.3
130	0.4	0.3	0.3	0.3	0.3
135	0.5	0.4	0.4	0.4	0.4
140	0.5	0.5	0.5	0.5	0.5
145	0.6	0.6	0.6	0.6	0.6
150	0.6	0.6	0.6	0.6	0.6
155	0.7	0.7	0.7	0.7	0.7
160	0.7	0.7	0.7	0.7	0.7
165	0.7	0.7	0.7	0.7	0.7
170	0.7	0.7	0.7	0.7	0.7
175	0.7	0.7	0.7	0.7	0.7
180	0.6	0.6	0.6	0.6	0.6

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TEST REPORT

RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For 700BCKAL24x-LED930

Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens (lm)	% Luminaire (%)
700BCKAL24x-LED930		
0-30	322.6	28.0
0-40	526.0	45.6
0-60	921.3	79.9
0-90	1150.5	99.8
60-90	229.2	19.9
0-180	1152.4	100

Beam Angle

Total Beam Angle (°)

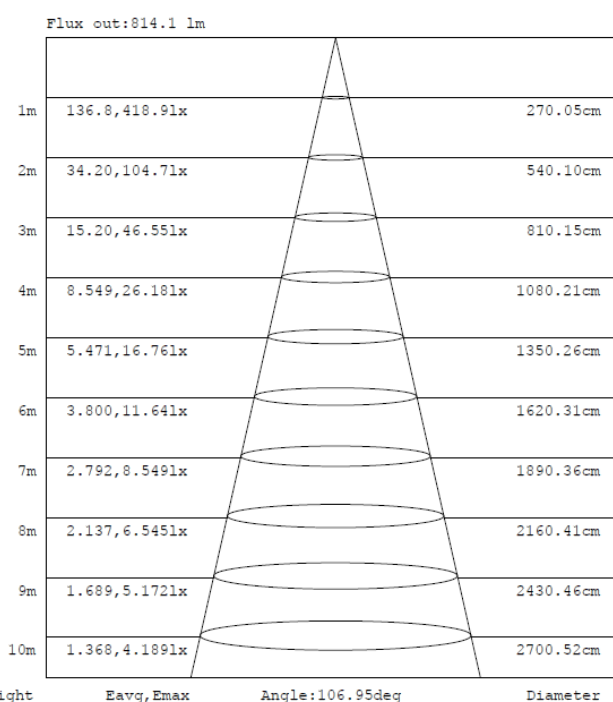
109.9

Illumination Plots

Model No.: 700BCKAL24x-LED930

Mount Height: 2.5 m

Illuminance - Cone of Light



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TEST REPORT

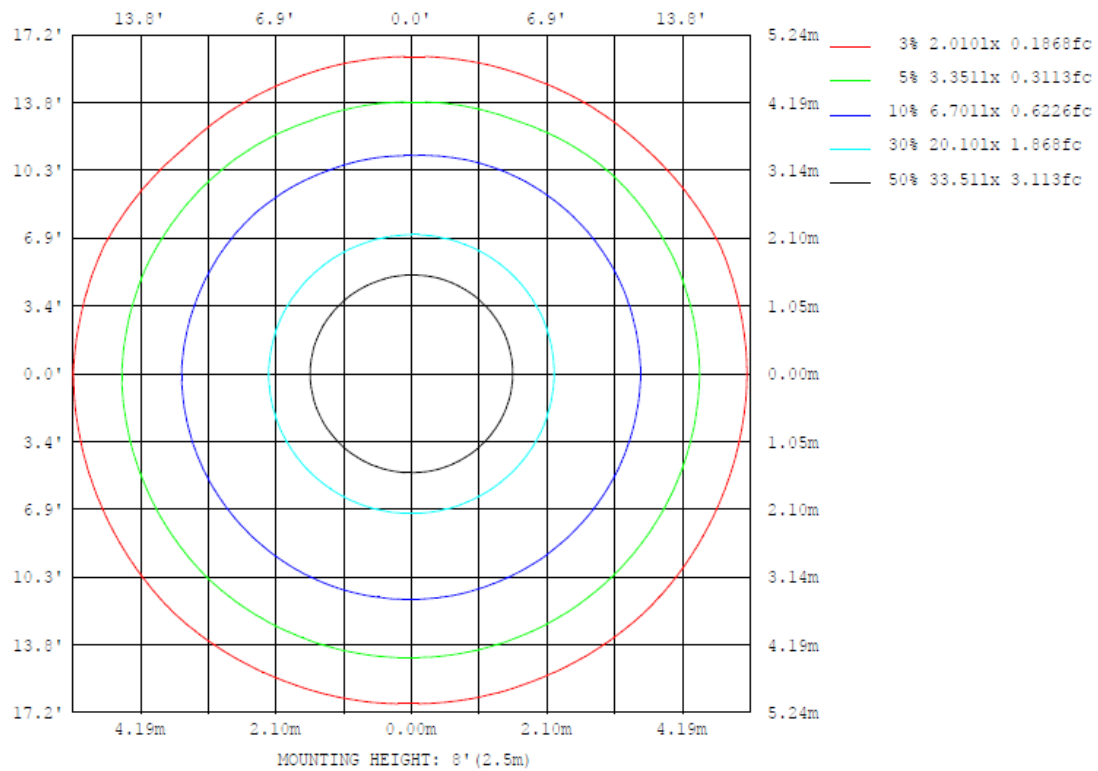
RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For 700BCKAL24x-LED930

Model No.: 700BCKAL24x-LED930

Mount Height: 2.5 m

Isoillumination Plot



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TEST REPORT

RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For 700BCKAL24x-LED930

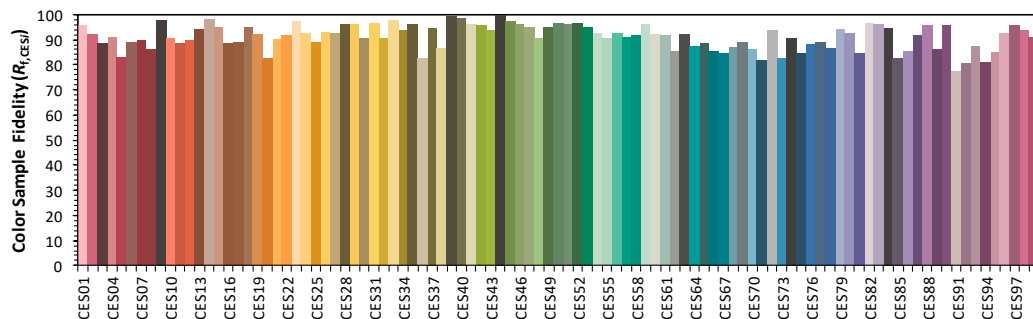
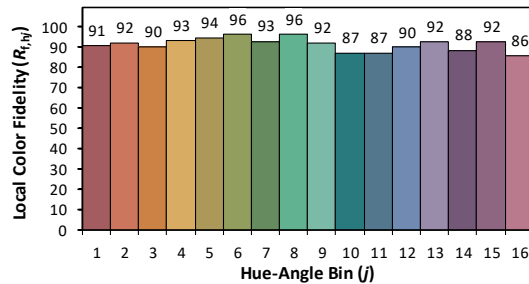
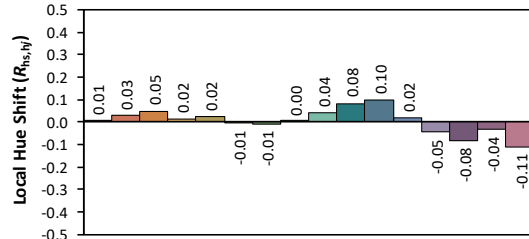
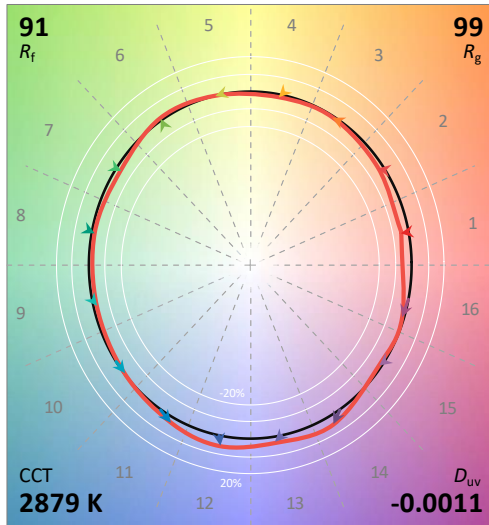
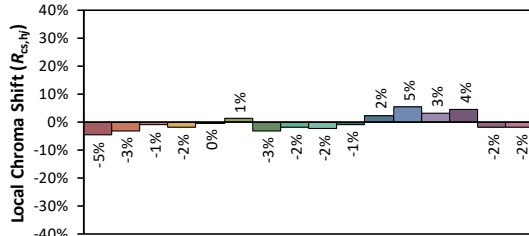
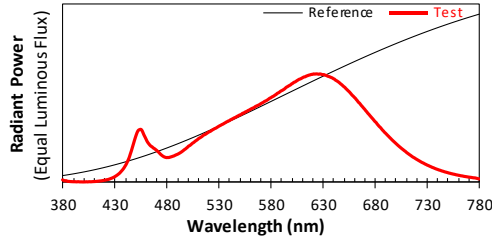
ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD

Manufacturer: Visual Comfort and Company

Date: 2022/4/12

Model: 700BCKAL24x-LED930



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

x 0.4440
 y 0.4035
 u' 0.2554
 v' 0.5222

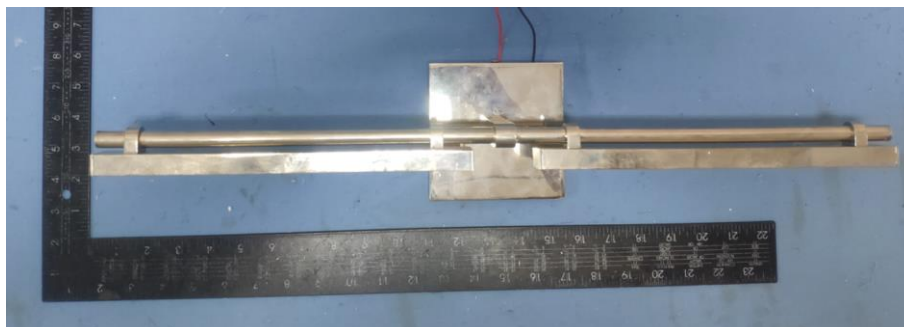
CIE 13.3-1995
(CRI)
 R_a 93
 R_g 63

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

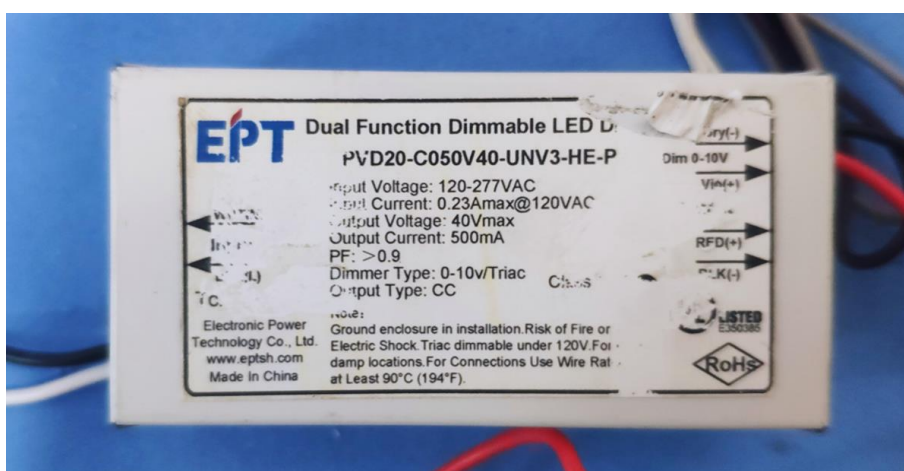
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TEST REPORT

PRODUCT PICTURE (not to scale)



External view of 700BCKAL24x-LED930



View of LED Driver PVD20-C050V40-UNV3-HE-P



View of LED

In Charge Of Tests:

Report Reviewed By

Done Ye
Done Ye
Engineer

Shelley Ying
Shelley Ying
Reviewer

Attachment: None

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