

VISUAL COMFORT AND COMPANY TEST REPORT

SCOPE OF WORK

LED Performance Testing

MODEL NUMBER

700BCSAGW37S-LED930

PROJECT NUMBER

G104941221

REPORT NUMBER

104941221CRT-026

ISSUE DATE

7/28/2022

REVISED DATE

None

TEST DATES

7/15/2022 through 7/26/2022

DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

© 2017 INTERTEK



REPORT NUMBER

104941221CRT-026

MODEL NUMBER(s)

700BCSAGW37S-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

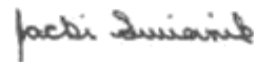
ANSI NEMA ANSLG C78.377: 2017: Specifications for the Chromaticity of Solid State Lighting (SSL) Products

In Charge of Testing:

Reviewer:



Melanie Brittain
Senior Associate Engineer
Lighting Division



Jacki Swiernik
Staff Engineer
Lighting Division

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

SAMPLE INFORMATION

REPORT NO. 104941221CRT-026

ITEMS RECEIVED

Item No.	Control No.	Model No.	Description	Type	Received
1	CRT2206301053-026	700BCSAGW37S-LED930	Sage 37 Bath	Production	6/30/2022

SAMPLE PHOTOS - TESTED CONFIGURATIONS



SUMMARY

REPORT NO. 104941221CRT-026

PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	700BCSAGW37S-LED930
Product Description:	Sage 37 Bath
LED Model No.:	Everlight 62-217D/HK4C-H3030QA1R32835Z15/2T 5630D package,300mA, CRI90, CCT 3000K, Bin:30K-F/30K-G, 22PCS
Driver Model No.:	LTF, DA42W1200C2036OC1-0000
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	3337.3	3242.6
Input Power (W) @ 120 (Vac)	47.10	47.16
Luminous Efficacy (lm/W)	70.86	68.76
Input Power Factor () @ 120 (Vac)	0.985	0.984

Criteria	Results
Input ATHD (%) @ 120 (Vac)	13.99
Correlated Color Temperature (K)	3117
Color Rendering Index - Ra ()	92.2
Color Rendering Index - R9 ()	52.3
Duv ()	0.0019
Chromaticity Coordinate (x)	0.431
Chromaticity Coordinate (y)	0.407
Chromaticity Coordinate (u')	0.246
Chromaticity Coordinate (v')	0.522

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 $25^{\circ}\text{C} \pm 1.2^{\circ}\text{C}$ 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 $25^{\circ}\text{C} \pm 1.2^{\circ}\text{C}$ 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 $\geq 5x$ the longest luminous dimension of the EUT.

TYPE C GONIOPHOTOMETER DISTRIBUTION TESTING

REPORT NO. 104941221CRT-026

PHOTOMETRIC AND ELECTRICAL MEASUREMENTS

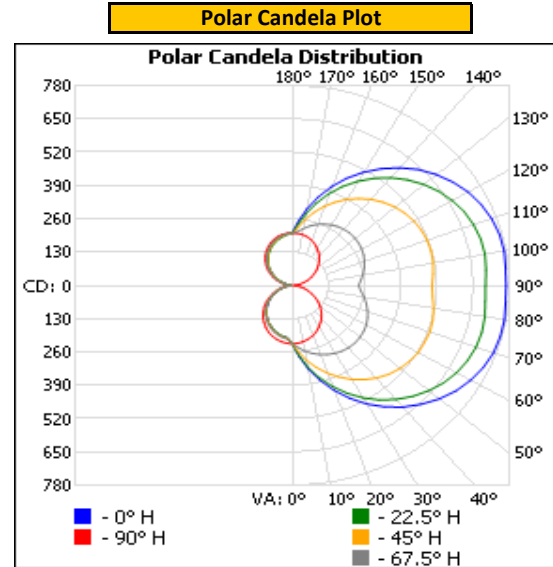
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()
Wall Mount	120.08	398.4	47.10	0.985

Light Output (lm)	Efficacy (lm/W)
3337.3	70.9

LUMINOUS INTENSITY SUMMARY (candela)

Angle (°)	0	22.5	45	67.5	90
0	227	227	227	227	227
5	277	275	261	243	227
10	330	323	296	260	223
15	383	371	330	274	217
20	435	418	363	287	210
25	485	463	394	298	201
30	534	506	423	306	190
35	578	545	449	312	177
40	620	580	471	316	164
45	656	612	490	318	148
50	689	639	505	316	131
55	718	663	515	313	115
60	740	682	523	307	97
65	757	695	525	298	78
70	769	703	526	287	61
75	774	706	523	276	45
80	774	703	516	262	30
85	769	696	506	248	15
90	769	695	502	238	4
95	769	699	508	248	13
100	773	703	514	259	28
105	771	701	516	268	43
110	763	693	516	276	59
115	749	681	512	283	75
120	730	663	504	287	91
125	704	642	493	290	107
130	674	614	478	291	123
135	640	583	460	290	137
140	600	549	439	287	151
145	556	510	414	282	163
150	510	469	388	274	173
155	461	426	358	264	184
160	410	380	327	253	192
165	356	332	294	240	198
170	303	285	260	225	202
175	251	239	226	211	205
180	204	204	204	204	204

Entire luminous intensity matrix found in .IES file



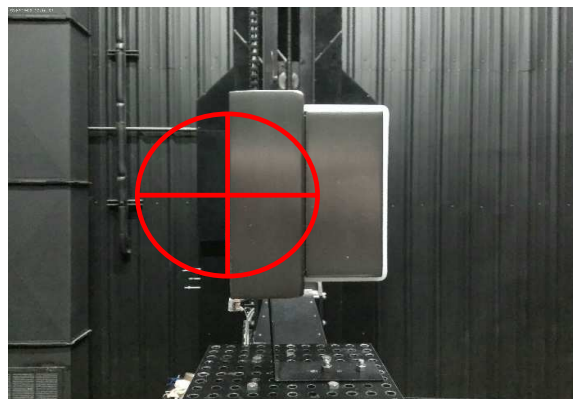
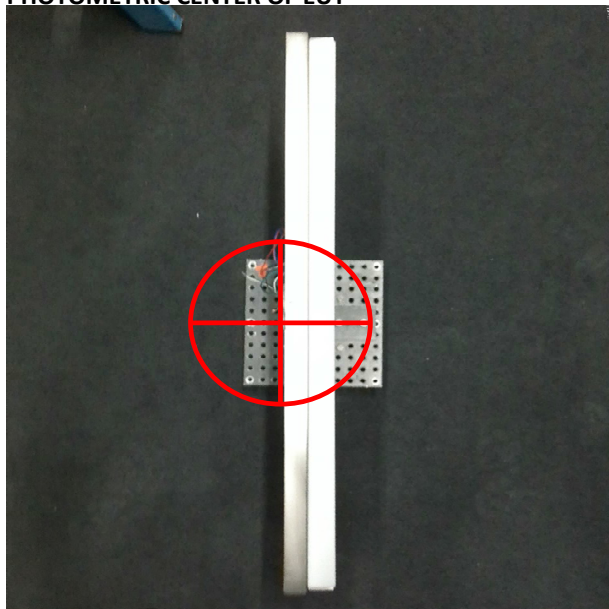
REPORT NO. 104941221CRT-026

ORIENTATION AND ALIGNMENT OF EUT

Luminous Opening		
Length (ft)	Width (ft)	Height (ft)
0.14	3.00	0.31
0°-180° H	90°-270° H	0°-180° V

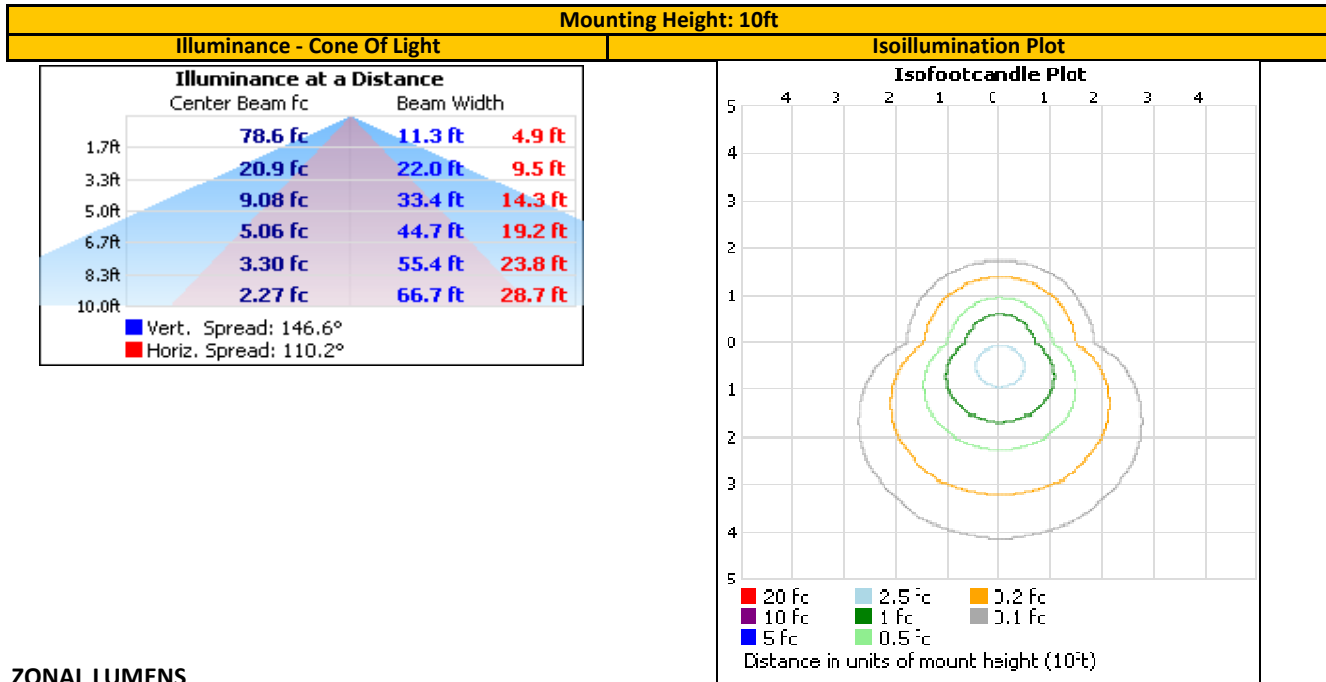
Test Distance (ft)
29.6

PHOTOMETRIC CENTER OF EUT



REPORT NO. 104941221CRT-026

ILLUMINANCE SUMMARY



ZONAL LUMENS

Zonal Lumen Summary								
Zone	Lumens	Luminaire	Zone	Lumens	Total	Zone	Lumens	Total
0-30	225.8	6.8%	0-10	22.8	0.7%	90-100	257.1	7.7%
0-40	408.4	12.2%	10-20	73.8	2.2%	100-110	267.4	8.0%
0-60	896.9	26.9%	20-30	129.1	3.9%	110-120	265.8	8.0%
60-90	806.6	24.2%	30-40	182.6	5.5%	120-130	248.3	7.4%
70-100	788.4	23.6%	40-50	228.2	6.8%	130-140	215.6	6.5%
90-120	790.3	23.7%	50-60	260.4	7.8%	140-150	171.0	5.1%
0-90	1,703.5	51.0%	60-70	275.3	8.2%	150-160	119.9	3.6%
90-180	1,633.9	49.0%	70-80	273.0	8.2%	160-170	67.9	2.0%
0-180	3,337.3	100.0%	80-90	258.2	7.7%	170-180	20.9	0.6%

INTEGRATING SPHERE TESTING

REPORT NO. 104941221CRT-026

PHOTOMETRIC, RADIOMETRIC, COLORIMETRIC, AND ELECTRICAL MEASUREMENTS

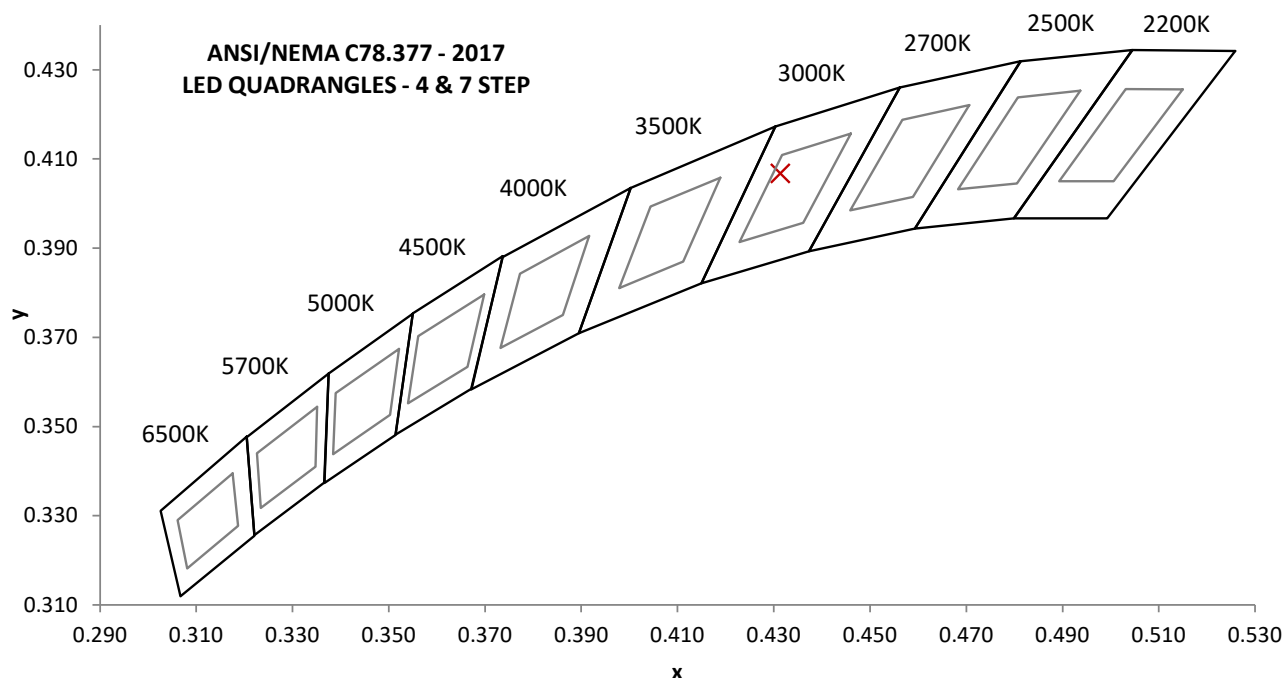
Base Orientation
Wall Mount

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor (l)	Input ATHD (%)
120.03	399.5	47.16	0.984	13.99

Measured at 120.03(Vac)

Light Output (lm)	Efficacy (lm/W)	CCT (K)	CRI - Ra (l)	CRI - R9 (l)
3242.6	68.8	3117	92.2	52.3

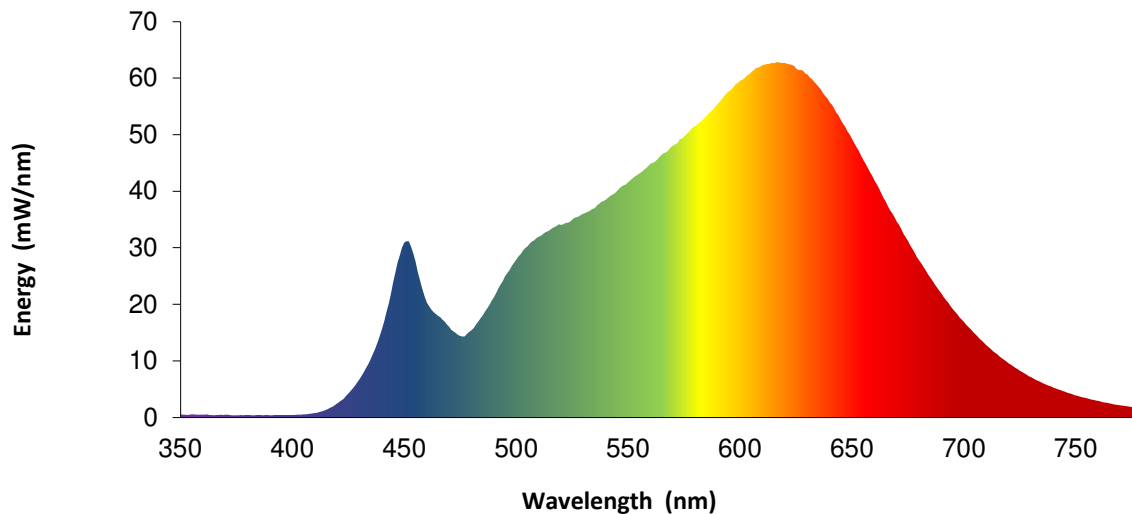
Duv (l)	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
0.0019	0.431	0.407	0.246	0.522



REPORT NO. 104941221CRT-026

SPECTRAL POWER DISTRIBUTION

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.6		460	20.3		570	48.1		680	27.8
355	0.6		465	18.0		575	49.7		685	24.7
360	0.5		470	16.0		580	51.5		690	21.9
365	0.4		475	14.4		585	53.4		695	19.2
370	0.5		480	15.4		590	55.5		700	16.9
375	0.4		485	18.0		595	57.7		705	14.7
380	0.4		490	21.2		600	59.6		710	12.8
385	0.4		495	25.0		605	61.1		715	11.1
390	0.4		500	27.9		610	62.3		720	9.6
395	0.4		505	30.2		615	62.6		725	8.3
400	0.4		510	32.0		620	62.7		730	7.1
405	0.5		515	33.1		625	61.6		735	6.1
410	0.8		520	34.0		630	60.6		740	5.3
415	1.4		525	35.0		635	58.4		745	4.6
420	2.5		530	36.0		640	55.7		750	3.9
425	4.2		535	37.0		645	52.6		755	3.4
430	6.8		540	38.5		650	49.3		760	2.9
435	10.4		545	40.0		655	45.6		765	2.5
440	15.6		550	41.6		660	41.9		770	2.1
445	23.9		555	43.2		665	38.2		775	1.8
450	30.9		560	44.9		670	34.6		780	1.6
455	27.6		565	46.5		675	31.2		---	---



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

EQUIPMENT LIST

REPORT NO. 104941221CRT-026

#	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	Fluke Multimeter	87V	M145	3/25/2022	3/25/2023
7	Current Monitor	411	A197	8/26/2021	8/26/2024
8	3M Integrating Sphere Spectrometer System	CDS 2600	L231	7/1/2022	10/1/2022
9	Fisher Scientific Stopwatch	14-649-9	N1132	3/24/2022	3/24/2023
10	LSI High Speed Mirror Goniophotometer	6440	---	6/30/2022	9/30/2022
11	Elgar AC Power Supply	CW1251	---	VBU	VBU
12	Yokogawa Power Analyzer	WT210	307-E464	6/21/2022	6/21/2023
13	Traceable Hygrothermometer	4800	L204	2/21/2022	2/21/2023
14	Sorenson DC Power Supply	XG 150-10	---	VBU	VBU
15	Omega Thermometer	DPi8-C24	M263	3/1/2022	3/1/2023
16	Bosch Distance Laser	Pro GLM 20	L210	3/21/2022	3/15/2023
17	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	---	---	---
---	---	---	---	---
---	---	---	---	---

ANNEX A - TM-30 CALCULATIONS

REPORT NO. 104941221CRT-026

TM-30 REPORT

