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Report No: L041608503

Date: 4/29/2016



NVLAP LAB CODE 200927-0

**Report No:** L041608503

**Report Prepared For:** GM LIGHTING  
 9830 W 190th St, Torrance, CA 90503

**Model Number:** GMR6-120V-IC-SP-BA

**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 GMR6-120V-IC-SP-BA. Received in working and undamaged condition. No modifications were necessary.

**Testing Condition:** Fixture is tested with no special conditions.

**Sample Arrival Date:** 4/25/16

**Date of Tests:** 4/27/16 - 4/29/16

**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	11/18/16
Xitron Power Analyzer	2503AH	MT-EL01	11/30/16
ITECH DC Power Supply	IT6122	PSDC-03-S1	11/17/16
Fluke Digital Thermometer	52k/J	MT-TP02-GC	11/24/16
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.

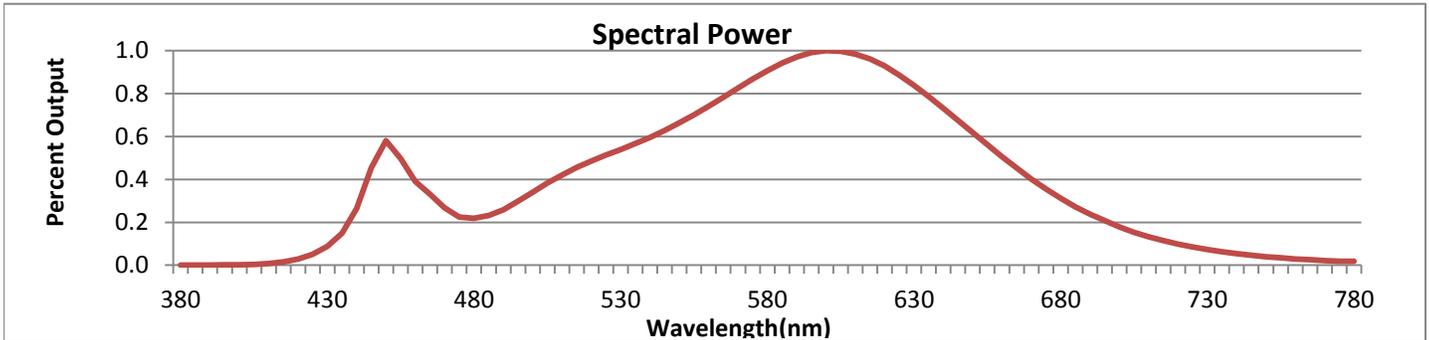
**Test Summary**

<b>Manufacturer:</b>	GM LIGHTING
<b>Model Number:</b>	GMR6-120V-IC-SP-BA
<b>Driver Model Number:</b>	N/A
<b>Total Lumens:</b>	499.10
<b>Input Voltage (VAC/60Hz):</b>	120.00
<b>Input Current (Amp):</b>	0.05
<b>Input Power (W):</b>	5.42
<b>Input Power Factor:</b>	0.98
<b>Current ATHD @ 120V(%):</b>	10%
<b>Current ATHD @ 277V(%):</b>	N/A
<b>Efficacy:</b>	92
<b>Color Rendering Index (CRI):</b>	83
<b>Correlated Color Temperature (K):</b>	3124
<b>Chromaticity Coordinate x:</b>	0.4288
<b>Chromaticity Coordinate y:</b>	0.4018
<b>Ambient Temperature (°C):</b>	25.0
<b>Stabilization Time (Hours):</b>	1:05
<b>Total Operating Time (Hours):</b>	2:05
<b>Off State Power(W):</b>	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.



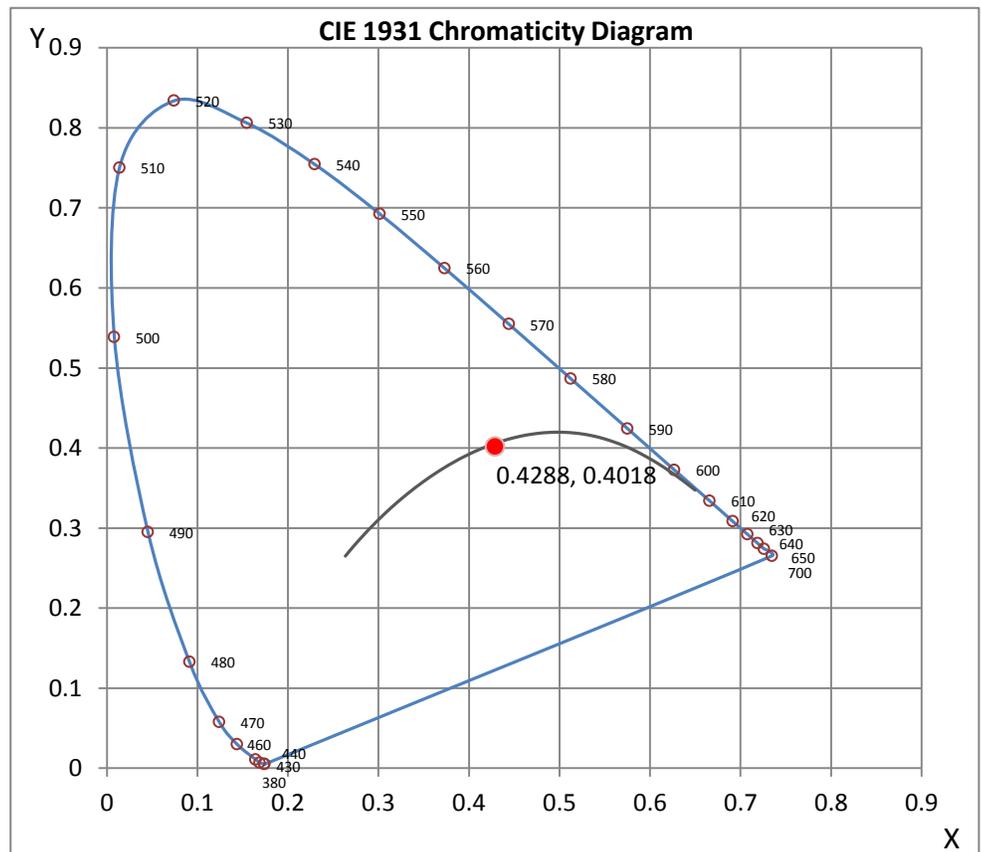
Wavelength	W/m <sup>2</sup> nm	440	0.0020	510	0.0032	580	0.0068	650	0.0046	720	0.0007
380	0.0000	450	0.0044	520	0.0037	590	0.0073	660	0.0038	730	0.0005
390	0.0000	460	0.0029	530	0.0041	600	0.0075	670	0.0030	740	0.0004
400	0.0000	470	0.0020	540	0.0045	610	0.0074	680	0.0023	750	0.0003
410	0.0001	480	0.0016	550	0.0050	620	0.0070	690	0.0018	760	0.0002
420	0.0002	490	0.0019	560	0.0056	630	0.0063	700	0.0013	770	0.0002
430	0.0007	500	0.0026	570	0.0062	640	0.0055	710	0.0010	780	0.0001

**CRI & CCT**

x	0.4288
y	0.4018
u'	0.2463
v'	0.5193
CRI	82.60
CCT	3124
Duv	0.00027

**R Values**

R1	80.69
R2	90.26
R3	96.72
R4	80.21
R5	80.47
R6	87.17
R7	84.19
R8	61.39
R9	11.07
R10	77.36
R11	78.52
R12	68.58
R13	82.82
R14	98.44



\*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 : L041608503.IES**

**DESCRIPTION INFORMATION (From Photometric File)**

IESNA:LM-63-2002  
 [TEST] L041608503  
 [TESTLAB] LIGHT LABORATORY, INC.  
 [ISSUEDATE] 4/29/2016  
 [MANUFAC] GM LIGHTING  
 [LUMCAT] GMR6-120V-IC-SP-BA  
 [LUMINAIRE] 3.25"DIA. X 2.75"H. LED LUMINAIRE  
 [BALLASTCAT] N/A  
 [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, 5.42W  
 [TEST PROCEDURE] IESNA:LM-79-08

**CHARACTERISTICS**

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	499
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	92
Total Luminaire Watts	5.42
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	0.32
Spacing Criterion (90-270)	0.32
Spacing Criterion (Diagonal)	0.30
Basic Luminous Shape	Circular
Luminous Length (0-180)	0.10 ft (Diameter)
Luminous Width (90-270)	0.10 ft (Diameter)
Luminous Height	0.00 ft

**LUMINANCE DATA (cd/sq.m)**

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	94882	94882	94882
55	64453	64453	64453
65	38878	38878	38878
75	10581	10581	10581
85	0	0	0

IES INDOOR REPORT  
PHOTOMETRIC FILENAME : L041608503.IES

CANDELA TABULATION

	<u>0</u>
0.0	3030
1.0	3010
3.0	2833
5.0	2510
7.0	2063
9.0	1531
11.0	990
13.0	586
15.0	356
17.0	241
19.5	174
22.5	133
25.5	108
29.0	90
33.0	78
37.5	67
42.5	55
47.5	43
55.0	27
65.0	12
75.0	2
85.0	0
90.0	0

**IES INDOOR REPORT**  
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**ZONAL LUMEN SUMMARY**

Zone	Lumens	%Lamp	%Fixt
0-20	318.17	N.A.	63.70
0-30	369.78	N.A.	74.10
0-40	409.40	N.A.	82.00
0-60	472.32	N.A.	94.60
0-80	498.02	N.A.	99.80
0-90	499.10	N.A.	100.00
10-90	325.71	N.A.	65.30
20-40	91.23	N.A.	18.30
20-50	131.71	N.A.	26.40
40-70	81.41	N.A.	16.30
60-80	25.70	N.A.	5.10
70-80	7.20	N.A.	1.40
80-90	1.08	N.A.	0.20
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	499.10	N.A.	100.00

Total Luminaire Efficiency = N.A.%

**ZONAL LUMEN SUMMARY**

Zone	Lumens
0-10	173.39
10-20	144.78
20-30	51.61
30-40	39.62
40-50	40.48
50-60	22.43
60-70	18.50
70-80	7.20
80-90	1.08
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

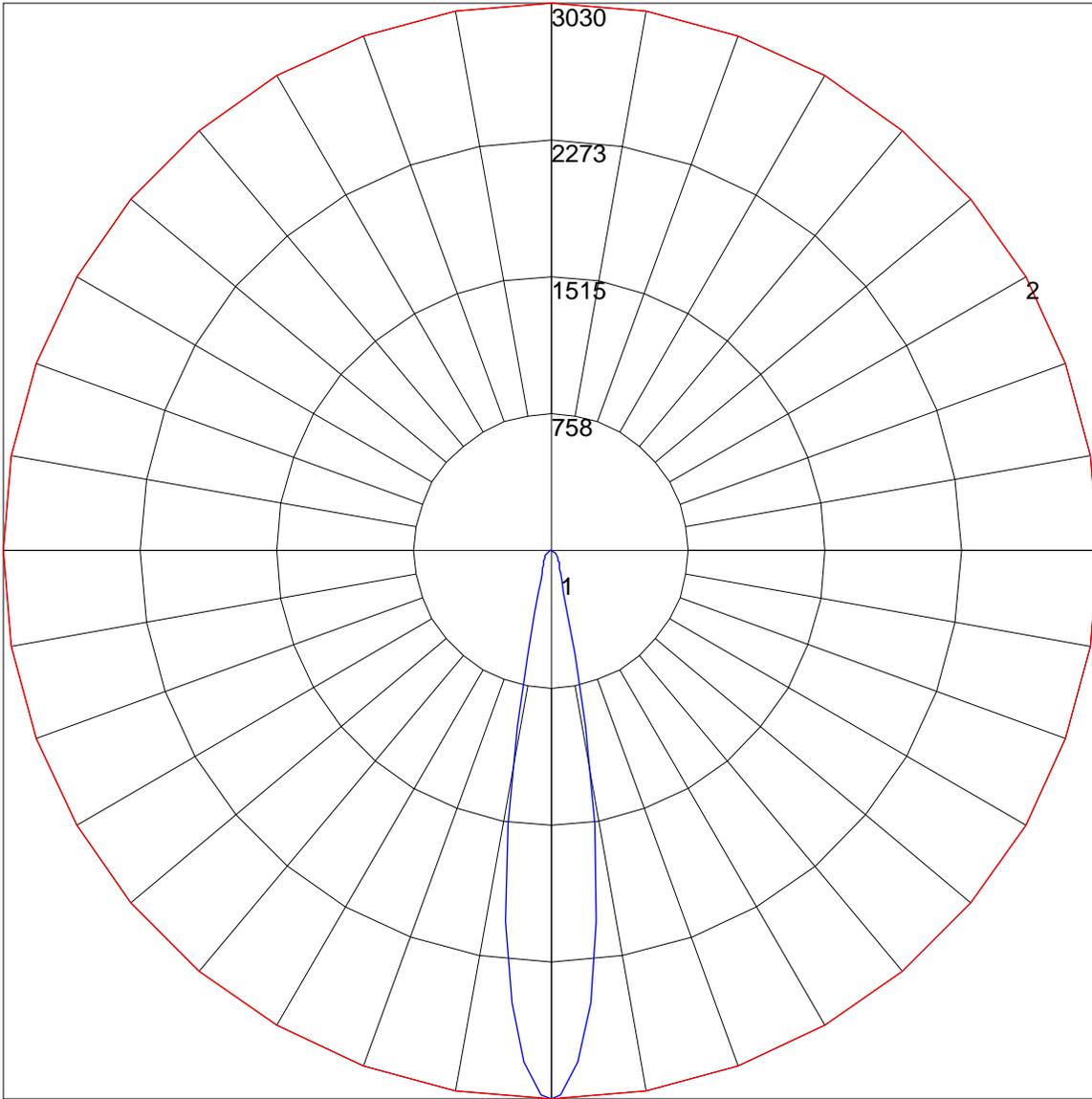
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**COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD**

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	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	114	111	108	106	111	109	107	105	105	103	101	101	100	98	98	96	95	94
2	108	104	100	96	106	102	98	95	99	96	93	96	93	91	93	91	89	88
3	104	97	93	89	102	96	92	88	93	90	87	91	88	86	89	86	84	83
4	99	92	87	83	97	91	86	83	89	85	82	87	84	81	85	82	80	78
5	95	88	82	78	94	87	82	78	85	81	77	83	80	77	82	79	76	75
6	92	84	78	75	90	83	78	74	82	77	74	80	76	73	79	76	73	72
7	88	80	75	71	87	80	75	71	78	74	71	77	73	70	76	73	70	69
8	85	77	72	69	84	77	72	69	76	71	68	75	71	68	74	70	68	67
9	83	75	70	66	82	74	69	66	73	69	66	73	69	66	72	68	66	64
10	80	72	67	64	79	72	67	64	71	67	64	70	67	64	70	66	64	63

POLAR GRAPH



Maximum Candela = 3030 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.)