



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

Report No: L101701701



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Issue Date: 10/10/2017

Report Prepared For: Vode Lighting
21684 8th Street East, Suite 700, Sonoma, CA 95476

Model Number: 107-BX-48-Z-SO-359-1

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: 10/9/17

Date of Tests: 10/9/17 - 10/10/17

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:	Vode Lighting
Model Number:	107-BX-48-Z-SO-359-1
Driver Model Number:	MEAN WELL HLG-40H-36A
Total Lumens:	2058.78
Input Voltage (VAC/60Hz):	120.00
Input Current (Amp):	0.2
Input Power (W):	24.12
Input Power Factor:	0.99
Current ATHD @ 120V(%):	10%
Current ATHD @ 277V(%):	N/A
Efficacy:	85
Color Rendering Index (CRI):	96
Correlated Color Temperature (K):	3370
Chromaticity Coordinate x:	0.4117
Chromaticity Coordinate y:	0.3916
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	1:15
Total Operating Time (Hours):	2:05

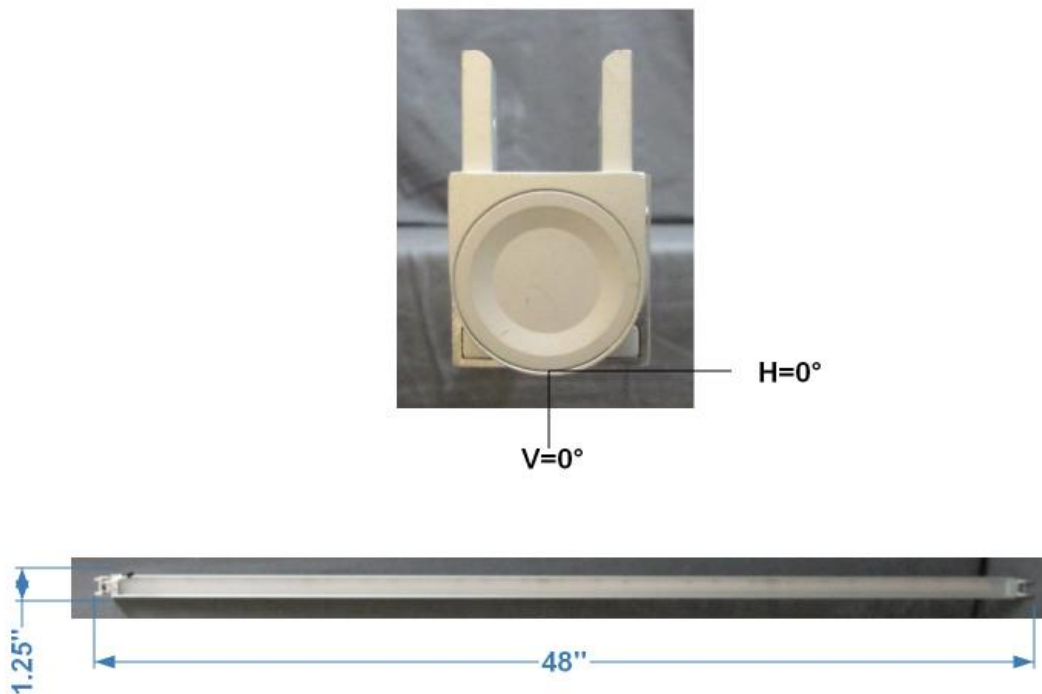
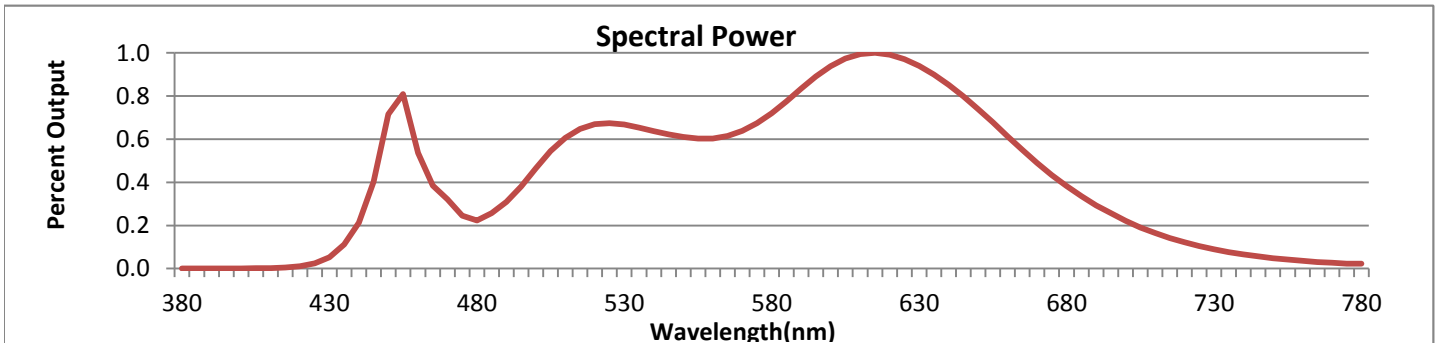


FIG. 1 LUMINAIRE

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



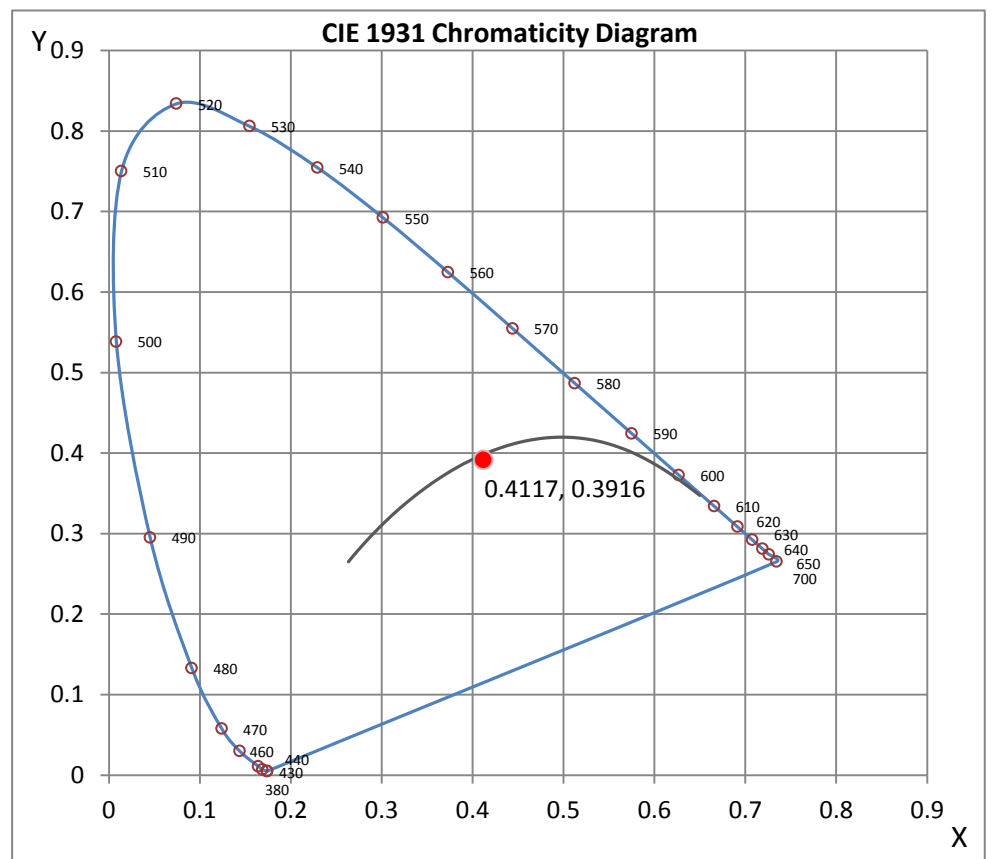
Wavelength	W/m ² nm	440	0.2128	510	0.6058	580	0.7199	650	0.7391	720	0.1220
380	0.0009	450	0.7154	520	0.6696	590	0.8341	660	0.6140	730	0.0898
390	0.0009	460	0.5367	530	0.6676	600	0.9387	670	0.4904	740	0.0660
400	0.0012	470	0.3217	540	0.6375	610	0.9943	680	0.3826	750	0.0484
410	0.0024	480	0.2230	550	0.6098	620	0.9914	690	0.2926	760	0.0358
420	0.0105	490	0.3097	560	0.6031	630	0.9396	700	0.2211	770	0.0265
430	0.0531	500	0.4651	570	0.6386	640	0.8529	710	0.1650	780	0.0228

CRI & CCT

x	0.4117
y	0.3916
u'	0.2395
v'	0.5126
CRI	95.80
CCT	3370
Duv	-0.00096

R Values

R1	97.44
R2	98.79
R3	98.97
R4	95.55
R5	97.57
R6	94.31
R7	94.42
R8	88.97
R9	73.75
R10	98.11
R11	88.54
R12	82.65
R13	97.07
R14	98.48



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

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 : L101701701.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L101701701
[TESTLAB] LIGHT LABORATORY, INC. (www.lightlaboratory.com)
[ISSUEDATE] 10/10/2017
[MANUFAC] Vode Lighting
[LUMCAT] 07-BX-48-Z-SO-359-1
[LUMINAIRE] BoxRail LED, 48", 3500K, 90 CRI, zipper board,
[MORE] diffuse lens, standard output
[BALLASTCAT] MEAN WELL HLG-40H-36A
[OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND
[MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.
[INPUT] 120VAC, 24.12W
[TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	2059
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	85
Total Luminaire Watts	24.12
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	1.08
Spacing Criterion (90-270)	1.18
Spacing Criterion (Diagonal)	1.20
Basic Luminous Shape	Rectangular
Luminous Length (0-180)	0.08 ft
Luminous Width (90-270)	3.83 ft
Luminous Height	0.00 ft

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	19358	23279	27002
55	14441	18541	23008
65	10796	14284	19018
75	8136	10713	15730
85	4430	6040	13289

**IES INDOOR REPORT
PHOTOMETRIC FILENAME : L101701701.IES**

CANDELA TABULATION

	0	5	10	15	20	25	30	35	40	45
0	994	994	994	994	994	994	994	994	994	994
5	986	986	986	986	987	987	987	987	987	987
10	961	961	961	962	962	963	963	964	965	966
15	917	917	918	919	920	922	923	925	927	930
20	855	856	857	859	861	864	867	871	875	878
25	777	777	779	782	786	790	795	801	807	814
30	685	686	688	692	697	703	711	719	727	736
35	586	587	590	595	601	609	618	628	639	650
40	485	486	490	495	502	512	522	534	547	559
45	390	391	395	400	408	417	428	441	455	469
50	307	308	311	316	323	332	342	354	368	382
55	236	236	239	243	250	257	267	278	290	303
60	177	178	180	183	188	195	202	211	222	233
65	130	130	132	134	138	143	148	155	164	172
70	91	92	92	94	96	100	104	109	115	121
75	60	60	61	62	63	65	67	71	75	79
80	34	34	34	35	35	36	37	39	41	44
85	11	11	11	11	12	12	13	13	14	15
90	0	0	0	0	0	0	0	0	0	0

Vert. Horizontal Angles

	50	55	60	65	70	75	80	85	90
0	994	994	994	994	994	994	994	994	994
5	988	988	988	988	988	988	989	989	989
10	967	968	968	969	970	970	971	971	971
15	932	934	936	937	939	940	941	941	942
20	883	886	890	893	895	897	899	900	900
25	820	825	831	835	840	843	845	847	847
30	745	753	760	767	773	777	780	782	783
35	661	671	680	689	696	702	706	709	710
40	572	584	595	605	613	620	625	628	629
45	483	496	507	518	527	534	539	543	544
50	396	410	422	433	441	449	454	457	458
55	316	329	341	351	360	367	372	375	376
60	245	256	267	277	285	291	295	298	299
65	182	192	201	210	217	223	226	228	229
70	129	137	144	151	157	162	165	167	168
75	84	90	96	101	106	110	113	115	116
80	47	50	54	58	62	65	68	70	70
85	17	18	20	23	26	28	30	32	33
90	0	0	0	0	0	0	0	0	0

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L101701701.IES

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	354.98	N.A.	17.20
0-30	728.20	N.A.	35.40
0-40	1133.35	N.A.	55.00
0-60	1769.2	N.A.	85.90
0-80	2035.84	N.A.	98.90
0-90	2058.78	N.A.	100.00
10-90	1965.21	N.A.	95.50
20-40	778.37	N.A.	37.80
20-50	1140.04	N.A.	55.40
40-70	812.55	N.A.	39.50
60-80	266.64	N.A.	13.00
70-80	89.94	N.A.	4.40
80-90	22.94	N.A.	1.10
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	2058.78	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	93.57
10-20	261.42
20-30	373.22
30-40	405.15
40-50	361.67
50-60	274.18
60-70	176.70
70-80	89.94
80-90	22.94
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

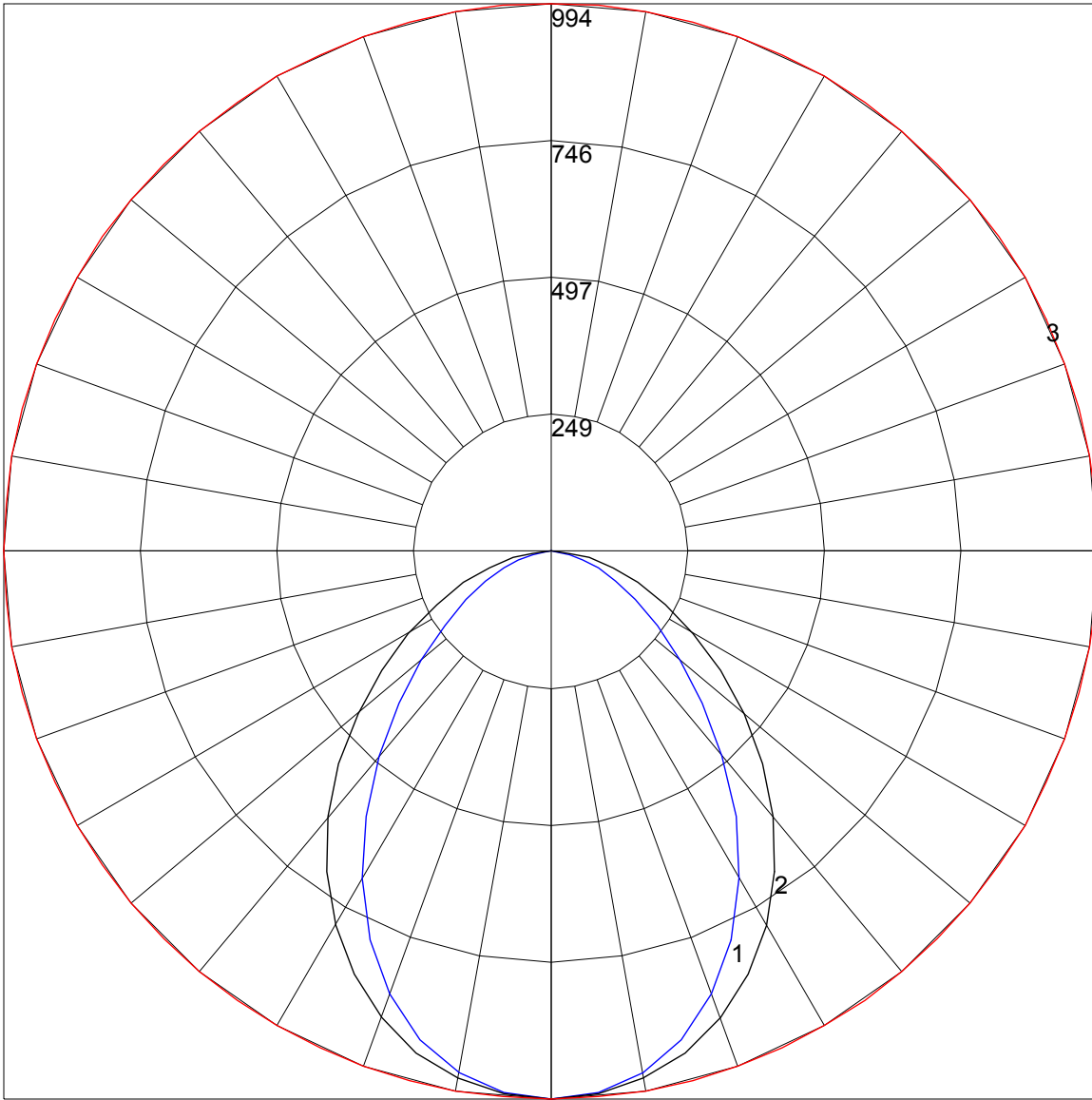
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	110	106	102	99	107	104	100	97	99	97	94	96	93	91	92	90	88	86
2	101	94	88	83	99	92	86	82	89	84	80	85	81	78	82	79	76	74
3	93	84	76	70	91	82	75	70	79	73	69	77	72	67	74	70	66	64
4	86	75	67	61	84	74	66	60	71	65	60	69	63	59	67	62	58	56
5	80	68	59	53	78	67	59	53	65	58	53	63	57	52	61	56	51	49
6	74	62	53	47	72	61	53	47	59	52	47	57	51	46	56	50	46	44
7	69	56	48	42	67	55	48	42	54	47	42	53	46	42	51	46	41	39
8	64	52	44	38	63	51	43	38	50	43	38	48	42	38	47	42	37	36
9	60	48	40	35	59	47	40	35	46	39	34	45	39	34	44	38	34	32
10	57	44	37	32	56	44	37	32	43	36	32	42	36	31	41	35	31	30

POLAR GRAPH



Maximum Candela = 994 Located At Horizontal Angle = 0, Vertical Angle = 0
1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)
2 - Vertical Plane Through Horizontal Angles (90 - 270)
3 - Horizontal Cone Through Vertical Angle (0) (Through Max. Cd.)