

# Visual Comfort & Co.

## TEST REPORT

**SCOPE OF WORK**

LM-79 testing report

**REPORT NUMBER**

240124027GZU-006

**ISSUE DATE**

29 August 2024

**REVISION DATE**

Modification 1: 01 November 2024

**NUMBER OF PAGES**

12

**DOCUMENT CONTROL NUMBER**

Report format for LM-79\_G

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## TEST REPORT

### TEST OF ONE LED LUMINAIRE

MODEL NO. AKWS16027XX

Remark: "XX" are denoted appearance color.

#### RENDERED TO

Visual Comfort & Co.

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<u>TEST:</u>	Electrical and Photometric as required to the IES LM-79 test standard.
<u>AUTHORIZATION:</u>	The testing performed was authorized by signed quote number: QGZ240119029.
<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-79-19	Approved Method for the Electrical and Photometric Measurements of Solid-State Lighting Products
ANSI C78.377-2017 (R2022)	Specifications of the Chromaticity of Solid State Lighting Products
<u>DESCRIPTION OF SAMPLE:</u>	The client submitted one sample of model AKWS16027XX. The sample was received by Intertek in undamaged condition and tested as received. The sample designation was S240124027-006.
<u>MANUFACTURER /FACTORY &amp; ADDRESS:</u>	Guangzhou Xiongyi Precision Metalworking Co., Ltd Hantang Industrial Zone, Langbian Village, Shiji Town, Panyu District, Guangzhou City, Guangdong Province, China 511450
<u>DATES OF TESTS:</u>	28 February 2024
<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 District, Guangzhou, Guangdong, China

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# TEST REPORT

## SUMMARY

Model Number:	AKWS16027XX
Description:	LED Luminaries
Brand Name:	--

### Test Condition: 120V, 60Hz For AKWS16027XX

Criteria	Result
Total Lumen Output	655.0 lm
Total Power	7.4 W
Luminaire Efficacy	88.9 lm/W
S/MH(C0/180)	1.19
S/MH(C90/270)	1.58
Correlated Color Temperature (CCT)	2640 K
Color Rendering Index (CRI)	93
R9	63
Chromaticity Coordinate (x)	0.4627
Chromaticity Coordinate (y)	0.4079
Chromaticity Coordinate (u')	0.2656
Chromaticity Coordinate (v')	0.5268

### Remark:

### Revision history:

Modification 1: Based on and superseded the previous report 240124027GZU-006 issued on 29 August 2024, correct the manufacturer information on page 2 of the report, correct the applicant name on page 1 and 2 of the report.

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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	D215S	SA063-16-06
Digital Power Meter	PLM3000	SA063-16-09
AC power source for Goniophotometer	PCR-1000WH	SA063-16-10
Temperature Meter	S500-TH	SA047-182

## 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 $\pi$  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 WT310E.

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: 3.948A DC

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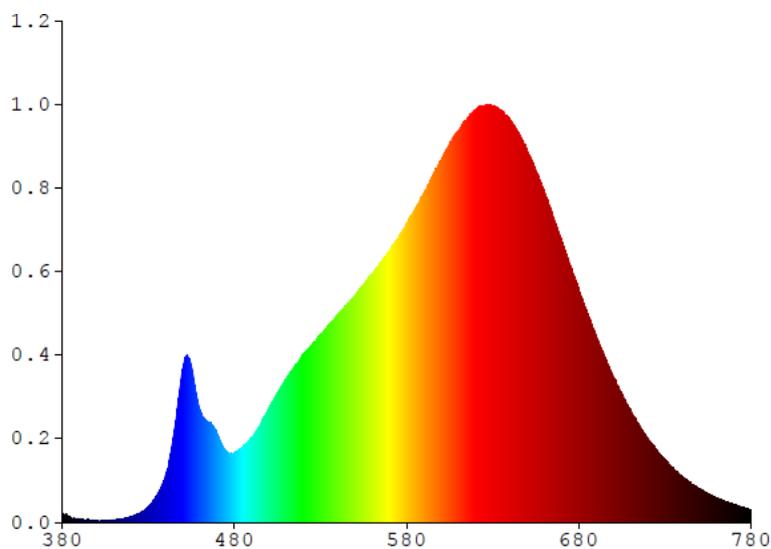
## TEST REPORT

### RESULTS OF TESTS

**Test Condition: 120V, 60Hz For AKWS16027XX**

Spectral Distribution over Visible Wavelengths

nm	mW/nm								
380	0.0293	480	0.2442	580	1.0414	680	0.8127	780	0.0418
385	0.0086	485	0.2669	585	1.0956	685	0.7294		
390	0.0058	490	0.2973	590	1.1516	690	0.6521		
395	0.0083	495	0.3422	595	1.2112	695	0.5762		
400	0.0066	500	0.3994	600	1.2649	700	0.5069		
405	0.0046	505	0.4511	605	1.3204	705	0.4488		
410	0.0079	510	0.5017	610	1.3689	710	0.3914		
415	0.0126	515	0.5446	615	1.4111	715	0.3398		
420	0.0213	520	0.5849	620	1.4420	720	0.2929		
425	0.0329	525	0.6195	625	1.4557	725	0.2532		
430	0.0554	530	0.6566	630	1.4548	730	0.2186		
435	0.0943	535	0.6923	635	1.4406	735	0.1878		
440	0.1662	540	0.7253	640	1.4075	740	0.1601		
445	0.3184	545	0.7588	645	1.3588	745	0.1373		
450	0.5391	550	0.7941	650	1.2993	750	0.1180		
455	0.5401	555	0.8305	655	1.2290	755	0.1001		
460	0.3897	560	0.8651	660	1.1530	760	0.0856		
465	0.3508	565	0.9054	665	1.0686	765	0.0740		
470	0.3062	570	0.9515	670	0.9830	770	0.0623		
475	0.2496	575	0.9923	675	0.8811	775	0.0534		



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## TEST REPORT

### RESULTS OF TESTS (cont'd)

**Test Condition: 120V, 60Hz For AKWS16027XX**

Total operation burning time: 60 minutes

Stabilization time: 30 minutes

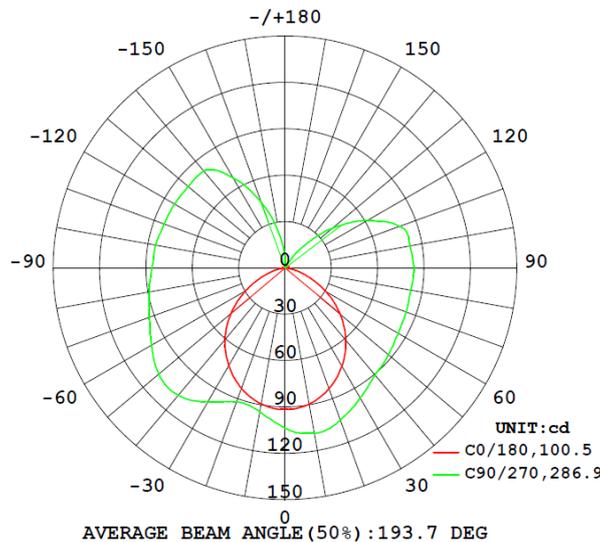
#### Photometric Measurements at 25°C – Distribution Method

Intertek Sample No.	Base Orientation	Correlated Color Temperature (K)	CRI	R9	CIE 31'	CIE 31'	CIE 76'	CIE 76'
					Chromaticity Coordinate (x)	Chromaticity Coordinate (y)	Chromaticity Coordinate (u')	Chromaticity Coordinate (v')
AKWS16027XX								
S2401240 27-006	base-up	2640	93	63	0.4627	0.4079	0.2656	0.5268

#### 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)
AKWS16027XX							
S2401240 27-006	base-up	120.0	62.2	7.4	0.986	655.0	88.9

#### Intensity (Candlepower) Summary at 25°C - Candelas



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# TEST REPORT

## RESULTS OF TESTS (cont'd)

**Test Condition: 120V, 60Hz For AKWS16027XX**

Intensity (Candlepower) Summary at 25°C - Candelas

V \ H(°)	0	22.5	45	67.5	90
0	91.7	91.5	95.4	100.1	103.6
5	91.1	90.9	96.7	103.7	107.3
10	89.5	89.4	97.7	105.5	108.6
15	86.8	87.6	97.6	105.7	108.0
20	83.2	84.9	95.7	103.8	104.7
25	78.7	81.6	92.7	99.5	101.1
30	73.5	77.7	87.6	95.3	97.2
35	67.7	73.0	81.4	90.7	93.7
40	61.2	67.3	75.4	86.2	90.5
45	54.1	60.5	68.7	82.4	88.9
50	46.5	53.0	62.4	80.1	87.4
55	38.7	44.3	57.8	78.0	85.8
60	30.4	35.9	54.1	75.8	84.6
65	22.4	28.1	51.2	74.5	83.7
70	15.0	21.9	49.6	73.7	83.4
75	8.8	18.0	48.5	73.2	82.8
80	4.1	16.0	48.2	72.9	82.7
85	1.0	15.7	49.2	73.2	83.1
90	0.2	17.2	50.5	73.8	83.3
95	0.5	20.2	52.0	73.8	82.6
100	1.3	22.5	54.4	74.0	82.2
105	1.8	22.0	54.6	75.2	82.4
110	2.2	19.5	50.6	73.7	78.9
115	2.4	17.5	45.0	67.9	71.2
120	2.3	14.1	37.4	59.4	61.4
125	2.0	11.3	31.0	49.1	51.2
130	1.6	7.5	23.4	38.4	40.3
135	1.1	4.2	16.4	27.7	29.0
140	0.6	1.9	9.9	18.2	18.4
145	0.3	0.5	4.4	10.0	9.4
150	0.2	0.2	0.9	3.5	2.6
155	0.2	0.2	0.2	0.3	0.2
160	0.2	0.2	0.2	0.2	0.2
165	0.2	0.2	0.2	0.2	0.2
170	0.2	0.2	0.2	0.2	0.2
175	0.2	0.2	0.2	0.2	0.4
180	0.2	0.2	0.2	1.5	4.7

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**TEST REPORT**  
**RESULTS OF TESTS (cont'd)**

**Test Condition: 120V, 60Hz For AKWS16027XX**

Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens (lm)	% Luminaire (%)
AKWS16027XX		
0-30	77.4	11.8
0-40	131.3	20.1
0-60	256.1	39.1
0-90	428.4	65.4
60-90	172.3	26.3
0-180	655.0	100.0

Beam Angle

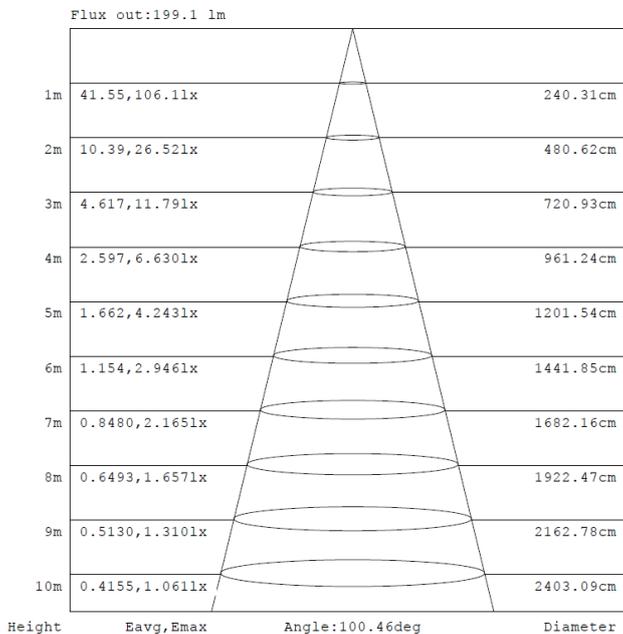
**Total Beam Angle(°)**  
193.7

Illumination Plots

Model No.: AKWS16027XX

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.

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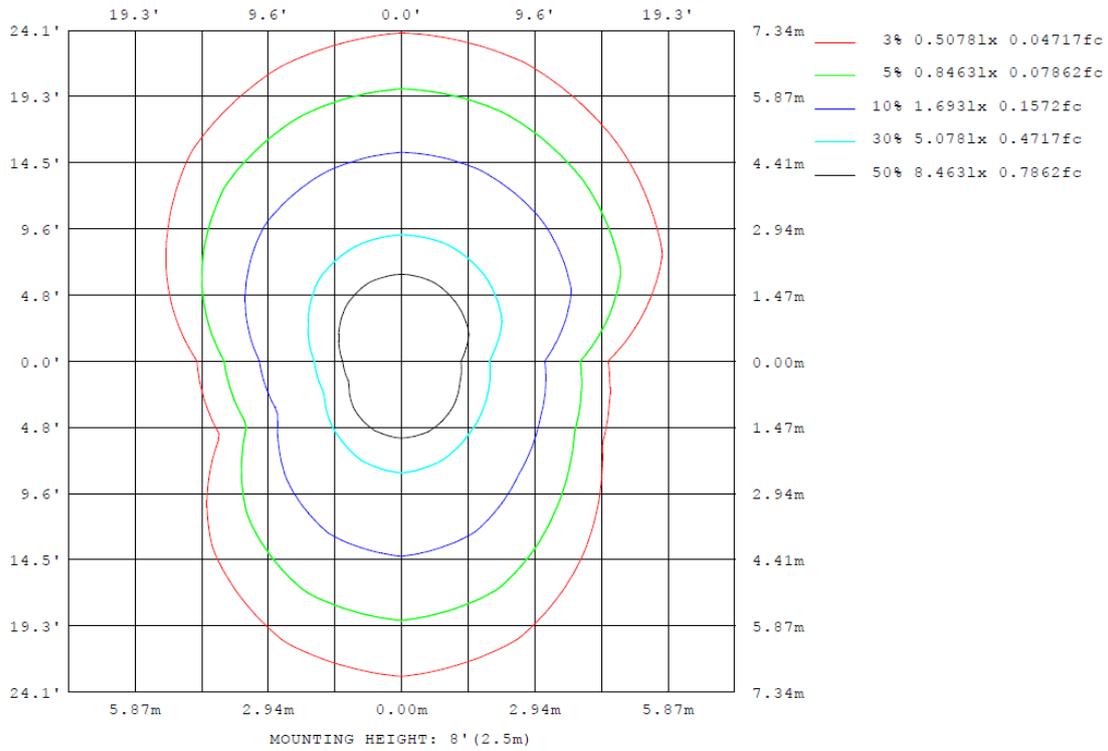
**TEST REPORT**  
**RESULTS OF TESTS (cont'd)**

**Test Condition: 120V, 60Hz For AKWS16027XX**

Model No.: AKWS16027XX

Mount Height: 2.5 m

Isoillumination Plot



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## TEST REPORT

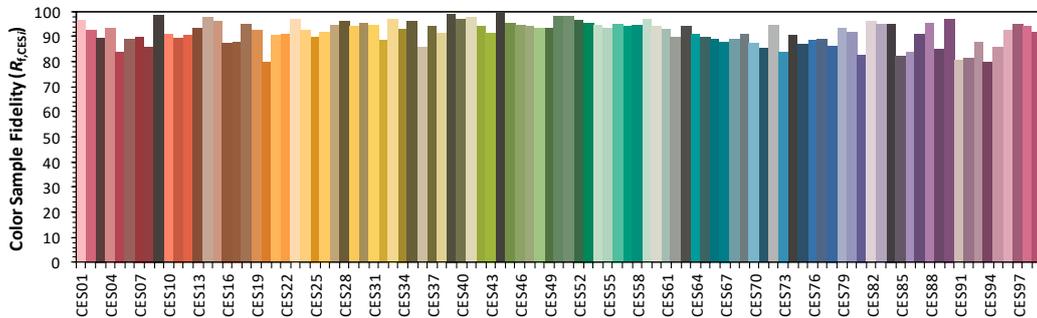
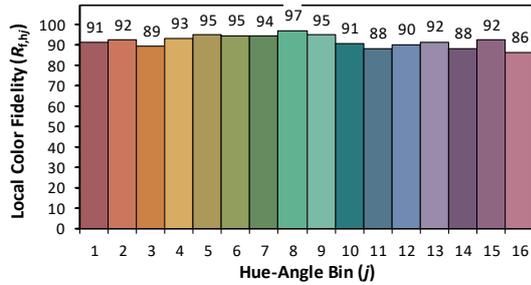
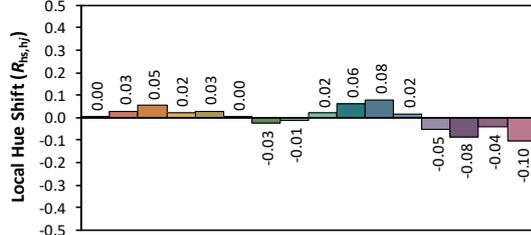
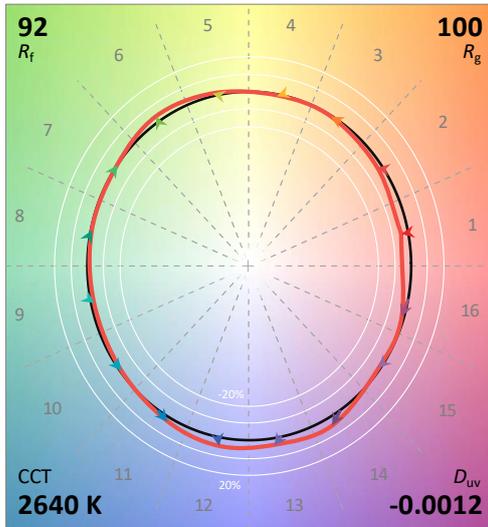
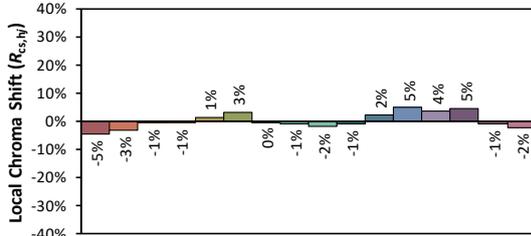
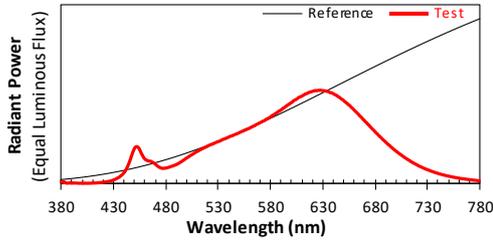
### RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For AKWS16027XX

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

Source: User SPD  
Date: 2024/2/28

Manufacturer: Visual Comfort and Company  
Model: AKWS16027xx



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

$x$  0.4627  
 $y$  0.4079  
 $u'$  0.2656  
 $v'$  0.5268

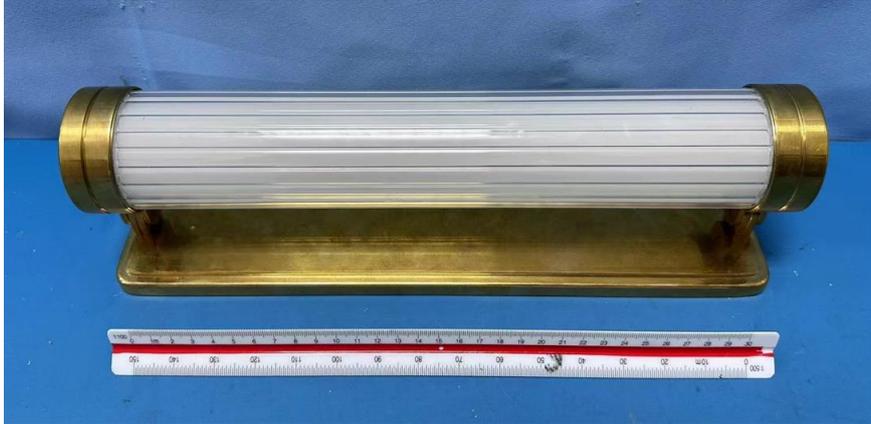
CIE 13.3-1995 (CRI)	
$R_a$	93
$R_g$	63

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

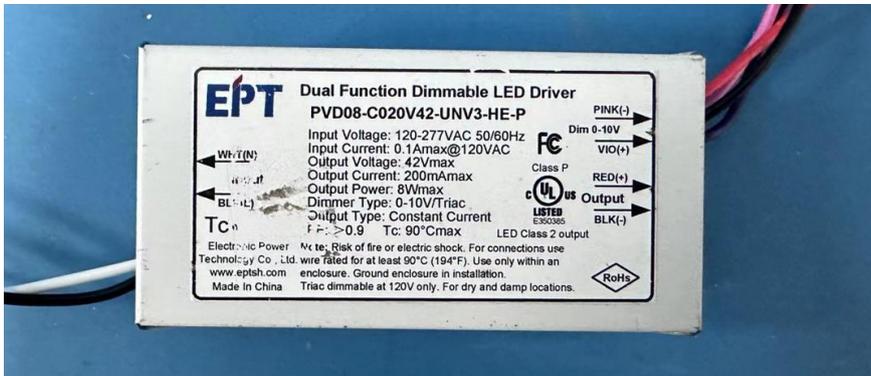
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## TEST REPORT

### PRODUCT PICTURE (not to scale)



External view of AKWS16027XX



View of LED driver PVD08-C020V42-UNV3-HE-P



View of LED board

In Charge Of Tests:

*Done Ye*

Report Reviewed By

*Shelley Ying*

Done Ye  
Engineer

Shelley Ying  
Reviewer

Attachment: None

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