

VISUAL COMFORT & CO. TEST REPORT

SCOPE OF WORK

Electrical and Photometric tests as required to the IESNA LM-79 test standard.

MODEL NUMBER

7000WBLD9273024xUNV

REPORT NUMBER

104206403CHI-036

ISSUE DATE

February 28, 2020

REVISION DATE

None

DOCUMENT CONTROL NUMBER

TBD

© 2017 INTERTEK



REPORT NO.: 104206403CHI-036

REPORT DATE: February 28, 2020

TEST REPORT

TEST OF ONE BLADE 24 WALL

MODEL NO. 700OWBLD9273024XUNV
LED MODEL NO. LUMINUS MP-2016-1100-30-90
DRIVER MODEL NO. ERP ESS030W-0700-42

RENDERED TO:

VISUAL COMFORT & CO.
7400 LINDER AVE.
SKOKIE IL 60077

STATEMENT OF LIMITATIONS

NVLAP Lab Code 600186-0. 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-01040682-1.

STANDARDS USED

IESNA LM-79 - 2008: Electrical and Photometric Measurements of Solid State Lighting
ANSI NEMA ANSLG C78.377: 2015: Specifications of the Chromaticity of Solid State Lighting Products

DESCRIPTION OF SAMPLE

The client submitted one production sample of model number 700OWBLD9273024xUNV. The sample was received by Intertek on February 18, 2020 in undamaged condition and one sample was tested as received. The sample designation was AH02182020100147.

DATE OF TESTS

February 21, 2020 through February 26, 2020.

REPORT NO.: 104206403CHI-036

REPORT DATE: February 28, 2020

TEST REPORT

SUMMARY

MODEL NO:	7000WBLED9273024xUNV
DESCRIPTION:	Blade 24 Wall

CRITERIA	RESULTS	
	INTEGRATING SPHERE	GONIOPHOTOMETER
Lumen Output (lumens)	1951.0	1935.9
Input Power (W) @ 120 (VAC)	27.72	27.86
Lumen Efficacy (lm/W)	70.4	69.5
Input Power Factor () @ 120 (VAC)	0.980	0.981

CRITERIA	RESULTS
Input Current ATHD (%) @ 120 (VAC)	14.29
Correlated Color Temperature (K)	2952
Color Rendering Index - Ra	93.0
Color Rendering - R9	61.8
DUV	0.0023
Chromaticity Coordinate (x)	0.437
Chromaticity Coordinate (y)	0.399
Chromaticity Coordinate (u')	0.253
Chromaticity Coordinate (v')	0.519

REPORT NO.: 104206403CHI-036

REPORT DATE: February 28, 2020

TEST REPORT

EQUIPMENT LIST

EQUIPMENT USED	MODEL NO.	CONTROL NO.	LAST CAL DATE	CAL DUE DATE
Yokogawa Power Meter	WT210	146919	7/1/2019	7/1/2020
Omega Thermometer	DPI8-C24	146920	10/3/2019	10/3/2020
LSI High Speed Mirror Goniometer	6440T	146928	VBV	VBV
Newport Thermohygrometer	iServer	146957	12/2/2019	12/2/2020
Pacific, AC Power Supply	118-ACX	CHI0153	VBV	VBV
Labsphere 2M Sphere & Spectroradiometer	CDS1100	146137	VBV	VBV
Elgar AC Power Supply	CW1251M	146113	VBV	VBV
Sorenson DC Power Supply	XFR150-8	146847	VBV	VBV
Yokogawa Power Analyzer	WT1600	146767	4/3/2019	4/3/2020
Omega Temperature	MDSi8	146873	7/2/2019	7/2/2020
Newport Thermohygrometer	iTHX-M	146961	7/26/2019	7/26/2020

REPORT NO.: 104206403CHI-036

REPORT DATE: February 28, 2020

TEST REPORT

TEST METHODS

SEASONING IN SAMPLE ORIENTATION - LED PRODUCTS

No seasoning was performed in accordance with IESNA LM-79.

PHOTOMETRIC AND ELECTRICAL MEASUREMENTS - INTEGRATING SPHERE METHOD

A Spectroradiometer and integrating sphere was used to measure correlated color temperature, chromaticity coordinates, and the color rendering index for each SSL unit.

Ambient temperature was measured at a position inside the sphere. Each SSL unit was operated on the client provided driver at the rated input voltage in its designated orientation. Each SSL unit was allowed to stabilize for at least thirty minutes before measurements were made. Stabilization procedures to LM-79 were followed. Electrical measurements including voltage, current, and power were measured using a power analyzer.

The calibration of the sphere photometer-spectroradiometer system is traceable to the National Institute of Standards and Technology.

PHOTOMETRIC AND ELECTRICAL MEASUREMENTS - DISTRIBUTION METHOD

A Type C Mirror Goniometer was used to measure the intensity (candelas) at each angle of distribution for the SSL sample.

Ambient temperature was measured equal to the height of the sample mounted on the goniometer equipment. The SSL sample was operated on the client provided driver at rated input volts in its designated orientation. The SSL sample was allowed to stabilize for at least thirty minutes before measurements were made. Stabilization procedures to LM-79 were followed. Electrical measurements including voltage, current, and power were measured using a power analyzer.

REPORT NO.: 104206403CHI-036

REPORT DATE: February 28, 2020

TEST REPORT

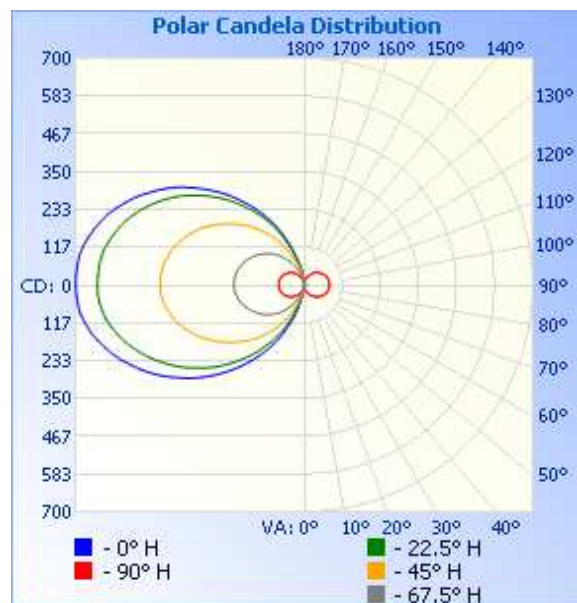
RESULTS OF TESTS

PHOTOMETRIC AND ELECTRICAL MEASUREMENTS - DISTRIBUTION METHOD (25°C +/- 1°C)

INTERTEK CONTROL NO.	BASE POSITION	INPUT VOLTAGE (VAC)	INPUT CURRENT (mA)	INPUT POWER (W)	INPUT POWER FACTOR	LIGHT OUTPUT (lm)	LUMEN EFFICACY (lm/W)
AH02182020100147	Horizontal	120.1	236.5	27.86	0.981	1935.9	69.5

INTENSITY SUMMARY - CANDELAS

Angle	180	202.5	225	247.5	270
0	6	6	6	6	6
5	14	12	11	10	9
10	31	24	20	15	11
15	75	58	35	20	14
20	126	103	66	33	20
25	182	153	99	50	26
30	234	202	137	69	33
35	287	252	173	88	40
40	341	300	207	107	46
45	394	350	241	126	51
50	446	397	274	142	56
55	495	443	306	156	61
60	542	486	336	170	65
65	584	526	364	182	69
70	623	561	389	192	72
75	655	590	411	202	74
80	680	615	426	208	76
85	695	629	438	213	77
90	700	633	441	215	78
95	697	631	439	214	78
100	688	623	431	211	77
105	666	604	419	206	76
110	640	581	401	198	74
115	603	551	380	189	71
120	563	516	355	178	68
125	519	476	326	166	64
130	469	432	296	152	60
135	417	385	262	136	55
140	365	336	229	119	50
145	308	286	194	100	44
150	253	234	156	81	37
155	198	182	117	63	31
160	140	128	84	49	24
165	86	83	60	37	19
170	52	51	39	26	16
180	10	10	10	10	10



Lum. Classification System (LCS)

LCS	Zone	Lumens	%Lumens
FL	(0-30)	2.2	0.1
FM	(30-60)	9.6	0.5
FH	(60-80)	11.7	0.6
FVH	(80-90)	6.8	0.4
BL	(0-30)	30.9	1.5
BM	(30-60)	277.3	14.3
BH	(60-80)	380.1	19.6
BVH	(80-90)	226.5	11.7
UL	(90-100)	234.4	12.1
UH	(100-180)	755.9	39.1
Total		1935.4	100.0

BUG Rating: B1-U4-G3

IES Classification: Type I

Longitudinal Classification: Very Short

REPORT NO.: 104206403CHI-036

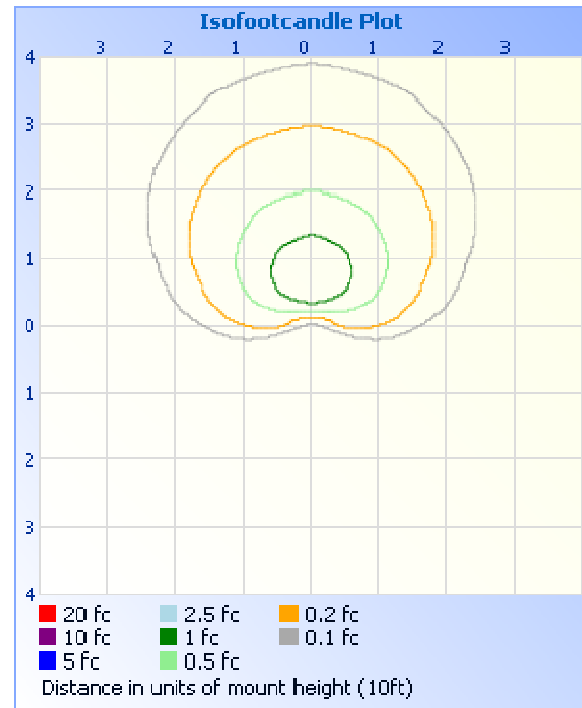
REPORT DATE: February 28, 2020

TEST REPORT

RESULTS OF TESTS

PHOTOMETRIC AND ELECTRICAL MEASUREMENTS - DISTRIBUTION METHOD (25°C +/- 1°C)

MOUNTING HEIGHT: 10ft	
ILLUMINANCE - CONE OF LIGHT	ISOILLUMINATION PLOT



ZONAL LUMEN SUMMARY AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	33.2	1.7
0-40	88.8	4.6
0-60	320.1	16.5
60-90	625.2	32.3
70-100	681.0	35.2
90-120	638.7	33.0
0-90	945.4	48.8
90-180	990.6	51.2
0-180	1935.9	100.0

ZONE	LUMENS	% LUMINAIRE
0-10	0.9	0.0
10-20	7.0	0.4
20-30	25.3	1.3
30-40	55.6	2.9
40-50	94.3	4.9
50-60	137.0	7.1
60-70	178.7	9.2
70-80	213.2	11.0
80-90	233.4	12.1
90-100	234.4	12.1
100-110	217.8	11.3
110-120	186.5	9.6
120-130	146.1	7.5
130-140	102.6	5.3
140-150	62.2	3.2
150-160	29.7	1.5
160-170	9.7	0.5
170-180	1.6	0.1

REPORT NO.: 104206403CHI-036

REPORT DATE: February 28, 2020

TEST REPORT

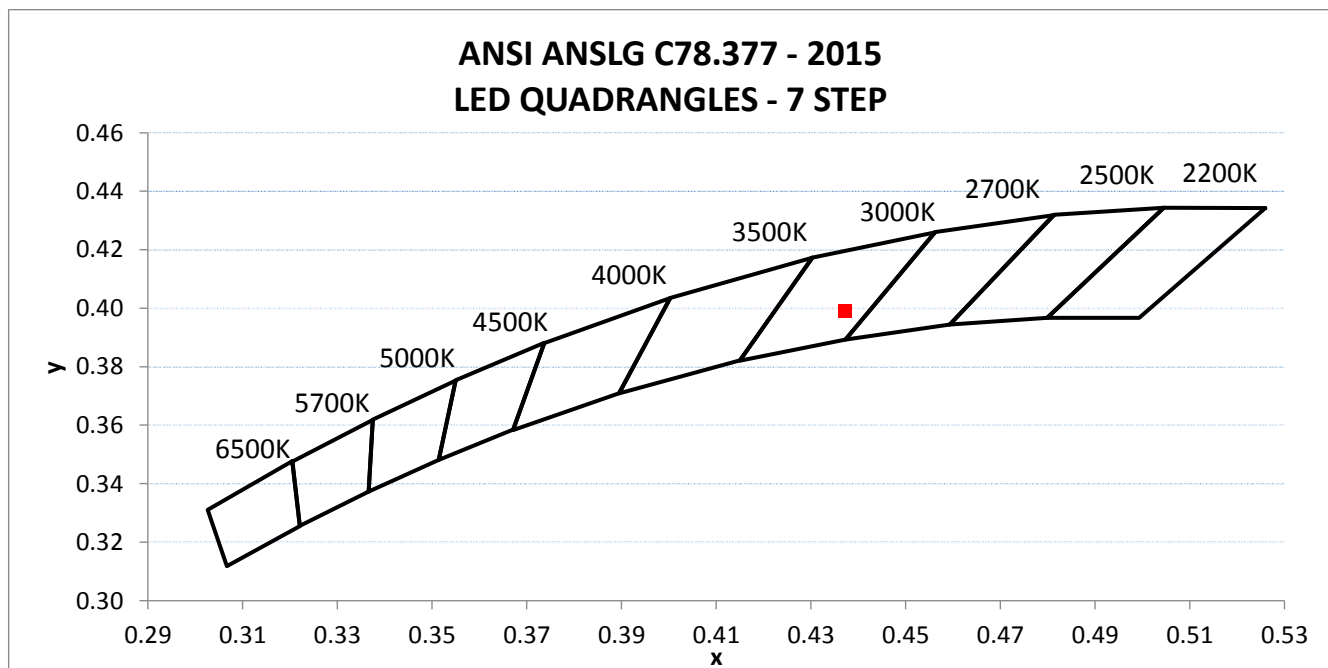
RESULTS OF TESTS

PHOTOMETRIC AND ELECTRICAL MEASUREMENTS - INTEGRATING SPHERE METHOD (25°C +/- 1°C)

INTERTEK CONTROL NO.	BASE POSITION	INPUT VOLTAGE (VAC)	INPUT CURRENT (mA)	INPUT POWER (W)	INPUT POWER FACTOR ()	INPUT CURRENT ATHD (%)
AH02182020100147	Horizontal	119.99	235.66	27.72	0.980	14.29

LIGHT OUTPUT (lm)	LUMEN EFFICACY (lm/W)	CORRELATED COLOR TEMPERATURE - CCT (K)	CRI - Ra	CRI - R9	DUV
1951.0	70.4	2952	93.0	61.8	0.0023

CIE 1931 CHROMATICITY COORDINATE (x)	CIE 1931 CHROMATICITY COORDINATE (y)	CIE 1976 CHROMATICITY COORDINATE (u')	CIE 1976 CHROMATICITY COORDINATE (v')
0.437	0.399	0.253	0.519



REPORT NO.: 104206403CHI-036

REPORT DATE: February 28, 2020

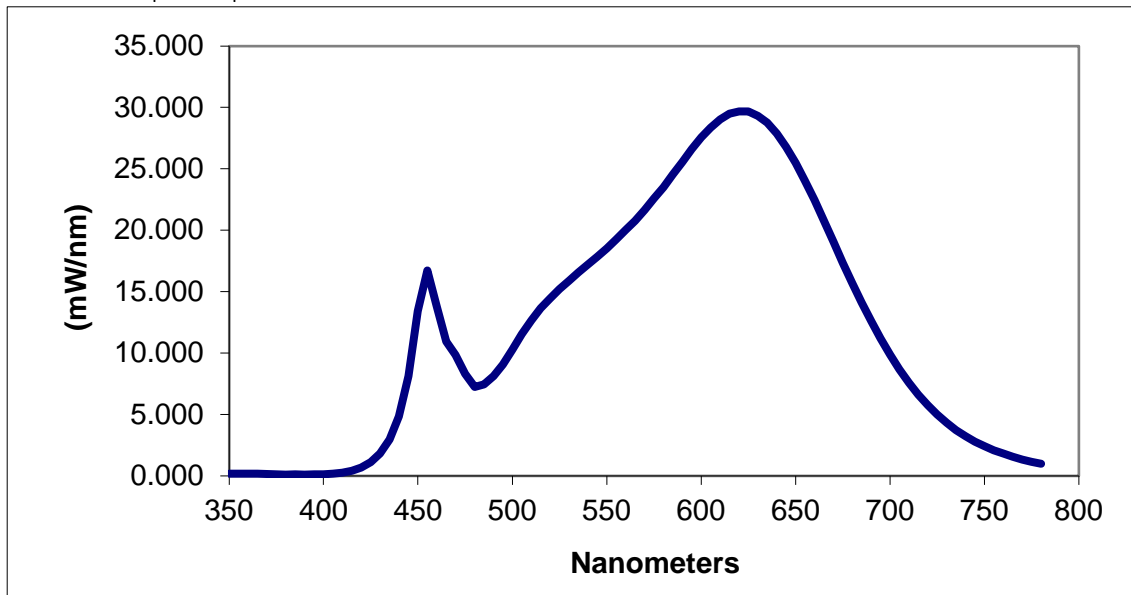
TEST REPORT

RESULTS OF TESTS

PHOTOMETRIC AND ELECTRICAL MEASUREMENTS - INTEGRATING SPHERE METHOD (25°C +/- 1°C)

SPECTRAL DISTRIBUTION OVER VISIBLE WAVELENGTHS*							
nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.166	460	13.824	570	21.634	680	15.687
355	0.171	465	10.940	575	22.579	685	14.105
360	0.169	470	9.842	580	23.501	690	12.594
365	0.166	475	8.295	585	24.542	695	11.185
370	0.154	480	7.249	590	25.558	700	9.862
375	0.131	485	7.449	595	26.600	705	8.663
380	0.107	490	8.115	600	27.550	710	7.580
385	0.115	495	9.053	605	28.336	715	6.602
390	0.110	500	10.279	610	29.005	720	5.750
395	0.116	505	11.531	615	29.470	725	4.986
400	0.137	510	12.662	620	29.667	730	4.319
405	0.179	515	13.654	625	29.687	735	3.733
410	0.264	520	14.440	630	29.308	740	3.230
415	0.413	525	15.194	635	28.748	745	2.793
420	0.675	530	15.897	640	27.859	750	2.421
425	1.104	535	16.558	645	26.761	755	2.090
430	1.815	540	17.225	650	25.476	760	1.821
435	2.971	545	17.838	655	24.005	765	1.552
440	4.842	550	18.522	660	22.438	770	1.327
445	8.113	555	19.245	665	20.774	775	1.141
450	13.403	560	20.017	670	19.052	780	0.978
455	16.730	565	20.761	675	17.354		

*Without correction of sample absorption.



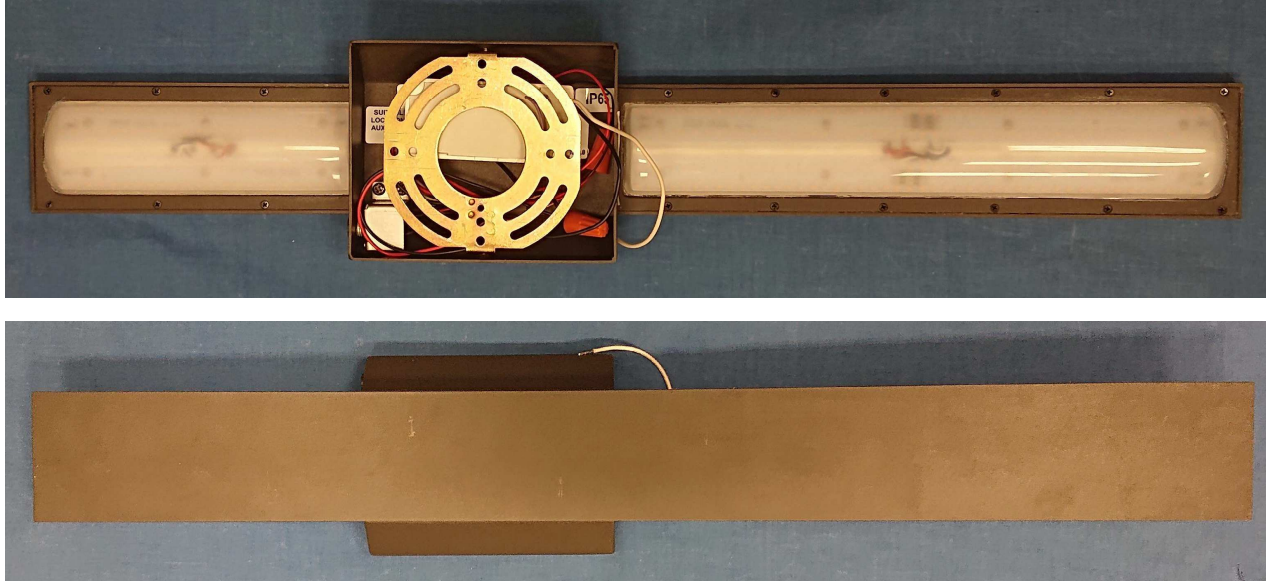
End Of Test Results

REPORT NO.: 104206403CHI-036

REPORT DATE: February 28, 2020

TEST REPORT

PICTURES



CONCLUSION

The results tabulated in this report are representative of the actual test samples submitted for this report only. The data is provided to the client for further evaluation. Compliance to the referenced specification requirements was not determined in this report.

In Charge Of Tests:

A handwritten signature in black ink, reading "Ian Smith".

Ian Smith
Engineer
Lighting Division

Report Reviewed By:

A handwritten signature in black ink, reading "Jeff Davis".

Jeff Davis
NA Technical Lead
Lighting Division

Attachments: IES File

REVISION HISTORY

JOB NUMBER	DATE OF REVISION	PROJECT HANDLER	REVIEWED BY	REVISION NOTE
None				