



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

Report No: L091700201



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Issue Date: 9/6/2017

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

Model Number: 1524-27-LE

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: 9/5/17

Date of Tests: 9/6/17 - 9/6/17

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:	1524-27-LE
Driver Model Number:	N/A
Total Lumens:	398.87
Input Voltage (VDC):	24.00
Input Current (Amp):	0.24
Input Power (W):	5.76
Input Power Factor:	1.00
Current ATHD @ 120V(%):	N/A
Current ATHD @ 277V(%):	N/A
Efficacy:	69.19
Color Rendering Index (CRI):	98
Correlated Color Temperature (K):	2631
Chromaticity Coordinate x:	0.4634
Chromaticity Coordinate y:	0.4080
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:30
Total Operating Time (Hours):	1:00

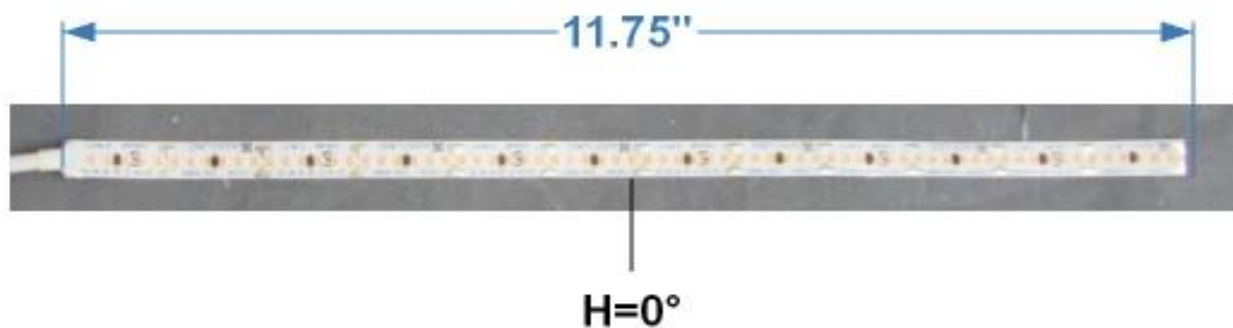
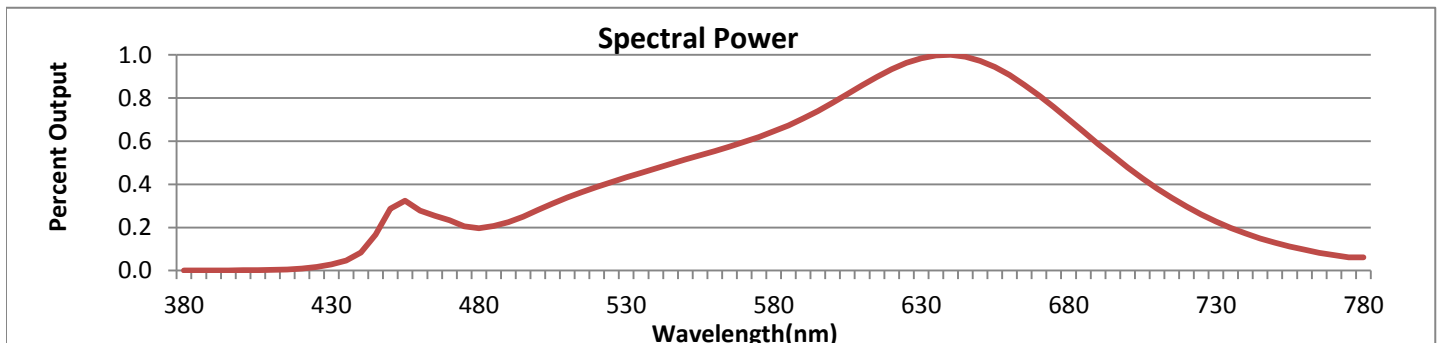


FIG. 1 LUMINAIRE



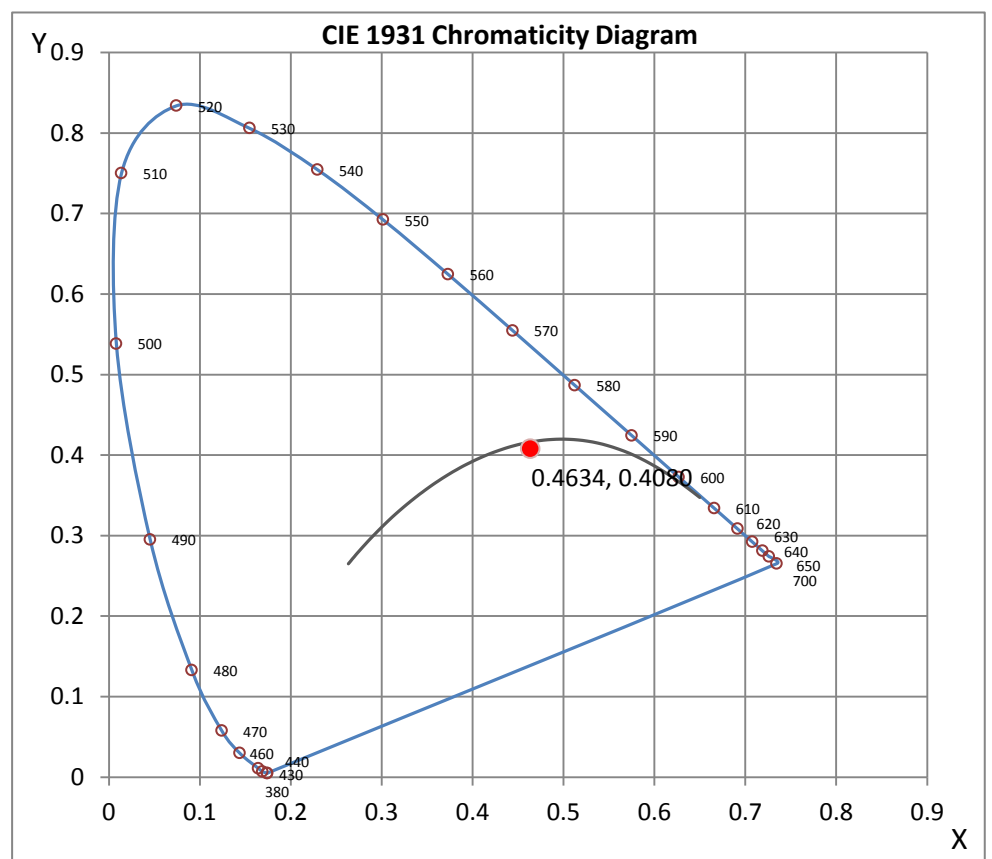
Wavelength	W/m ² nm	440	0.0839	510	0.3391	580	0.6457	650	0.9731	720	0.2969
380	0.0007	450	0.2862	520	0.3878	590	0.7054	660	0.9077	730	0.2275
390	0.0008	460	0.2781	530	0.4319	600	0.7774	670	0.8125	740	0.1726
400	0.0013	470	0.2341	540	0.4741	610	0.8591	680	0.7024	750	0.1291
410	0.0033	480	0.1968	550	0.5150	620	0.9342	690	0.5872	760	0.0963
420	0.0098	490	0.2249	560	0.5547	630	0.9842	700	0.4790	770	0.0712
430	0.0280	500	0.2803	570	0.5968	640	1.0000	710	0.3810	780	0.0611

CRI & CCT

x	0.4634
y	0.4080
u'	0.2660
v'	0.5269
CRI	97.90
CCT	2631
Duv	-0.00122

R Values

R1	99.40
R2	99.36
R3	98.67
R4	99.12
R5	98.97
R6	97.08
R7	96.31
R8	94.47
R9	89.07
R10	99.26
R11	98.34
R12	87.28
R13	99.58
R14	98.19



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.

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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 : L091700201.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L091700201
[TESTLAB] LIGHT LABORATORY, INC. (www.lightlaboratory.com)
[ISSUE DATE] 9/6/2017
[MANUFAC] Aion LED, Inc.
[LUMCAT] 1524-27-LE
[LUMINAIRE] 12" Linear Fixture with power lead
[BALLASTCAT] 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, 5.76W
[TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	399
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	69
Total Luminaire Watts	5.76
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)	0.02 ft
Luminous Width (90-270)	0.96 ft
Luminous Height	0.00 ft

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	74584	74655	74584
55	72729	72495	71519
65	68120	67299	63283
75	57867	55443	47804
85	39522	38687	24035

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L091700201.IES

CANDELA TABULATION

	<u>0.0</u>	<u>22.5</u>	<u>45.0</u>	<u>67.5</u>	<u>90.0</u>
0	137.57	137.57	137.57	137.57	137.57
5	137.01	137.01	137.01	137.14	137.18
10	135.35	135.31	135.31	135.43	135.52
15	132.61	132.57	132.53	132.65	132.78
20	128.79	128.75	128.79	128.83	128.96
25	123.97	123.81	123.85	123.93	123.89
30	118.00	117.79	117.83	118.00	117.91
35	111.10	110.98	111.02	111.02	111.10
40	103.05	103.13	103.17	103.13	102.97
45	94.16	94.21	94.25	94.16	94.16
50	84.86	84.66	84.66	84.78	84.37
55	74.48	74.24	74.24	73.78	73.24
60	62.78	63.19	62.94	61.53	61.03
65	51.40	51.44	50.78	48.70	47.75
70	39.61	39.32	38.07	35.54	34.21
75	26.74	26.90	25.62	22.42	22.09
80	15.53	15.69	14.82	12.41	12.37
85	6.15	6.23	6.02	4.90	3.74
90	0.00	0.00	0.00	0.00	0.00

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ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	50.47	N.A.	12.70
0-30	107.57	N.A.	27.00
0-40	177.01	N.A.	44.40
0-60	315.73	N.A.	79.20
0-80	391.99	N.A.	98.30
0-90	398.87	N.A.	100.00
10-90	385.84	N.A.	96.70
20-40	126.54	N.A.	31.70
20-50	199.21	N.A.	49.90
40-70	188.25	N.A.	47.20
60-80	76.26	N.A.	19.10
70-80	26.73	N.A.	6.70
80-90	6.88	N.A.	1.70
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	398.87	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	13.03
10-20	37.44
20-30	57.10
30-40	69.44
40-50	72.68
50-60	66.04
60-70	49.53
70-80	26.73
80-90	6.88
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

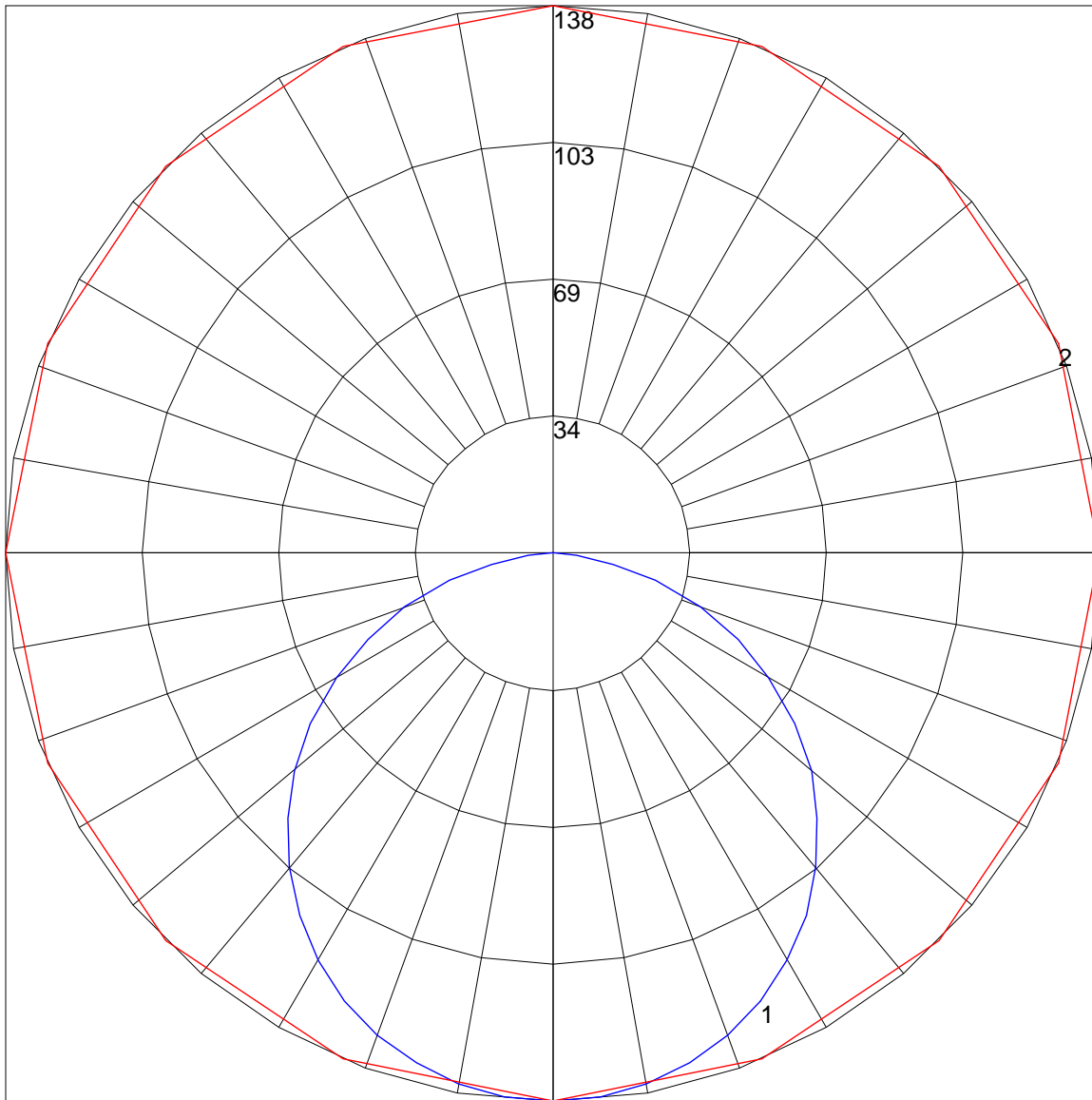
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	94	91	88	90	88	86	84
2	99	91	84	78	96	89	82	77	85	80	75	82	77	73	79	75	72	70
3	90	79	71	65	88	78	70	64	75	68	63	72	66	62	69	65	61	59
4	82	70	61	55	80	69	61	54	66	59	54	64	58	53	62	57	52	50
5	76	63	54	47	74	62	53	47	59	52	46	57	51	46	56	50	45	43
6	70	56	47	41	68	55	47	41	54	46	40	52	45	40	50	44	40	38
7	65	51	42	36	63	50	42	36	49	41	36	47	40	35	46	40	35	33
8	60	47	38	32	59	46	38	32	45	37	32	43	37	32	42	36	31	29
9	56	43	34	29	55	42	34	29	41	34	29	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 = 137.57 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.)