



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

Report No: L031703003



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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: 9524-30-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:	9524-30-FR
Driver Model Number:	N/A
Total Lumens:	1047.29
Input Voltage (VDC):	24.00
Input Current (Amp):	0.45
Input Power (W):	10.75
Input Power Factor:	0.99
Current ATHD @ 120V(%):	N/A
Current ATHD @ 277V(%):	N/A
Efficacy:	97
Color Rendering Index (CRI):	98
Correlated Color Temperature (K):	2978
Chromaticity Coordinate x:	0.4385
Chromaticity Coordinate y:	0.4045
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:40
Total Operating Time (Hours):	1:00

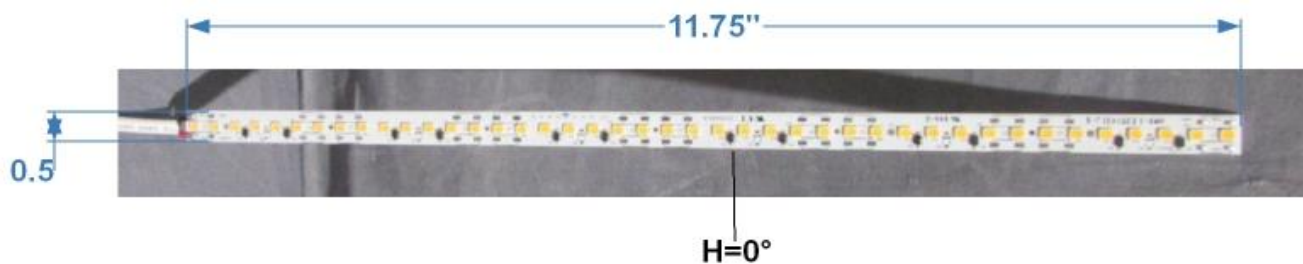
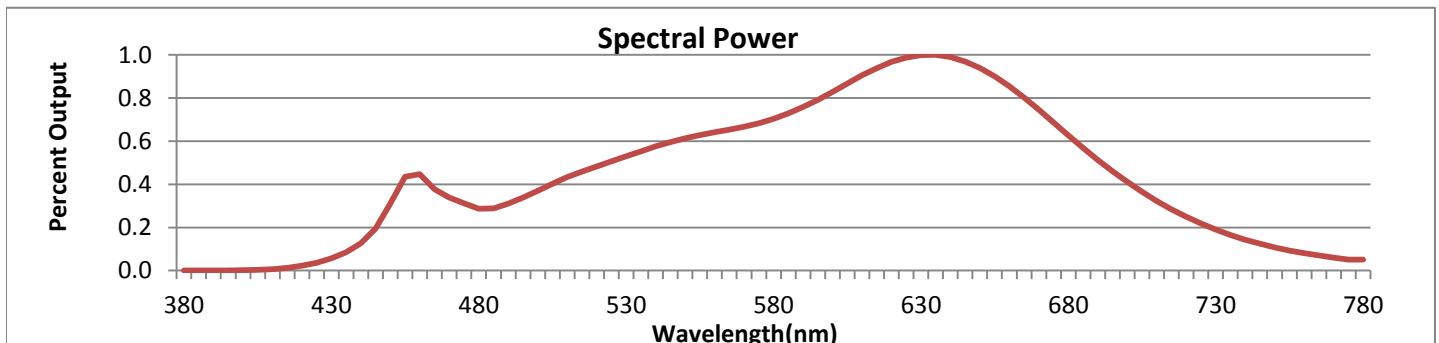


FIG. 1 LUMINAIRE



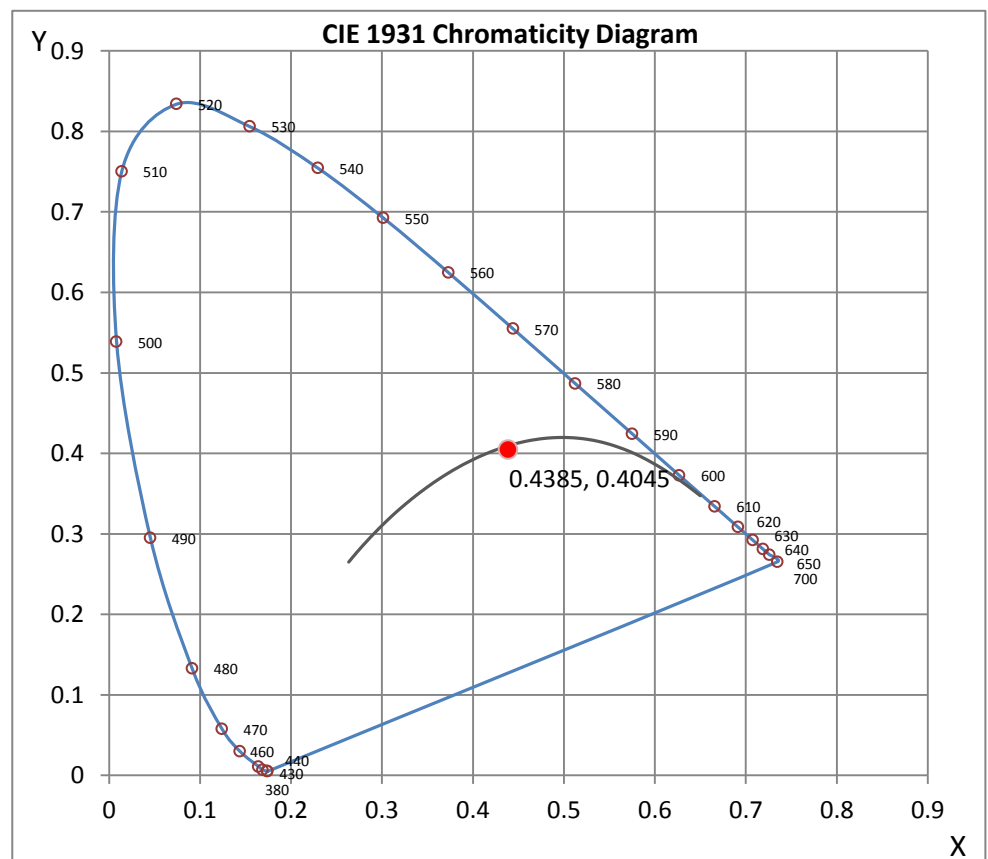
Wavelength	W/m ² nm	440	0.1268	510	0.4335	580	0.7034	650	0.9393	720	0.2494
380	0.0008	450	0.3103	520	0.4835	590	0.7582	660	0.8551	730	0.1899
390	0.0010	460	0.4470	530	0.5301	600	0.8288	670	0.7455	740	0.1436
400	0.0017	470	0.3388	540	0.5758	610	0.9052	680	0.6273	750	0.1079
410	0.0059	480	0.2873	550	0.6135	620	0.9684	690	0.5130	760	0.0804
420	0.0220	490	0.3114	560	0.6413	630	0.9988	700	0.4109	770	0.0599
430	0.0570	500	0.3706	570	0.6675	640	0.9902	710	0.3229	780	0.0515

CRI & CCT

x	0.4385
y	0.4045
u'	0.2514
v'	0.5218
CRI	97.70
CCT	2978
Duv	-0.00004

R Values

R1	99.13
R2	99.30
R3	98.76
R4	98.10
R5	98.10
R6	97.32
R7	96.20
R8	94.74
R9	89.68
R10	99.37
R11	99.60
R12	84.61
R13	99.20
R14	98.22





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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 : L031703003.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L031703003
[TESTLAB] LIGHT LABORATORY, INC.
[ISSUEDATE] 3/15/2017
[MANUFAC] AION LED, INC.
[LUMCAT] 9524-30-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, 10.75W
[TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	1047
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	97
Total Luminaire Watts	10.75
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	1.28
Spacing Criterion (90-270)	1.30
Spacing Criterion (Diagonal)	1.40
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	190134	190010	190654
55	184436	184752	185947
65	173667	173888	173992
75	150511	150766	146462
85	92540	89140	92540

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L031703003.IES

CANDELA TABULATION

	<u>0.0</u>	<u>22.5</u>	<u>45.0</u>	<u>67.5</u>	<u>90.0</u>
0	356.04	356.04	356.04	356.04	356.04
5	353.40	354.23	354.28	355.60	355.81
10	349.17	349.75	349.63	351.16	351.49
15	342.28	342.90	342.57	344.15	344.44
20	333.23	333.35	333.85	334.72	334.80
25	320.77	321.48	321.35	322.76	323.01
30	305.58	306.16	305.62	307.24	307.57
35	287.72	288.64	287.81	289.84	289.55
40	267.05	268.08	267.71	269.21	268.71
45	245.04	245.21	244.88	246.12	245.71
50	220.38	220.71	220.05	221.17	221.54
55	192.81	193.72	193.14	194.43	194.39
60	163.17	164.62	164.33	165.33	163.67
65	133.77	134.19	133.94	134.56	134.02
70	103.05	102.38	102.26	102.63	102.97
75	71.00	69.34	71.12	70.37	69.09
80	39.19	39.61	39.94	39.53	39.94
85	14.70	14.66	14.16	13.12	14.70
90	0.00	0.00	0.00	0.00	0.00

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L031703003.IES

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	130.66	N.A.	12.50
0-30	278.96	N.A.	26.60
0-40	459.52	N.A.	43.90
0-60	821.70	N.A.	78.50
0-80	1028.79	N.A.	98.20
0-90	1047.29	N.A.	100.00
10-90	1013.58	N.A.	96.80
20-40	328.86	N.A.	31.40
20-50	518.14	N.A.	49.50
40-70	494.71	N.A.	47.20
60-80	207.09	N.A.	19.80
70-80	74.57	N.A.	7.10
80-90	18.50	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	1047.29	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	33.71
10-20	96.95
20-30	148.29
30-40	180.56
40-50	189.29
50-60	172.90
60-70	132.52
70-80	74.57
80-90	18.50
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

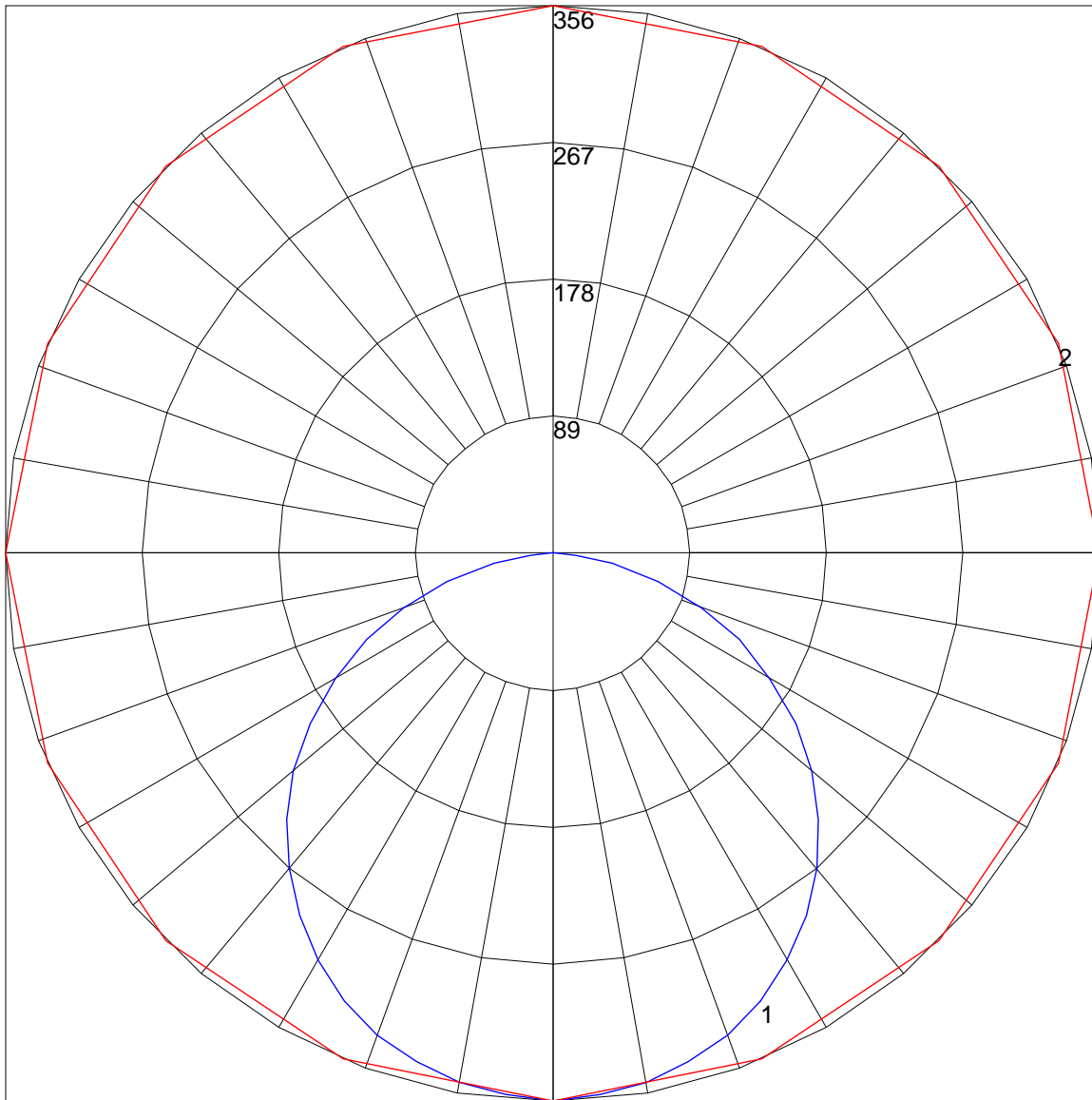
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	79	75	82	77	73	79	75	72	69
3	90	79	71	64	87	78	70	64	75	68	63	72	66	61	69	64	60	58
4	82	70	61	54	80	69	60	54	66	59	53	64	57	52	62	56	52	49
5	75	62	53	47	73	61	53	46	59	52	46	57	51	45	55	49	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	48	41	35	47	40	35	46	39	35	33
8	60	46	38	32	58	46	37	32	44	37	32	43	36	31	42	36	31	29
9	56	42	34	29	55	42	34	29	41	33	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	25	24

POLAR GRAPH



Maximum Candela = 356.04 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.)