

# Visual Comfort and Company

## TEST REPORT

**SCOPE OF WORK**

LM-79 testing report

**REPORT NUMBER**

230301038GZU-006

**ISSUE DATE**

03-April-2023

**REVISION DATE**

None

**NUMBER OF PAGES**

13

**DOCUMENT CONTROL NUMBER**

Report format for LM-79:2008\_F

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Report No.: 230301038GZU-006

## TEST REPORT

### TEST OF ONE LED LUMINAIRE

MODEL NO. KWWS19927X

(Remark: "X" denote other appearance colors for the characters that change)

#### 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: QGZ230224053.
<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 KWWS19927X. The sample was received, in undamaged condition. The sample designation was S230301038-006.
<u>DATES OF TESTS:</u>	09 March 2023
<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:	KWWS19927X
Description:	LED Luminaries
Brand Name:	--

#### Test Condition: 120V, 60Hz For KWWS19927X

Criteria	Result
Total Lumen Output	632.4 lm
Total Power	7.7 W
Luminaire Efficacy	82.3 lm/W
S/MH(C0/180)	1.04
S/MH(C90/270)	0.77
Correlated Color Temperature (CCT)	2602 K
Color Rendering Index (CRI)	91
R9	67
Chromaticity Coordinate (x)	0.4683
Chromaticity Coordinate (y)	0.4128
Chromaticity Coordinate (u')	0.2670
Chromaticity Coordinate (v')	0.5295

### 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	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

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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 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: 110V/100W

Current: 0.8851A

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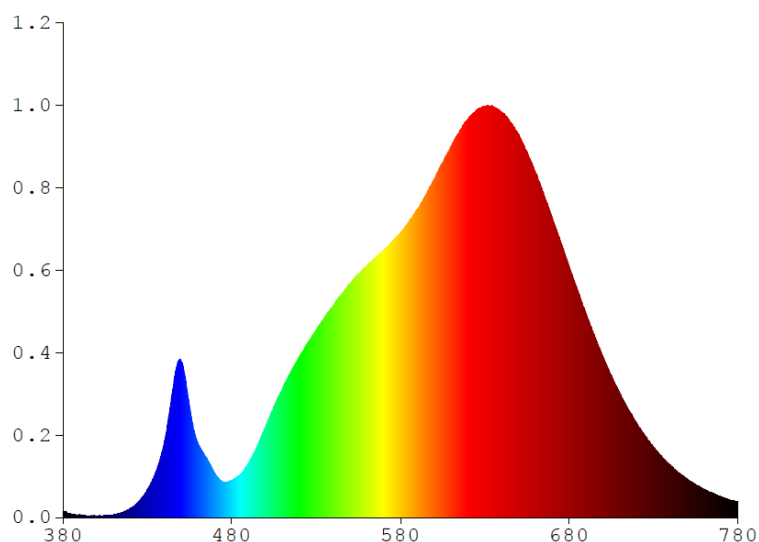
## TEST REPORT

### RESULTS OF TESTS

**Test Condition: 120V, 60Hz For KWWS19927X**

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
380	0.0417	480	0.2351	580	1.7986	680	1.5802	780	0.0974
385	0.0193	485	0.2735	585	1.8688	685	1.4293		
390	0.0148	490	0.3445	590	1.9456	690	1.2843		
395	0.0084	495	0.4491	595	2.0362	695	1.1414		
400	0.0111	500	0.5732	600	2.1407	700	1.0115		
405	0.0086	505	0.6990	605	2.2413	705	0.8942		
410	0.0183	510	0.8116	610	2.3470	710	0.7816		
415	0.0323	515	0.9185	615	2.4400	715	0.6811		
420	0.0583	520	1.0114	620	2.5146	720	0.5945		
425	0.1024	525	1.1034	625	2.5733	725	0.5125		
430	0.1768	530	1.1836	630	2.5991	730	0.4435		
435	0.2866	535	1.2659	635	2.5934	735	0.3810		
440	0.4720	540	1.3362	640	2.5621	740	0.3284		
445	0.8030	545	1.4063	645	2.4982	745	0.2809		
450	0.9870	550	1.4774	650	2.4194	750	0.2440		
455	0.6943	555	1.5388	655	2.3033	755	0.2078		
460	0.4646	560	1.5863	660	2.1741	760	0.1776		
465	0.3751	565	1.6395	665	2.0351	765	0.1522		
470	0.2768	570	1.6884	670	1.8842	770	0.1304		
475	0.2254	575	1.7419	675	1.7048	775	0.1105		



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## TEST REPORT

### RESULTS OF TESTS (cont'd)

**Test Condition: 120V, 60Hz For KWWS19927X**

Total operation burning time: 60 minutes

Stabilization time: 45 minutes

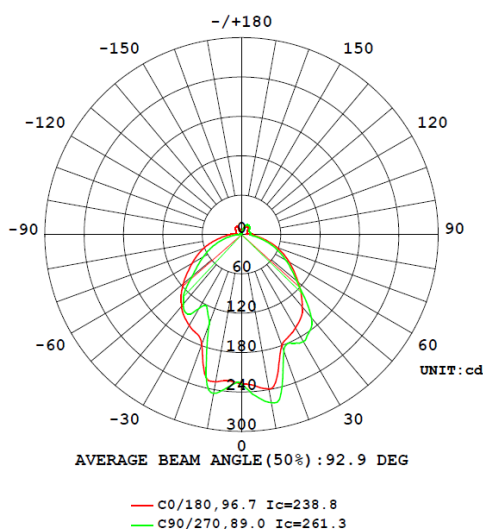
#### Photometric Measurements at 25°C – Integrating Sphere Method

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')
KWWS19927X								
S2303010 38-006	--	2602	91	67	0.4683	0.4128	0.2670	0.5295

#### 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)
KWWS19927X							
S2303010 38-006	--	120.2	65.1	7.7	0.983	632.4	82.3

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



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## TEST REPORT

### RESULTS OF TESTS (cont'd)

**Test Condition: 120V, 60Hz For KWWS19927X**

Intensity (Candlepower) Summary at 25°C - Candelas

V \ H(°)	0	22.5	45	67.5	90
0	227.8	227.8	227.8	227.8	227.8
5	231.2	236.9	243.3	249.0	246.9
10	238.6	246.4	256.0	264.9	260.2
15	215.3	213.3	225.0	240.2	239.2
20	179.7	176.7	183.4	195.6	188.6
25	171.0	170.5	179.5	189.8	182.7
30	164.4	165.1	177.5	192.3	188.1
35	156.7	157.2	168.3	185.4	180.3
40	144.0	141.8	148.9	166.5	165.4
45	128.7	121.5	123.0	134.9	135.8
50	112.7	103.4	102.7	109.8	109.9
55	97.7	89.2	88.5	92.9	93.0
60	83.9	76.7	75.5	78.1	78.2
65	70.5	64.3	62.7	63.7	63.9
70	57.2	52.1	50.6	50.4	50.6
75	43.4	38.4	37.1	36.2	36.9
80	30.7	25.6	24.1	23.3	24.2
85	20.9	16.5	14.6	13.7	14.7
90	17.0	15.3	13.6	13.0	13.5
95	10.2	15.2	13.5	12.8	13.6
100	8.5	15.2	13.5	12.5	14.3
105	8.8	14.8	13.3	12.2	13.7
110	9.1	14.7	13.2	12.2	13.1
115	9.4	14.7	13.2	12.2	12.6
120	9.9	15.7	14.0	12.9	13.4
125	11.1	17.5	15.5	14.2	14.7
130	12.6	19.3	17.2	15.7	16.2
135	13.9	20.6	18.4	16.9	17.2
140	14.7	21.3	19.1	17.5	17.9
145	14.9	21.0	19.1	17.6	18.0
150	14.2	19.4	18.4	16.8	17.4
155	12.6	16.6	16.6	15.2	15.8
160	9.9	12.6	13.5	12.6	13.0
165	6.4	8.0	9.3	8.7	8.9
170	2.9	3.7	4.4	3.8	3.6
175	0.8	0.7	0.7	0.6	0.8
180	0.3	0.3	0.3	0.3	0.3

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# TEST REPORT

## RESULTS OF TESTS (cont'd)

**Test Condition: 120V, 60Hz For KWWS19927X**

Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens (lm)	% Luminaire (%)
KWWS19927X		
0-30	157.9	25.0
0-40	254.5	40.2
0-60	434.0	68.6
0-90	559.2	88.4
60-90	125.2	19.8
0-180	632.4	100.0

Beam Angle

**Total Beam Angle (°)**

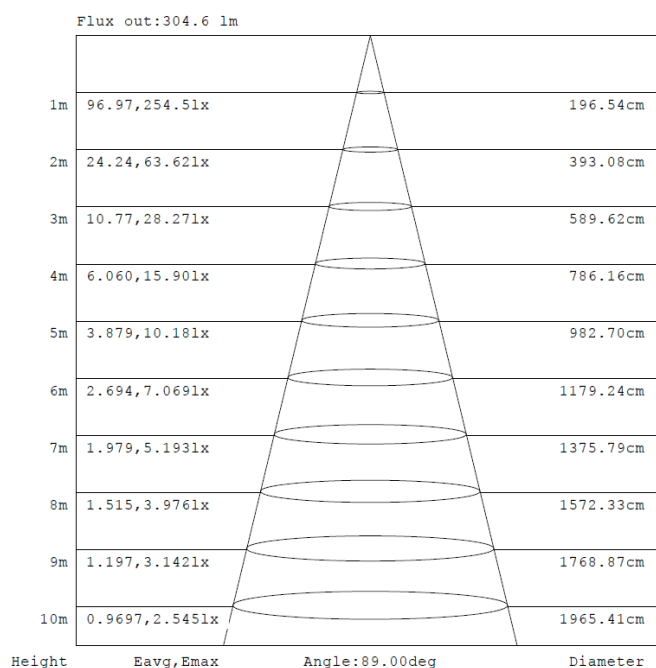
92.9

Illumination Plots

Model No.: KWWS19927X

Mount Height: 2.5 m

Illuminance - Cone of Light



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# TEST REPORT

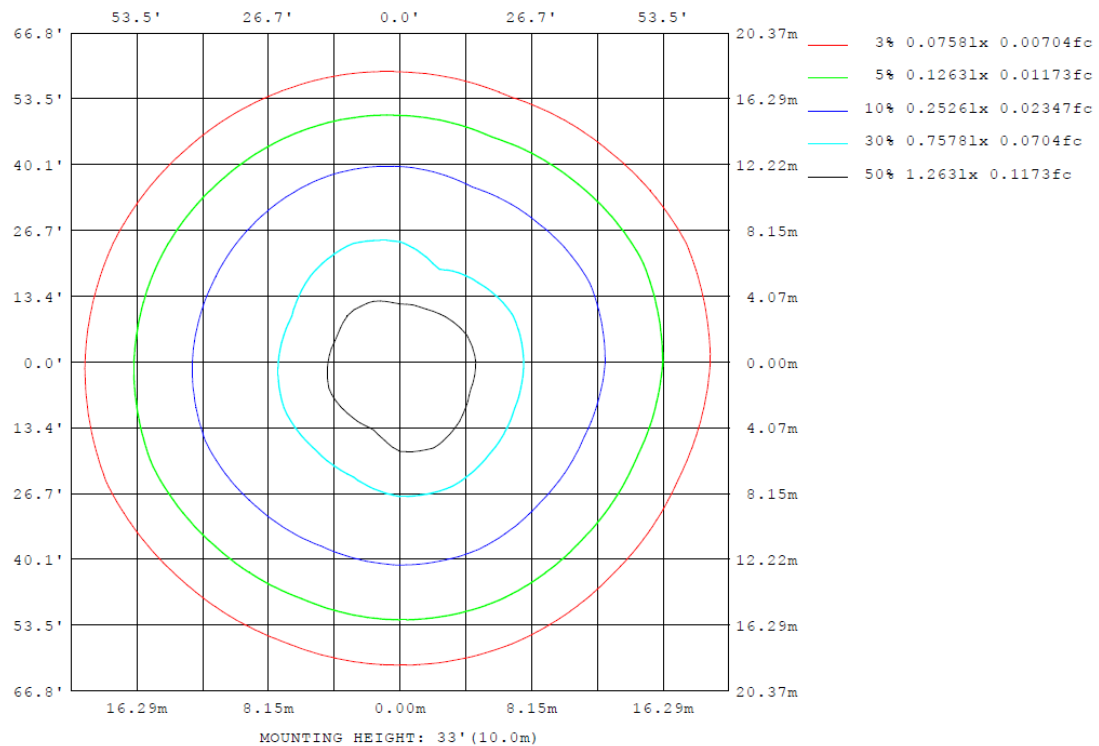
## RESULTS OF TESTS (cont'd)

**Test Condition: 120V, 60Hz For KWWS19927X**

Model No.: KWWS19927X

Mount Height: 2.5 m

Isoillumination Plot



## TEST REPORT

### RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For KWWS19927X

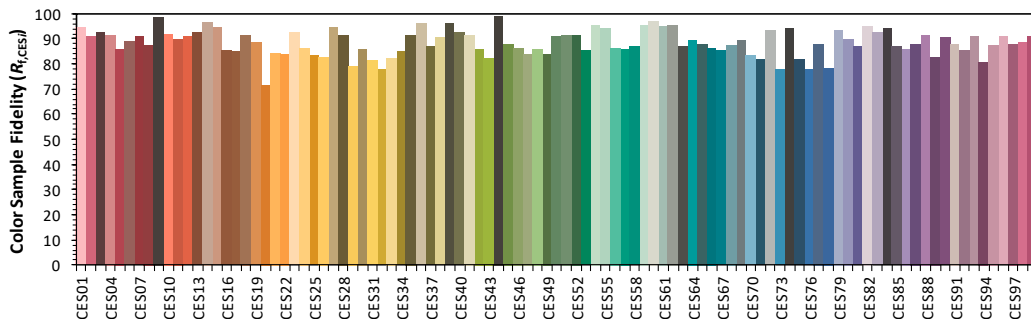
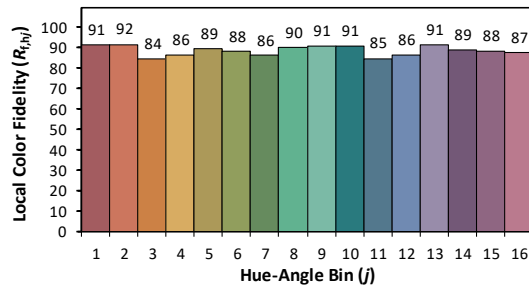
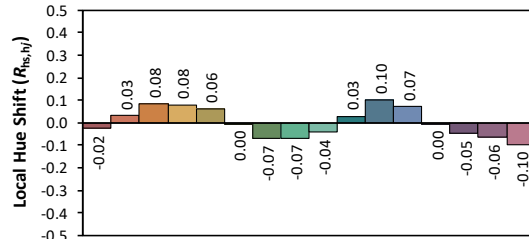
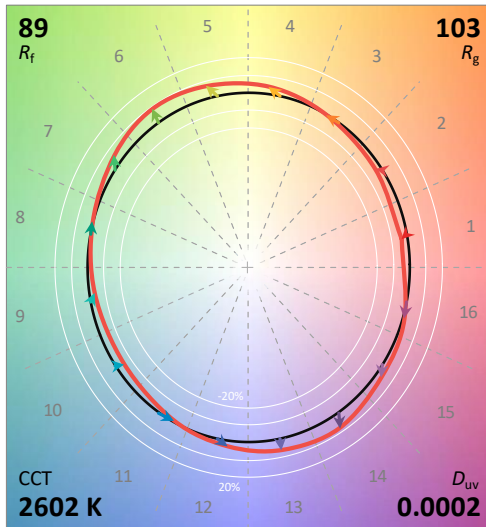
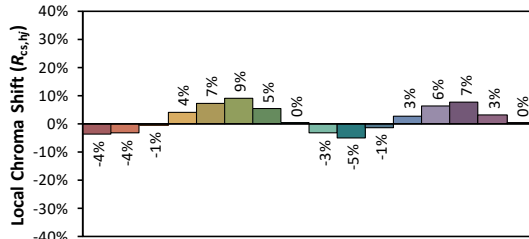
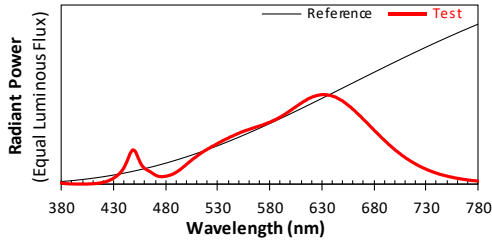
#### ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD

Manufacturer: Visual Comfort and Company

Date: 2023/3/9

Model: KWWS19927X



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

$x$  0.4683  
 $y$  0.4128  
 $u'$  0.2670  
 $v'$  0.5295

CIE 13.3-1995  
(CRI)

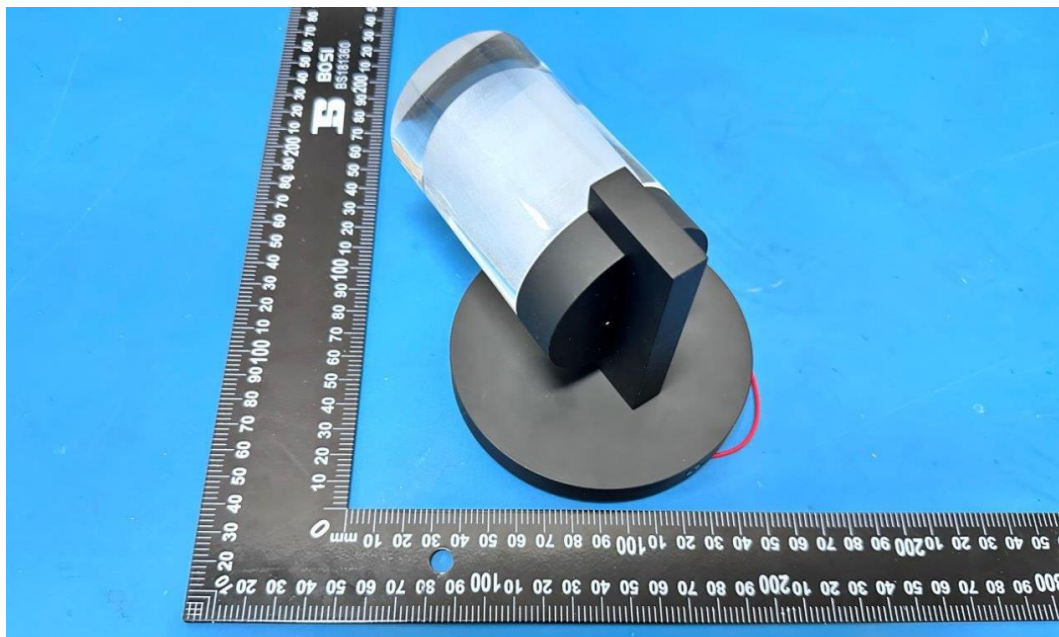
$R_a$  91  
 $R_g$  67

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 KWWS19927X

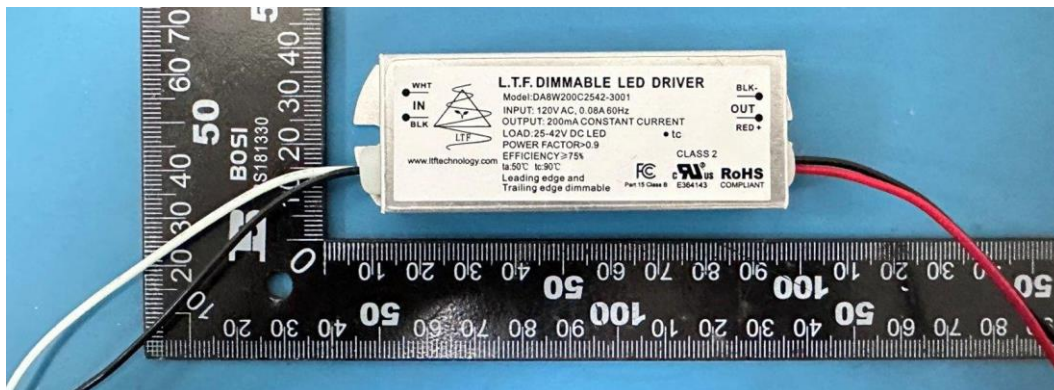


External view of KWWS19927X

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## TEST REPORT

### PRODUCT PICTURE (not to scale)



View of LED Driver DA8W200C2542-3001



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 \*\*\*\*\*