

Visual Comfort and Company

TEST REPORT

SCOPE OF WORK

LM-79 testing report

REPORT NUMBER

230301038GZU-002

ISSUE DATE

03-April-2023

REVISION DATE

None

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13

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Report No.: 230301038GZU-002

TEST REPORT

TEST OF ONE LED LUMINAIRE

MODEL NO. KWBA20027X

(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 KWBA20027X. The sample was received, in undamaged condition. The sample designation was S230301038-002.
<u>DATES OF TESTS:</u>	13 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:	KWBA20027X
Description:	LED Luminaries
Brand Name:	--

Test Condition: 120V, 60Hz For KWBA20027X

Criteria	Result
Total Lumen Output	1309.9 lm
Total Power	13.9 W
Luminaire Efficacy	94.5 lm/W
S/MH(C0/180)	1.00
S/MH(C90/270)	1.15
Correlated Color Temperature (CCT)	2613 K
Color Rendering Index (CRI)	91
R9	67
Chromaticity Coordinate (x)	0.4673
Chromaticity Coordinate (y)	0.4124
Chromaticity Coordinate (u')	0.2665
Chromaticity Coordinate (v')	0.5292

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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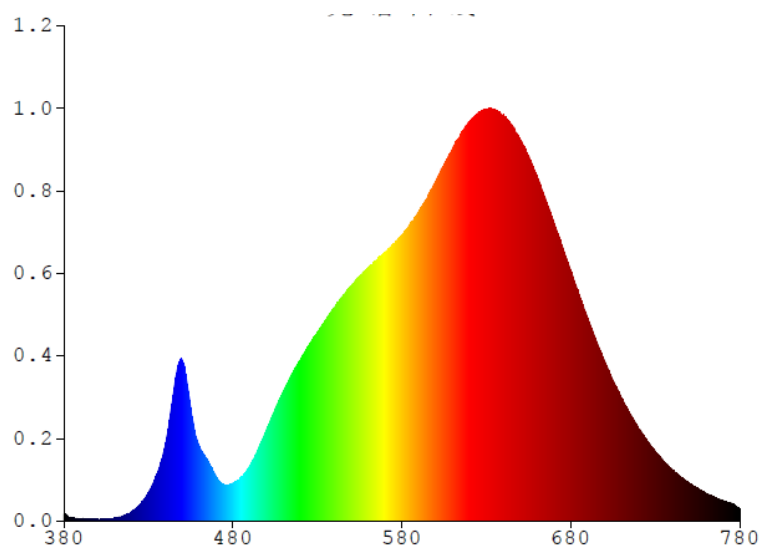
TEST REPORT

RESULTS OF TESTS

Test Condition: 120V, 60Hz For KWBA20027X

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
380	0.0869	480	0.4753	580	3.5810	680	3.1383	780	0.1474
385	0.0418	485	0.5472	585	3.7253	685	2.8276		
390	0.0278	490	0.6891	590	3.8758	690	2.5417		
395	0.0201	495	0.9008	595	4.0453	695	2.2552		
400	0.0188	500	1.1461	600	4.2508	700	2.0036		
405	0.0232	505	1.4001	605	4.4600	705	1.7599		
410	0.0366	510	1.6290	610	4.6626	710	1.5457		
415	0.0640	515	1.8466	615	4.8522	715	1.3426		
420	0.1196	520	2.0229	620	4.9969	720	1.1647		
425	0.2031	525	2.2051	625	5.1069	725	1.0122		
430	0.3553	530	2.3652	630	5.1541	730	0.8729		
435	0.5854	535	2.5220	635	5.1555	735	0.7490		
440	0.9568	540	2.6677	640	5.0911	740	0.6432		
445	1.6245	545	2.8145	645	4.9657	745	0.5536		
450	2.0104	550	2.9450	650	4.7912	750	0.4773		
455	1.3992	555	3.0678	655	4.5726	755	0.4086		
460	0.9393	560	3.1695	660	4.3152	760	0.3481		
465	0.7574	565	3.2690	665	4.0329	765	0.3001		
470	0.5520	570	3.3670	670	3.7363	770	0.2559		
475	0.4531	575	3.4732	675	3.3733	775	0.2209		



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TEST REPORT

RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For KWBA20027X

Total operation burning time: 60 minutes
Stabilization time: 45 minutes

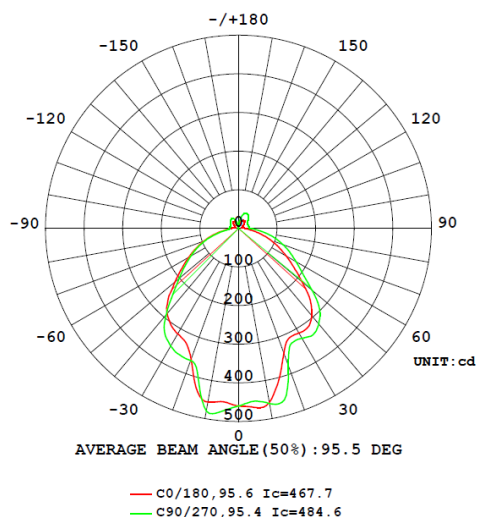
Photometric Measurements at 25°C – Integrating Sphere Method

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')
KWBA20027X								
S2303010 38-002	--	2613	91	67	0.4673	0.4124	0.2665	0.5292

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)
KWBA20027X							
S2303010 38-002	--	120.1	116.9	13.9	0.987	1309.9	94.5

Intensity (Candlepower) Summary at 25°C – Candelas



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TEST REPORT

RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For KWBA20027X

Intensity (Candlepower) Summary at 25°C - Candelas

V \ H(°)	0	22.5	45	67.5	90
0	459.6	459.6	459.6	459.6	459.6
5	464.8	453.4	446.1	445.7	449.0
10	457.9	450.9	448.7	450.2	460.0
15	405.4	417.1	427.0	447.7	459.3
20	344.5	354.1	361.1	373.3	378.9
25	312.5	319.0	328.2	324.3	327.1
30	312.7	311.9	322.7	323.3	328.7
35	312.9	304.9	316.3	322.3	336.6
40	294.9	287.7	303.6	314.4	323.5
45	262.7	261.7	278.7	293.5	297.6
50	215.2	227.9	241.0	249.3	248.6
55	174.6	193.4	204.1	207.0	202.7
60	142.6	163.0	173.7	176.3	172.2
65	114.4	136.7	147.2	150.2	146.7
70	87.6	112.0	122.0	125.7	122.4
75	62.5	87.5	96.8	101.2	98.1
80	39.7	62.1	69.9	75.0	72.3
85	23.1	41.2	46.4	50.4	47.3
90	17.5	32.0	34.2	33.0	29.5
95	11.5	31.5	33.0	30.6	27.6
100	7.9	30.6	32.4	30.6	27.6
105	8.8	29.3	30.6	29.5	27.0
110	9.9	29.0	29.6	28.4	26.3
115	11.4	29.8	29.4	28.2	26.2
120	13.3	31.2	30.5	28.5	26.0
125	16.3	33.4	33.7	31.3	28.3
130	19.4	37.0	38.2	35.6	32.1
135	22.0	41.0	42.9	40.5	36.7
140	24.9	44.0	46.7	44.7	40.5
145	24.6	44.5	48.8	47.5	43.2
150	24.2	42.7	48.6	48.6	44.5
155	22.1	38.2	44.8	47.3	43.7
160	18.4	29.9	39.9	42.7	40.0
165	13.9	21.2	27.6	34.1	33.1
170	5.5	10.3	15.9	19.8	22.2
175	1.4	2.0	4.1	7.6	9.6
180	0.4	0.3	0.8	0.3	0.0

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TEST REPORT

RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For KWBA20027X

Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens (lm)	% Luminaire (%)
KWBA20027X		
0-30	321.0	24.5
0-40	525.5	40.1
0-60	901.9	68.9
0-90	1153.6	88.1
60-90	251.7	19.2
0-180	1309.9	100.0

Beam Angle

Total Beam Angle (°)

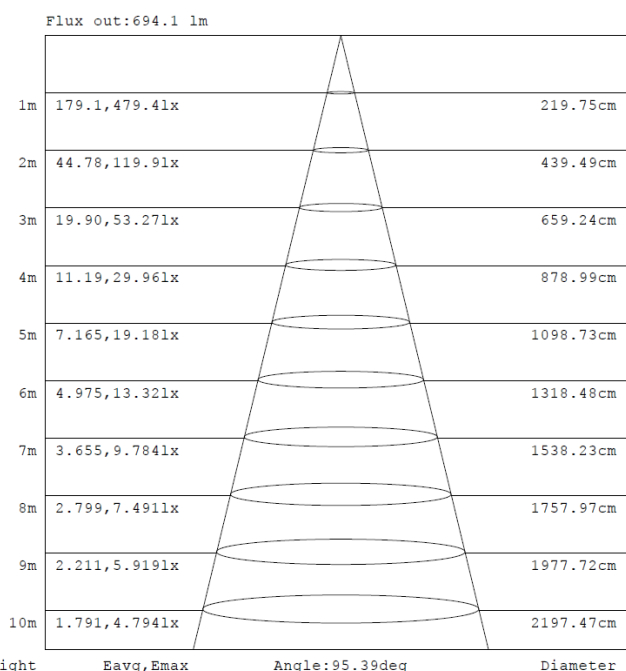
95.5

Illumination Plots

Model No.: KWBA20027X

Mount Height: 2.5 m

Illuminance - Cone of Light



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TEST REPORT

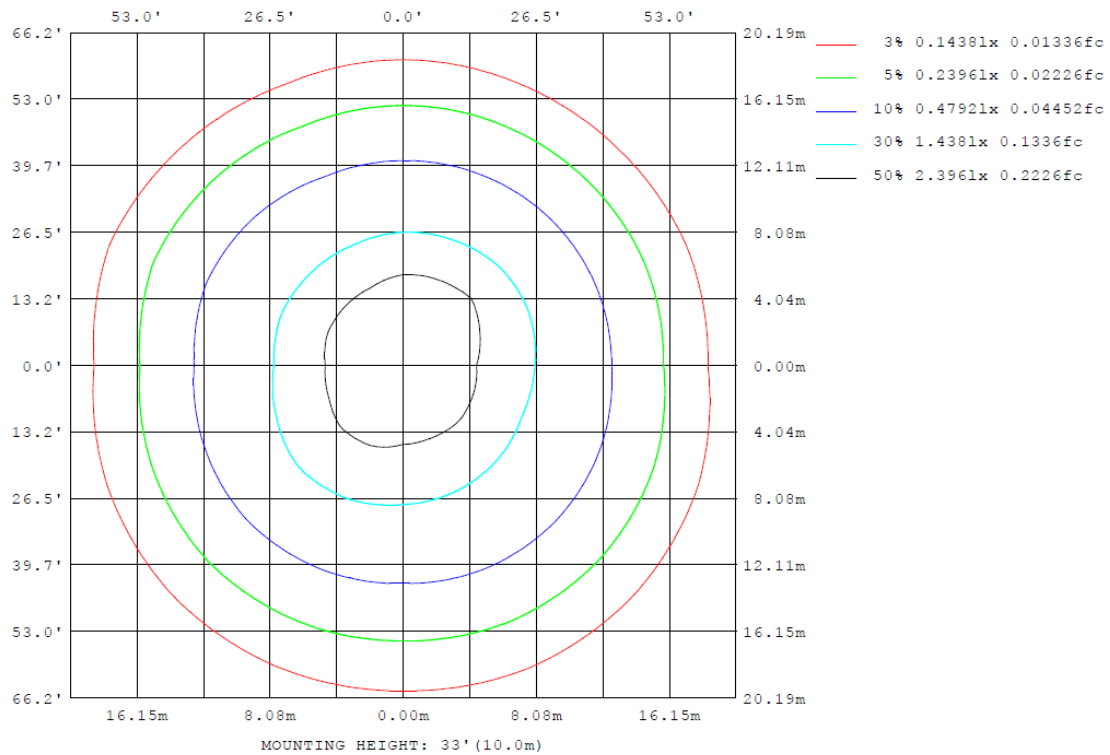
RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For KWBA20027X

Model No.: KWBA20027X

Mount Height: 2.5 m

Isoillumination Plot



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TEST REPORT

RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For KWBA20027X

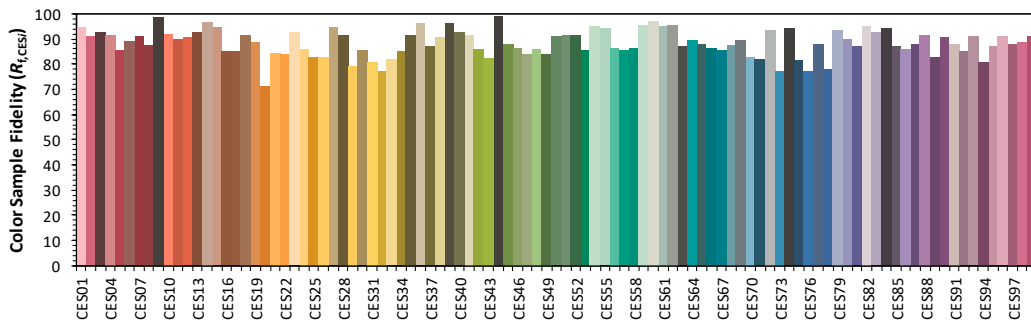
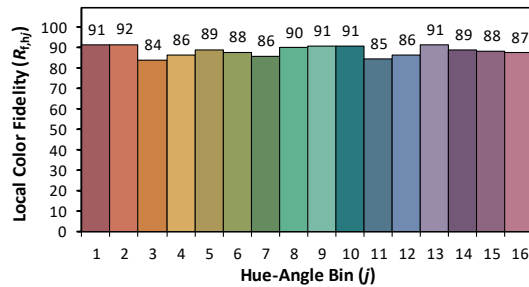
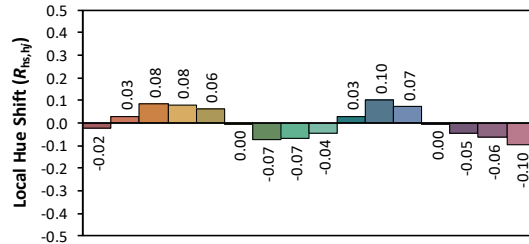
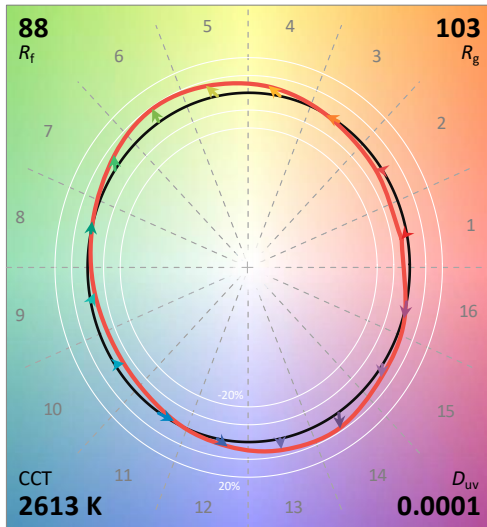
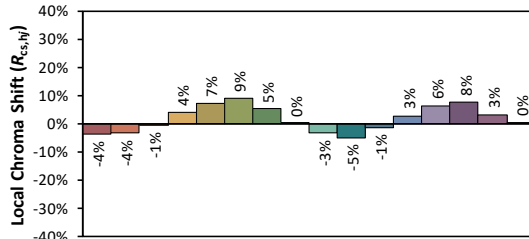
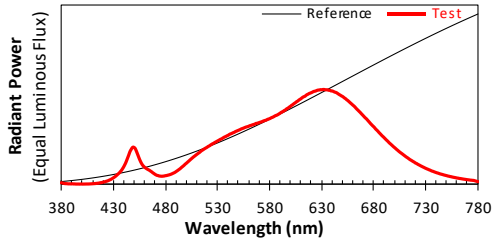
ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD

Manufacturer: Visual Comfort and Company

Date: 2023/3/13

Model: KWBA20027X



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

x 0.4673
 y 0.4124
 u' 0.2665
 v' 0.5292

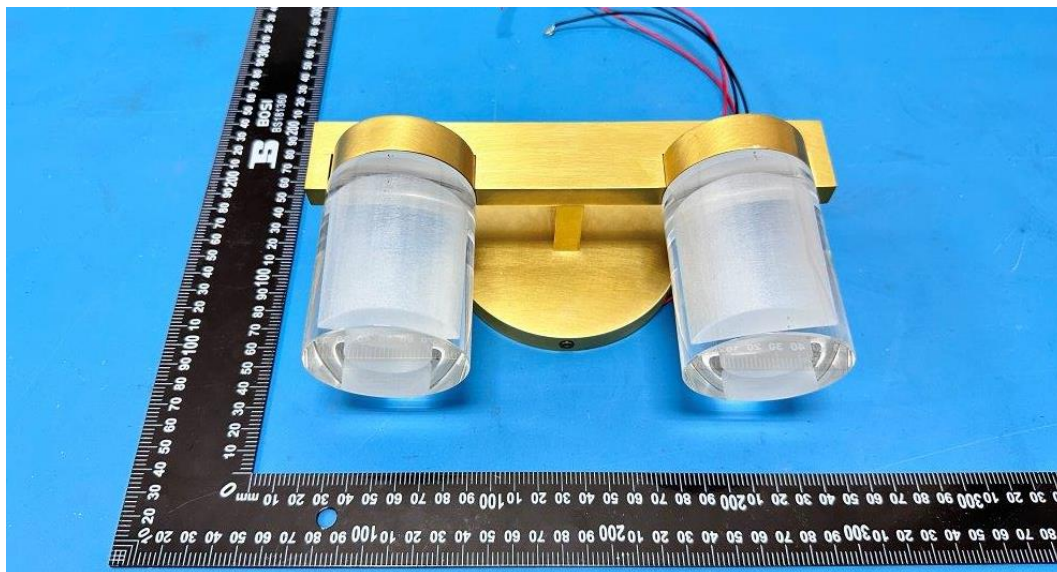
CIE 13.3-1995
(CRI)
 R_a 91
 R_g 67

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

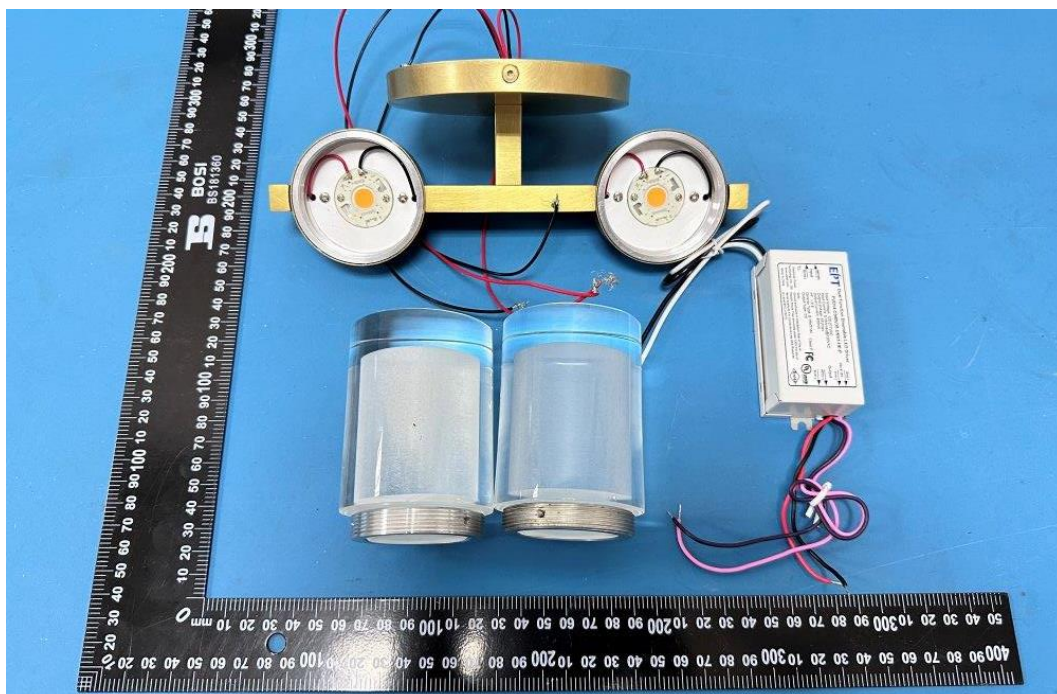
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TEST REPORT

PRODUCT PICTURE (not to scale)



External view of KWBA20027X

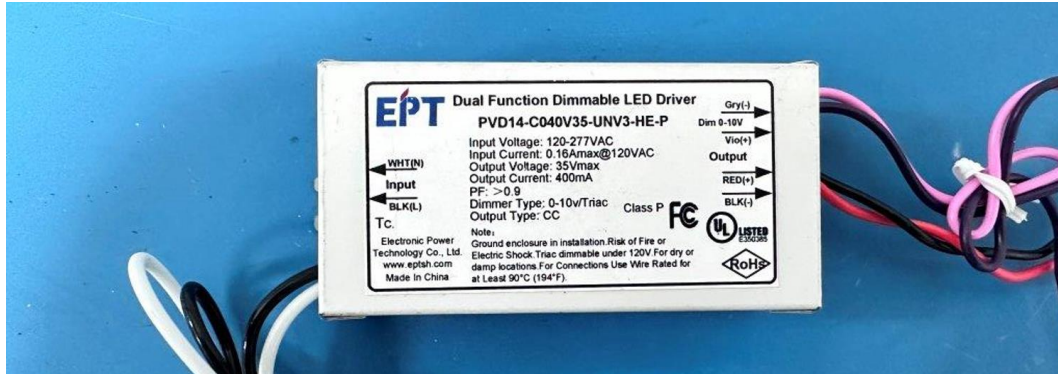


External view of KWBA20027X

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TEST REPORT

PRODUCT PICTURE (not to scale)



View of LED Driver PVD14-C040V35-UNV3-HE-P



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 *****