



8165 E Kaiser Blvd. Anaheim, CA 92808
 p. 714.282.2270
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Test #: L07134906

Date: 8/5/2013



NVLAP LAB CODE 200927-0

Test Report: L07134906

Model Number: 3924-26-XX

Report Prepared For: AION LED
 2325 3RD ST #330 SAN FRANCISCO, CA 94107

Test: Electrical and Photometric tests as required by the IESNA test standards.

Standards Used: Appropriate part or all test guidelines were used for test performed:
IESNA LM79: 2008 Approved Methods for Electrical and Photometric Measurements of Solid-State Lighting Products
ANSI NEMA ANSLG C78.377: 2008 Specification of the Chromaticity of Solid State Lighting Products

Description of Sample: Client submitted the sample. Fixture catalog number is 3924-26-XX .
 Received in working and undamaged condition. No modifications were necessary.

Testing Condition: Fixture is tested with no special conditions.

Sample Arrival Date: 7/16/13

Date of Tests: 8/2/13 - 8/5/13

Seasoning of Sample SSL: No seasoning was performed in accordance with IESNA LM-79.

Equipment List

Equipment Used	Model No	Stock No	Calibration Due Date
Chroma Programmable AC Source	61604	PS-AC02	--
Yokogawa Digital Power Meter	WT210	MT-EL06-S1	01/04/14
Xitron Power Analysis System	2503AH	MT-EL01	01/09/14
Fluke Digital Thermometer	52k/J	MT-TP02-GC	01/04/14
LLI Type C Goniophotometer System	RMG-C-MKII	CD-LL04-GC	--
LLI 2M Sphere	2MR97	CD-SN03-S2	--
LLI Spectroradiometer	SPR-3000	MT-SC01-S2	Before Use

*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.

LM-79 Test Summary

Manufacturer:	AION LED
Model Number:	3924-26-XX
LAMPCAT:	N/A
Driver Model Number:	N/A
Total Lumens:	93.77
Input Voltage (VDC):	24.00
Input Current (Amp):	0.06
Input Power (W):	1.37
Input Power Factor:	N/A
Total Harmonic Distortion @ 120V(%)	N/A
Total Harmonic Distortion @ 277V(%)	N/A
Efficacy:	69
Color Rendering Index (CRI):	96
Correlated Color Temperature (K):	2528
Chromaticity Coordinate x:	0.4730
Chromaticity Coordinate y:	0.4108
Ambient Temperature (°F):	77.0
Stabilization Time (Hours):	0:35
Total Operating Time (Hours):	1:15
Off State Power(W):	0.00

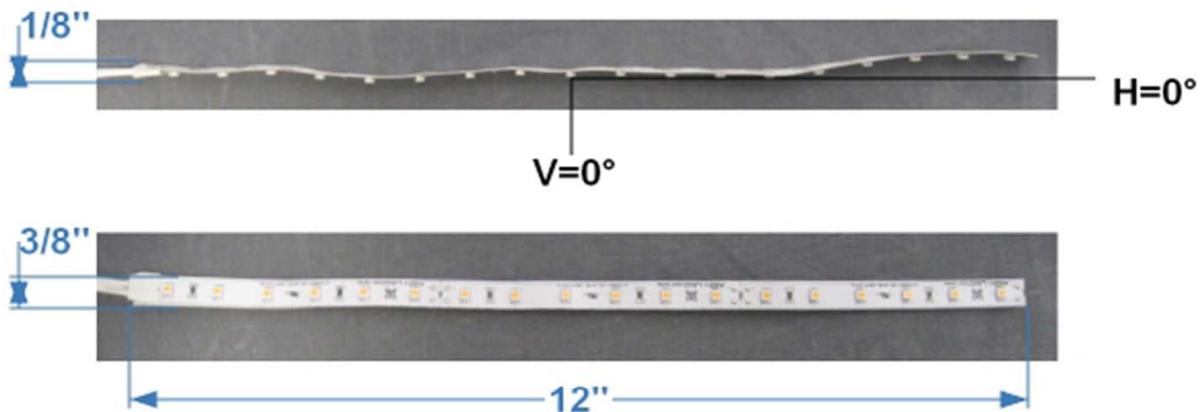
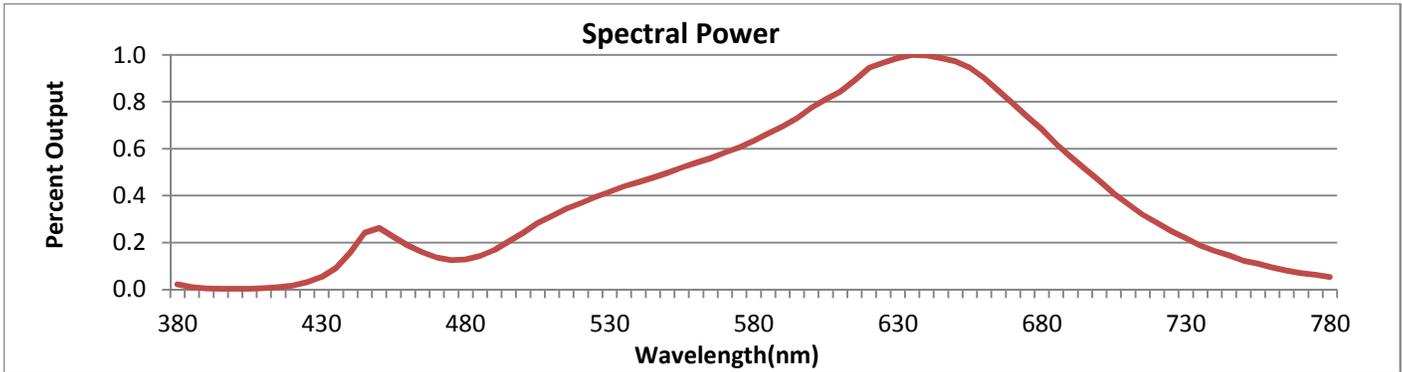


FIG1. LUMINAIRE

*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.



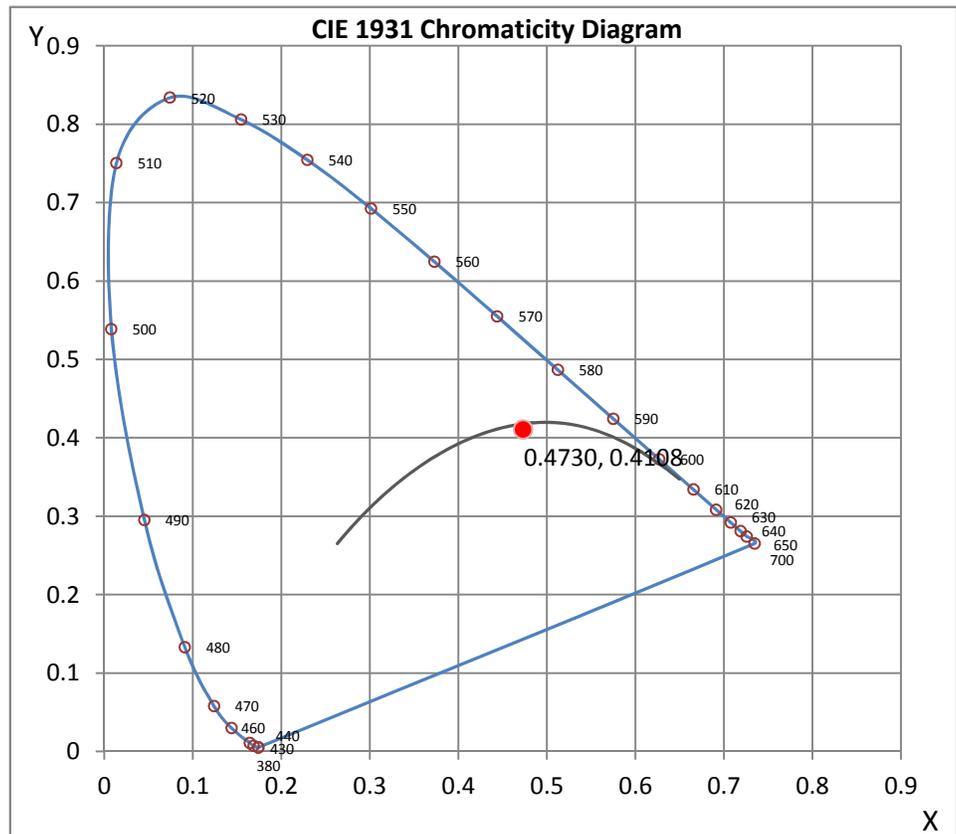
Wavelength	W/m ² nm	440	0.0015	510	0.0030	580	0.0061	650	0.0094	720	0.0027
380	0.0002	450	0.0025	520	0.0036	590	0.0067	660	0.0087	730	0.0021
390	0.0000	460	0.0018	530	0.0040	600	0.0075	670	0.0077	740	0.0016
400	0.0000	470	0.0013	540	0.0044	610	0.0082	680	0.0066	750	0.0012
410	0.0001	480	0.0012	550	0.0048	620	0.0091	690	0.0055	760	0.0009
420	0.0002	490	0.0016	560	0.0052	630	0.0095	700	0.0045	770	0.0007
430	0.0005	500	0.0023	570	0.0056	640	0.0096	710	0.0035	780	0.0005

CRI & CCT

x	0.4730
y	0.4108
u'	0.2709
v'	0.5294
CRI	96.30
CCT	2528
Duv	-0.00080

R Values

R1	97.79
R2	97.60
R3	95.19
R4	96.78
R5	97.18
R6	97.20
R7	96.12
R8	92.62
R9	83.25
R10	93.02
R11	96.46
R12	89.86
R13	97.96
R14	96.15



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Test Methods

Photometric Measurements - Goniophotometer

A Custom Light Laboratory Type C Rotating Mirror Goniophotometer was used to measure candelas(intensity) at each angle of distribution as defined by IESNA for the appropriate fixture type.

Ambient temperature is set to 25°C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25°C throughout the testing process and the sample is stabilized for at least 30mins and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

Spectral Measurements - Integrating Sphere

A Sensing Spectroradiometer SPR-3000, in conjunction with Light Laboratory 2 meter integrating sphere was used to measure chromaticity coordinates, correlated color temperature(CCT) and the color rendering index(CRI) for each sample.

Ambient temperature is set to 25°C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25°C throughout the testing process and the sample is stabilized for at least 30mins and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

Report Prepared by : Keyur Patel

Test Report Released by:

Jeff Ahn
 Engineering Manager

Test Report Reviewed by:

Steve Kang
 Quality Assurance

**Attached are photometric data reports. Total number of pages: 9*

*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.



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Photometric Test Report

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L07134906.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
 [TEST] L07134906
 [TESTLAB] LIGHT LABORATORY, INC.
 [ISSUEDATE] 8/5/2013
 [MANUFAC] AION LED
 [LUMCAT] 3924-26-XX
 [LUMINAIRE] 12"L. X 3/8"W. X 1/8"H. LED FLEX CIRCUIT LIGHT ENGINE ONLY
 [LAMPPOSITION] 0,0
 [LAMPCAT] N/A
 [OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND
 [MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.
 [POWER SUPPLY] 24VDC CONSTANT VOLTAGE SOURCE
 [INPUT] 24VDC, 1.37W
 [TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	94
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	68
Total Luminaire Watts	1.37
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	1.26
Spacing Criterion (90-270)	1.30
Spacing Criterion (Diagonal)	1.40
Basic Luminous Shape	Rectangular
Luminous Length (0-180)	0.94 ft
Luminous Width (90-270)	0.01 ft
Luminous Height	0.00 ft

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	34591	35286	35545
55	33768	34486	34705
65	32078	32863	33025
75	28333	29262	29306
85	20871	22183	22315

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L07134906.IES

CANDELA TABULATION

	<u>0</u>	<u>5</u>	<u>10</u>	<u>15</u>	<u>20</u>	<u>25</u>	<u>30</u>	<u>35</u>	<u>40</u>	<u>45</u>
0	31.51	31.51	31.51	31.51	31.51	31.51	31.51	31.51	31.51	31.51
5	30.85	30.92	31.04	31.14	31.14	31.21	31.38	31.55	31.56	31.48
10	30.49	30.56	30.68	30.79	30.80	30.87	31.02	31.20	31.20	31.13
15	29.87	29.95	30.09	30.18	30.18	30.27	30.38	30.59	30.58	30.51
20	29.04	29.11	29.22	29.33	29.34	29.43	29.55	29.72	29.68	29.63
25	27.95	28.01	28.13	28.24	28.24	28.34	28.43	28.58	28.52	28.53
30	26.66	26.71	26.81	26.92	26.94	27.04	27.09	27.25	27.19	27.16
35	25.08	25.13	25.23	25.35	25.35	25.44	25.52	25.59	25.56	25.58
40	23.37	23.41	23.49	23.59	23.59	23.68	23.76	23.82	23.81	23.84
45	21.38	21.41	21.49	21.58	21.58	21.67	21.74	21.79	21.76	21.81
50	19.25	19.30	19.36	19.43	19.46	19.52	19.56	19.59	19.63	19.65
55	16.93	16.94	17.01	17.07	17.11	17.15	17.19	17.21	17.25	17.29
60	14.45	14.45	14.50	14.56	14.62	14.65	14.66	14.70	14.72	14.77
65	11.85	11.84	11.90	11.94	11.98	12.01	12.03	12.07	12.11	12.14
70	9.11	9.10	9.14	9.18	9.21	9.23	9.26	9.31	9.34	9.36
75	6.41	6.41	6.44	6.46	6.50	6.50	6.54	6.57	6.59	6.62
80	3.75	3.77	3.78	3.81	3.82	3.83	3.86	3.86	3.88	3.89
85	1.59	1.60	1.62	1.65	1.65	1.65	1.67	1.68	1.69	1.69
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Vert. Horizontal Angles

	<u>50</u>	<u>55</u>	<u>60</u>	<u>65</u>	<u>70</u>	<u>75</u>	<u>80</u>	<u>85</u>	<u>90</u>
0	31.51	31.51	31.51	31.51	31.51	31.51	31.51	31.51	31.51
5	31.44	31.46	31.50	31.55	31.63	31.68	31.71	31.69	31.68
10	31.09	31.11	31.14	31.19	31.27	31.32	31.34	31.33	31.30
15	30.50	30.50	30.53	30.58	30.66	30.71	30.72	30.72	30.70
20	29.62	29.65	29.68	29.73	29.80	29.84	29.86	29.85	29.84
25	28.50	28.53	28.57	28.62	28.70	28.71	28.73	28.72	28.71
30	27.19	27.20	27.25	27.30	27.36	27.38	27.41	27.39	27.36
35	25.58	25.61	25.66	25.72	25.77	25.78	25.79	25.77	25.75
40	23.84	23.86	23.92	23.98	24.01	24.01	24.03	24.01	24.00
45	21.81	21.85	21.90	21.95	21.98	21.99	21.99	21.97	21.97
50	19.68	19.72	19.76	19.79	19.84	19.82	19.81	19.81	19.79
55	17.30	17.36	17.38	17.42	17.43	17.42	17.42	17.42	17.40
60	14.80	14.85	14.86	14.88	14.89	14.89	14.88	14.88	14.87
65	12.16	12.21	12.21	12.22	12.22	12.23	12.23	12.21	12.20
70	9.37	9.42	9.40	9.42	9.42	9.42	9.41	9.41	9.40
75	6.62	6.65	6.63	6.64	6.65	6.65	6.64	6.63	6.63
80	3.90	3.91	3.91	3.92	3.92	3.92	3.91	3.92	3.92
85	1.70	1.70	1.70	1.70	1.70	1.71	1.70	1.70	1.70
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L07134906.IES

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	11.58	N.A.	12.30
0-30	24.71	N.A.	26.40
0-40	40.70	N.A.	43.40
0-60	72.91	N.A.	77.80
0-80	91.80	N.A.	97.90
0-90	93.77	N.A.	100.00
10-90	90.78	N.A.	96.80
20-40	29.12	N.A.	31.10
20-50	45.92	N.A.	49.00
40-70	44.16	N.A.	47.10
60-80	18.89	N.A.	20.10
70-80	6.95	N.A.	7.40
80-90	1.97	N.A.	2.10
90-110	0.00	N.A.	0.00
90-120	0.00	N.A.	0.00
90-130	0.00	N.A.	0.00
90-150	0.00	N.A.	0.00
90-180	0.00	N.A.	0.00
110-180	0.00	N.A.	0.00
0-180	93.77	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

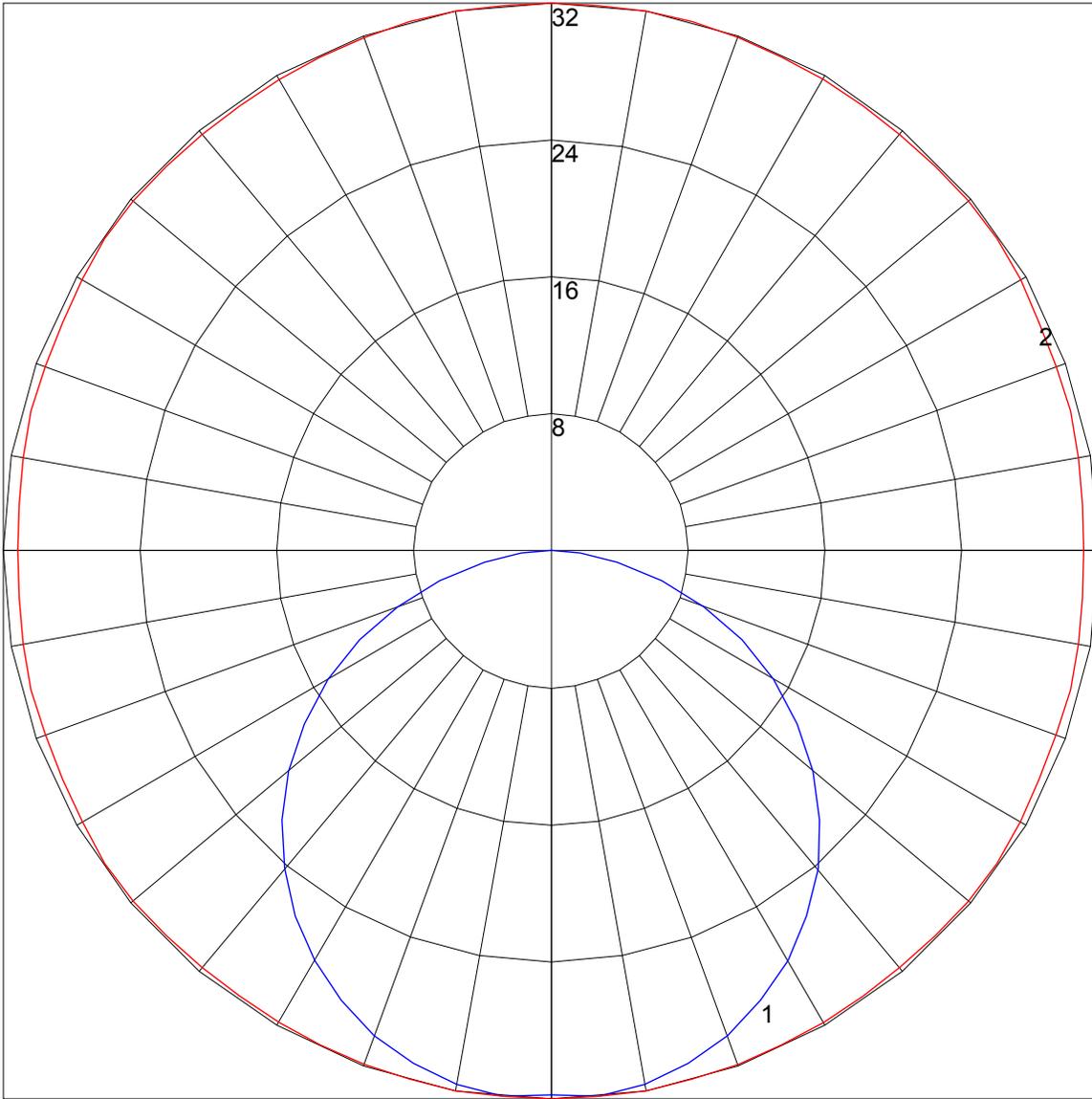
Zone	Lumens
0-10	2.99
10-20	8.59
20-30	13.13
30-40	15.99
40-50	16.80
50-60	15.41
60-70	11.94
70-80	6.95
80-90	1.97
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

Effective Floor Cavity Reflectance 0.20

RC	80				70				50			30			10			0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	108	103	99	95	105	101	97	93	97	93	90	93	90	88	89	87	85	83
2	98	90	83	77	96	88	81	76	84	79	74	81	76	73	78	74	71	69
3	89	79	70	64	87	77	69	63	74	67	62	71	66	61	69	64	60	58
4	82	69	61	54	79	68	60	53	66	58	53	63	57	52	61	56	51	49
5	75	62	53	46	73	61	52	46	59	51	45	57	50	45	55	49	44	42
6	69	56	47	40	67	55	46	40	53	45	40	51	44	39	50	44	39	37
7	64	50	42	35	62	50	41	35	48	40	35	47	40	35	45	39	34	32
8	60	46	37	31	58	45	37	31	44	36	31	43	36	31	41	35	31	29
9	56	42	34	28	54	42	34	28	40	33	28	39	33	28	38	32	28	26
10	52	39	31	26	51	38	31	26	37	30	25	36	30	25	35	29	25	23

POLAR GRAPH



Maximum Candela = 31.71 Located At Horizontal Angle = 80, Vertical Angle = 5
1 - Vertical Plane Through Horizontal Angles (80 - 260) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (5) (Through Max. Cd.)