



8165 E Kaiser Blvd. Anaheim, CA 92808
 p. 714.282.2270
 f. 714.676.5558

Test #: L09136603R01

Date: 3/12/2015



NVLAP LAB CODE 200927-0

Test Report: L09136603R01

Model Number: 8924-30-XX

Report Prepared For: Aion LED, Inc.
 2325 3rd St #330

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
ANSI C82.77:2002: Harmonic Emission Limits-Related Quality Requirements for Lighting Equipment

Description of Sample: Client submitted the sample. Fixture catalog number is 8924-30-XX. Received in working and undamaged condition. No modifications were necessary.

Testing Condition: Fixture is tested with no special conditions.

Sample Arrival Date: 9/17/13

Date of Tests: 9/24/13 - 9/26/13

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, Inc.
Model Number:	8924-30-XX
LAMPCAT:	N/A
Driver Model Number:	N/A
Total Lumens:	424.88
Input Voltage (VDC):	24.00
Input Current (Amp):	0.24
Input Power (W):	5.64
Input Power Factor:	1.00
Total Harmonic Distortion @ 120V(%):	N/A
Total Harmonic Distortion @ 277V(%):	N/A
Efficacy:	75
Color Rendering Index (CRI):	92
Correlated Color Temperature (K):	2988
Chromaticity Coordinate x:	0.4352
Chromaticity Coordinate y:	0.3990
Ambient Temperature (°F):	77.0
Stabilization Time (Hours):	0:30
Total Operating Time (Hours):	0:50
Off State Power(W):	0.00

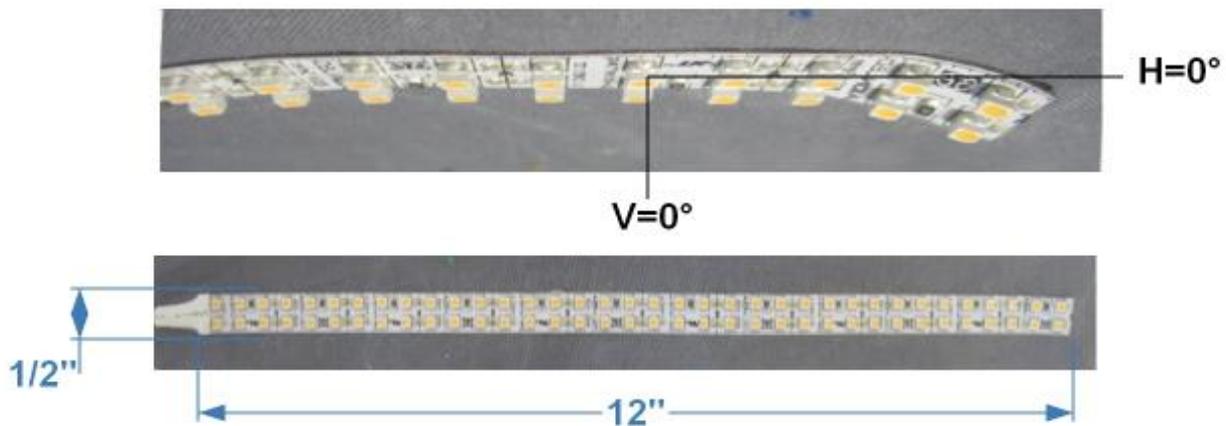
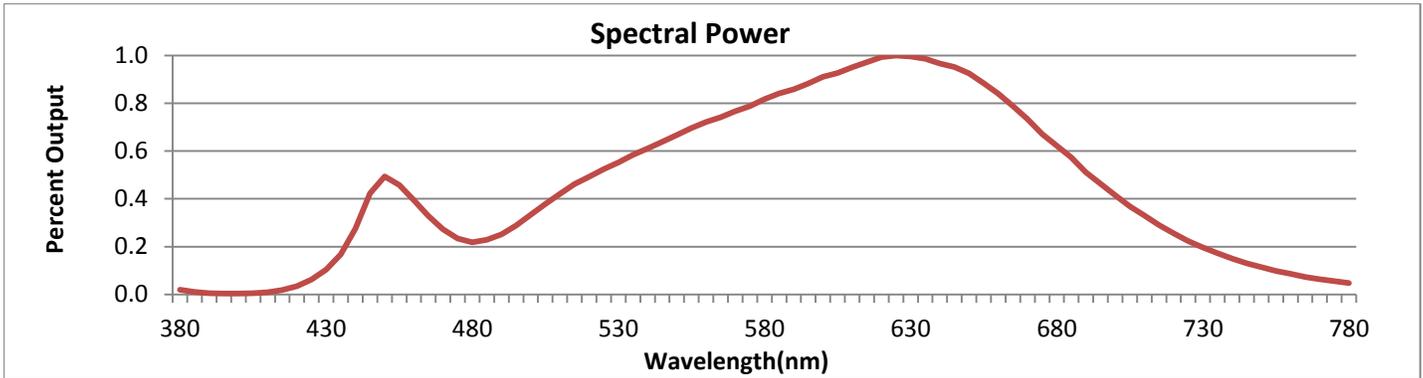


FIG1. LUMINAIRE

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



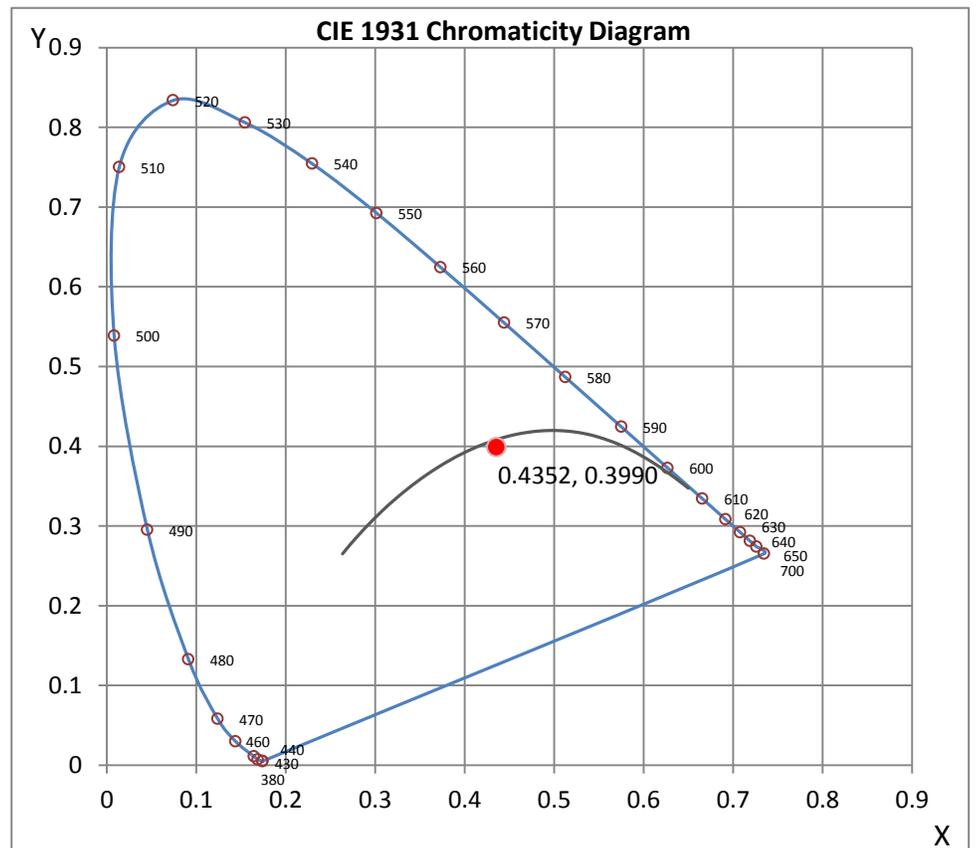
Wavelength	W/m ² nm	440	0.0099	510	0.0152	580	0.0295	650	0.0334	720	0.0092
380	0.0007	450	0.0178	520	0.0178	590	0.0310	660	0.0303	730	0.0071
390	0.0002	460	0.0143	530	0.0199	600	0.0328	670	0.0264	740	0.0054
400	0.0001	470	0.0098	540	0.0220	610	0.0343	680	0.0224	750	0.0041
410	0.0003	480	0.0079	550	0.0240	620	0.0358	690	0.0184	760	0.0031
420	0.0012	490	0.0090	560	0.0260	630	0.0359	700	0.0149	770	0.0023
430	0.0037	500	0.0120	570	0.0276	640	0.0348	710	0.0119	780	0.0017

CRI & CCT

x	0.4352
y	0.3990
u'	0.2516
v'	0.5191
CRI	91.90
CCT	2988
Duv	-0.00180

R Values

R1	92.15
R2	94.81
R3	95.24
R4	91.39
R5	91.15
R6	92.18
R7	93.30
R8	85.16
R9	66.40
R10	86.39
R11	90.52
R12	78.86
R13	92.77
R14	96.58



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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.

Disclaimers:

This report must not be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST or any agency of Federal Government.

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 : L09136603R01.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
 [TEST] L09136603R01
 [TESTLAB] LIGHT LABORATORY, INC.
 [ISSUEDATE] 3/12/2015
 [MANUFAC] AION LED, INC.
 [LUMCAT] 8924-30-XX
 [LUMINAIRE] 12"L. X 1/2"W. X 1/8"H. LED STRIP
 [MORE] 72 LEDs
 [LAMPPOSITION] 0,0
 [LAMPCAT] N/A
 [OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND
 [MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.
 [_INPUT] 24VDC, 5.64W
 [_TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	425
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	75
Total Luminaire Watts	5.64
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	1.30
Spacing Criterion (90-270)	1.28
Spacing Criterion (Diagonal)	1.40
Basic Luminous Shape	Rectangular
Luminous Length (0-180)	0.96 ft
Luminous Width (90-270)	0.03 ft
Luminous Height	0.00 ft

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	53334	52806	52806
55	51429	51429	51429
65	48594	48594	47711
75	40395	40395	40395
85	25706	25706	25706

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L09136603R01.IES

CANDELA TABULATION

	<u>0.0</u>	<u>22.5</u>	<u>45.0</u>	<u>67.5</u>	<u>90.0</u>
0	146	146	146	146	146
5	146	146	146	142	146
10	145	144	144	140	144
15	142	141	141	137	141
20	138	137	137	133	137
25	132	132	132	128	132
30	126	126	126	122	125
35	119	118	118	115	118
40	110	110	110	106	110
45	101	100	100	97	100
50	91	90	90	88	90
55	79	79	79	76	79
60	67	67	67	65	67
65	55	55	55	53	54
70	42	42	42	40	42
75	28	28	28	27	28
80	16	16	16	15	16
85	6	6	6	6	6
90	0	0	0	0	0

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L09136603R01.IES

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	53.36	N.A.	12.60
0-30	113.75	N.A.	26.80
0-40	187.19	N.A.	44.10
0-60	333.93	N.A.	78.60
0-80	417.33	N.A.	98.20
0-90	424.88	N.A.	100.00
10-90	411.10	N.A.	96.80
20-40	133.84	N.A.	31.50
20-50	210.61	N.A.	49.60
40-70	200.39	N.A.	47.20
60-80	83.40	N.A.	19.60
70-80	29.74	N.A.	7.00
80-90	7.55	N.A.	1.80
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	424.88	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	13.79
10-20	39.57
20-30	60.40
30-40	73.44
40-50	76.77
50-60	69.96
60-70	53.66
70-80	29.74
80-90	7.55
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

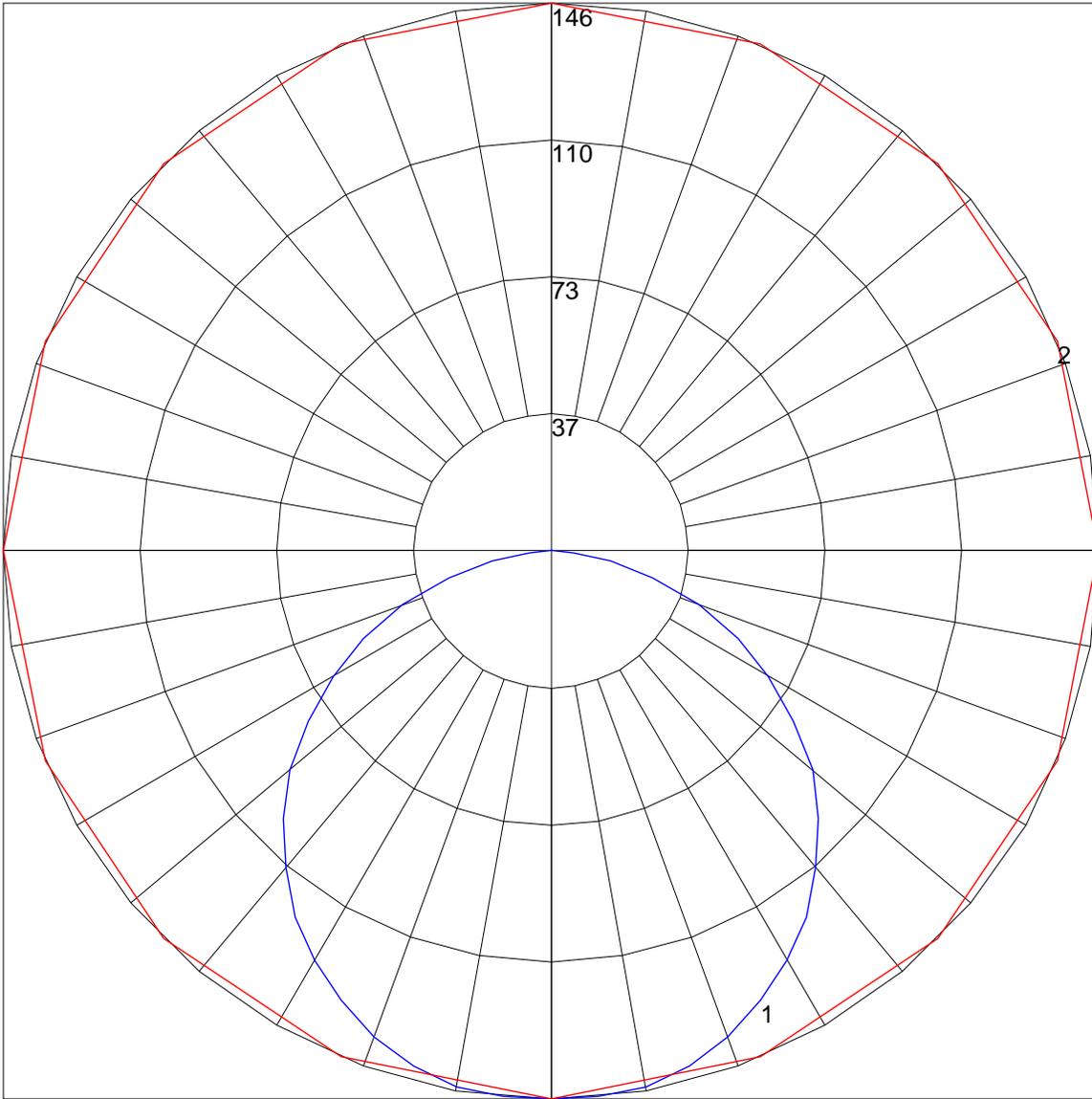
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	109	104	100	96	106	102	98	94	97	94	91	93	91	88	90	88	86	84
2	99	90	83	78	96	88	82	77	85	80	75	82	77	73	79	75	72	69
3	90	79	71	64	87	78	70	64	75	68	63	72	66	62	69	65	60	58
4	82	70	61	54	80	69	60	54	66	59	53	64	58	52	62	56	52	50
5	75	62	53	47	73	61	53	46	59	52	46	57	51	45	55	50	45	43
6	70	56	47	41	68	55	47	40	53	46	40	52	45	40	50	44	39	37
7	65	51	42	36	63	50	42	36	49	41	35	47	40	35	46	40	35	33
8	60	46	38	32	58	46	38	32	44	37	32	43	36	31	42	36	31	29
9	56	43	34	29	55	42	34	29	41	34	28	40	33	28	39	33	28	26
10	53	39	31	26	51	39	31	26	38	31	26	37	30	26	36	30	26	24

POLAR GRAPH



Maximum Candela = 146 Located At Horizontal Angle = 0, Vertical Angle = 0
1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (0) (Through Max. Cd.)