



8165 E Kaiser Blvd. Anaheim, CA 92808
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Test #: L061402503R01

Date: 7/9/2014



NVLAP LAB CODE 200927-0

Test Report: L061402503R01

Model Number: LED MV120V R20 5W 5K FL

Report Prepared For: Moon Visions Lighting
 780 S. Floyd Rd., Suite 2B, Richardson, TX 75080

Test: Electrical and Photometric tests as required by the IESNA test standards.

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. Fixture catalog number is LED MV120V R20 5W 5K FL .
 Received in working and undamaged condition. No modifications were necessary.

Testing Condition: Photometry (IES file) and LM-79 report is from the previous Light Laboratory test L051409104R01.

Sample Arrival Date: 5/16/14

Date of Tests: 6/3/14 - 6/9/14

Seasoning of Sample SSL: 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	01/04/15
Xitron Power Analysis System	2503AH	MT-EL01	01/09/15
BK Precision DC Power Supply	1747	PSDC-04	01/08/15
Fluke Digital Thermometer	52k/J	MT-TP02-GC	01/04/15
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.

LM-79 Test Summary

Manufacturer:	Moon Visions Lighting
Model Number:	LED MV120V R20 5W 5K FL
LAMPCAT:	N/A
Driver Model Number:	N/A
Total Lumens:	438.68
Input Voltage (VAC/60Hz):	120.00
Input Current (Amp):	0.04
Input Power (W):	4.55
Input Power Factor:	0.94
Total Harmonic Distortion @ 120V(%):	19%
Total Harmonic Distortion @ 277V(%):	N/A
Efficacy:	96
Color Rendering Index (CRI):	83
Correlated Color Temperature (K):	5156
Chromaticity Coordinate x:	0.3411
Chromaticity Coordinate y:	0.3523
Ambient Temperature (°F):	77.0
Stabilization Time (Hours):	0:30
Total Operating Time (Hours):	1:30
Off State Power(W):	0.00

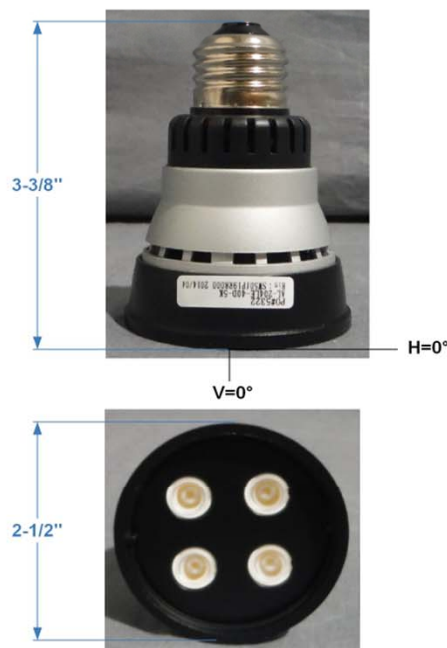
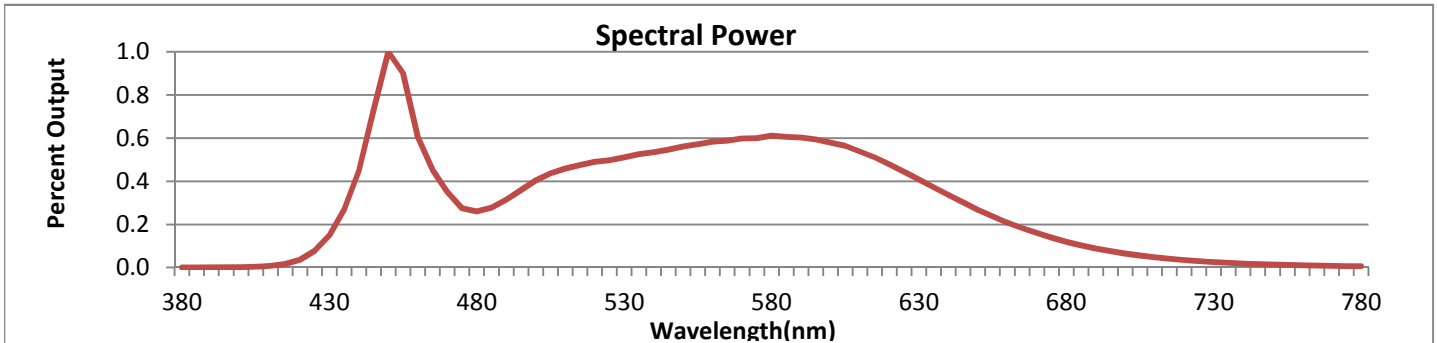


FIG.1 LUMINAIRE

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



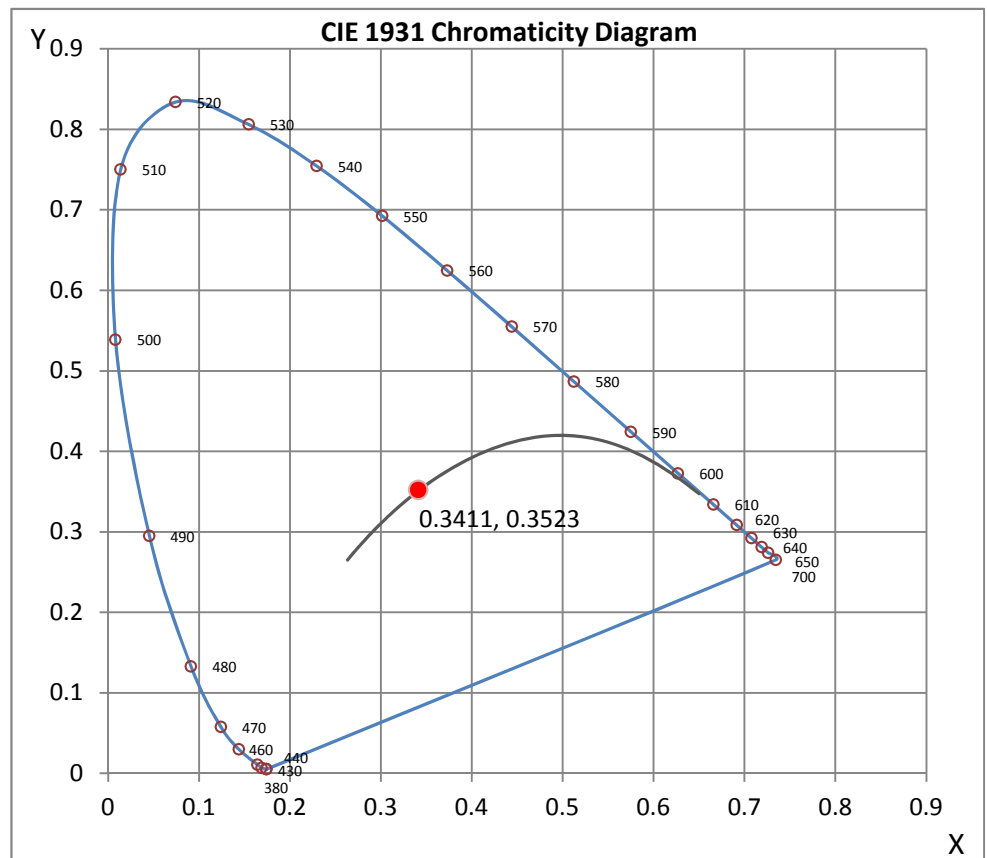
Wavelength	W/m ² nm	440	0.0045	510	0.0046	580	0.0061	650	0.0027	720	0.0003
380	0.0000	450	0.0100	520	0.0049	590	0.0060	660	0.0021	730	0.0003
390	0.0000	460	0.0061	530	0.0051	600	0.0058	670	0.0016	740	0.0002
400	0.0000	470	0.0035	540	0.0054	610	0.0054	680	0.0012	750	0.0001
410	0.0001	480	0.0026	550	0.0056	620	0.0048	690	0.0009	760	0.0001
420	0.0004	490	0.0032	560	0.0058	630	0.0041	700	0.0006	770	0.0001
430	0.0015	500	0.0040	570	0.0060	640	0.0034	710	0.0005	780	0.0001

CRI & CCT

x	0.3411
y	0.3523
u'	0.2085
v'	0.4844
CRI	83.40
CCT	5156
Duv	0.00199

R Values

R1	81.53
R2	89.00
R3	93.66
R4	83.00
R5	82.47
R6	84.23
R7	86.50
R8	66.61
R9	6.09
R10	73.83
R11	82.56
R12	64.03
R13	83.56
R14	96.54



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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 : Wilson Khounlavong

Test Report Released by:

Test Report Reviewed by:

Jeff Ahn
 Engineering Manager

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 : L061402503R01.IES

DESCRIPTIVE INFORMATION (From Photometric File)

IESNA:LM-63-2002
 [TEST] L061402503R01
 [TESTLAB] LIGHT LABORATORY, INC.
 [ISSUEDATE] 6/16/2014
 [MANUFAC] MOON VISIONS LIGHTING
 [LUMCAT] LED MV120V R20 5W 5K FL
 [LUMINAIRE] 2-1/2"DIA. X 3-3/8"H. LED LAMP
 [MORE] NO LENS
 [LAMPPOSITION] 0,0
 [LAMPCAT] N/A
 [OTHER] CANDELA AND ELECTRICAL VALUES ARE FROM
 [MORE] LIGHT LABORATORY TEST L051409104R01
 [OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND
 [MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.
 [INPUT] 120VAC, 4.55W
 [TEST PROCEDURE] IESNA:LM-79-08

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

CHARACTERISTICS

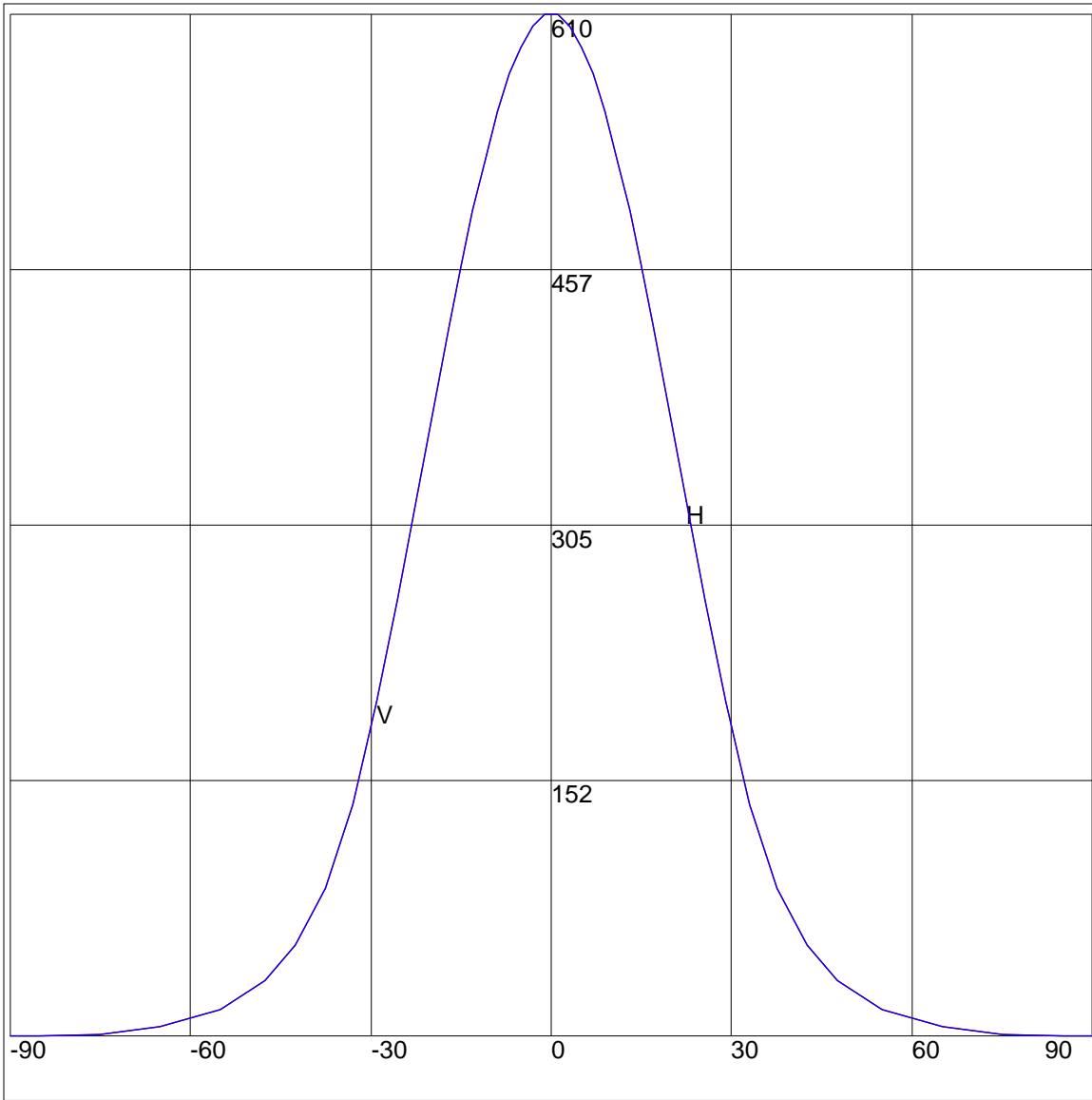
NEMA Type	5 H x 5 V
Maximum Candela	609.61
Maximum Candela Angle	0H 0V
Horizontal Beam Angle (50%)	46.5
Vertical Beam Angle (50%)	46.5
Horizontal Field Angle (10%)	83.0
Vertical Field Angle (10%)	83.0
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Beam Lumens	226
Beam Efficiency	N.A.
Field Lumens	387
Field Efficiency	N.A.
Spill Lumens	52
Luminaire Lumens	439
Total Efficiency	N.A.
Total Luminaire Watts	4.55
Ballast Factor	1.00

IES FLOOD REPORT
PHOTOMETRIC FILENAME : L061402503R01.IES

AXIAL CANDELA

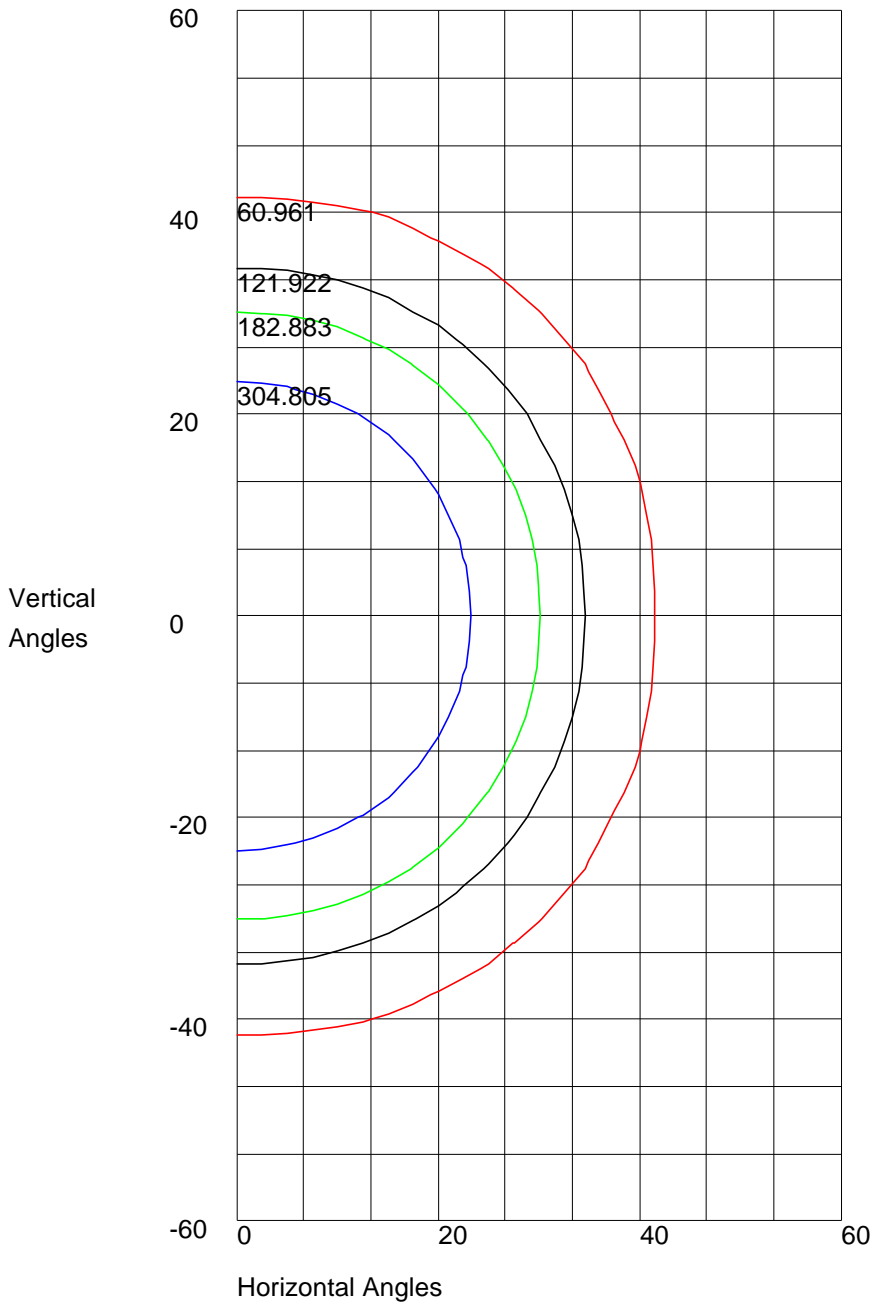
DEG.	HOR.	DEG.	VERT.
90	0	90	0
85	0	85	0
75	1.33	75	1.33
65	5.78	65	5.78
55	16.33	55	16.33
47.5	33.42	47.5	33.42
42.5	54.22	42.5	54.22
37.5	88.51	37.5	88.51
33	138.58	33	138.58
29	200.06	29	200.06
25.5	261.25	25.5	261.25
22.5	319.08	22.5	319.08
19.5	377.38	19.5	377.38
17	422.6	17	422.6
15	458.39	15	458.39
13	492.41	13	492.41
11	522.99	11	522.99
9	551.42	9	551.42
7	573.92	7	573.92
5	590.24	5	590.24
3	602.76	3	602.76
1	609.4	1	609.4
0	609.61	0	609.61
-1	609.4	-1	609.4
-3	602.76	-3	602.76
-5	590.24	-5	590.24
-7	573.92	-7	573.92
-9	551.42	-9	551.42
-11	522.99	-11	522.99
-13	492.41	-13	492.41
-15	458.39	-15	458.39
-17	422.6	-17	422.6
-19.5	377.38	-19.5	377.38
-22.5	319.08	-22.5	319.08
-25.5	261.25	-25.5	261.25
-29	200.06	-29	200.06
-33	138.58	-33	138.58
-37.5	88.51	-37.5	88.51
-42.5	54.22	-42.5	54.22
-47.5	33.42	-47.5	33.42
-55	16.33	-55	16.33
-65	5.78	-65	5.78
-75	1.33	-75	1.33
-85	0	-85	0
-90	0	-90	0

AXIAL CANDELA DISPLAY



Maximum Candela = 609.61 Located At Horizontal Angle = 0, Vertical Angle = 0
H - Horizontal Axial Candela
V - Vertical Axial Candela

ISOCANDELA CURVES



Maximum Candela = 609.61 Located At Horizontal Angle = 0, Vertical Angle = 0
50% Maximum Candela = 304.805
10% Maximum Candela = 60.961