

Visual Comfort and Company

TEST REPORT

SCOPE OF WORK

LM-79 testing report

REPORT NUMBER

220401100GZU-012

ISSUE DATE

11 April 2022

REVISION DATE

None

NUMBER OF PAGES

12

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Report No.: 220401100GZU-012

TEST REPORT

TEST OF ONE LED LUMINAIRE

MODEL NO. 700BCKAL13x-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 700BCKAL13x-LED930. The sample was received, in undamaged condition. The sample designation was S220401100-012.

DATES OF TESTS: 11 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:	700BCKAL13x-LED930 (Remark: "XX" denote other appearance colors for the characters that change)
Description:	LED Luminaries
Brand Name:	--

Test Condition: 120V, 60Hz For 700BCKAL13x-LED930

Criteria	Result
Total Lumen Output	397.0 lm
Total Power	8.6 W
Luminaire Efficacy	45.95lm/W
S/MH(C0/180)	1.37
S/MH(C90/270)	1.21
Correlated Color Temperature (CCT)	2842 K
Color Rendering Index (CRI)	93
R9	63
Chromaticity Coordinate (x)	0.4473
Chromaticity Coordinate (y)	0.4053
Chromaticity Coordinate (u')	0.2567
Chromaticity Coordinate (v')	0.5234

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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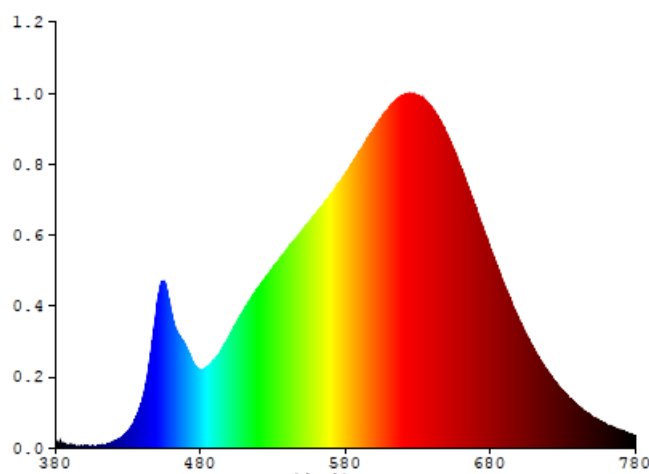
TEST REPORT

RESULTS OF TESTS

Test Condition: 120V, 60Hz For 700BCKAL13x-LED930

Spectral Distribution over Visible Wavelengths

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
380	0.0468	480	0.5258	580	1.8515	680	1.3455	780	0.0769
385	0.0298	485	0.5498	585	1.9293	685	1.2190		
390	0.0197	490	0.5966	590	2.0058	690	1.0925		
395	0.0098	495	0.6704	595	2.0934	695	0.9712		
400	0.0151	500	0.7579	600	2.1640	700	0.8594		
405	0.0124	505	0.8498	605	2.2322	705	0.7604		
410	0.0152	510	0.9342	610	2.2984	710	0.6688		
415	0.0248	515	1.0148	615	2.3504	715	0.5853		
420	0.0422	520	1.0883	620	2.3847	720	0.5095		
425	0.0656	525	1.1559	625	2.3924	725	0.4436		
430	0.1111	530	1.2200	630	2.3810	730	0.3826		
435	0.1914	535	1.2820	635	2.3489	735	0.3309		
440	0.3300	540	1.3413	640	2.2955	740	0.2869		
445	0.5861	545	1.4068	645	2.2215	745	0.2474		
450	0.9633	550	1.4681	650	2.1236	750	0.2133		
455	1.1198	555	1.5285	655	2.0112	755	0.1852		
460	0.9080	560	1.5899	660	1.8832	760	0.1595		
465	0.7611	565	1.6486	665	1.7589	765	0.1354		
470	0.6814	570	1.7132	670	1.6235	770	0.1183		
475	0.5724	575	1.7841	675	1.4534	775	0.1004		



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TEST REPORT

RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For 700BCKAL13x-LED930

Total operation burning time: 60 minutes

Stabilization time: 45 minutes

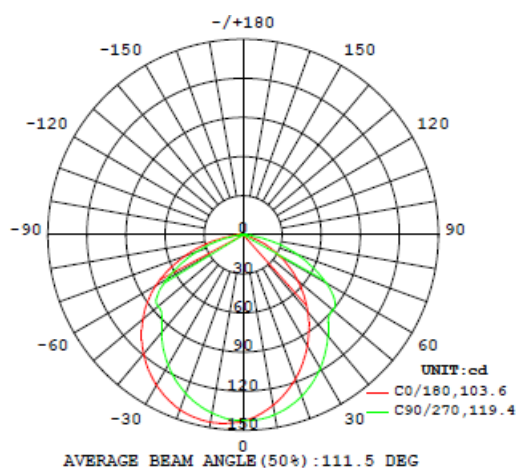
Photometric Measurements at 25°C – Integrating Sphere Method

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')
700BCKAL13x-LED930								
S2204011 00-012	--	2842	93	63	0.4473	0.4053	0.2567	0.5234

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)
700BCKAL13x-LED930							
S2204011 00-012	--	120.0	73.5	8.6	0.979	397.0	45.95

Intensity (Candlepower) Summary at 25°C – Candelas



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TEST REPORT

RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For 700BCKAL13x-LED930

Intensity (Candlepower) Summary at 25°C - Candelas

V \ H(°)	0	22.5	45	67.5	90
0	142.8	142.7	142.6	142.7	142.5
5	138.5	138.9	139.7	140.8	142.1
10	132.6	133.3	135.0	137.4	140.1
15	125.6	126.7	129.0	132.6	136.5
20	117.5	118.8	121.9	126.4	131.5
25	108.4	110.0	113.7	119.2	125.4
30	98.5	100.3	104.7	111.0	118.3
35	88.1	90.1	95.0	102.0	110.1
40	77.2	79.4	84.7	92.6	101.1
45	66.1	68.4	74.1	83.1	92.3
50	54.7	57.1	64.1	78.7	89.9
55	43.3	45.8	56.3	80.6	85.4
60	32.1	34.7	59.2	72.3	73.4
65	21.0	25.0	56.8	58.2	59.0
70	10.6	20.9	43.6	43.7	44.3
75	1.9	27.5	29.2	29.0	29.4
80	0.0	15.6	15.5	14.8	15.0
85	0.1	4.8	4.5	4.5	4.7
90	0.1	0.1	0.1	0.1	0.1
95	0.2	0.5	0.3	0.2	0.1
100	0.4	0.7	0.4	0.3	0.2
105	0.5	0.9	0.6	0.4	0.3
110	0.6	0.9	0.7	0.5	0.4
115	0.6	1.0	0.8	0.6	0.5
120	0.7	1.0	0.8	0.6	0.5
125	0.7	0.9	0.9	0.7	0.6
130	0.7	0.9	0.9	0.8	0.7
135	0.7	0.9	0.8	0.8	0.7
140	0.7	0.8	0.8	0.9	0.8
145	0.7	0.8	0.8	0.9	0.8
150	0.7	0.7	0.8	0.9	0.8
155	0.7	0.7	0.7	0.8	0.8
160	0.6	0.6	0.7	0.7	0.7
165	0.5	0.6	0.6	0.6	0.6
170	0.5	0.5	0.5	0.5	0.5
175	0.4	0.4	0.4	0.4	0.4
180	0.3	0.3	0.2	0.1	0.2

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TEST REPORT

RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For 700BCKAL13x-LED930

Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens (lm)	% Luminaire (%)
700BCKAL13x-LED930		
0-30	108.5	27.3
0-40	175.8	44.3
0-60	309.5	78.0
0-90	393.9	99.2
60-90	84.4	21.2
0-180	397.0	100

Beam Angle

Total Beam Angle (°)

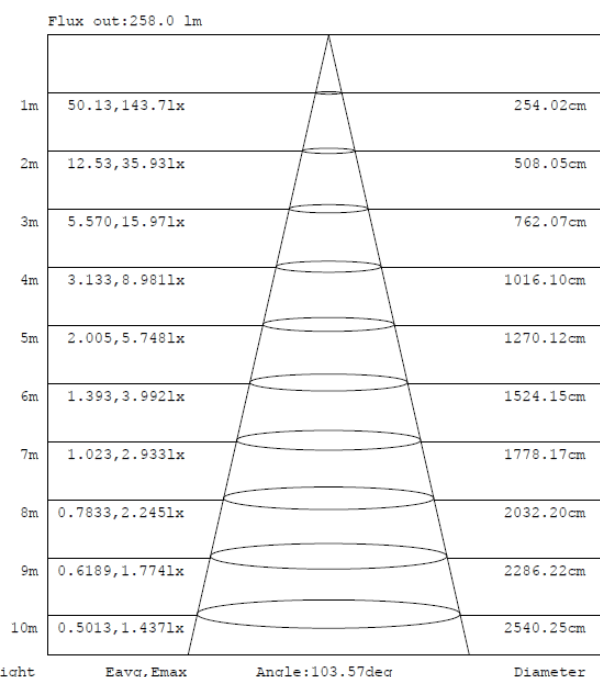
111.5

Illumination Plots

Model No.: 700BCKAL13x-LED930

Mount Height: 2.5 m

Illuminance - Cone of Light



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TEST REPORT

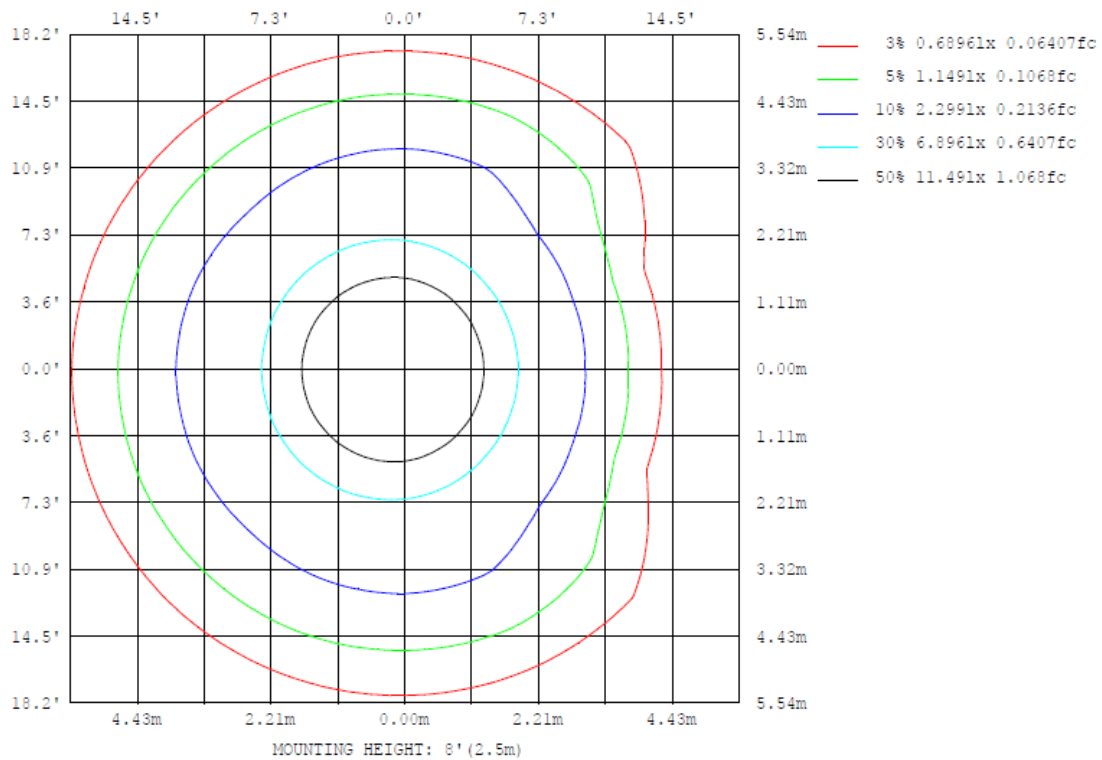
RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For 700BCKAL13x-LED930

Model No.: 700BCKAL13x-LED930

Mount Height: 2.5 m

Isoillumination Plot



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TEST REPORT

RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For 700BCKAL13x-LED930

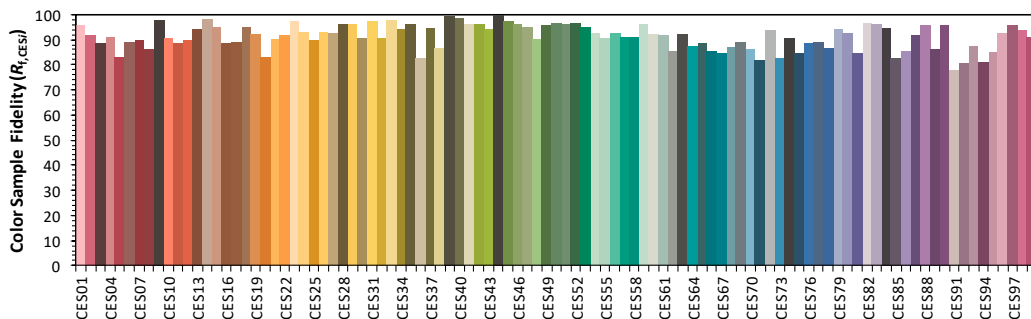
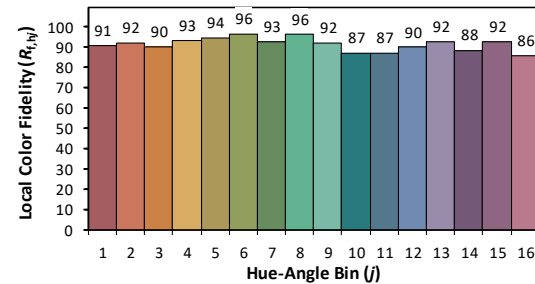
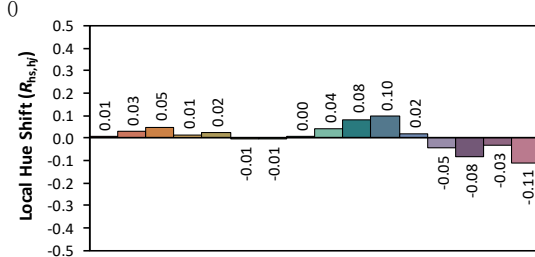
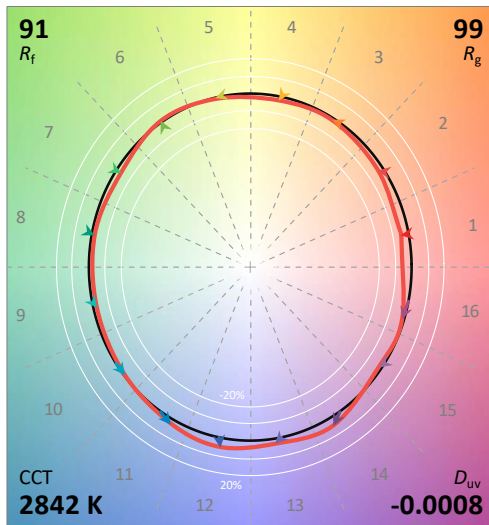
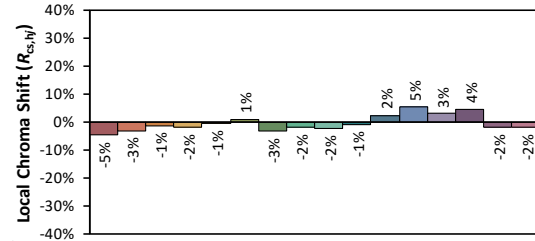
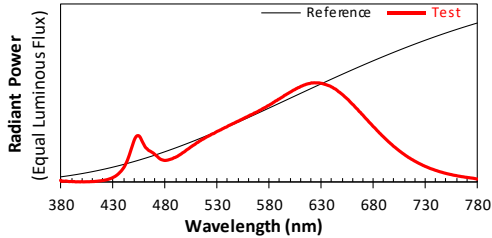
ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD

Manufacturer: Visual Comfort and Company

Date: 2022/4/11

Model: 700BCKAL13x-LED930



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

x 0.4473
 y 0.4053
 u' 0.2567
 v' 0.5234

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.

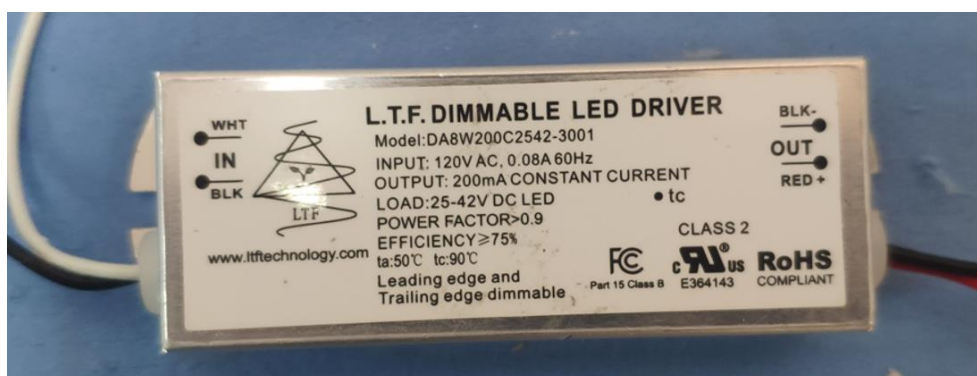
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TEST REPORT

PRODUCT PICTURE (not to scale)



External view of 700BCKAL13x-LED930



View of LED Driver DA8W200C2542-3001



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 *****