



8165 E Kaiser Blvd. Anaheim, CA 92808
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Test #: L09136601R01

Date: 3/12/2015



NVLAP LAB CODE 200927-0

Test Report: L09136601R01

Model Number: 3924-30-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 3924-30-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:	3924-30-XX
LAMPCAT:	N/A
Driver Model Number:	N/A
Total Lumens:	108.76
Input Voltage (VDC):	24.00
Input Current (Amp):	0.06
Input Power (W):	1.41
Input Power Factor:	1.00
Total Harmonic Distortion @ 120V(%):	N/A
Total Harmonic Distortion @ 277V(%):	N/A
Efficacy:	77
Color Rendering Index (CRI):	92
Correlated Color Temperature (K):	3001
Chromaticity Coordinate x:	0.4357
Chromaticity Coordinate y:	0.4016
Ambient Temperature (°F):	77.0
Stabilization Time (Hours):	0:30
Total Operating Time (Hours):	0:55
Off State Power(W):	0.00

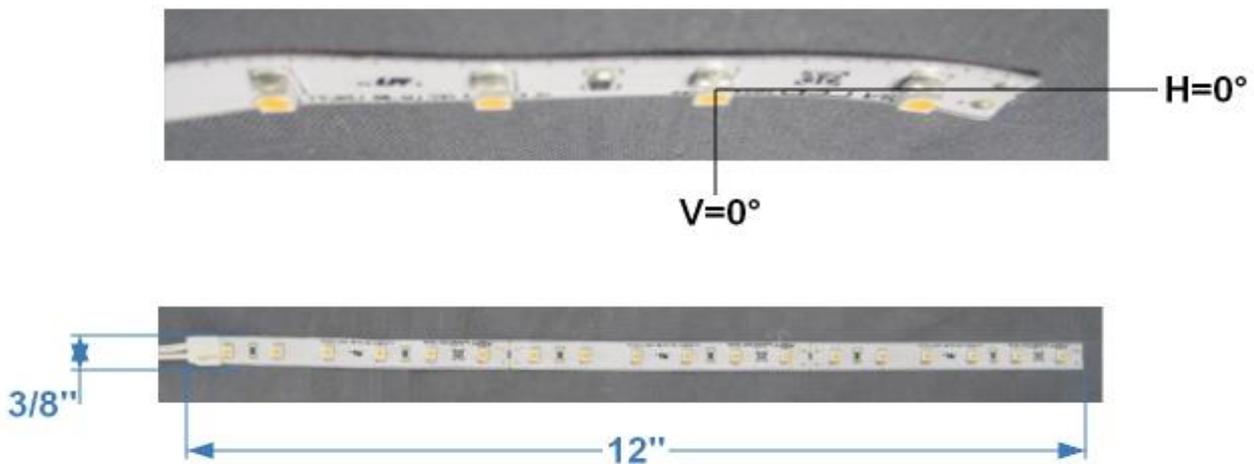
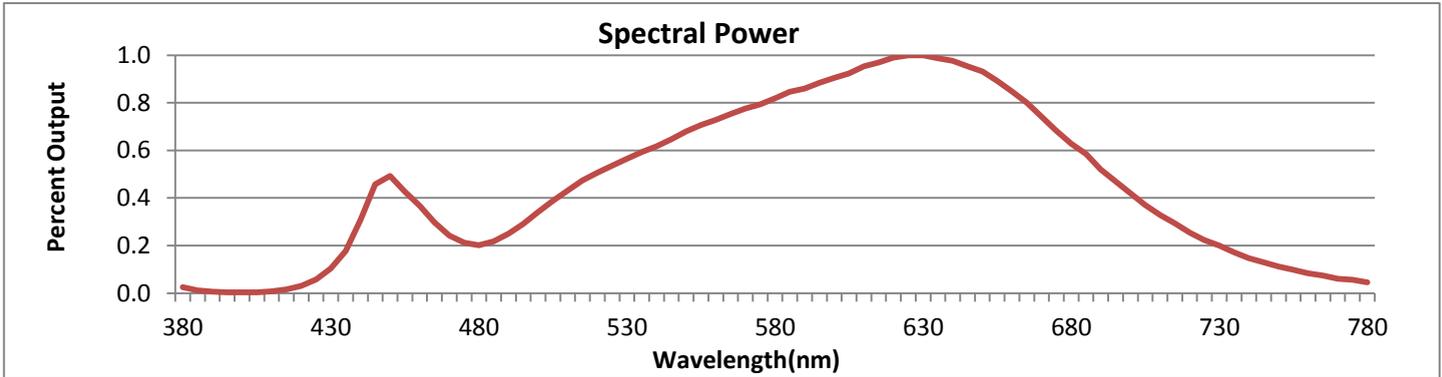


FIG1. LUMINAIRE

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



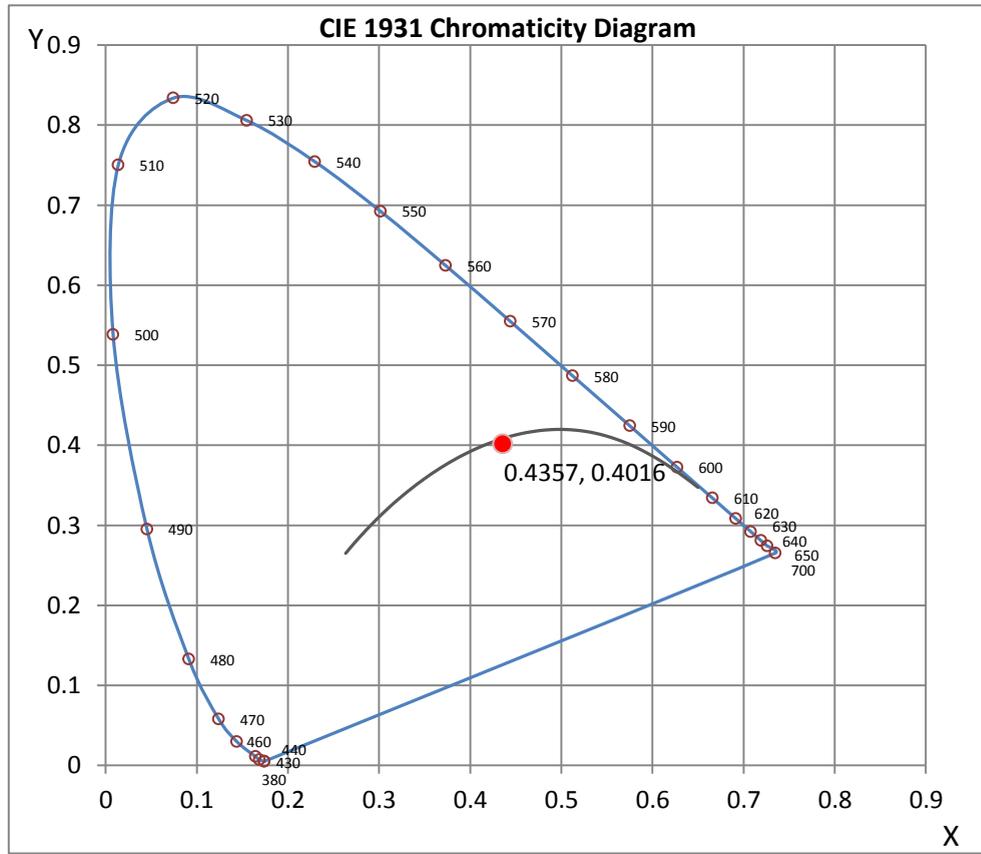
Wavelength	W/m ² nm	440	0.0027	510	0.0038	580	0.0073	650	0.0083	720	0.0023
380	0.0002	450	0.0044	520	0.0045	590	0.0077	660	0.0076	730	0.0018
390	0.0001	460	0.0033	530	0.0050	600	0.0081	670	0.0066	740	0.0013
400	0.0000	470	0.0022	540	0.0055	610	0.0085	680	0.0056	750	0.0010
410	0.0001	480	0.0018	550	0.0061	620	0.0088	690	0.0046	760	0.0007
420	0.0003	490	0.0022	560	0.0065	630	0.0089	700	0.0037	770	0.0005
430	0.0009	500	0.0030	570	0.0069	640	0.0087	710	0.0029	780	0.0004

CRI & CCT

x	0.4357
y	0.4016
u'	0.2508
v'	0.5202
CRI	91.60
CCT	3001
Duv	-0.00082

R Values

R1	91.75
R2	93.96
R3	94.30
R4	91.55
R5	90.67
R6	91.07
R7	93.70
R8	85.57
R9	66.35
R10	84.68
R11	90.85
R12	77.53
R13	92.14
R14	96.05



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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:

Test Report Reviewed by:

Jeff Ahn
 Engineering Manager

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 : L09136601R01.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
 [TEST] L09136601R01
 [TESTLAB] LIGHT LABORATORY, INC.
 [ISSUEDATE] 3/12/2015
 [MANUFAC] AION LED, INC.
 [LUMCAT] 3924-30-XX
 [LUMINAIRE] 12"L. X 3/8"W. X 1/8"H. LED STRIP
 [MORE] 18 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, 1.41W
 [_TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	109
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	77
Total Luminaire Watts	1.41
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	1.28
Spacing Criterion (90-270)	1.28
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	40447	40447	40447
55	39891	39891	39891
65	37898	37898	37898
75	30941	30941	30941
85	26252	26252	13126

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L09136601R01.IES

CANDELA TABULATION

	<u>0.0</u>	<u>22.5</u>	<u>45.0</u>	<u>67.5</u>	<u>90.0</u>
0	37	37	37	37	37
5	37	37	37	37	37
10	36	36	36	36	36
15	36	36	36	36	36
20	35	35	35	35	35
25	33	33	33	33	33
30	32	32	32	32	32
35	30	30	30	30	30
40	28	28	28	28	28
45	25	25	25	25	25
50	23	23	23	23	23
55	20	20	20	20	20
60	17	17	17	17	17
65	14	14	14	14	14
70	10	11	11	11	11
75	7	7	7	7	7
80	4	4	4	4	4
85	2	2	2	2	1
90	0	0	0	0	0

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L09136601R01.IES

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	13.62	N.A.	12.50
0-30	28.98	N.A.	26.60
0-40	47.78	N.A.	43.90
0-60	85.20	N.A.	78.30
0-80	106.65	N.A.	98.10
0-90	108.76	N.A.	100.00
10-90	105.26	N.A.	96.80
20-40	34.16	N.A.	31.40
20-50	53.68	N.A.	49.40
40-70	51.25	N.A.	47.10
60-80	21.45	N.A.	19.70
70-80	7.62	N.A.	7.00
80-90	2.11	N.A.	1.90
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	108.76	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	3.50
10-20	10.12
20-30	15.36
30-40	18.81
40-50	19.51
50-60	17.90
60-70	13.83
70-80	7.62
80-90	2.11
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

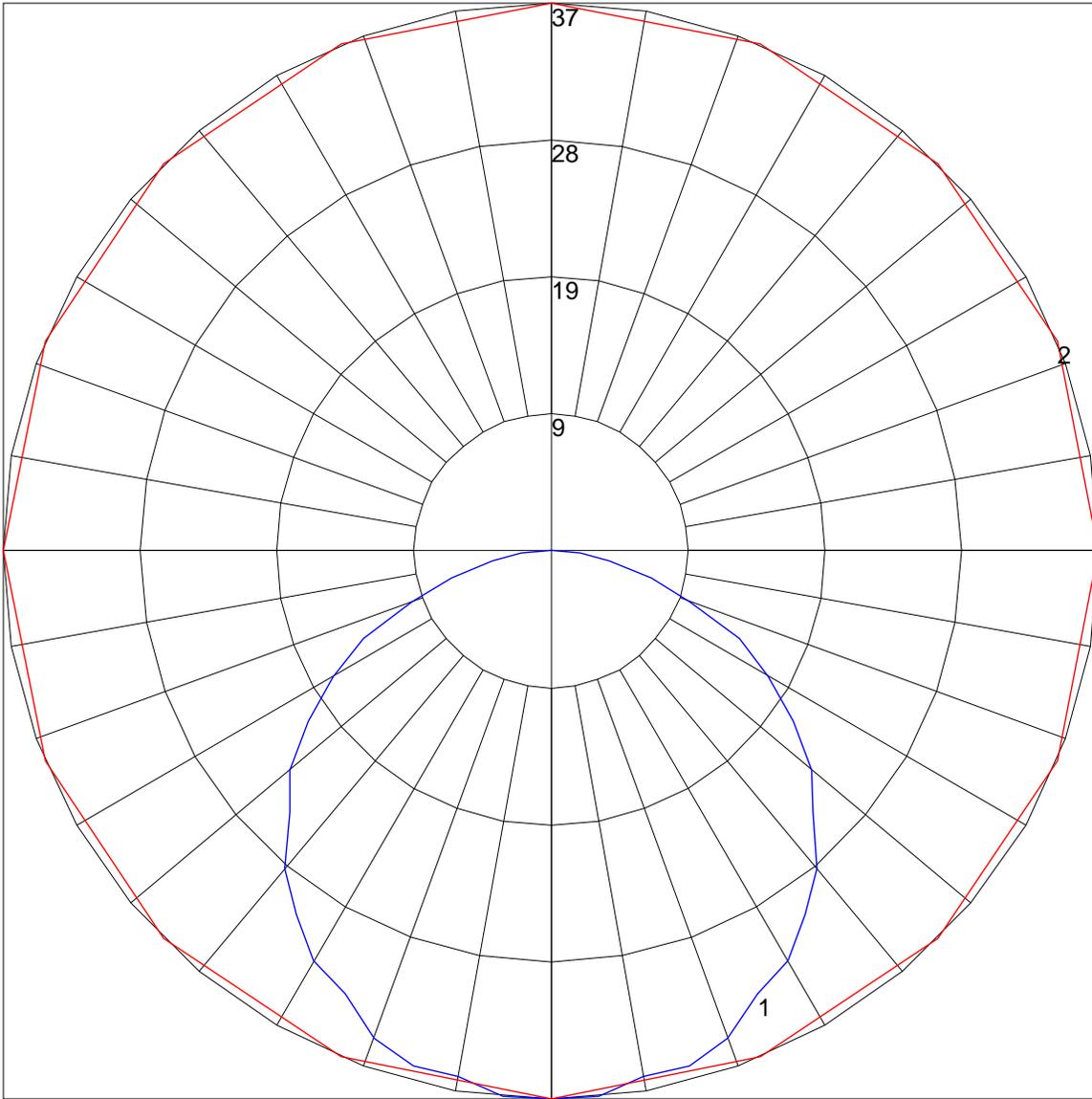
IES INDOOR REPORT
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	108	104	99	95	106	101	97	94	97	94	91	93	90	88	89	87	85	83
2	98	90	83	77	96	88	82	76	85	79	75	81	77	73	78	75	71	69
3	90	79	71	64	87	77	70	63	74	68	62	72	66	61	69	64	60	58
4	82	70	61	54	80	68	60	54	66	59	53	64	57	52	61	56	52	49
5	75	62	53	46	73	61	53	46	59	51	46	57	50	45	55	49	45	43
6	69	56	47	40	68	55	46	40	53	46	40	52	45	40	50	44	39	37
7	64	51	42	36	63	50	41	36	48	41	35	47	40	35	46	39	35	33
8	60	46	38	32	58	46	37	32	44	37	31	43	36	31	42	36	31	29
9	56	42	34	29	54	42	34	28	41	33	28	40	33	28	39	32	28	26
10	52	39	31	26	51	39	31	26	38	31	26	37	30	26	36	30	25	24

POLAR GRAPH



Maximum Candela = 37 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.)