



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

Test #: L09136602R01

Date: 3/12/2015



NVLAP LAB CODE 200927-0

Test Report: L09136602R01

Model Number: 4924-30-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 4924-30-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:	4924-30-XX
LAMPCAT:	N/A
Driver Model Number:	N/A
Total Lumens:	255.24
Input Voltage (VDC):	24.00
Input Current (Amp):	0.12
Input Power (W):	2.82
Input Power Factor:	1.00
Total Harmonic Distortion @ 120V(%):	N/A
Total Harmonic Distortion @ 277V(%):	N/A
Efficacy:	91
Color Rendering Index (CRI):	82
Correlated Color Temperature (K):	3033
Chromaticity Coordinate x:	0.4325
Chromaticity Coordinate y:	0.3987
Ambient Temperature (°F):	77.0
Stabilization Time (Hours):	0:30
Total Operating Time (Hours):	0:50
Off State Power(W):	0.00

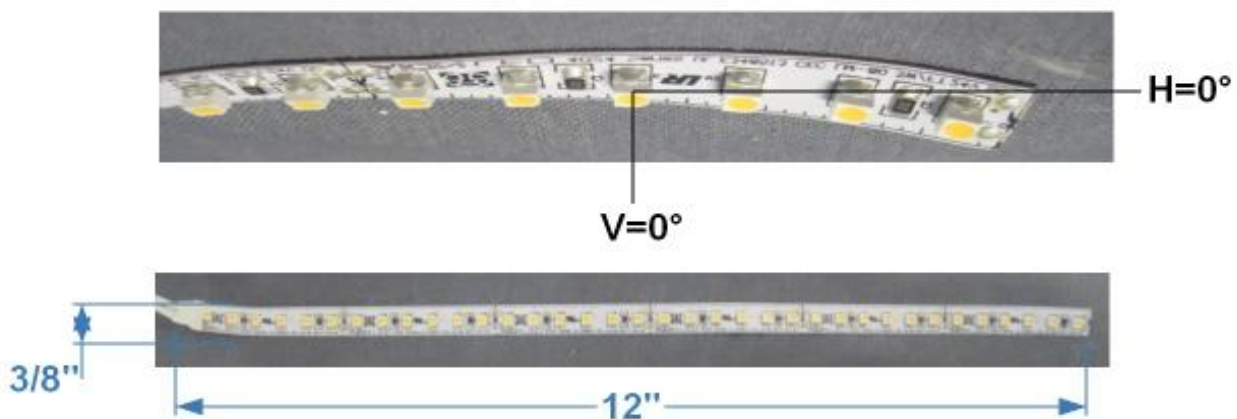
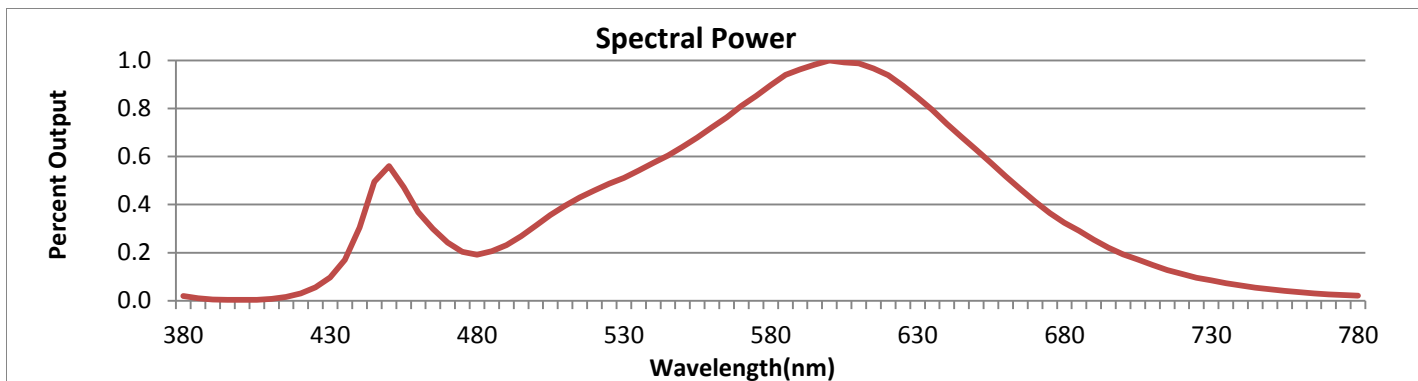


FIG1. LUMINAIRE



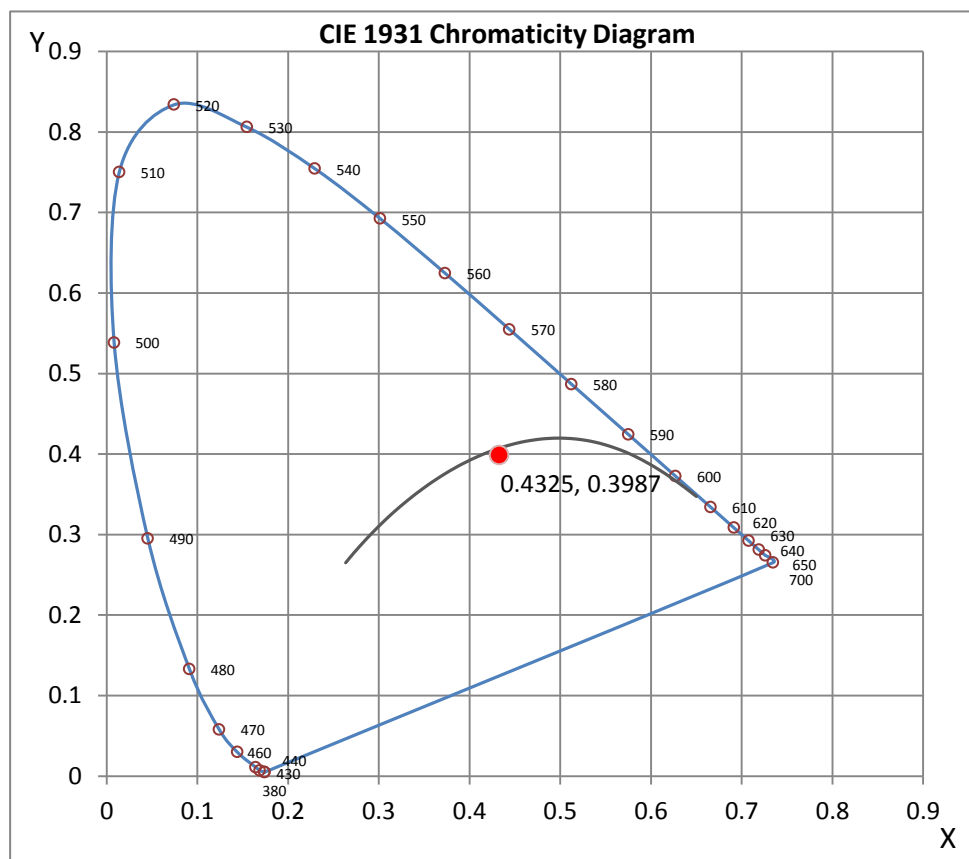
Wavelength	W/m ² nm	440	0.0066	510	0.0085	580	0.0194	650	0.0136	720	0.0024
380	0.0004	450	0.0121	520	0.0099	590	0.0208	660	0.0112	730	0.0018
390	0.0001	460	0.0080	530	0.0110	600	0.0216	670	0.0089	740	0.0014
400	0.0001	470	0.0052	540	0.0124	610	0.0214	680	0.0070	750	0.0010
410	0.0002	480	0.0042	550	0.0138	620	0.0203	690	0.0055	760	0.0008
420	0.0007	490	0.0050	560	0.0156	630	0.0183	700	0.0042	770	0.0006
430	0.0021	500	0.0068	570	0.0175	640	0.0159	710	0.0032	780	0.0004

CRI & CCT

x	0.4325
y	0.3987
u'	0.2500
v'	0.5186
CRI	82.30
CCT	3033
Duv	-0.00155

R Values

R1	80.55
R2	90.20
R3	96.34
R4	79.75
R5	80.33
R6	87.03
R7	83.42
R8	60.85
R9	11.37
R10	77.20
R11	77.97
R12	69.95
R13	83.18
R14	98.25





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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 : L09136602R01.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L09136602R01
[TESTLAB] LIGHT LABORATORY, INC.
[ISSUEDATE] 3/12/2015
[MANUFAC] AION LED, INC.
[LUMCAT] 4924-30-XX
[LUMINAIRE] 12"L. X 3/8"W. X 1/8"H. LED STRIP
[MORE] 36 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, 2.82W
[TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	255
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	91
Total Luminaire Watts	2.82
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	1.30
Spacing Criterion (90-270)	1.30
Spacing Criterion (Diagonal)	1.40
Basic Luminous Shape	Rectangular
Luminous Length (0-180)	0.97 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	94071	94071	94071
55	90844	90844	90844
65	83945	83945	83945
75	72819	72819	72819
85	50881	50881	38161

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L09136602R01.IES

CANDELA TABULATION

	<u>0.0</u>	<u>22.5</u>	<u>45.0</u>	<u>67.5</u>	<u>90.0</u>
0	87	87	87	87	87
5	87	87	87	87	87
10	86	86	86	86	86
15	84	84	84	84	84
20	82	82	82	82	82
25	79	79	79	79	79
30	75	75	75	75	75
35	71	70	70	70	71
40	65	66	65	65	66
45	60	60	60	60	60
50	54	54	54	54	54
55	47	47	47	47	47
60	40	40	40	40	40
65	32	32	32	32	32
70	25	25	25	25	25
75	17	17	17	17	17
80	9	10	9	9	10
85	4	4	4	3	3
90	0	0	0	0	0

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L09136602R01.IES

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	32.03	N.A.	12.50
0-30	68.41	N.A.	26.80
0-40	112.43	N.A.	44.00
0-60	200.75	N.A.	78.70
0-80	250.72	N.A.	98.20
0-90	255.24	N.A.	100.00
10-90	246.97	N.A.	96.80
20-40	80.39	N.A.	31.50
20-50	126.64	N.A.	49.60
40-70	120.26	N.A.	47.10
60-80	49.97	N.A.	19.60
70-80	18.04	N.A.	7.10
80-90	4.52	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	255.24	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	8.27
10-20	23.77
20-30	36.37
30-40	44.02
40-50	46.25
50-60	42.07
60-70	31.94
70-80	18.04
80-90	4.52
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

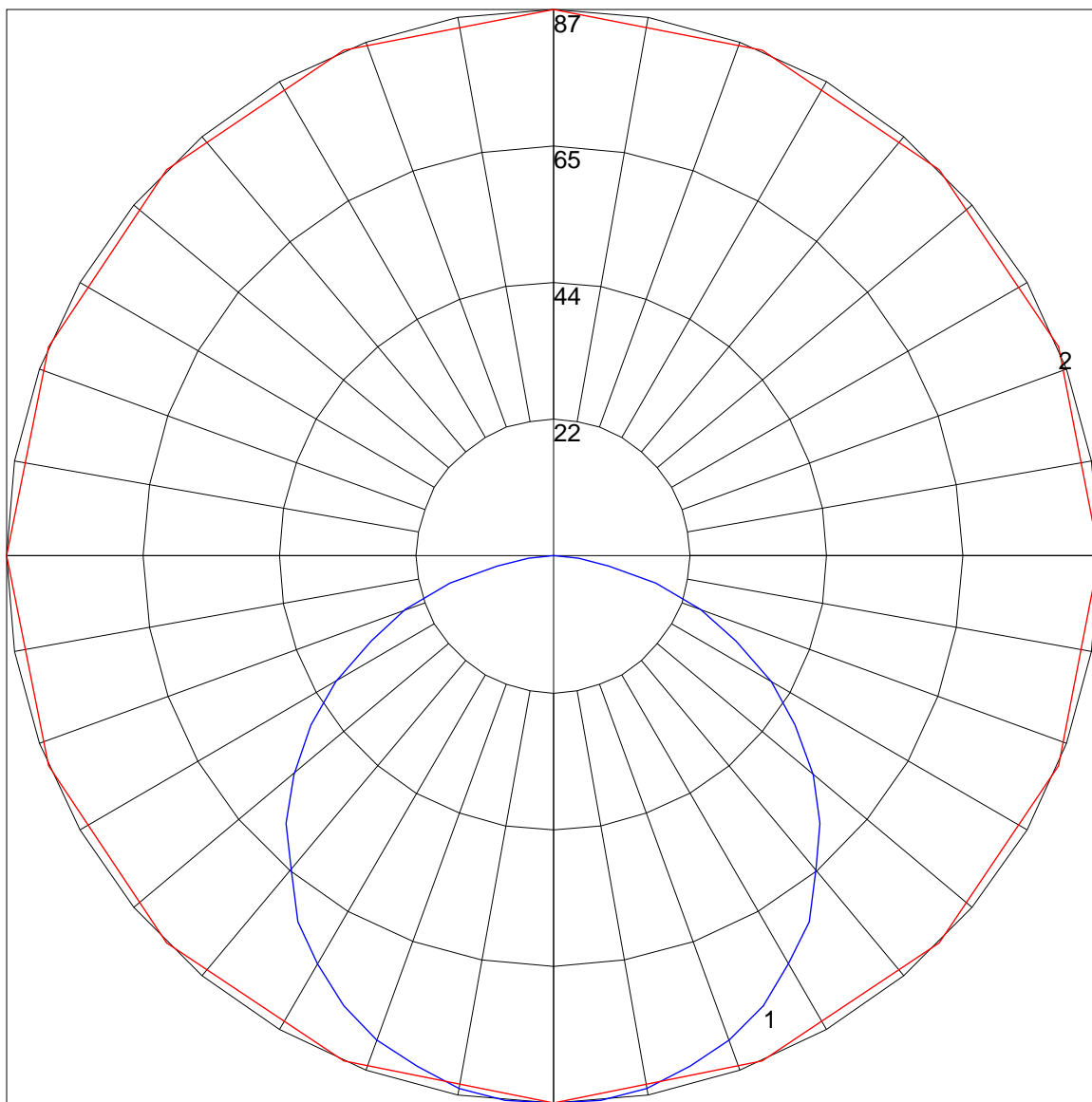
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	84	78	96	89	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	61	58
4	82	70	61	54	80	69	60	54	66	59	53	64	58	53	62	56	52	50
5	76	63	53	47	73	61	53	47	59	52	46	57	51	45	55	50	45	43
6	70	56	47	41	68	55	47	41	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	59	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 = 87 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.)