



8165 E Kaiser Blvd. Anaheim, CA 92808
www.lightlaboratory.com

Report No: L031703004



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Issue Date: 3/15/2017

Report Prepared For: Aion LED, Inc.
2325 3rd Street #330 San Francisco, CA 94107

Model Number: 9524-35-FR

Test: Electrical and Photometric tests

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. Received in working and undamaged condition. No modifications were necessary.

Testing Condition: Fixture is tested with no special conditions.

Sample Arrival Date: 3/13/17

Date of Tests: 3/14/17 - 3/15/17

Seasoning of Sample: 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	11/28/17
ITECH	IT6122	PS-DC03-S1	11/28/17
Fluke Digital Thermometer	52k/J	MT-TP02-GC	11/28/17
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.

Test Summary

Manufacturer:	Aion LED, Inc.
Model Number:	9524-35-FR
Driver Model Number:	N/A
Total Lumens:	1094.83
Input Voltage (VDC):	24.00
Input Current (Amp):	0.45
Input Power (W):	10.69
Input Power Factor:	1.00
Current ATHD @ 120V(%):	N/A
Current ATHD @ 277V(%):	N/A
Efficacy:	102
Color Rendering Index (CRI):	97
Correlated Color Temperature (K):	3451
Chromaticity Coordinate x:	0.4042
Chromaticity Coordinate y:	0.3820
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:35
Total Operating Time (Hours):	1:00

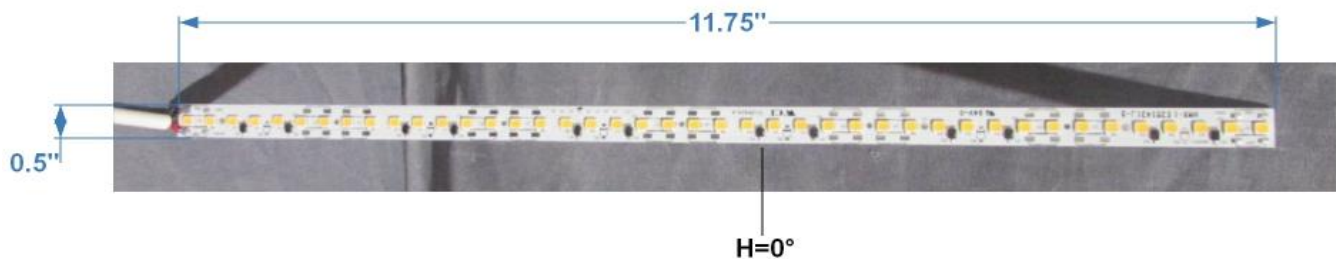
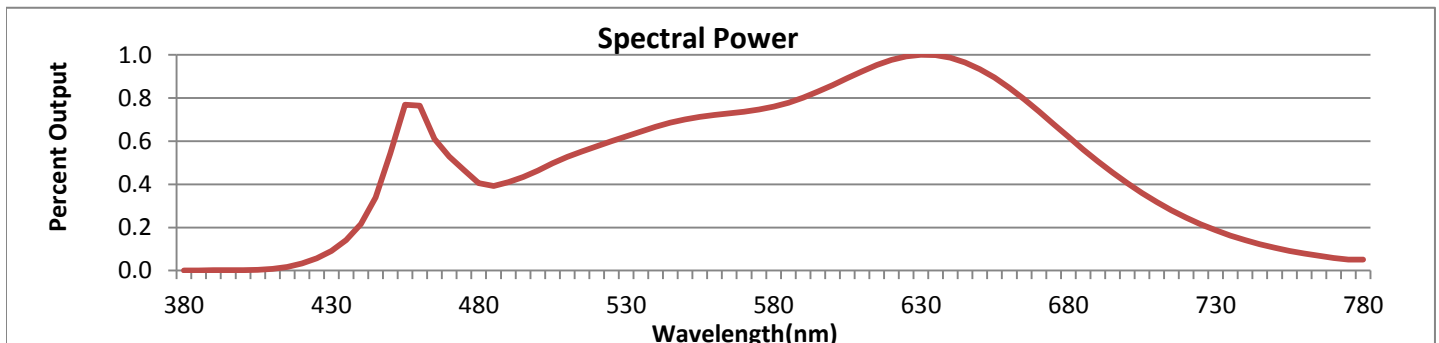


FIG. 1 LUMINAIRE



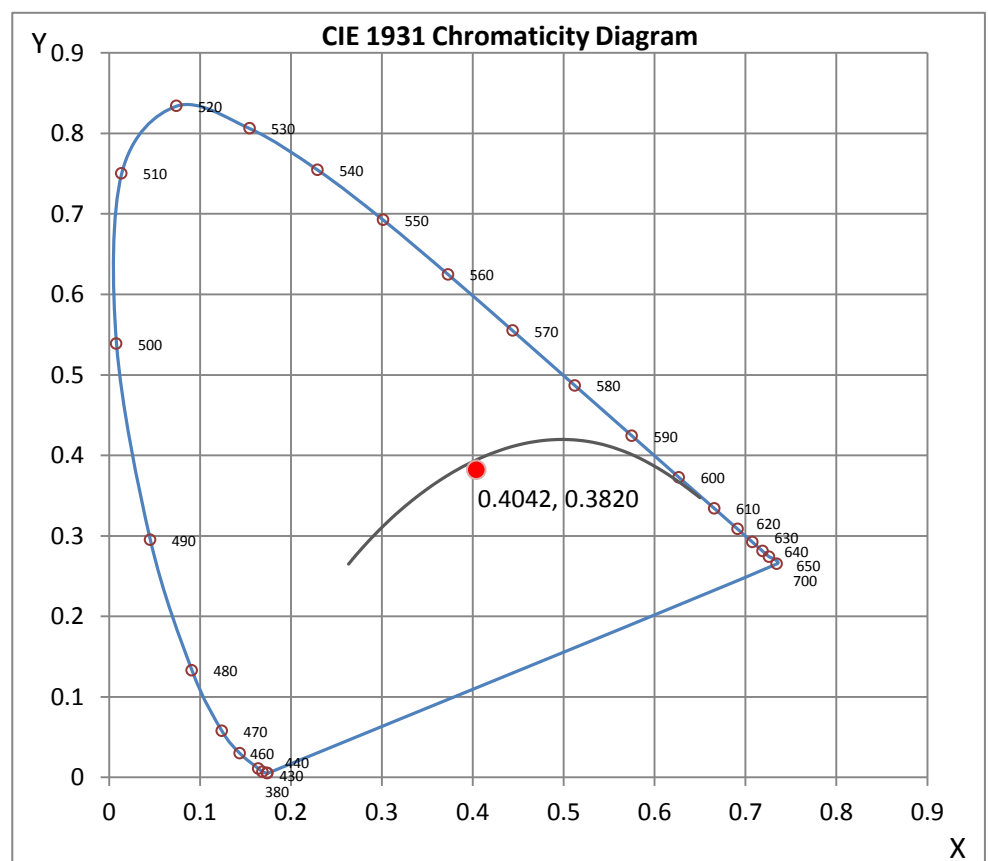
Wavelength	W/m ² nm	440	0.2164	510	0.5278	580	0.7608	650	0.9341	720	0.2453
380	0.0010	450	0.5436	520	0.5768	590	0.8023	660	0.8482	730	0.1869
390	0.0013	460	0.7643	530	0.6227	600	0.8603	670	0.7381	740	0.1411
400	0.0025	470	0.5291	540	0.6672	610	0.9241	680	0.6202	750	0.1059
410	0.0082	480	0.4058	550	0.7011	620	0.9776	690	0.5063	760	0.0788
420	0.0333	490	0.4096	560	0.7211	630	1.0000	700	0.4053	770	0.0588
430	0.0915	500	0.4641	570	0.7369	640	0.9871	710	0.3181	780	0.0505

CRI & CCT

x	0.4042
y	0.3820
u'	0.2386
v'	0.5074
CRI	97.00
CCT	3451
Duv	-0.00364

R Values

R1	97.11
R2	97.09
R3	98.92
R4	98.01
R5	96.91
R6	94.97
R7	95.85
R8	96.92
R9	97.92
R10	96.35
R11	98.77
R12	80.41
R13	96.80
R14	98.83



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*



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Photometric Test Report

IES INDOOR REPORT

PHOTOMETRIC FILENAME : L031703004.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L031703004
[TESTLAB] LIGHT LABORATORY, INC.
[ISSUEDATE] 3/15/2017
[MANUFAC] AION LED, INC.
[LUMCAT] 9524-35-FR
[LUMINAIRE] LED STRIP LIGHT
[BALLASTCAT] N/A
[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, 10.69W
[TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	1095
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	102
Total Luminaire Watts	10.69
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	1.28
Spacing Criterion (90-270)	1.30
Spacing Criterion (Diagonal)	1.42
Basic Luminous Shape	Rectangular
Luminous Length (0-180)	0.02 ft
Luminous Width (90-270)	0.98 ft
Luminous Height	0.00 ft

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	197800	199352	199608
55	193495	194250	195083
65	181651	183054	182729
75	153500	155959	155959
85	97765	93043	99339

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PHOTOMETRIC FILENAME : L031703004.IES

CANDELA TABULATION

	<u>0.0</u>	<u>22.5</u>	<u>45.0</u>	<u>67.5</u>	<u>90.0</u>
0	370.20	370.20	370.20	370.20	370.20
5	366.52	367.89	369.10	369.93	370.18
10	362.04	363.41	364.70	365.44	365.61
15	354.98	356.27	357.51	358.18	358.22
20	345.02	346.18	347.55	348.17	348.42
25	333.39	333.93	335.34	335.34	336.13
30	317.28	318.86	319.73	320.69	320.36
35	299.60	300.55	301.84	302.25	302.50
40	278.92	279.75	280.42	281.00	281.49
45	254.92	256.38	256.92	257.54	257.25
50	229.35	230.68	231.13	232.05	231.26
55	202.28	202.36	203.07	203.48	203.94
60	171.47	172.01	172.84	173.01	172.72
65	139.92	141.08	141.00	141.33	140.75
70	106.79	107.87	107.74	108.32	107.28
75	72.41	73.36	73.57	75.15	73.57
80	41.68	41.35	42.14	41.15	42.10
85	15.53	15.36	14.78	13.70	15.78
90	0.00	0.00	0.00	0.00	0.00

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ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	135.90	N.A.	12.40
0-30	290.24	N.A.	26.50
0-40	478.75	N.A.	43.70
0-60	857.92	N.A.	78.40
0-80	1075.4	N.A.	98.20
0-90	1094.83	N.A.	100.00
10-90	1059.77	N.A.	96.80
20-40	342.84	N.A.	31.30
20-50	540.85	N.A.	49.40
40-70	518.34	N.A.	47.30
60-80	217.48	N.A.	19.90
70-80	78.32	N.A.	7.20
80-90	19.43	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	1094.83	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	35.06
10-20	100.84
20-30	154.34
30-40	188.50
40-50	198.01
50-60	181.17
60-70	139.16
70-80	78.32
80-90	19.43
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

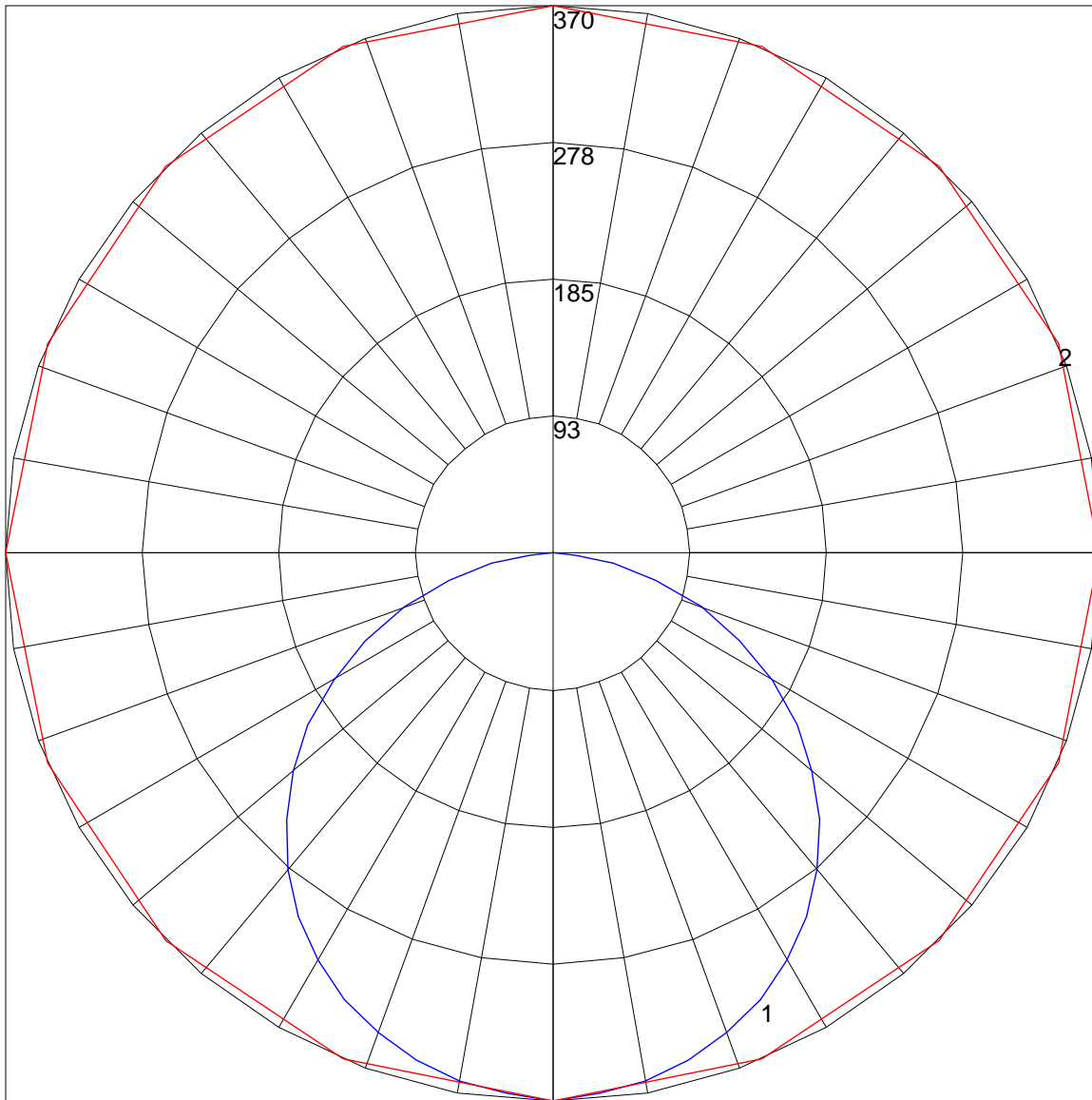
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	99	96	106	102	98	94	97	94	91	93	91	88	90	88	86	83
2	99	90	83	78	96	88	82	77	85	79	75	81	77	73	78	75	71	69
3	90	79	71	64	87	77	70	64	74	68	62	72	66	61	69	64	60	58
4	82	70	61	54	80	69	60	54	66	59	53	64	57	52	61	56	52	49
5	75	62	53	47	73	61	53	46	59	52	46	57	50	45	55	49	45	43
6	70	56	47	40	68	55	47	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	55	42	34	28	41	33	28	40	33	28	39	32	28	26
10	52	39	31	26	51	39	31	26	38	30	26	37	30	25	36	30	25	24

POLAR GRAPH



Maximum Candela = 370.2 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.)