VISUAL COMFORT AND COMPANY

TEST REPORT

SCOPE OF WORK
LED Performance Testing

MODEL NUMBER
700BCDBS1B-LED930

PROJECT NUMBER
G104941221

REPORT NUMBER
104941221CRT-010

ISSUE DATE
7/28/2022

REVISED DATE
None

TEST DATES
7/12/2022 through 7/28/2022

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

PAGES
11

REPORT NUMBER
104941221CRT-010

MODEL NUMBER(s)
700BCDBS1B-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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SAMPLE INFORMATION

REPORT NO. 104941221CRT-010

ITEMS RECEIVED

Item No.	Control No.	Model No.	Description	Type	Received
1	CRT2206301053-010	700BCDBS1B-LED930	Dobson II 1-Light Wall/Bath	Production	6/30/2022

SAMPLE PHOTOS - TESTED CONFIGURATIONS

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SUMMARY **REPORT NO. 104941221CRT-010**

PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	700BCDBS1B-LED930
Product Description:	Dobson II 1-Light Wall/Bath
LED Model No.:	BRIDGELUX Bridgelux DS412 V10 Gen 8
Driver Model No.:	EPT PVD11-C030V33-UNV3-HE-P (AA8514)
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	832.1	812.3
Input Power (W) @ 120 (Vac)	12.47	12.46
Luminous Efficacy (lm/W)	66.73	65.19
Input Power Factor () @ 120 (Vac)	0.990	0.988

Criteria	Results
Input ATHD (%) @ 120 (Vac)	10.04
Correlated Color Temperature (K)	3063
Color Rendering Index - Ra ()	92.8
Color Rendering Index - R9 ()	59.0
Duv ()	0.0023
Chromaticity Coordinate (x)	0.436
Chromaticity Coordinate (y)	0.410
Chromaticity Coordinate (u')	0.248
Chromaticity Coordinate (v')	0.523

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	119.99	104.9	12.47	0.990

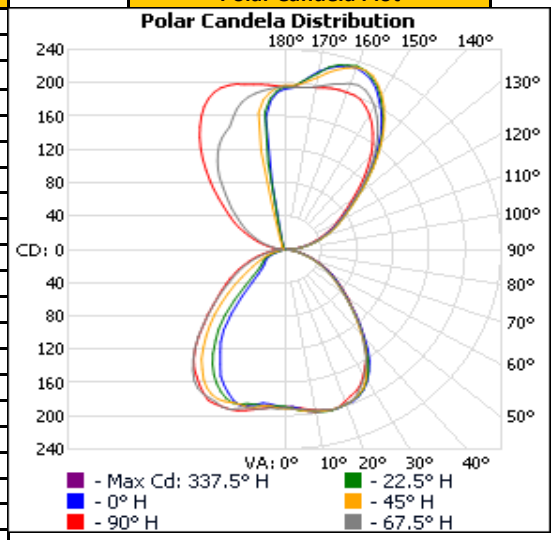
Light Output (lm)	Efficacy (lm/W)
832.1	66.7

LUMINOUS INTENSITY SUMMARY (candela)

Angle (°)	0	22.5	45	67.5	90
0	190	188	191	190	190
5	192	194	194	192	191
10	198	197	198	196	196
15	200	200	200	200	200
20	198	198	198	197	194
25	194	194	193	191	188
30	183	182	180	176	174
35	164	161	158	157	158
40	137	134	132	134	136
45	112	109	110	110	112
50	90	89	88	88	91
55	74	72	70	71	75
60	60	57	57	57	60
65	45	43	43	43	47
70	33	31	31	31	34
75	22	20	20	20	23
80	11	10	10	10	12
85	4	3	3	4	5
90	6	7	7	7	4
95	13	15	14	14	12
100	23	25	24	24	21
105	34	36	35	34	31
110	45	48	48	46	42
115	58	61	62	59	55
120	71	73	74	72	68
125	87	90	91	87	83
130	109	112	112	108	101
135	133	137	138	132	125
140	161	165	166	157	149
145	187	190	192	180	170
150	209	212	215	199	187
155	225	227	231	211	198
160	232	234	232	212	201
165	228	230	224	206	200
170	217	215	210	198	197
175	201	202	199	195	196
180	193	195	197	196	196

Entire luminous intensity matrix found in .IES file

Polar Candela Plot



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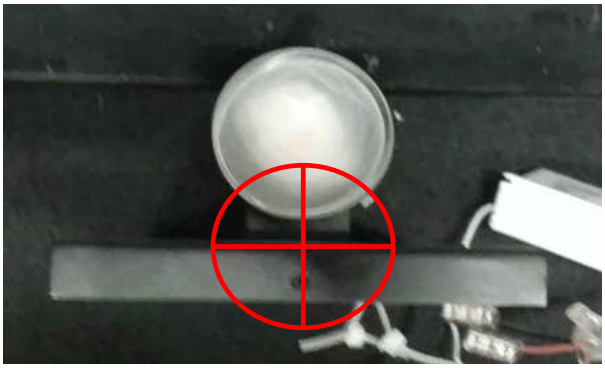
ORIENTATION AND ALIGNMENT OF EUT

Luminous Opening		
Length (ft)	Width (ft)	Height (ft)
0.13	0.13	0.52
0°-180° H	90°-270° H	0°-180° V

Test Distance (ft)
29.6

PHOTOMETRIC CENTER OF EUT



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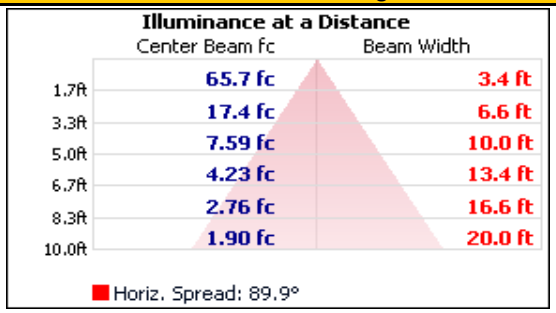
REPORT NO. 104941221CRT-010

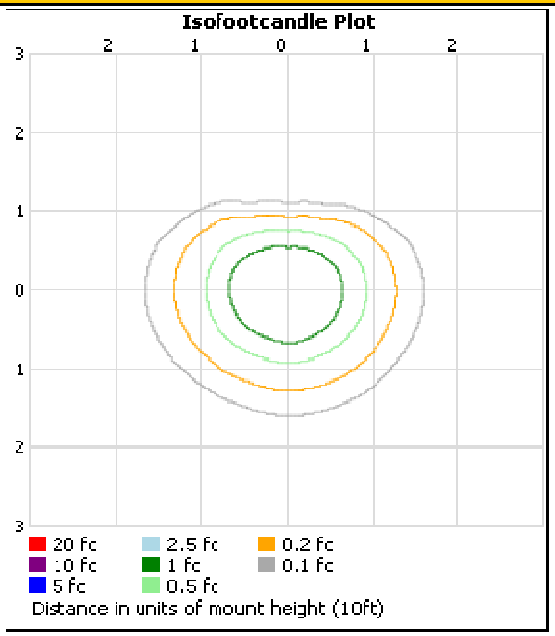
ILLUMINANCE SUMMARY

Mounting Height: 10ft

Illuminance - Cone Of Light



Isoillumination Plot



ZONAL LUMENS

Zonal Lumen Summary

Zone	Lumens	Luminaire
0-30	160.5	19.3%
0-40	256.6	30.8%
0-60	392.3	47.2%
60-90	61.4	7.4%
70-100	31.2	3.8%
90-120	66.9	8.0%
0-90	453.7	54.5%
90-180	378.4	45.5%
0-180	832.1	100.0%

Zone	Lumens	Total	Zone	Lumens	Total
0-10	18.4	2.2%	90-100	8.6	1.0%
10-20	55.6	6.7%	100-110	21.9	2.6%
20-30	86.5	10.4%	110-120	36.3	4.4%
30-40	96.1	11.5%	120-130	49.8	6.0%
40-50	78.8	9.5%	130-140	64.6	7.8%
50-60	57.0	6.8%	140-150	72.2	8.7%
60-70	38.8	4.7%	150-160	63.5	7.6%
70-80	17.8	2.1%	160-170	43.5	5.2%
80-90	4.8	0.6%	170-180	17.9	2.2%

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INTEGRATING SPHERE TESTING **REPORT NO. 104941221CRT-010**

PHOTOMETRIC, RADIOMETRIC, COLORIMETRIC, AND ELECTRICAL MEASUREMENTS

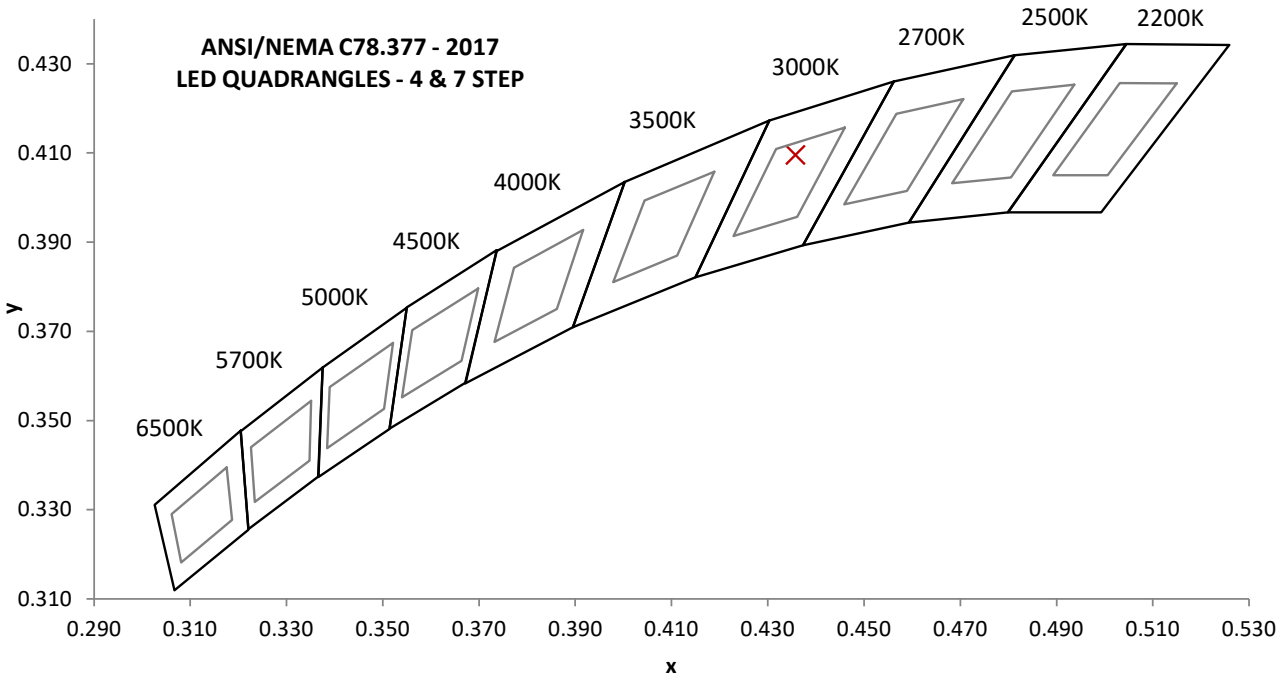
Base Orientation
Wall Mount

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()	Input ATHD (%)
120.02	105.0	12.46	0.988	10.04

Measured at 120.02(Vac)

Light Output (lm)	Efficacy (lm/W)	CCT (K)	CRI - Ra ()	CRI - R9 ()
812.3	65.2	3063	92.8	59.0

Duv ()	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
0.0023	0.436	0.410	0.248	0.523



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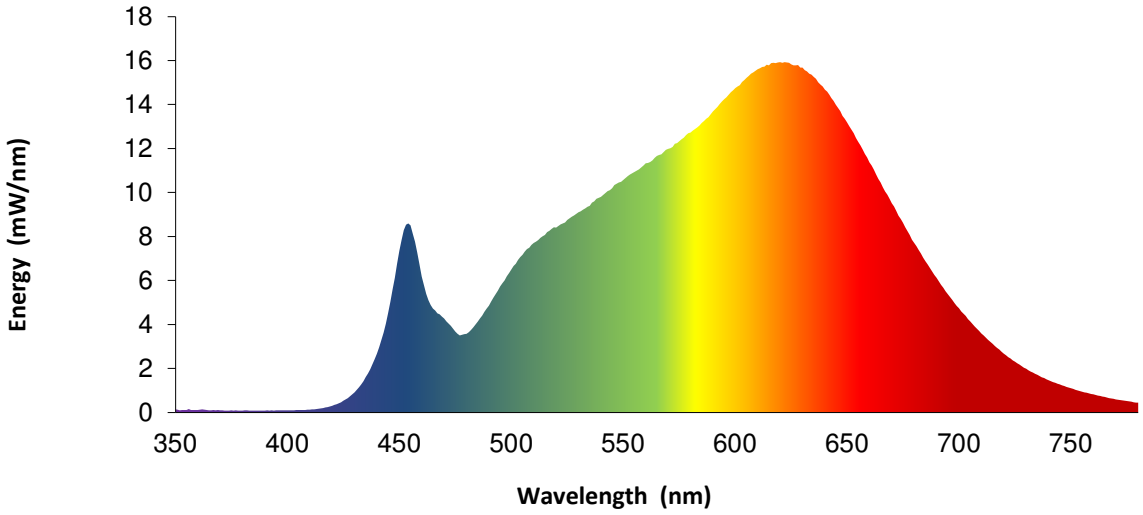
SPECTRAL POWER DISTRIBUTION

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.1		460	6.2		570	12.0		680	7.7
355	0.1		465	4.7		575	12.3		685	6.9
360	0.1		470	4.3		580	12.7		690	6.1
365	0.1		475	3.7		585	13.2		695	5.4
370	0.1		480	3.6		590	13.7		700	4.7
375	0.1		485	4.1		595	14.2		705	4.1
380	0.1		490	4.9		600	14.8		710	3.6
385	0.1		495	5.7		605	15.2		715	3.1
390	0.1		500	6.5		610	15.6		720	2.7
395	0.1		505	7.2		615	15.8		725	2.3
400	0.1		510	7.7		620	15.9		730	2.0
405	0.1		515	8.1		625	15.8		735	1.7
410	0.1		520	8.4		630	15.7		740	1.5
415	0.2		525	8.7		635	15.3		745	1.3
420	0.3		530	9.1		640	14.7		750	1.1
425	0.5		535	9.4		645	14.0		755	0.9
430	0.9		540	9.8		650	13.2		760	0.8
435	1.6		545	10.2		655	12.3		765	0.7
440	2.7		550	10.6		660	11.4		770	0.6
445	4.5		555	10.9		665	10.5		775	0.5
450	7.3		560	11.3		670	9.5		780	0.4
455	8.5		565	11.7		675	8.6		---	---



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

REPORT NO. 104941221CRT-010

#	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-010**

TM-30 REPORT