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Report No: L051503011

Date: 5/21/2015



NVLAP LAB CODE 200927-0

Report No: L051503011

Report Prepared For: USTE, dba Vista Professional Outdoor Lighting
 1625 Surveyor Ave., Simi Valley CA 93063

Model Number: 3106-X-4.5-W-MF

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. Catalog number is 3106-X-4.5-W-MF. Received in working and undamaged condition. No modifications were necessary.

Testing Condition: Fixture is tested with no special conditions.

Sample Arrival Date: 5/15/15

Date of Tests: 5/20/15 - 5/21/15

Seasoning of Sample: No seasoning was performed in accordance with IESNA LM-79.

Equipment List

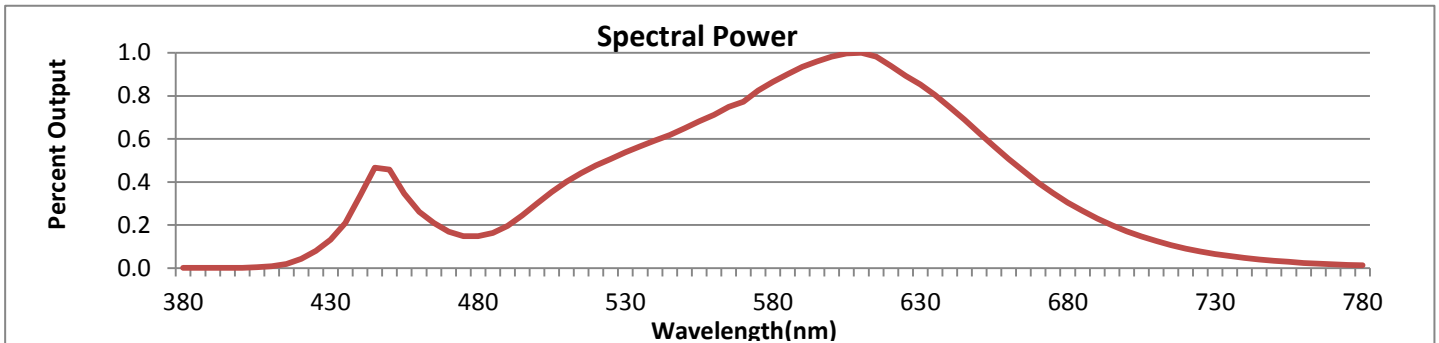
Equipment Used	Model No	Stock No	Calibration Due Date
Chroma Programmable AC Source	61604	PS-AC02	--
Yokogawa Digital Power Meter	WT210	MT-EL06-S1	11/10/15
Xitron Power Analysis System	2503AH	MT-EL01	10/20/15
BK Precision DC Power Supply	1747	PSDC-04	01/08/16
Fluke Digital Thermometer	52k/J	MT-TP02-GC	01/05/16
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:	USTE, dba Vista Professional Outdoor Lighting
Model Number:	3106-X-4.5-W-MF
Driver Model Number:	N/A
Total Lumens:	320.58
Input Voltage (VAC/60Hz):	12.00
Input Current (Amp):	0.38
Input Power (W):	4.06
Input Power Factor:	0.89
Current ATHD @ 12V(%):	39%
Current ATHD @ 277V(%):	N/A
Efficacy:	79
Color Rendering Index (CRI):	84
Correlated Color Temperature (K):	3046
Chromaticity Coordinate x:	0.4355
Chromaticity Coordinate y:	0.4068
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:30
Total Operating Time (Hours):	1:30
Off State Power(W):	0.00

FIG. 1 LUMINAIRE



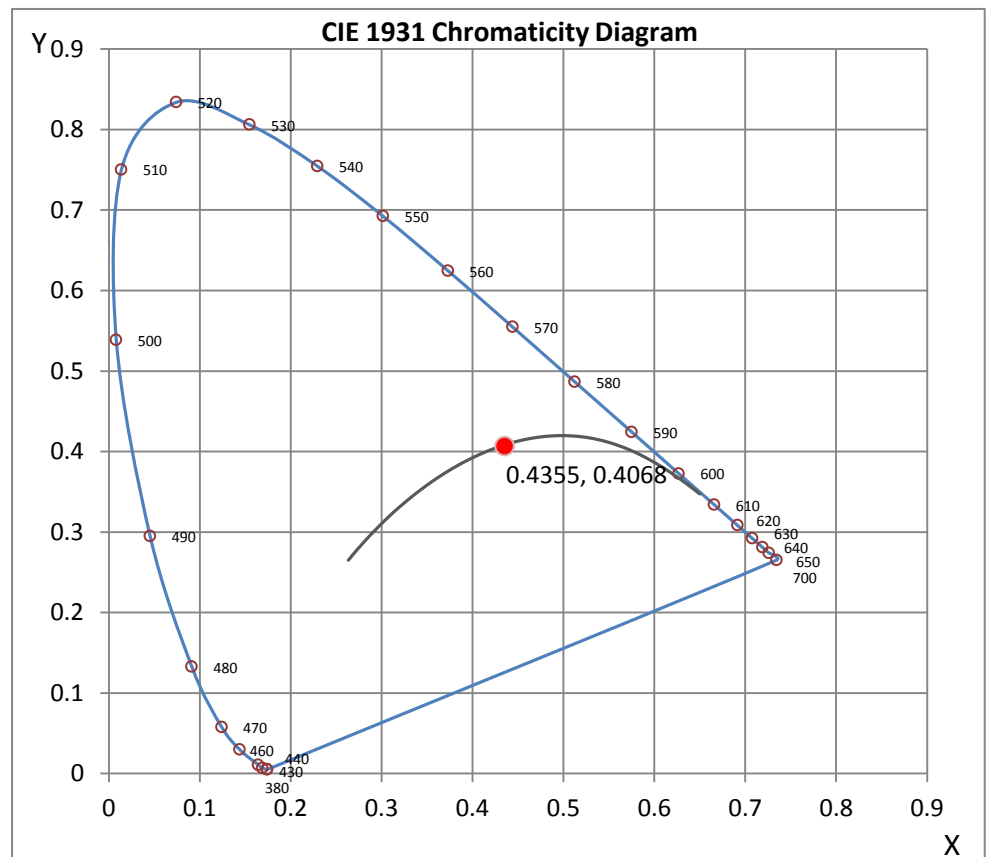
Wavelength	W/m ² nm	440	0.3356	510	0.4017	580	0.8650	650	0.6275	720	0.0898
380	0.0009	450	0.4579	520	0.4768	590	0.9346	660	0.5064	730	0.0652
390	0.0009	460	0.2620	530	0.5374	600	0.9826	670	0.3966	740	0.0471
400	0.0018	470	0.1694	540	0.5928	610	1.0000	680	0.3051	750	0.0339
410	0.0083	480	0.1477	550	0.6488	620	0.9399	690	0.2304	760	0.0241
420	0.0424	490	0.1964	560	0.7121	630	0.8530	700	0.1713	770	0.0177
430	0.1325	500	0.3002	570	0.7727	640	0.7472	710	0.1259	780	0.0130

CRI & CCT

x	0.4355
y	0.4068
u'	0.2485
v'	0.5222
CRI	83.60
CCT	3046
Duv	0.00128

R Values

R1	82.37
R2	89.02
R3	94.93
R4	83.69
R5	81.71
R6	85.82
R7	86.32
R8	64.97
R9	17.11
R10	74.19
R11	82.99
R12	68.76
R13	83.59
R14	96.63



*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: 8*



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Photometric Test Report

IES FLOOD REPORT
PHOTOMETRIC FILENAME : L051503011.IES

DESCRIPTIVE INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L051503011
[TESTLAB] LIGHT LABORATORY, INC.
[ISSUEDATE] 5/21/2015
[MANUFAC] USTE, DBA VISTA PROFESSIONAL OUTDOOR LIGHTING
[LUMCAT] 3106-X-4.5-W-MF
[LUMINAIRE] 6"DIA. X 2-3/4"H. LED ACCENT
[MORE] CLEAR LENS
[LAMPPOSITION] 0,0
[LAMPCAT] N/A
[OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND
[MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.
[INPUT] 12VAC, 4.06W
[TEST PROCEDURE] IESNA:LM-79-08

Note: Candela values converted from Type-C to Type-B

CHARACTERISTICS

NEMA Type	5 H x 5 V
Maximum Candela	710.11
Maximum Candela Angle	0H 0V
Horizontal Beam Angle (50%)	31.9
Vertical Beam Angle (50%)	31.9
Horizontal Field Angle (10%)	71.3
Vertical Field Angle (10%)	71.3
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Beam Lumens	120
Beam Efficiency	N.A.
Field Lumens	278
Field Efficiency	N.A.
Spill Lumens	43
Luminaire Lumens	321
Total Efficiency	N.A.
Total Luminaire Watts	4.06
Ballast Factor	1.00

IES FLOOD REPORT
PHOTOMETRIC FILENAME : L051503011.IES

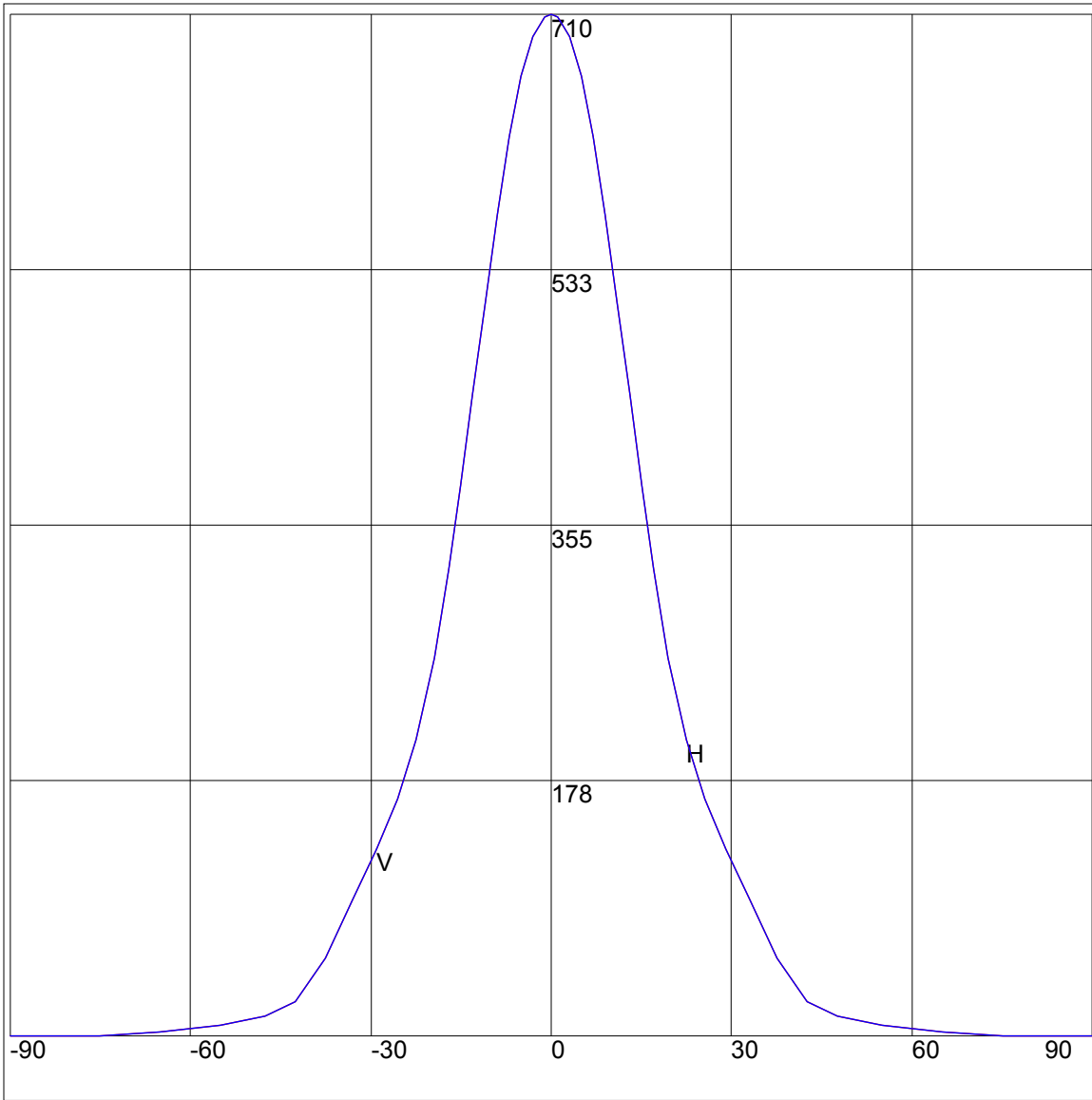
AXIAL CANDELA

DEG.	HOR.	DEG.	VERT.
90	0	90	0
85	0	85	0
75	.28	75	.28
65	2.79	65	2.79
55	7.51	55	7.51
47.5	14.09	47.5	14.09
42.5	24.55	42.5	24.55
37.5	54.41	37.5	54.41
33	95.24	33	95.24
29	130.06	29	130.06
25.5	165.19	25.5	165.19
22.5	205.86	22.5	205.86
19.5	263.1	19.5	263.1
17	324.95	17	324.95
15	382.58	15	382.58
13	445.55	13	445.55
11	510.87	11	510.87
9	570.95	9	570.95
7	625.27	7	625.27
5	666.67	5	666.67
3	694.46	3	694.46
1	708.04	1	708.04
0	710.11	0	710.11
-1	708.04	-1	708.04
-3	694.46	-3	694.46
-5	666.67	-5	666.67
-7	625.27	-7	625.27
-9	570.95	-9	570.95
-11	510.87	-11	510.87
-13	445.55	-13	445.55
-15	382.58	-15	382.58
-17	324.95	-17	324.95
-19.5	263.1	-19.5	263.1
-22.5	205.86	-22.5	205.86
-25.5	165.19	-25.5	165.19
-29	130.06	-29	130.06
-33	95.24	-33	95.24
-37.5	54.41	-37.5	54.41
-42.5	24.55	-42.5	24.55
-47.5	14.09	-47.5	14.09
-55	7.51	-55	7.51
-65	2.79	-65	2.79
-75	.28	-75	.28
-85	0	-85	0
-90	0	-90	0

ZONAL LUMEN SUMMARY

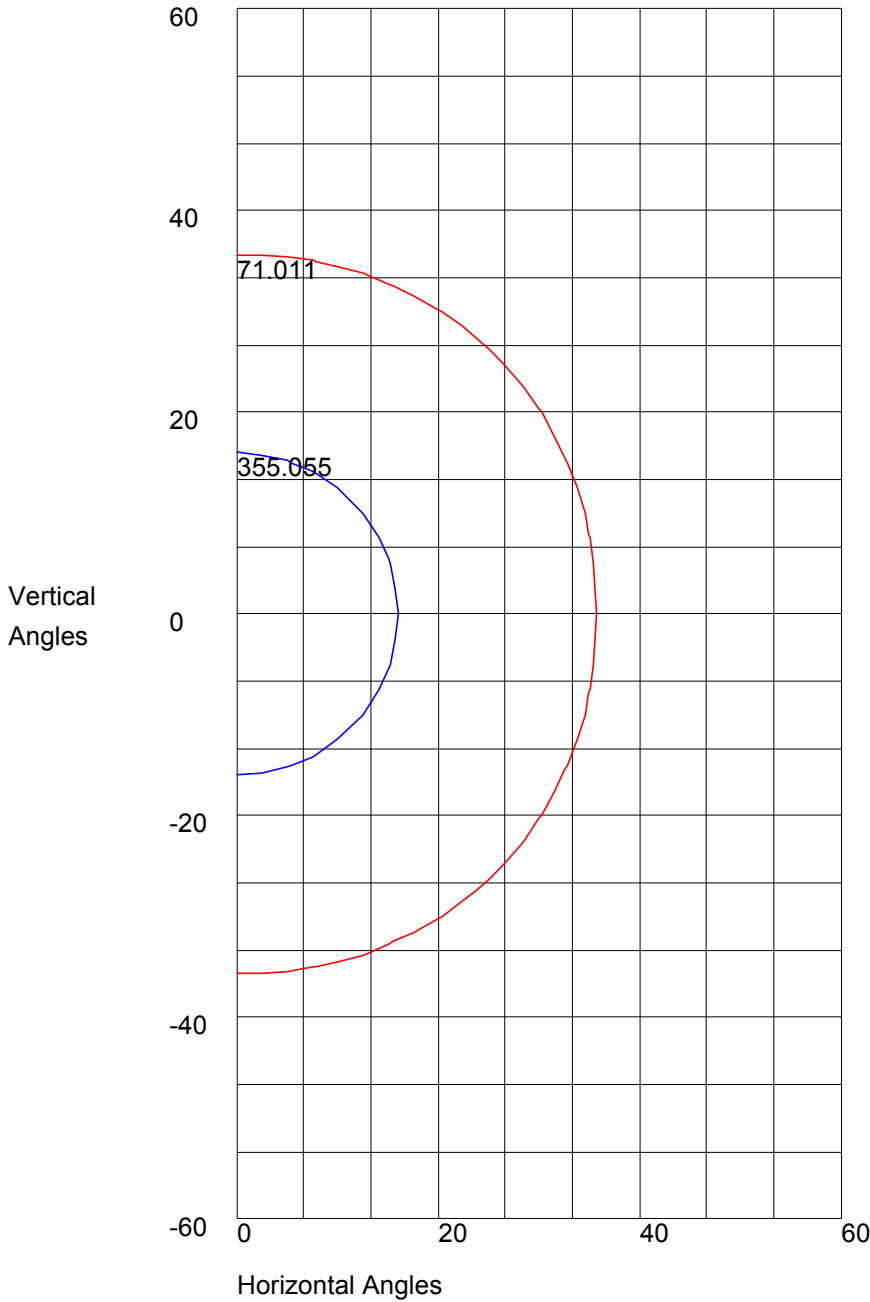
Zone	%
0-20	50.1
0-30	74.5
0-40	89.1
0-60	97.9
0-80	100
0-90	100
10-90	84.6
20-40	39
20-50	45.7
40-70	10.4
60-80	2
70-80	0.5
80-90	0
90-110	0
90-120	0
90-130	0
90-150	0
90-180	0
110-180	0
0-180	100

AXIAL CANDELA DISPLAY



Maximum Candela = 710.11 Located At Horizontal Angle = 0, Vertical Angle = 0
H - Horizontal Axial Candela
V - Vertical Axial Candela

ISOCANDELA CURVES



Maximum Candela = 710.11 Located At Horizontal Angle = 0, Vertical Angle = 0
50% Maximum Candela = 355.055
10% Maximum Candela = 71.011