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Report No: L041608502

Date: 4/29/2016



NVLAP LAB CODE 200927-0

**Report No:** L041608502

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

**Model Number:** GMR6-120V-IC-FL-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-FL-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-FL-BA
<b>Driver Model Number:</b>	N/A
<b>Total Lumens:</b>	454.94
<b>Input Voltage (VAC/60Hz):</b>	120.00
<b>Input Current (Amp):</b>	0.05
<b>Input Power (W):</b>	5.54
<b>Input Power Factor:</b>	0.99
<b>Current ATHD @ 120V(%):</b>	7%
<b>Current ATHD @ 277V(%):</b>	N/A
<b>Efficacy:</b>	82
<b>Color Rendering Index (CRI):</b>	83
<b>Correlated Color Temperature (K):</b>	3140
<b>Chromaticity Coordinate x:</b>	0.4296
<b>Chromaticity Coordinate y:</b>	0.4057
<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

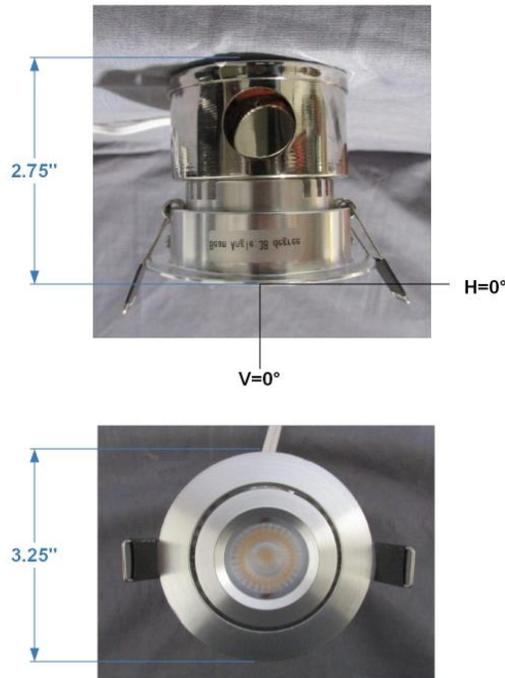
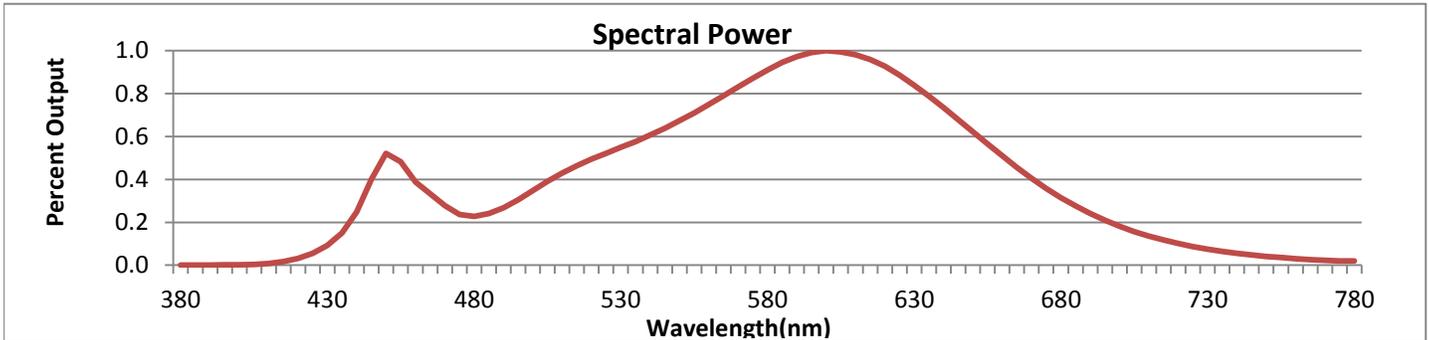


FIG. 1 LUMINAIRE

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



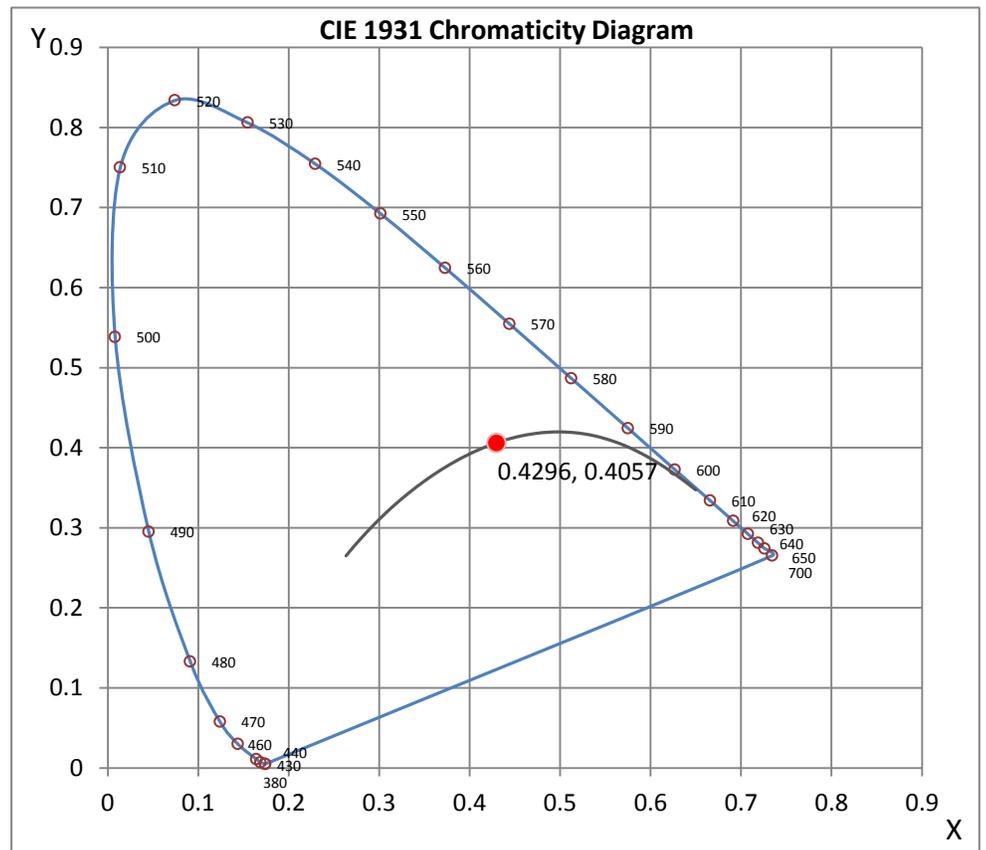
Wavelength	W/m <sup>2</sup> nm	440	0.0014	510	0.0023	580	0.0050	650	0.0034	720	0.0005
380	0.0000	450	0.0028	520	0.0027	590	0.0053	660	0.0028	730	0.0004
390	0.0000	460	0.0021	530	0.0030	600	0.0054	670	0.0022	740	0.0003
400	0.0000	470	0.0015	540	0.0033	610	0.0053	680	0.0017	750	0.0002
410	0.0000	480	0.0012	550	0.0037	620	0.0050	690	0.0013	760	0.0002
420	0.0002	490	0.0015	560	0.0041	630	0.0046	700	0.0010	770	0.0001
430	0.0005	500	0.0019	570	0.0045	640	0.0040	710	0.0007	780	0.0001

**CRI & CCT**

x	0.4296
y	0.4057
u'	0.2452
v'	0.5209
CRI	82.70
CCT	3140
Duv	0.00173

**R Values**

R1	80.50
R2	89.99
R3	97.04
R4	80.26
R5	80.19
R6	86.90
R7	84.78
R8	61.69
R9	10.97
R10	76.77
R11	78.45
R12	67.95
R13	82.56
R14	98.50



\*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 : L041608502.IES**

**DESCRIPTION INFORMATION (From Photometric File)**

IESNA:LM-63-2002  
 [TEST] L041608502  
 [TESTLAB] LIGHT LABORATORY, INC.  
 [ISSUEDATE] 4/29/2016  
 [MANUFAC] GM LIGHTING  
 [LUMCAT] GMR6-120V-IC-FL-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, 5.54W  
 [TEST PROCEDURE] IESNA:LM-79-08

**CHARACTERISTICS**

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	455
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	82
Total Luminaire Watts	5.54
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	0.52
Spacing Criterion (90-270)	0.52
Spacing Criterion (Diagonal)	0.54
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	40664	40664	40664
55	23872	23872	23872
65	19439	19439	19439
75	15871	15871	15871
85	15710	15710	15710

IES INDOOR REPORT  
PHOTOMETRIC FILENAME : L041608502.IES

CANDELA TABULATION

	<u>0</u>
0.0	1230
1.0	1228
3.0	1203
5.0	1150
7.0	1075
9.0	980
11.0	872
13.0	754
15.0	637
17.0	527
19.5	409
22.5	293
25.5	204
29.0	125
33.0	71
37.5	42
42.5	25
47.5	17
55.0	10
65.0	6
75.0	3
85.0	1
90.0	0

**IES INDOOR REPORT**  
**PHOTOMETRIC FILENAME : L041608502.IES**

**ZONAL LUMEN SUMMARY**

Zone	Lumens	%Lamp	%Fixt
0-20	269.94	N.A.	59.30
0-30	373.47	N.A.	82.10
0-40	411.69	N.A.	90.50
0-60	440.29	N.A.	96.80
0-80	452.51	N.A.	99.50
0-90	454.94	N.A.	100.00
10-90	369.60	N.A.	81.20
20-40	141.75	N.A.	31.20
20-50	161.70	N.A.	35.50
40-70	36.18	N.A.	8.00
60-80	12.22	N.A.	2.70
70-80	4.63	N.A.	1.00
80-90	2.43	N.A.	0.50
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	454.94	N.A.	100.00

Total Luminaire Efficiency = N.A.%

**ZONAL LUMEN SUMMARY**

Zone	Lumens
0-10	85.34
10-20	184.60
20-30	103.53
30-40	38.22
40-50	19.94
50-60	8.65
60-70	7.59
70-80	4.63
80-90	2.43
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

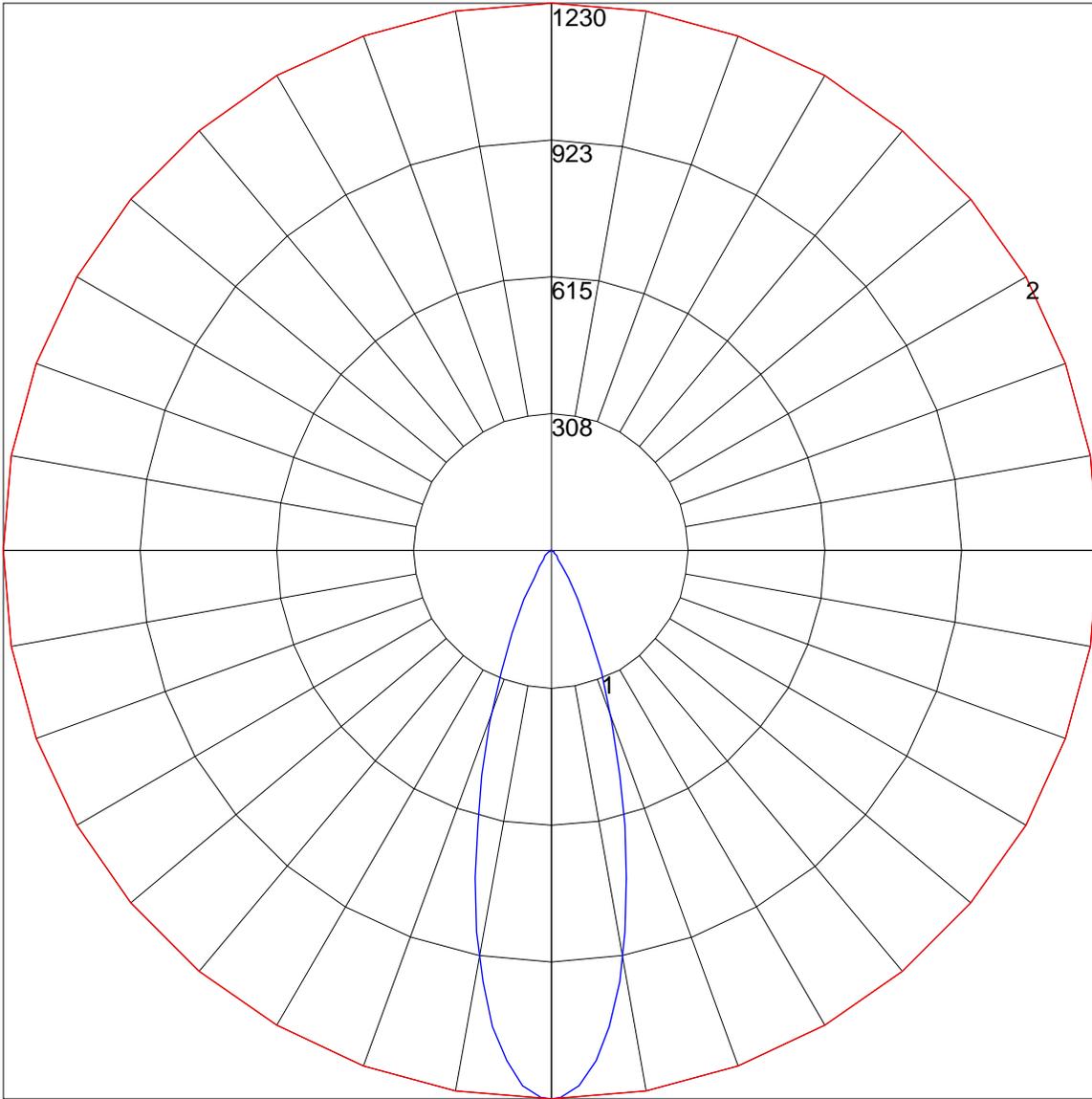
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**COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD**

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	0
1	114	111	108	106	111	109	107	105	105	103	101	101	100	98	98	96	96	94	0
2	108	104	100	97	106	102	99	96	99	96	94	96	94	92	93	91	90	88	0
3	104	98	93	89	102	96	92	89	94	90	87	91	88	86	89	87	85	83	0
4	99	92	87	83	98	91	86	83	89	85	82	87	84	81	85	82	80	79	0
5	95	88	82	78	94	87	82	78	85	81	77	83	80	77	82	79	76	75	0
6	91	83	78	74	90	82	77	74	81	77	73	80	76	73	78	75	72	71	0
7	88	79	74	70	86	79	74	70	78	73	70	76	72	69	75	72	69	68	0
8	84	76	71	67	83	75	70	67	74	70	66	73	69	66	72	69	66	65	0
9	81	73	67	64	80	72	67	64	71	67	64	70	66	63	70	66	63	62	0
10	78	70	65	61	77	69	64	61	69	64	61	68	64	61	67	63	61	59	0

POLAR GRAPH



Maximum Candela = 1230 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.)