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

NVLAP TESTING
NVLAP LAB CODE 200927-0

Report No: **L021703901** **Issue Date: 2/17/2017**

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

Model Number: **1045-X-VNS-620**

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: 2/14/17

Date of Tests: 2/15/17 - 2/17/17

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.

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Test Summary	
Manufacturer:	Vista Professional Outdoor Lighting
Model Number:	1045-X-VNS-620
Driver Model Number:	ERP ESS030W-0620-42
Total Lumens:	1409.26
Input Voltage (VAC/60Hz):	120.00
Input Current (Amp):	0.22
Input Power (W):	25.76
Input Power Factor:	0.99
Current ATHD @ 120V(%):	12%
Current ATHD @ 277V(%):	N/A
Efficacy:	55
Color Rendering Index (CRI):	85
Correlated Color Temperature (K):	3092
Chromaticity Coordinate x:	0.4311
Chromaticity Coordinate y:	0.4030
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:50
Total Operating Time (Hours):	2:25

FIG. 1 LUMINAIRE

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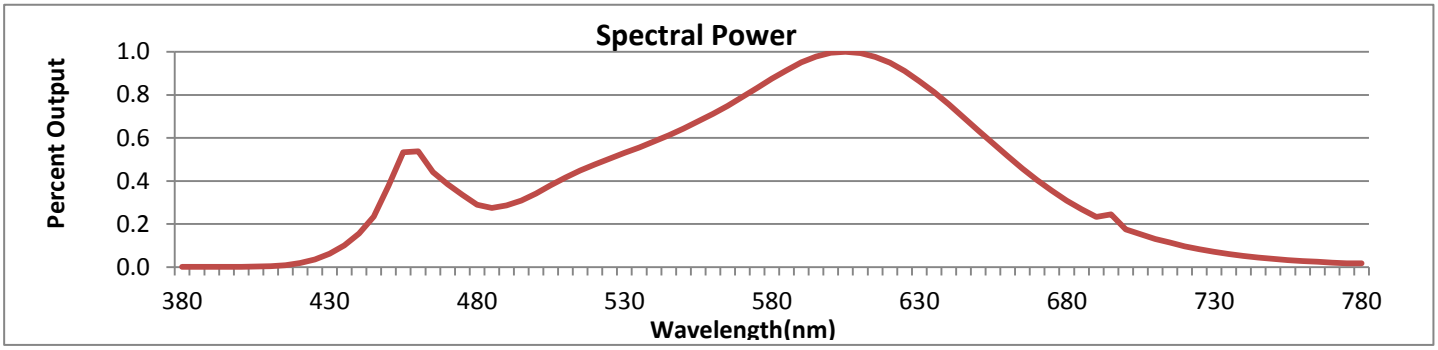


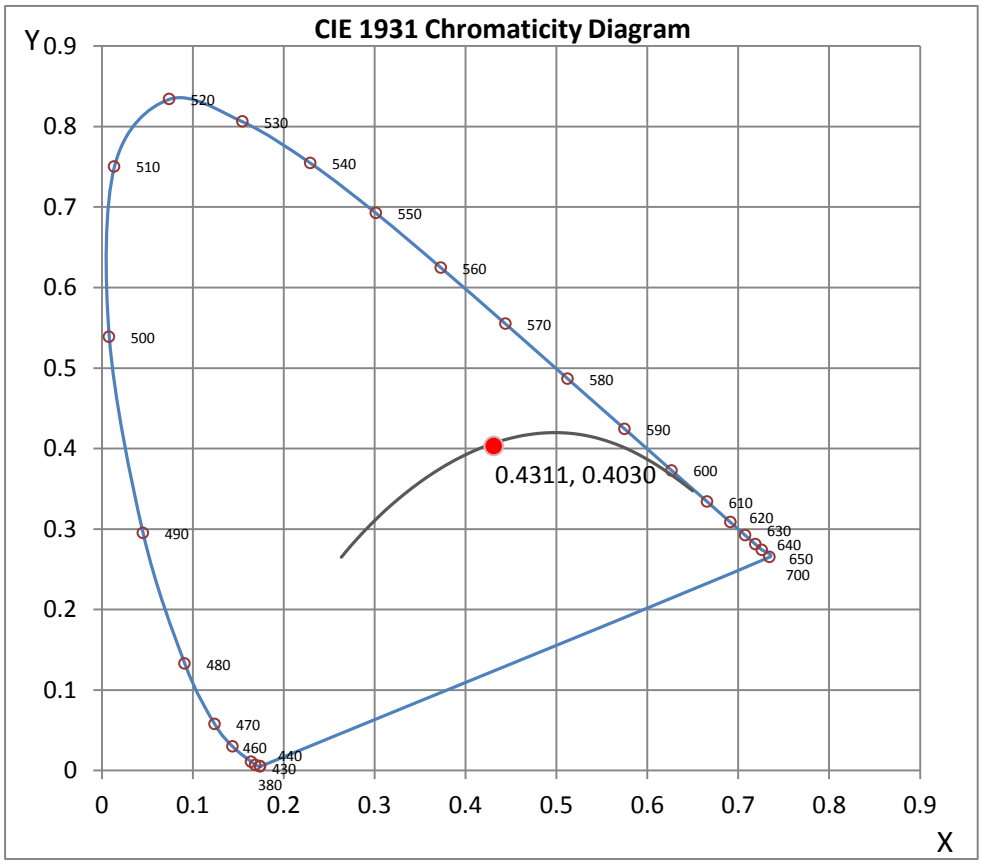
Wavelength	W/m²nm	440	0.1552	510	0.4167	580	0.8751	650	0.6348	720	0.0969
380	0.0007	450	0.3774	520	0.4773	590	0.9507	660	0.5153	730	0.0707
390	0.0009	460	0.5376	530	0.5298	600	0.9952	670	0.4047	740	0.0515
400	0.0013	470	0.3846	540	0.5844	610	0.9949	680	0.3095	750	0.0382
410	0.0043	480	0.2895	550	0.6441	620	0.9497	690	0.2338	760	0.0284
420	0.0191	490	0.2868	560	0.7118	630	0.8637	700	0.1753	770	0.0211
430	0.0620	500	0.3417	570	0.7900	640	0.7559	710	0.1311	780	0.0181

CRI & CCT

x	0.4311
y	0.4030
u'	0.2473
v'	0.5201
CRI	84.90
CCT	3092
Duv	0.00041

R Values

R1	84.21
R2	93.90
R3	95.72
R4	81.61
R5	83.82
R6	92.23
R7	83.98
R8	64.00
R9	20.11
R10	85.02
R11	80.51
R12	72.65
R13	86.80
R14	98.45



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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: 8*

*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 FLOOD REPORT
PHOTOMETRIC FILENAME : L021703901.IES

DESCRIPTIVE INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L021703901
[TESTLAB] LIGHT LABORATORY, INC.
[ISSUEDATE] 2/17/2017
[MANUFAC] VISTA PROFESSIONAL OUTDOOR LIGHTING
[LUMCAT] 1045-X-VNS-620
[LUMINAIRE] LED ACCENT LUMINAIRE
[BALLASTCAT] ERP ESS030W-0620-42
[LAMPPOSITION] 0,0
[LAMPCAT] N/A
[OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND
[MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.
[INPUT] 120VAC, 25.76W
[TEST PROCEDURE] IESNA:LM-79-08

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

CHARACTERISTICS

NEMA Type	3 H x 3 V
Maximum Candela	11813
Maximum Candela Angle	-1H -1V
Horizontal Beam Angle (50%)	17.2
Vertical Beam Angle (50%)	17.2
Horizontal Field Angle (10%)	32.8
Vertical Field Angle (10%)	32.8
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Beam Lumens	645
Beam Efficiency	N.A.
Field Lumens	1146
Field Efficiency	N.A.
Spill Lumens	263
Luminaire Lumens	1409
Total Efficiency	N.A.
Total Luminaire Watts	25.76
Ballast Factor	1.00

IES FLOOD REPORT
PHOTOMETRIC FILENAME : L021703901.IES

AXIAL CANDELA

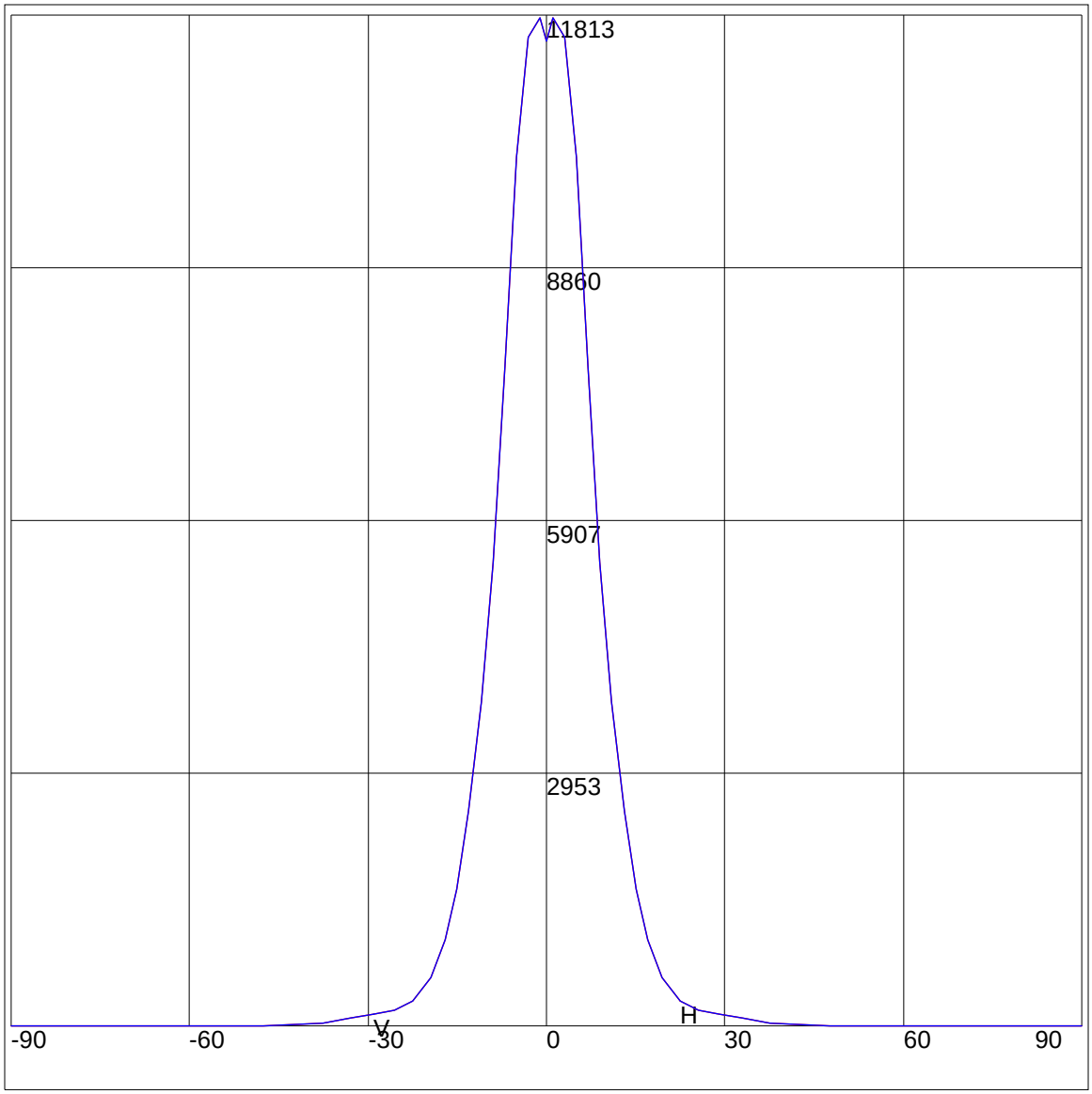
DEG.	HOR.	DEG.	VERT.
90	0	90	0
85	0	85	0
75	0	75	0
65	0	65	0
55	3	55	3
47.5	8	47.5	8
42.5	17	42.5	17
37.5	44	37.5	44
33	91	33	91
29	143	29	143
25.5	196	25.5	196
22.5	298	22.5	298
19.5	572	19.5	572
17	1006	17	1006
15	1601	15	1601
13	2517	13	2517
11	3792	11	3792
9	5420	9	5420
7	7711	7	7711
5	10157	5	10157
3	11555	3	11555
1	11784	1	11784
0	11509	0	11509
-1	11784	-1	11784
-3	11555	-3	11555
-5	10157	-5	10157
-7	7711	-7	7711
-9	5420	-9	5420
-11	3792	-11	3792
-13	2517	-13	2517
-15	1601	-15	1601
-17	1006	-17	1006
-19.5	572	-19.5	572
-22.5	298	-22.5	298
-25.5	196	-25.5	196
-29	143	-29	143
-33	91	-33	91
-37.5	44	-37.5	44
-42.5	17	-42.5	17
-47.5	8	-47.5	8
-55	3	-55	3
-65	0	-65	0
-75	0	-75	0
-85	0	-85	0
-90	0	-90	0

ZONAL LUMEN SUMMARY

Zone	%
0-20	88.4
0-30	96
0-40	99.1
0-60	100
0-80	100
0-90	100
10-90	46
20-40	10.7
20-50	11.4
40-70	0.9
60-80	0
70-80	0
80-90	0
90-110	0
90-120	0
90-130	0
90-150	0
90-180	0
110-180	0
0-180	100

IES FLOOD REPORT
PHOTOMETRIC FILENAME : L021703901.IES

AXIAL CANDELA DISPLAY



Maximum Candela = 11813 Located At Horizontal Angle =-1, Vertical Angle =-1
H - Horizontal Axial Candela
V - Vertical Axial Candela

IES FLOOD REPORT
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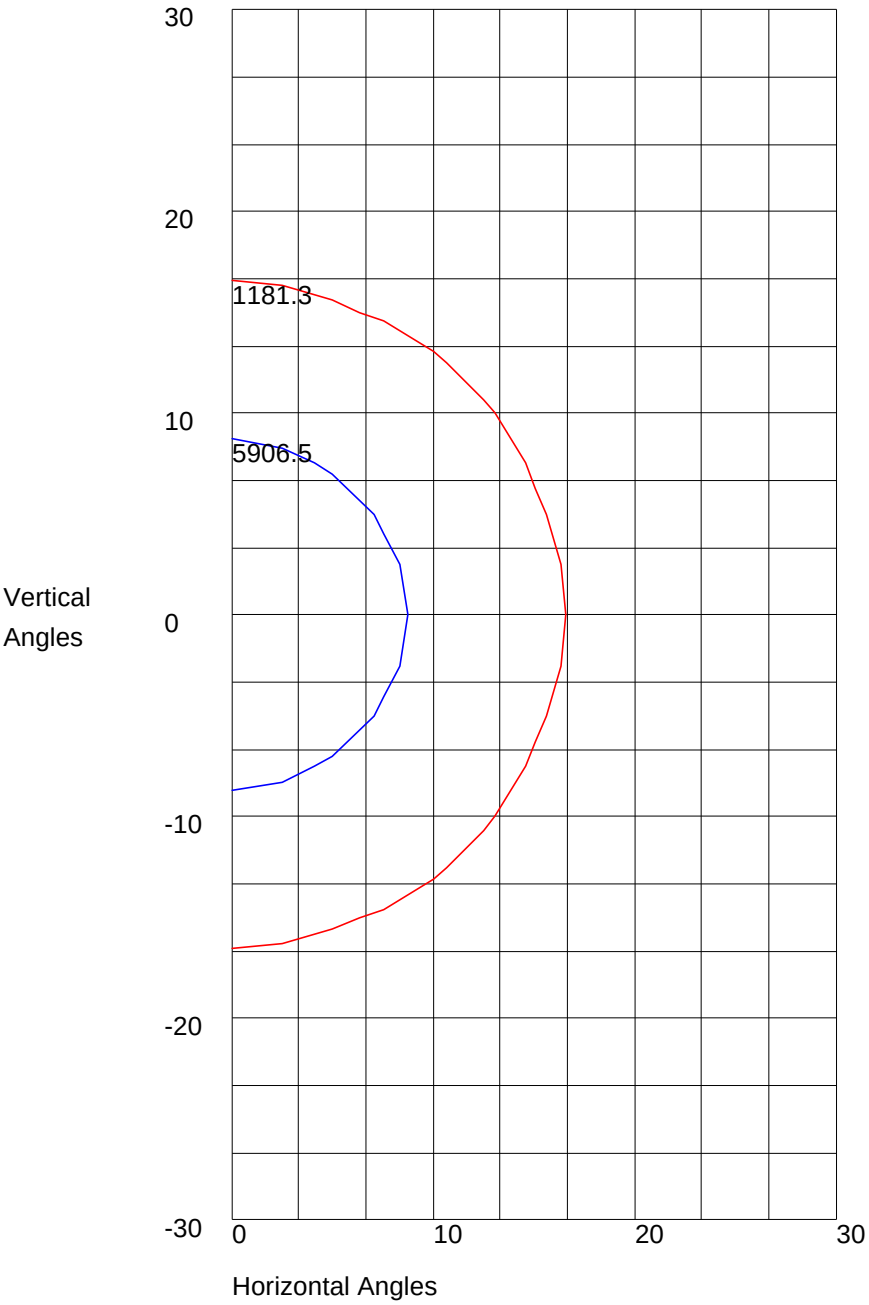
ISOCANDELA CURVES



Maximum Candela = 11813 Located At Horizontal Angle =-1, Vertical Angle =-1
50% Maximum Candela = 5906.5
10% Maximum Candela = 1181.3