VISUAL COMFORT AND COMPANY

TEST REPORT

SCOPE OF WORK
LED Performance Testing

MODEL NUMBER
700BCKMD1S-LED930

PROJECT NUMBER
G104941221

REPORT NUMBER
104941221CRT-011

ISSUE DATE
7/28/2022

REVISED DATE
None

TEST DATES
7/12/2022 through 7/22/2022

DOCUMENT CONTROL NUMBER
RTTDS-R-AMER-Test-3407

PAGES
11

REPORT NUMBER
104941221CRT-011

MODEL NUMBER(s)
700BCKMD1S-LED930

REPORT RENDERED TO:

VISUAL COMFORT AND COMPANY
7400 LINDER AVE
SKOKIE, IL 60077

STATEMENT OF LIMITATION

NVLAP Lab Code 100402-0. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

AUTHORIZATION

The testing performed was authorized by signed quote number Qu-01236637-1.

TEST STANDARDS

ANSI/IES LM-79-19: Optical and Electrical Measurements of Solid State Lighting Products
ANSI NEMA ANSLG C78.377: 2017: Specifications for the Chromaticity of Solid State Lighting (SSL) Products

In Charge of Testing:	Reviewer:
Melanie Brittain	Jacki Swiernik
Senior Associate Engineer	Staff Engineer
Lighting Division	Lighting Division

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Cortland, NY 13045
Telephone: (607) 753-6711
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SAMPLE INFORMATION

REPORT NO. 104941221CRT-011

ITEMS RECEIVED

Item No.	Control No.	Model No.	Description	Type	Received
1	CRT2206301053-011	700BCKMD1S-LED930	Kamden 1-Light Wall/Bath	Production	6/30/2022

SAMPLE PHOTOS - TESTED CONFIGURATIONS

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SUMMARY **REPORT NO. 104941221CRT-011**

PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	700BCKMD1S-LED930
Product Description:	Kamden 1-Light Wall/Bath
LED Model No.:	Everlight62-217D/HK2C-3H3030PBR22835Z15/2T/EU
Driver Model No.:	EPT PVD11-C030V33-UNV3-HE-P (AA8514)
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	768.7	759.0
Input Power (W) @ 120 (Vac)	11.83	11.81
Luminous Efficacy (lm/W)	65.00	64.27
Input Power Factor () @ 120 (Vac)	0.990	0.988

Criteria	Results
Input ATHD (%) @ 120 (Vac)	10.13
Correlated Color Temperature (K)	2782
Color Rendering Index - Ra ()	93.5
Color Rendering Index - R9 ()	62.1
Duv ()	-0.0015
Chromaticity Coordinate (x)	0.451
Chromaticity Coordinate (y)	0.404
Chromaticity Coordinate (u')	0.259
Chromaticity Coordinate (v')	0.524

TEST METHODS

SEASONING IN SAMPLE ORIENTATION - LED PRODUCTS

No seasoning was performed in accordance with ANSI/IES LM-79-19

INTEGRATING SPHERE TESTING

A spectroradiometer and integrating sphere were used to measure the spectral power distribution for photometric and colorimetric data of the EUT. Electrical measurements of the unit were measured using a power analyzer. Each EUT was operated at the rated input voltage of the system in its designated orientation. The ambient temperature and relative humidity was measured at 25°C ± 1.2°C and 10-65% respectively at a position inside of the sphere within 1.5m and at equal height of the EUT. Stabilization procedures to LM-79-19 were followed. The EUT was mounted in a 4π configuration.

TYPE C GONIOPHOTOMETER DISTRIBUTION TESTING

A Type C Mirror Goniophotometer system was used to measure the luminous intensity (candela) at each angle of distribution for the EUT. Electrical measurements of the unit were measured using a power analyzer. Each EUT was operated at the rated input voltage of the system in its designated orientation. The ambient temperature and relative humidity was measured at 25°C ± 1.2°C and 10-65% respectively at a position within 1.5m and at equal height of the EUT. Stabilization procedures to LM-79-19 were followed. The test distance was ≥ 5x the longest luminous dimension of the EUT.

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TYPE C GONIOPHOTOMETER DISTRIBUTION TESTING

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PHOTOMETRIC AND ELECTRICAL MEASUREMENTS

Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()
Wall Mount	120.13	99.5	11.83	0.990

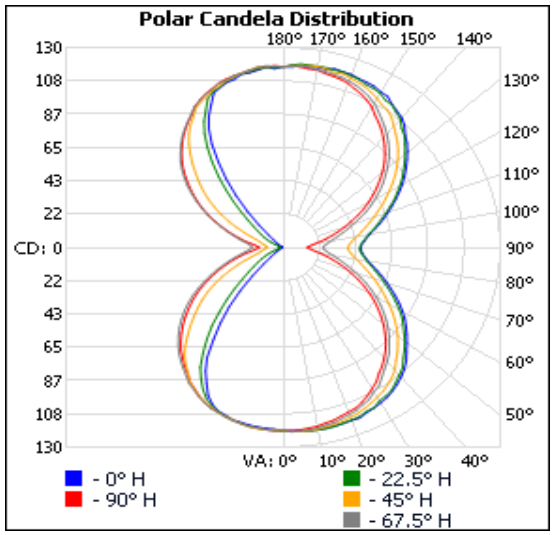
Light Output (lm)	Efficacy (lm/W)
768.7	65.0

LUMINOUS INTENSITY SUMMARY (candela)

Angle (°)	0	22.5	45	67.5	90
0	119	119	119	119	119
5	120	120	120	120	119
10	120	120	120	119	118
15	120	120	119	118	116
20	120	120	117	116	114
25	118	118	115	113	111
30	117	115	112	108	106
35	114	113	109	103	100
40	110	108	104	97	94
45	104	102	97	90	87
50	97	95	90	82	78
55	90	88	82	73	69
60	82	80	73	64	60
65	74	72	65	55	50
70	66	64	57	45	40
75	58	57	50	37	31
80	52	51	45	30	23
85	48	47	41	26	17
90	46	46	39	24	14
95	49	48	41	26	17
100	53	52	46	30	23
105	60	59	51	37	30
110	67	65	58	45	39
115	74	73	65	55	49
120	82	81	73	64	59
125	90	88	82	73	69
130	97	95	90	82	78
135	103	103	97	90	86
140	110	109	103	96	93
145	114	113	109	102	99
150	117	116	112	109	106
155	118	117	116	112	110
160	120	119	117	115	114
165	120	120	118	116	115
170	119	120	120	117	117
175	118	120	119	119	118
180	118	118	118	118	118

Entire luminous intensity matrix found in .IES file

Polar Candela Plot



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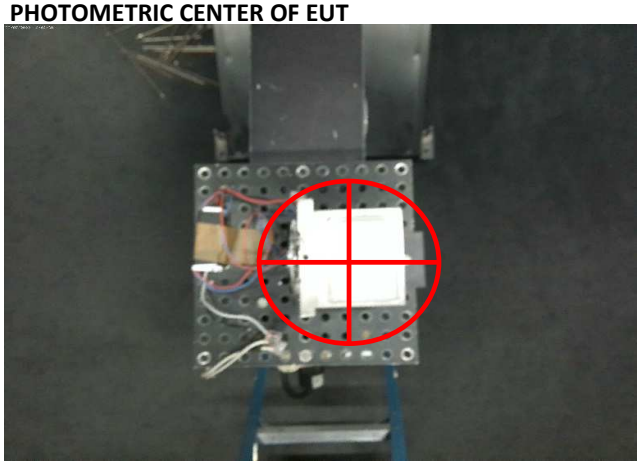
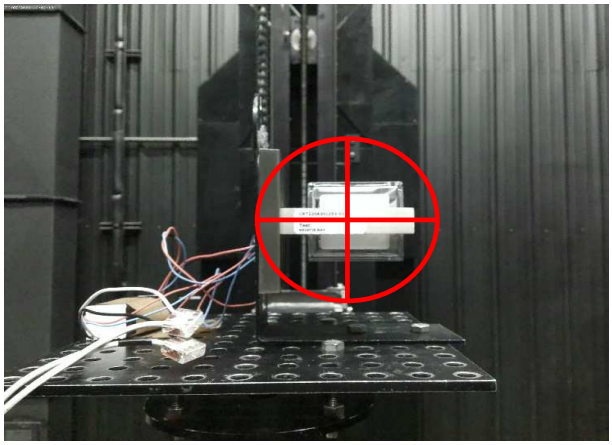
ORIENTATION AND ALIGNMENT OF EUT

Luminous Opening		
Length (ft)	Width (ft)	Height (ft)
0.18	0.33	0.19
0°-180° H	90°-270° H	0°-180° V

Test Distance (ft)
29.6

PHOTOMETRIC CENTER OF EUT





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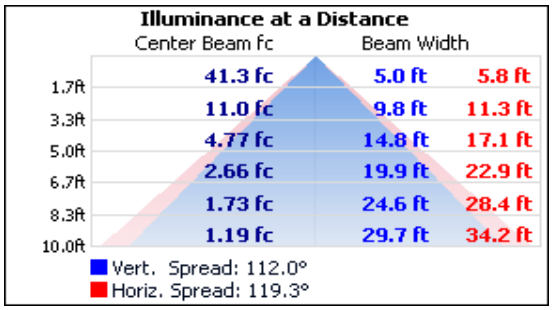
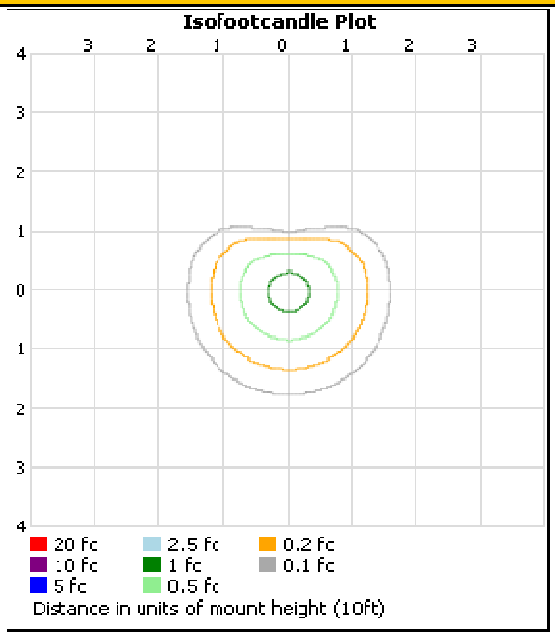
ILLUMINANCE SUMMARY

Mounting Height: 10ft

Illuminance - Cone Of Light



Isoillumination Plot



ZONAL LUMENS

Zonal Lumen Summary

Zone	Lumens	Luminaire
0-30	96.5	12.6%
0-40	159.3	20.7%
0-60	280.1	36.4%
60-90	107.1	13.9%
70-100	86.7	11.3%
90-120	106.1	13.8%
0-90	387.2	50.4%
90-180	381.5	49.6%
0-180	768.7	100.0%

Zone	Lumens	Total	Zone	Lumens	Total
0-10	11.4	1.5%	90-100	26.3	3.4%
10-20	33.2	4.3%	100-110	34.1	4.4%
20-30	51.8	6.7%	110-120	45.8	6.0%
30-40	62.8	8.2%	120-130	56.1	7.3%
40-50	63.5	8.3%	130-140	62.1	8.1%
50-60	57.3	7.5%	140-150	61.7	8.0%
60-70	46.6	6.1%	150-160	51.3	6.7%
70-80	34.2	4.5%	160-170	32.9	4.3%
80-90	26.2	3.4%	170-180	11.3	1.5%

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INTEGRATING SPHERE TESTING **REPORT NO. 104941221CRT-011**

PHOTOMETRIC, RADIOMETRIC, COLORIMETRIC, AND ELECTRICAL MEASUREMENTS

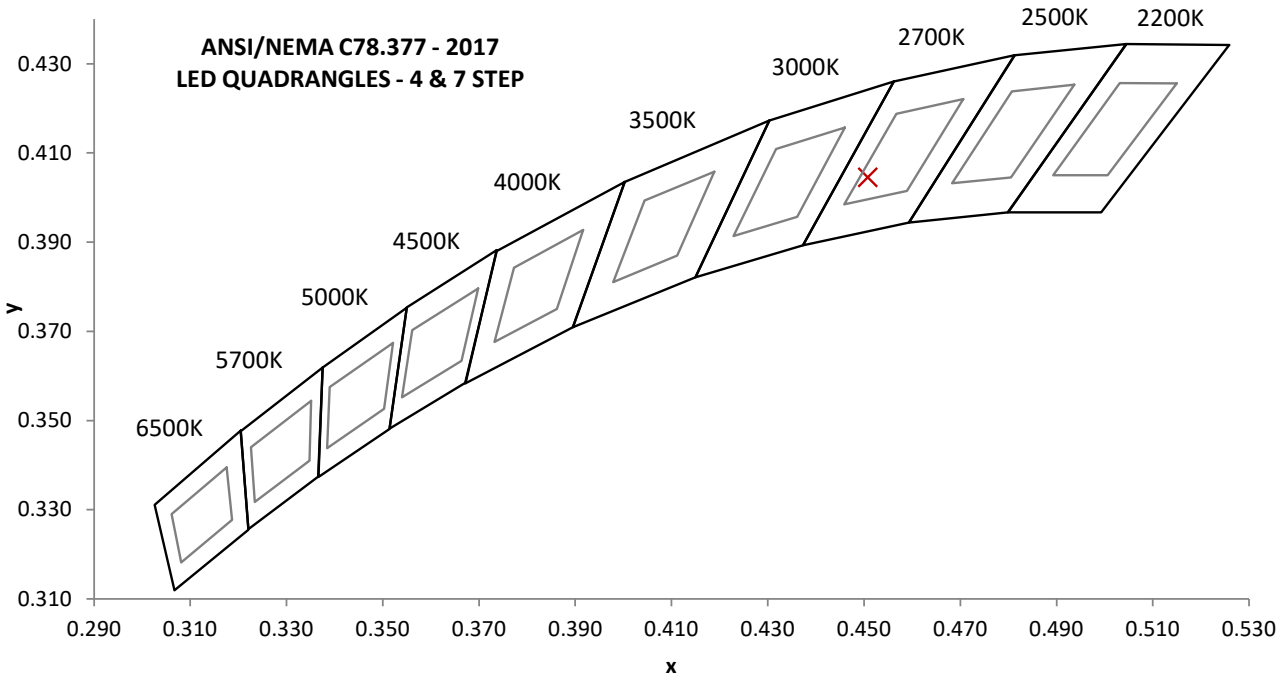
Base Orientation
Wall Mount

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()	Input ATHD (%)
120.02	99.6	11.81	0.988	10.13

Measured at 120.02(Vac)

Light Output (lm)	Efficacy (lm/W)	CCT (K)	CRI - Ra ()	CRI - R9 ()
759.0	64.3	2782	93.5	62.1

Duv ()	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
-0.0015	0.451	0.404	0.259	0.524



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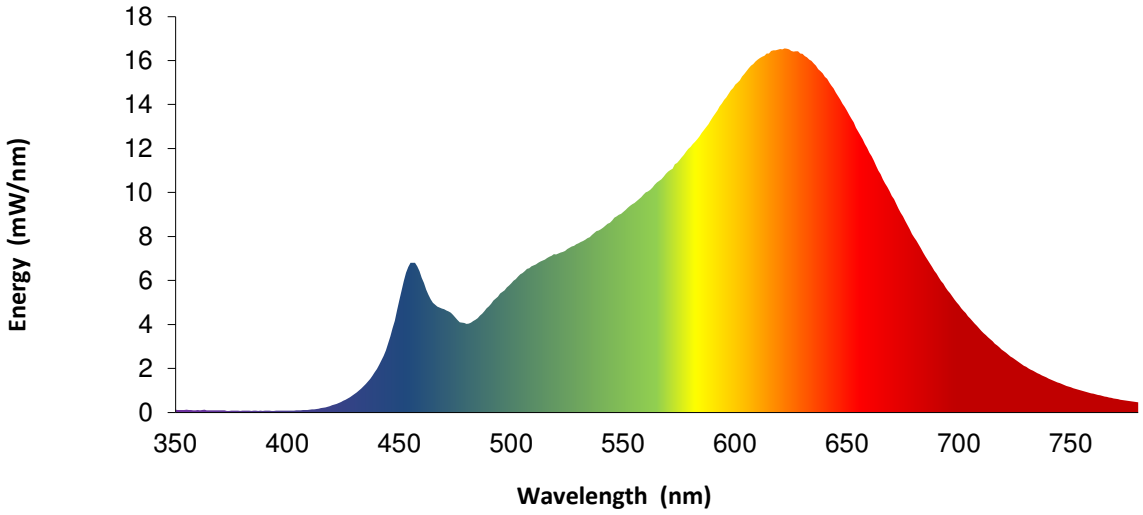
SPECTRAL POWER DISTRIBUTION

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.1		460	6.1		570	10.9		680	8.0
355	0.1		465	5.0		575	11.5		685	7.1
360	0.1		470	4.7		580	12.1		690	6.3
365	0.1		475	4.3		585	12.7		695	5.5
370	0.1		480	4.0		590	13.4		700	4.9
375	0.1		485	4.3		595	14.2		705	4.3
380	0.1		490	4.8		600	14.9		710	3.7
385	0.1		495	5.4		605	15.5		715	3.2
390	0.1		500	5.9		610	16.0		720	2.8
395	0.1		505	6.3		615	16.3		725	2.4
400	0.1		510	6.7		620	16.5		730	2.1
405	0.1		515	7.0		625	16.4		735	1.8
410	0.1		520	7.2		630	16.3		740	1.5
415	0.2		525	7.4		635	15.9		745	1.3
420	0.3		530	7.7		640	15.3		750	1.1
425	0.5		535	8.0		645	14.5		755	1.0
430	0.8		540	8.3		650	13.7		760	0.8
435	1.3		545	8.7		655	12.8		765	0.7
440	2.0		550	9.1		660	11.8		770	0.6
445	3.1		555	9.5		665	10.8		775	0.5
450	5.1		560	10.0		670	9.8		780	0.5
455	6.8		565	10.5		675	8.9		---	---



Portrayed color in graphic is estimated by wavelength (nm) and may not be exact - it is a visual representation only

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EQUIPMENT LIST

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#	Equipment	Model No	Control No.	Last Cal	Cal Due
1	Elgar AC Power Supply	CW1251	---	VBU	VBU
2	Sorenson DC Power Supply	XFR 150-8	---	VBU	VBU
3	Traceable Hygrothermometer	200110913	L206	2/21/2022	2/21/2023
4	Yokogawa Power Analyzer	WT1600	E462	5/21/2022	5/21/2023
5	Fluke Thermometer	53 II	D588	6/13/2022	6/13/2023
6	Current Monitor	411	A197	8/26/2021	8/26/2024
7	3M Integrating Sphere Spectrometer System	CDS 2600	L231	7/1/2022	10/1/2022
8	LSI High Speed Mirror Goniophotometer	6440	---	6/30/2022	9/30/2022
9	Elgar AC Power Supply	CW1251	---	VBU	VBU
10	Yokogawa Power Analyzer	WT210	307-E464	6/21/2022	6/21/2023
11	Traceable Hygrothermometer	4800	L204	2/21/2022	2/21/2023
12	Sorenson DC Power Supply	XG 150-10	---	VBU	VBU
13	Omega Thermometer	DPi8-C24	M263	3/1/2022	3/1/2023
14	Bosch Distance Laser	Pro GLM 20	L210	3/21/2022	3/15/2023
15	Tape Measure	Crescent	---	9/21/2021	9/21/2024
The AC power supplies used for testing have a crest factor capable of 0-3.5					

REVISION HISTORY

#	Revision Date	Updated By	Reviewed By	Description of Change
---	None	---	---	---
---	---	---	---	---
---	---	---	---	---

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ANNEX A - TM-30 CALCULATIONS

REPORT NO. 104941221CRT-011

TM-30 REPORT