



8165 E Kaiser Blvd. Anaheim, CA 92808
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Report No: L031706101



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Issue Date: 3/16/2017

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

Model Number: 9524-40-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: 3/14/17

Date of Tests: 3/15/17 - 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:	9524-40-FR
Driver Model Number:	N/A
Total Lumens:	1117.04
Input Voltage (VDC):	24.00
Input Current (Amp):	0.44
Input Power (W):	10.64
Input Power Factor:	0.99
Current ATHD @ 120V(%):	N/A
Current ATHD @ 277V(%):	N/A
Efficacy:	105
Color Rendering Index (CRI):	96
Correlated Color Temperature (K):	4034
Chromaticity Coordinate x:	0.3785
Chromaticity Coordinate y:	0.3742
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:30
Total Operating Time (Hours):	0:55

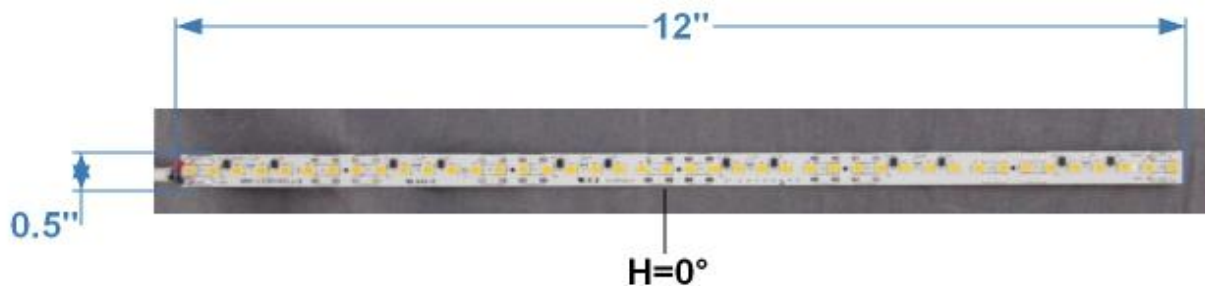
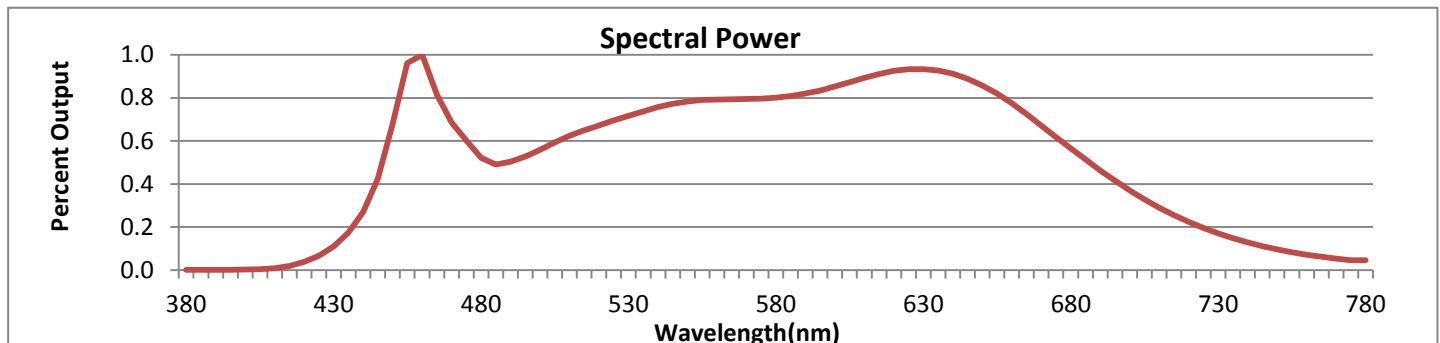


FIG. 1 LUMINAIRE



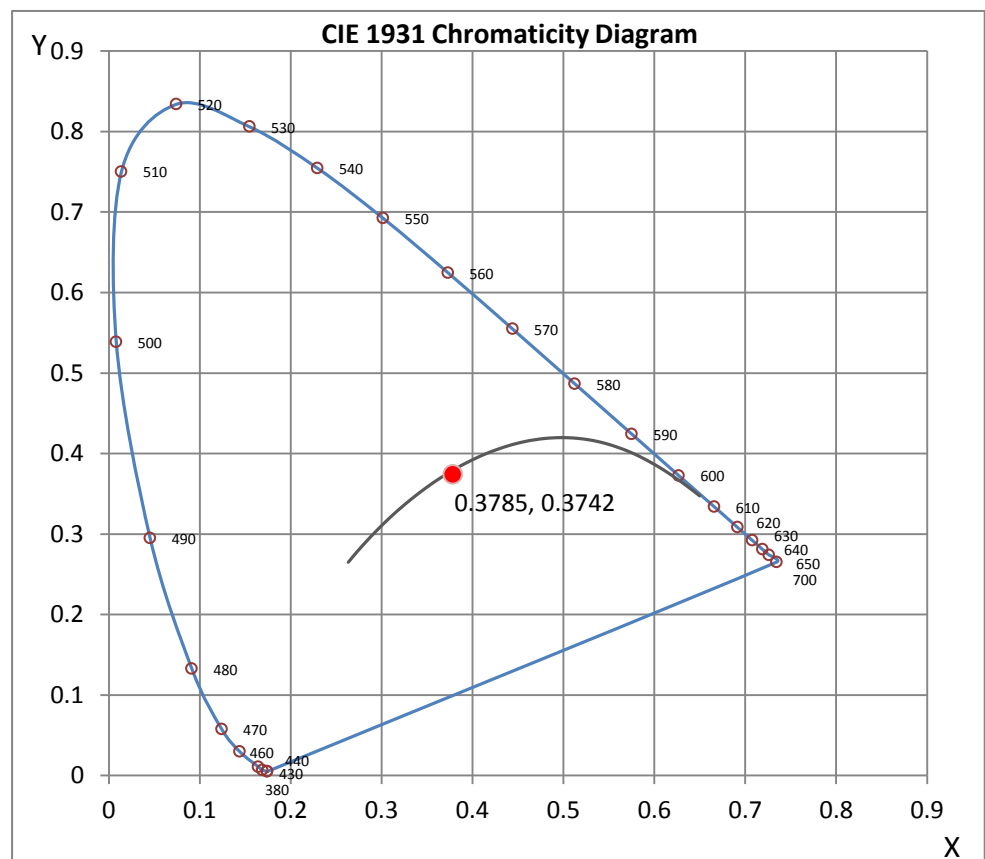
Wavelength	W/m ² nm	440	0.2689	510	0.6239	580	0.8007	650	0.8577	720	0.2238
380	0.0012	450	0.6759	520	0.6723	590	0.8198	660	0.7759	730	0.1701
390	0.0014	460	1.0000	530	0.7168	600	0.8533	670	0.6719	740	0.1285
400	0.0027	470	0.6853	540	0.7573	610	0.8932	680	0.5664	750	0.0961
410	0.0091	480	0.5217	550	0.7833	620	0.9260	690	0.4628	760	0.0717
420	0.0378	490	0.5037	560	0.7928	630	0.9339	700	0.3703	770	0.0534
430	0.1099	500	0.5587	570	0.7945	640	0.9130	710	0.2900	780	0.0461

CRI & CCT

x	0.3785
y	0.3742
u'	0.2248
v'	0.5002
CRI	96.40
CCT	4034
Duv	-0.00062

R Values

R1	98.18
R2	98.50
R3	99.26
R4	94.26
R5	95.66
R6	96.35
R7	94.43
R8	94.68
R9	94.96
R10	99.24
R11	96.12
R12	74.65
R13	98.70
R14	99.07



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 : L031706101.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L031706101
[TESTLAB] LIGHT LABORATORY, INC.
[ISSUEDATE] 3/16/2017
[MANUFAC] AION LED, INC.
[LUMCAT] 9524-40-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, 10.64W
[TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	1117
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	105
Total Luminaire Watts	10.64
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	201152	203534	204442
55	195714	197981	199454
65	183807	186870	188221
75	158079	156850	160369
85	124960	109537	90966

IES INDOOR REPORT
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CANDELA TABULATION

	<u>0.0</u>	<u>22.5</u>	<u>45.0</u>	<u>67.5</u>	<u>90.0</u>
0	376.59	376.59	376.59	376.59	376.59
5	372.34	374.00	375.41	376.82	376.65
10	367.77	369.51	371.09	372.25	371.92
15	360.46	362.46	363.91	365.24	364.78
20	350.33	352.28	353.78	355.15	354.73
25	338.79	339.37	340.24	342.07	340.87
30	322.60	322.43	326.21	325.96	327.00
35	304.08	306.45	307.61	309.06	308.40
40	283.57	284.98	285.81	287.56	287.22
45	259.24	260.94	262.31	263.39	263.48
50	233.08	234.83	236.41	237.53	237.07
55	204.60	206.64	206.97	208.30	208.51
60	174.05	175.58	175.21	177.62	177.53
65	141.58	142.99	143.94	144.69	144.98
70	108.11	109.44	110.23	110.81	110.52
75	74.57	74.86	73.99	74.44	75.65
80	49.49	43.01	41.81	41.48	42.35
85	19.85	18.60	17.40	15.20	14.45
90	0.00	0.00	0.00	0.00	0.00

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ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	138.31	N.A.	12.40
0-30	295.27	N.A.	26.40
0-40	487.34	N.A.	43.60
0-60	874.33	N.A.	78.30
0-80	1096.02	N.A.	98.10
0-90	1117.04	N.A.	100.00
10-90	1081.37	N.A.	96.80
20-40	349.03	N.A.	31.20
20-50	551.11	N.A.	49.30
40-70	528.95	N.A.	47.40
60-80	221.69	N.A.	19.80
70-80	79.72	N.A.	7.10
80-90	21.02	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	1117.04	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	35.67
10-20	102.64
20-30	156.95
30-40	192.08
40-50	202.08
50-60	184.91
60-70	141.97
70-80	79.72
80-90	21.02
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

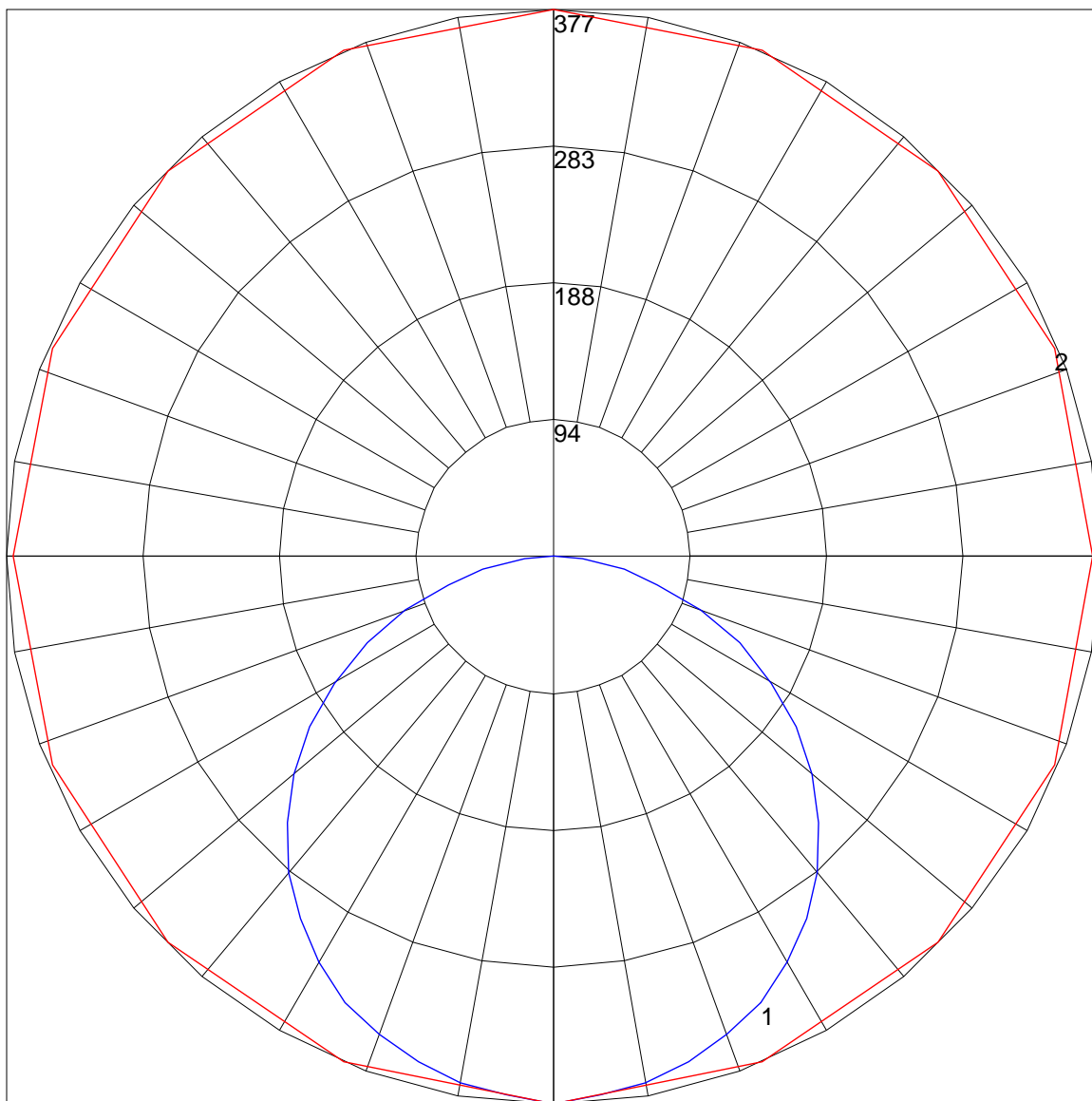
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	95	106	101	98	94	97	94	91	93	91	88	90	88	86	83
2	99	90	83	77	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	46	73	61	53	46	59	51	46	57	50	45	55	49	45	42
6	69	56	47	40	68	55	46	40	53	46	40	52	45	39	50	44	39	37
7	64	51	42	36	63	50	41	35	48	41	35	47	40	35	45	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	28	54	42	34	28	41	33	28	40	33	28	38	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 = 376.82 Located At Horizontal Angle = 67.5, Vertical Angle = 5
1 - Vertical Plane Through Horizontal Angles (0 - 180)
2 - Horizontal Cone Through Vertical Angle (5) (Through Max. Cd.)