

Visual Comfort and Company

TEST REPORT

SCOPE OF WORK

LM-79 testing report

REPORT NUMBER

230301038GZU-011

ISSUE DATE

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REVISION DATE

None

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Report No.: 230301038GZU-011

TEST REPORT

TEST OF ONE LED LUMINAIRE

MODEL NO. SLWS12230X

(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 SLWS12230X. The sample was received, in undamaged condition. The sample designation was S230301038-011.
<u>DATES OF TESTS:</u>	10 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:	SLWS12230X
Description:	LED Luminaries
Brand Name:	--

Test Condition: 120V, 60Hz For SLWS12230X

Criteria	Result
Total Lumen Output	2008.9 lm
Total Power	35.5 W
Luminaire Efficacy	56.6 lm/W
S/MH(C0/180)	1.23
S/MH(C90/270)	1.35
Correlated Color Temperature (CCT)	2863 K
Color Rendering Index (CRI)	94
R9	68
Chromaticity Coordinate (x)	0.4463
Chromaticity Coordinate (y)	0.4059
Chromaticity Coordinate (u')	0.2558
Chromaticity Coordinate (v')	0.5235

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 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 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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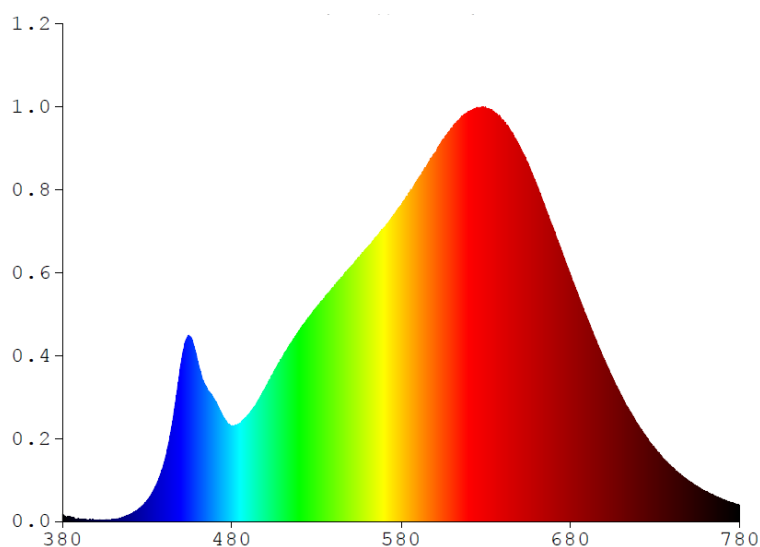
TEST REPORT

RESULTS OF TESTS

Test Condition: 120V, 60Hz For SLWS12230X

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
380	0.0942	480	1.2299	580	4.0843	680	3.1764	780	0.2090
385	0.0526	485	1.2729	585	4.2535	685	2.8847		
390	0.0329	490	1.3841	590	4.4148	690	2.6071		
395	0.0214	495	1.5412	595	4.5886	695	2.3380		
400	0.0212	500	1.7310	600	4.7651	700	2.0782		
405	0.0186	505	1.9425	605	4.9362	705	1.8418		
410	0.0280	510	2.1272	610	5.0733	710	1.6183		
415	0.0481	515	2.3082	615	5.1999	715	1.4154		
420	0.0913	520	2.4672	620	5.2845	720	1.2433		
425	0.1588	525	2.6327	625	5.3371	725	1.0782		
430	0.2712	530	2.7676	630	5.3351	730	0.9381		
435	0.4533	535	2.8964	635	5.2795	735	0.8069		
440	0.7545	540	3.0202	640	5.1845	740	0.6980		
445	1.2820	545	3.1514	645	5.0233	745	0.6020		
450	2.0290	550	3.2816	650	4.8382	750	0.5170		
455	2.3892	555	3.4129	655	4.6035	755	0.4491		
460	2.0458	560	3.5267	660	4.3393	760	0.3848		
465	1.7304	565	3.6680	665	4.0488	765	0.3304		
470	1.5531	570	3.7981	670	3.7630	770	0.2842		
475	1.3426	575	3.9395	675	3.4025	775	0.2423		



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TEST REPORT

RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For SLWS12230X

Total operation burning time: 60 minutes

Stabilization time: 45 minutes

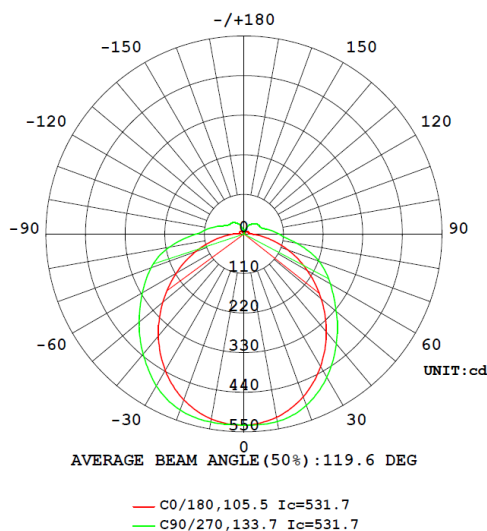
Photometric Measurements at 25°C – Integrating Sphere Method

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')
SLWS12230X								
S2303010 38-011	--	2863	94	68	0.4463	0.4059	0.2558	0.5235

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)
SLWS12230X							
S2303010 38-011	--	120.2	297.0	35.5	0.994	2008.9	56.6

Intensity (Candlepower) Summary at 25°C – Candelas



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TEST REPORT

RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For SLWS12230X

Intensity (Candlepower) Summary at 25°C - Candelas

V \ H(°)	0	22.5	45	67.5	90
0	531.1	531.1	531.1	531.1	531.1
5	527.0	527.7	529.1	530.8	531.6
10	517.3	519.6	523.5	527.3	529.5
15	501.8	505.7	513.0	518.1	521.3
20	481.3	487.3	496.8	502.9	506.2
25	455.4	463.8	475.2	481.8	485.4
30	425.5	435.8	448.2	455.7	459.9
35	391.8	403.9	417.8	426.1	430.6
40	355.5	369.5	385.3	393.8	398.7
45	318.3	334.0	351.0	360.8	366.4
50	279.8	297.7	316.6	329.0	334.3
55	241.3	261.2	282.7	297.7	304.4
60	203.2	225.3	249.9	268.5	276.9
65	166.5	190.4	218.9	240.5	250.3
70	129.7	155.6	187.9	211.5	222.1
75	95.4	121.6	153.9	176.1	186.4
80	63.8	88.3	118.7	139.0	148.1
85	38.9	60.4	88.3	106.9	114.3
90	21.9	45.8	74.0	91.4	97.5
95	12.9	44.5	66.5	78.6	83.4
100	13.8	41.2	57.8	66.8	70.5
105	14.5	38.2	50.9	56.3	58.7
110	14.3	35.7	49.6	51.3	51.6
115	13.7	32.3	48.7	49.8	49.5
120	12.9	28.9	46.6	48.3	48.4
125	12.0	25.6	43.5	46.5	47.0
130	11.0	22.4	38.9	43.7	45.2
135	9.9	19.1	34.2	39.4	41.5
140	8.8	15.9	29.5	35.1	37.7
145	7.5	12.5	24.3	30.5	33.5
150	6.0	8.7	18.6	25.4	28.5
155	4.2	4.8	12.7	19.4	22.4
160	2.5	2.3	7.1	13.0	15.5
165	1.3	1.1	2.5	6.7	8.4
170	0.9	0.9	0.9	1.2	2.0
175	0.9	0.9	0.8	0.8	0.8
180	0.8	0.8	0.8	0.8	0.8

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TEST REPORT

RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For SLWS12230X

Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens (lm)	% Luminaire (%)
SLWS12230X		
0-30	417.7	20.8
0-40	685.3	34.1
0-60	1231.2	61.3
0-90	1753.2	87.3
60-90	522.0	26.0
0-180	2008.9	100.0

Beam Angle

Total Beam Angle (°)

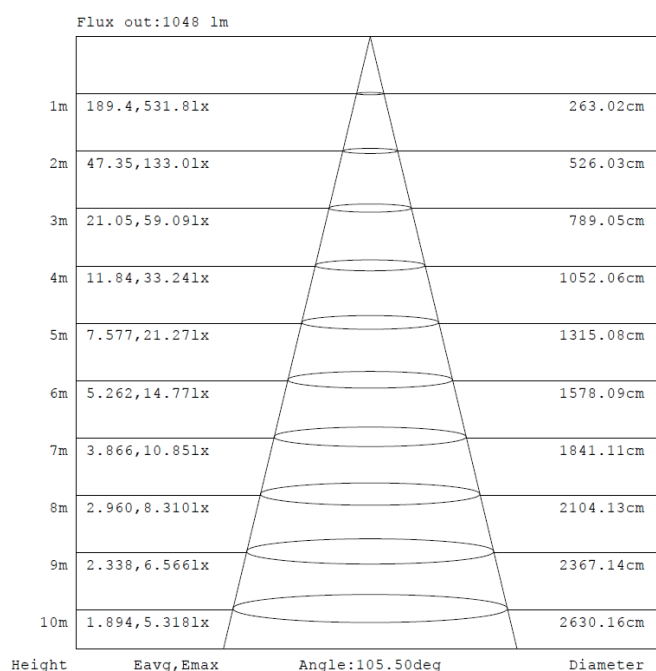
119.6

Illumination Plots

Model No.: SLWS12230X

Mount Height: 2.5 m

Illuminance - Cone of Light



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TEST REPORT

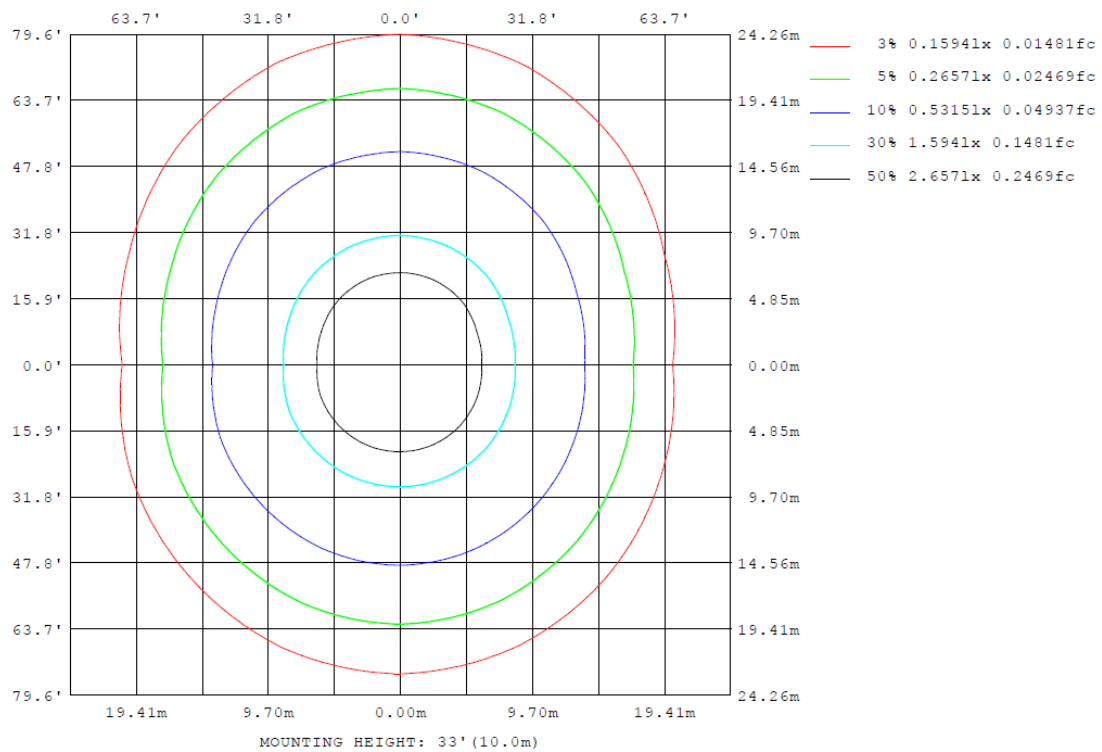
RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For SLWS12230X

Model No.: SLWS12230X

Mount Height: 2.5 m

Isoillumination Plot



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TEST REPORT

RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For SLWS12230X

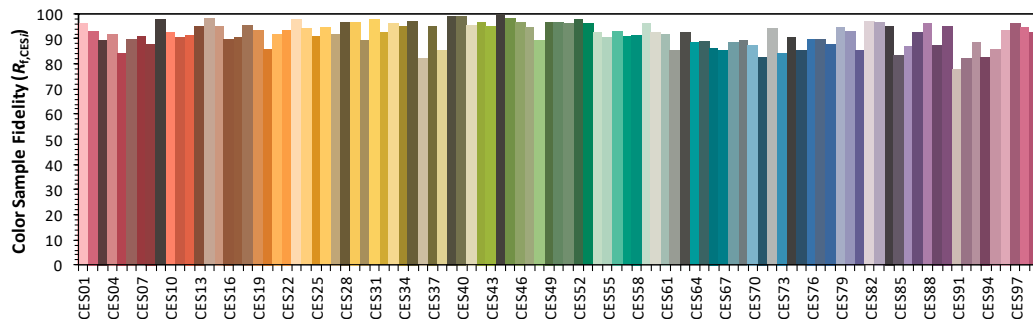
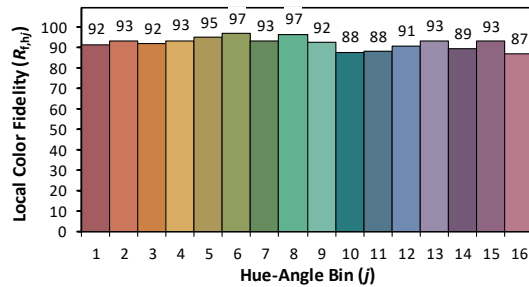
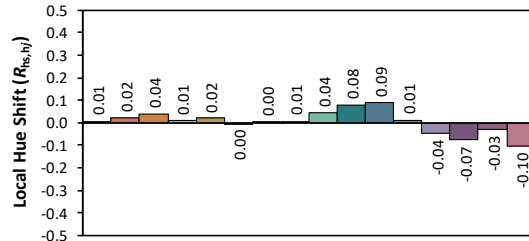
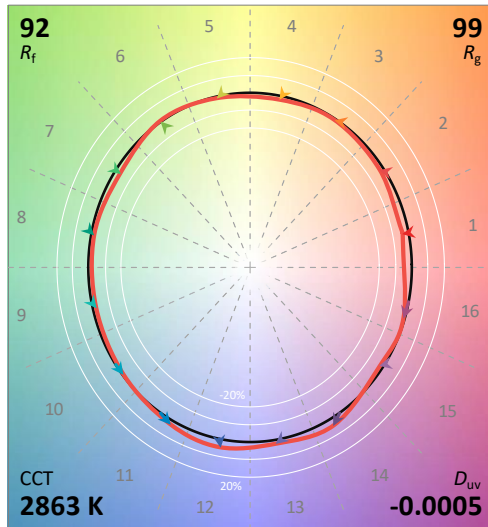
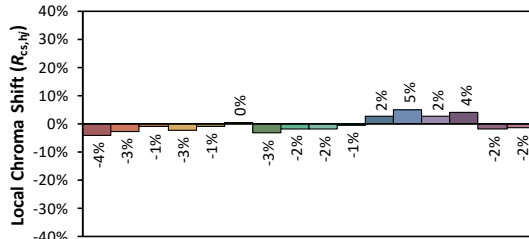
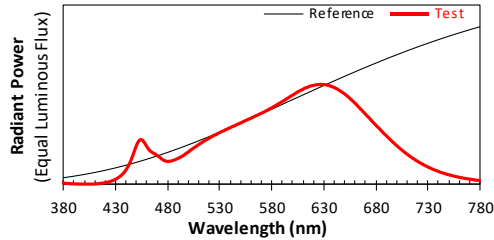
ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD

Manufacturer: Visual Comfort and Company

Date: 2023/3/10

Model: SLWS12230X



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

x 0.4463
 y 0.4059
 u' 0.2558
 v' 0.5235

CIE 13.3-1995
(CRI)

R_a 94

R_g 68

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

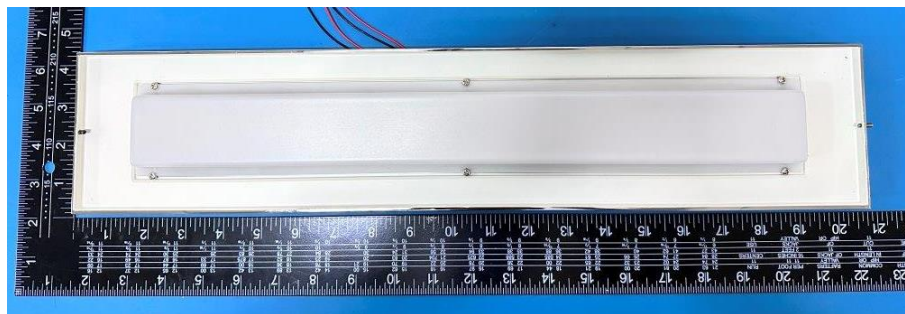
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TEST REPORT

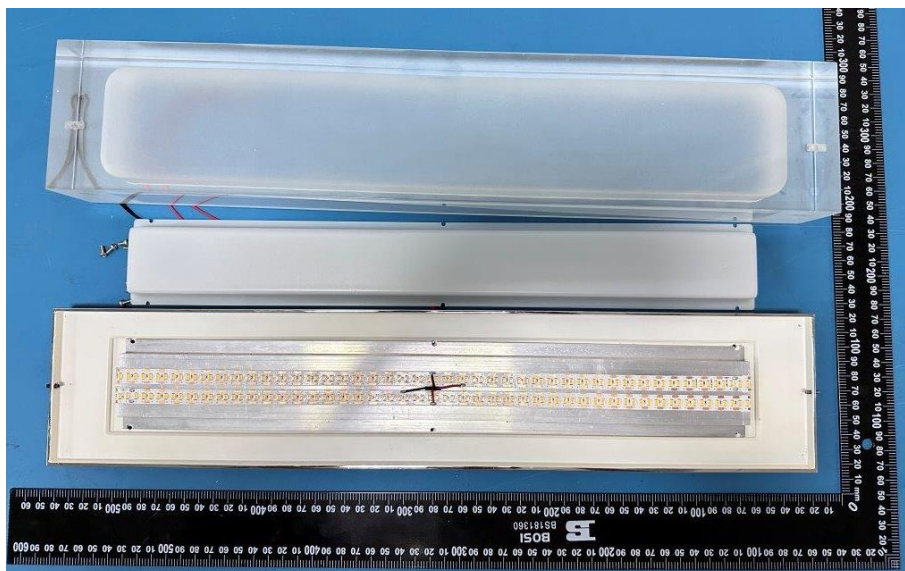
PRODUCT PICTURE (not to scale)



External view of SLWS12230X



External view of SLWS12230X

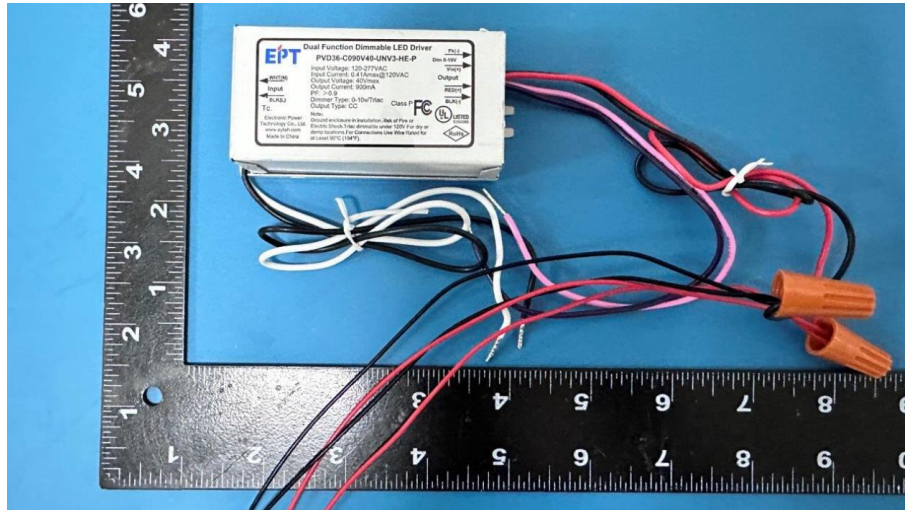


Internal view of SLWS12230X

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TEST REPORT

PRODUCT PICTURE (not to scale)



View of LED Driver PVD36-C090V40-UNV3-HE-P



View of LED

In Charge Of Tests:

Done Ye

Done Ye
Engineer

Report Reviewed By

Shelley Z.

Shelley Ying
Reviewer

Attachment: None

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