

VISUAL COMFORT AND COMPANY TEST REPORT

SCOPE OF WORK

LED Performance Testing

MODEL NUMBER

700WSMRAS-LED927

PROJECT NUMBER

G104941221

REPORT NUMBER

104941221CRT-007

ISSUE DATE

7/28/2022

REVISED DATE

None

TEST DATES

7/13/2022 through 7/28/2022

DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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REPORT NUMBER

104941221CRT-007

MODEL NUMBER(s)

700WSMRAS-LED927

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
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SAMPLE INFORMATION

REPORT NO. 104941221CRT-007

ITEMS RECEIVED

Item No.	Control No.	Model No.	Description	Type	Received
1	CRT2207111030-002	700WSMRAS-LED927	Mara Wall	Production	6/30/2022

SAMPLE PHOTOS - TESTED CONFIGURATIONS



SUMMARY

REPORT NO. 104941221CRT-007

PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	700WSMRAS-LED927
Product Description:	Mara Wall
LED Model No.:	Bridgelux DS412 V10 Gen 8
Driver Model No.:	LTF DA12W300C2742-3001
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	488.4	477.6
Input Power (W) @ 120 (Vac)	10.95	10.98
Luminous Efficacy (lm/W)	44.60	43.50
Input Power Factor (I) @ 120 (Vac)	0.980	0.987

Criteria	Results
Input ATHD (%) @ 120 (Vac)	7.00
Correlated Color Temperature (K)	2596
Color Rendering Index - Ra (I)	90.8
Color Rendering Index - R9 (I)	64.3
Duv (I)	0.001
Chromaticity Coordinate (x)	0.470
Chromaticity Coordinate (y)	0.415
Chromaticity Coordinate (u')	0.267
Chromaticity Coordinate (v')	0.531

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.

TYPE C GONIOPHOTOMETER DISTRIBUTION TESTING

REPORT NO. 104941221CRT-007

PHOTOMETRIC AND ELECTRICAL MEASUREMENTS

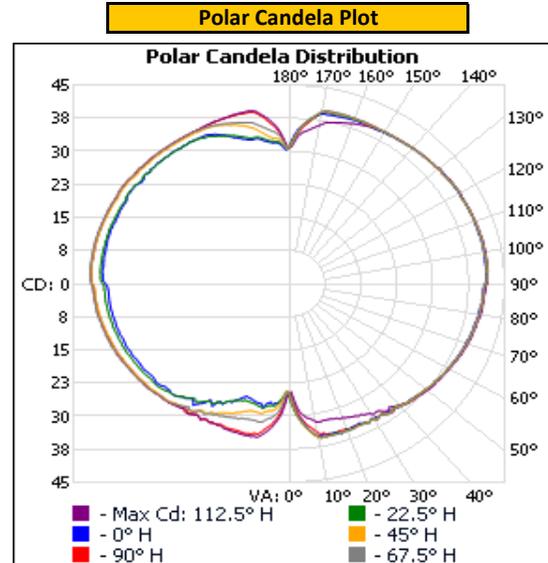
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()
Vertical Wall Mount	120.01	93.1	10.95	0.980

Light Output (lm)	Efficacy (lm/W)
488.4	44.6

LUMINOUS INTENSITY SUMMARY (candela)

Angle (°)	0	22.5	45	67.5	90
0	25	25	25	25	25
5	31	32	32	31	31
10	35	35	35	35	34
15	35	35	36	36	35
20	35	35	35	36	35
25	35	35	35	35	35
30	35	35	36	35	35
35	36	36	36	36	36
40	36	36	36	36	36
45	37	37	37	37	37
50	37	37	37	37	38
55	38	38	38	38	38
60	38	38	38	38	38
65	39	39	39	39	39
70	39	39	39	39	40
75	40	40	40	40	40
80	40	40	40	40	40
85	40	41	41	41	41
90	41	41	41	41	41
95	41	42	42	42	42
100	41	41	41	41	41
105	41	41	41	41	41
110	41	41	41	41	41
115	41	41	41	41	41
120	41	41	41	41	41
125	41	41	41	41	41
130	41	41	41	41	41
135	40	40	40	40	40
140	40	40	40	40	40
145	40	40	40	40	40
150	40	40	40	40	40
155	39	40	40	40	40
160	40	40	40	40	40
165	39	40	40	40	40
170	39	39	40	40	39
175	36	36	36	36	36
180	31	31	31	31	31

Entire luminous intensity matrix found in .IES file



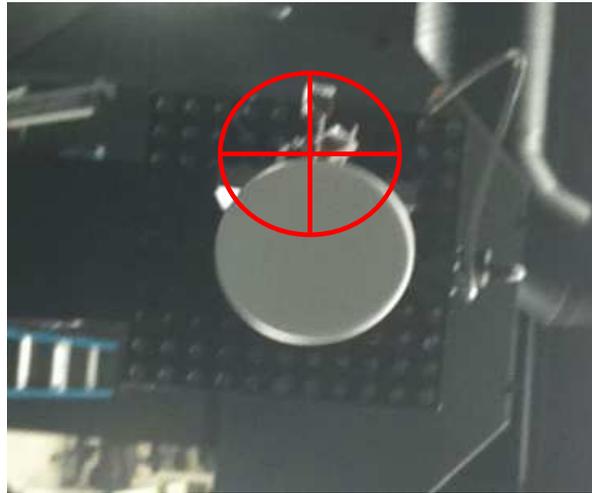
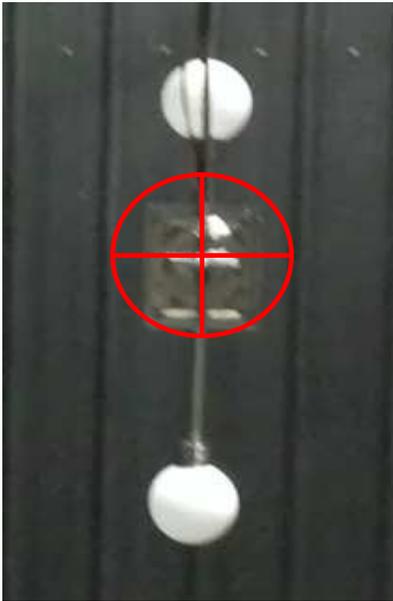
REPORT NO. 104941221CRT-007

ORIENTATION AND ALIGNMENT OF EUT

Luminous Opening		
Length (ft)	Width (ft)	Height (ft)
0.27	0.27	1.65
0°-180° H	90°-270° H	0°-180° V

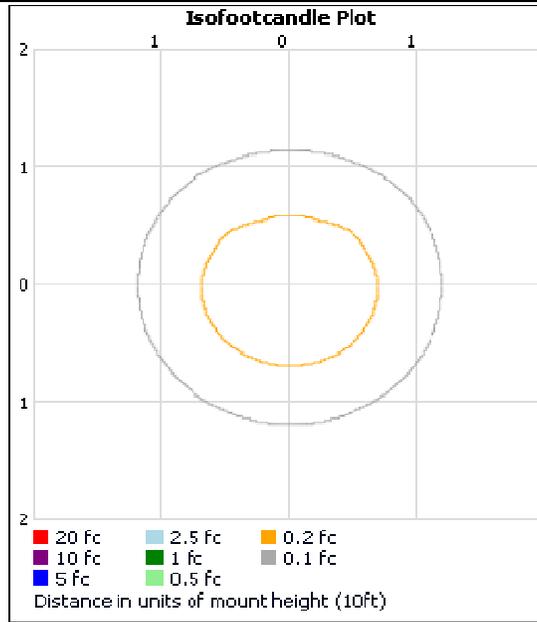
Test Distance (ft)
29.6

PHOTOMETRIC CENTER OF EUT



ILLUMINANCE SUMMARY

**Mounting Height: 10ft
Isoillumination Plot**



ZONAL LUMENS

Zonal Lumen Summary

Zone	Lumens	Luminaire
0-30	27.8	5.7%
0-40	49.7	10.2%
0-60	111.6	22.9%
60-90	123.9	25.4%
70-100	130.3	26.7%
90-120	128.5	26.3%
0-90	235.5	48.2%
90-180	252.9	51.8%
0-180	488.4	100.0%

Zone	Lumens	Total	Zone	Lumens	Total
0-10	2.9	0.6%	90-100	44.8	9.2%
10-20	9.3	1.9%	100-110	43.4	8.9%
20-30	15.5	3.2%	110-120	40.4	8.3%
30-40	22.0	4.5%	120-130	36.3	7.4%
40-50	28.2	5.8%	130-140	30.9	6.3%
50-60	33.7	6.9%	140-150	24.8	5.1%
60-70	38.3	7.8%	150-160	18.1	3.7%
70-80	41.8	8.6%	160-170	10.8	2.2%
80-90	43.8	9.0%	170-180	3.4	0.7%

INTEGRATING SPHERE TESTING

REPORT NO. 104941221CRT-007

PHOTOMETRIC, RADIOMETRIC, COLORIMETRIC, AND ELECTRICAL MEASUREMENTS

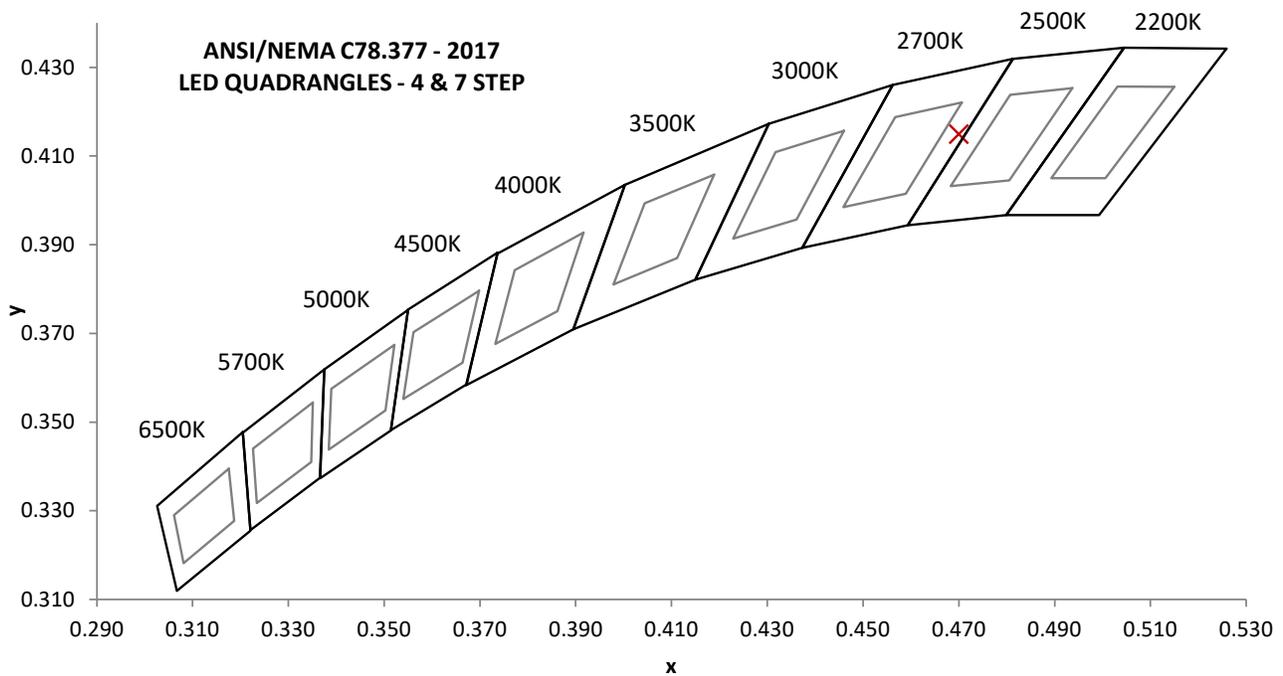
Base Orientation
Vertical Wall Mount

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()	Input ATHD (%)
120.01	92.7	10.98	0.987	7.00

Measured at 120.01(Vac)

Light Output (lm)	Efficacy (lm/W)	CCT (K)	CRI - Ra ()	CRI - R9 ()
477.6	43.5	2596	90.8	64.3

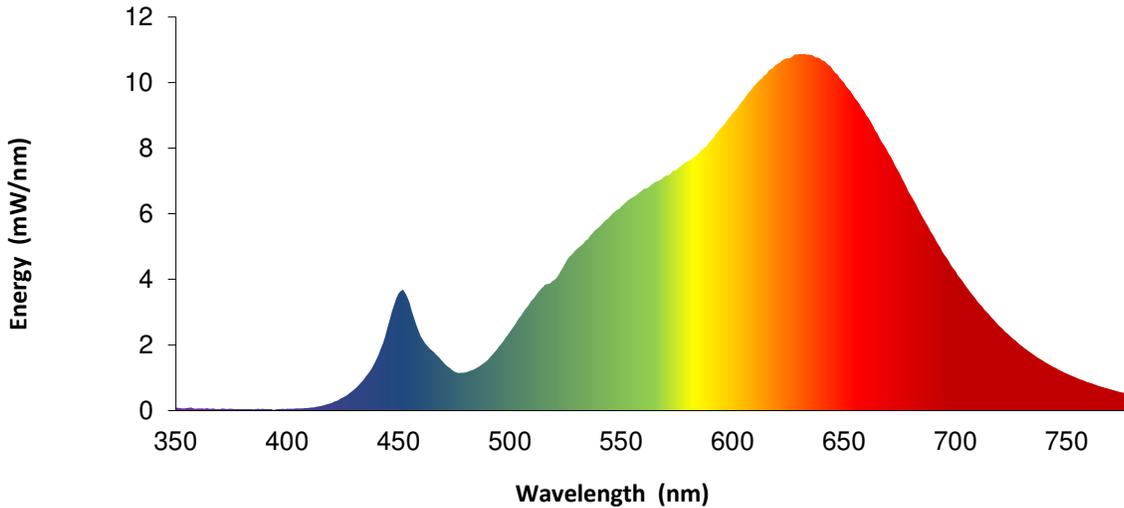
Duv ()	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
0.0008	0.470	0.415	0.267	0.531



REPORT NO. 104941221CRT-007

SPECTRAL POWER DISTRIBUTION

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.1	460	2.3	570	7.2	680	6.6
355	0.1	465	1.8	575	7.4	685	5.9
360	0.1	470	1.5	580	7.6	690	5.3
365	0.1	475	1.2	585	7.9	695	4.8
370	0.0	480	1.2	590	8.2	700	4.3
375	0.1	485	1.3	595	8.6	705	3.8
380	0.0	490	1.5	600	9.1	710	3.3
385	0.0	495	2.0	605	9.5	715	2.9
390	0.0	500	2.4	610	9.9	720	2.6
395	0.0	505	2.9	615	10.3	725	2.2
400	0.1	510	3.4	620	10.6	730	2.0
405	0.1	515	3.8	625	10.7	735	1.7
410	0.1	520	4.0	630	10.9	740	1.5
415	0.1	525	4.5	635	10.8	745	1.3
420	0.2	530	4.9	640	10.7	750	1.1
425	0.4	535	5.2	645	10.4	755	1.0
430	0.6	540	5.6	650	10.0	760	0.9
435	1.0	545	5.9	655	9.5	765	0.7
440	1.5	550	6.2	660	9.0	770	0.6
445	2.5	555	6.5	665	8.4	775	0.6
450	3.6	560	6.8	670	7.8	780	0.5
455	3.3	565	7.0	675	7.2	---	---



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-007

#	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-007

TM-30 REPORT

