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Report No: L041608001

Date: 4/29/2016



NVLAP LAB CODE 200927-0

**Report No:** L041608001

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

**Model Number:** SLCB--9-27

**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 SLCB--9-27. 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:** 4/28/16 - 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>	SLCB--9-27
<b>Driver Model Number:</b>	N/A
<b>Total Lumens:</b>	183.02
<b>Input Voltage (VAC/60Hz):</b>	120.00
<b>Input Current (Amp):</b>	0.03
<b>Input Power (W):</b>	4.04
<b>Input Power Factor:</b>	0.99
<b>Current ATHD @ 120V(%):</b>	15%
<b>Current ATHD @ 277V(%):</b>	N/A
<b>Efficacy:</b>	45
<b>Color Rendering Index (CRI):</b>	95
<b>Correlated Color Temperature (K):</b>	2740
<b>Chromaticity Coordinate x:</b>	0.4540
<b>Chromaticity Coordinate y:</b>	0.4049
<b>Ambient Temperature (°C):</b>	25.0
<b>Stabilization Time (Hours):</b>	0:30
<b>Total Operating Time (Hours):</b>	1:05
<b>Off State Power(W):</b>	0.00

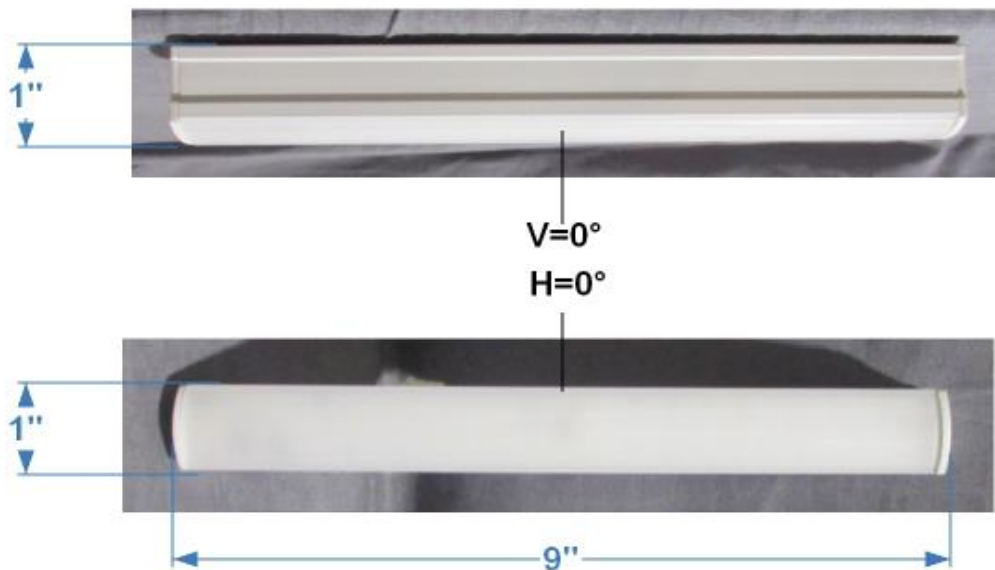
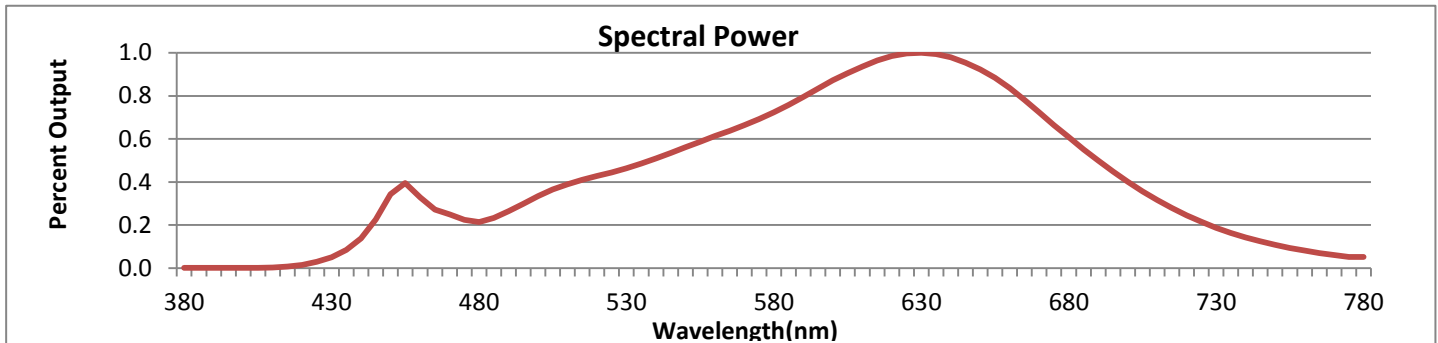


FIG. 1 LUMINAIRE

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



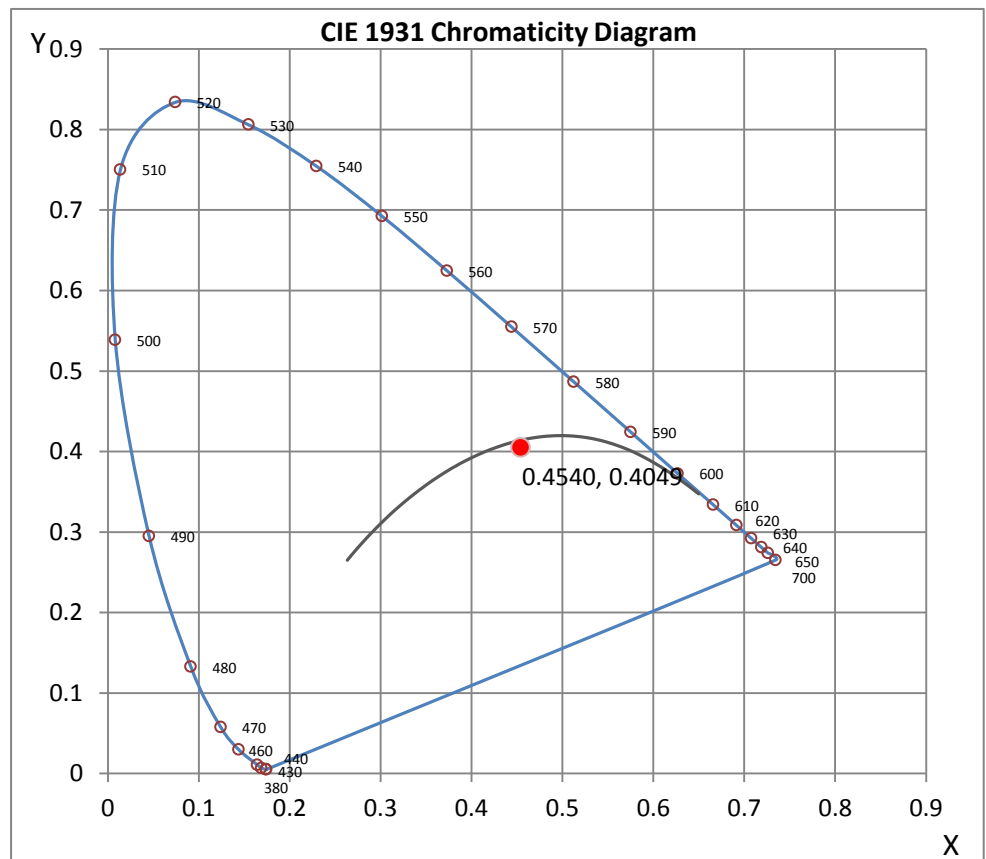
Wavelength	W/m <sup>2</sup> nm	440	0.0004	510	0.0011	580	0.0021	650	0.0027	720	0.0007
380	0.0000	450	0.0010	520	0.0013	590	0.0023	660	0.0025	730	0.0006
390	0.0000	460	0.0010	530	0.0014	600	0.0026	670	0.0021	740	0.0004
400	0.0000	470	0.0007	540	0.0015	610	0.0028	680	0.0018	750	0.0003
410	0.0000	480	0.0006	550	0.0016	620	0.0029	690	0.0015	760	0.0002
420	0.0000	490	0.0008	560	0.0018	630	0.0029	700	0.0012	770	0.0002
430	0.0001	500	0.0010	570	0.0020	640	0.0029	710	0.0009	780	0.0002

**CRI & CCT**

x	0.4540
y	0.4049
u'	0.2613
v'	0.5243
CRI	95.30
CCT	2740
Duv	-0.00162

**R Values**

R1	96.24
R2	99.10
R3	98.58
R4	95.45
R5	96.43
R6	97.19
R7	92.80
R8	86.53
R9	72.66
R10	97.33
R11	96.89
R12	87.54
R13	97.30
R14	99.49



\*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 : L041608001.IES**

**DESCRIPTION INFORMATION (From Photometric File)**

IESNA:LM-63-2002  
 [TEST] L041608001  
 [TESTLAB] LIGHT LABORATORY, INC.  
 [ISSUEDATE] 4/29/2016  
 [MANUFAC] GM LIGHTING  
 [LUMCAT] SLCB--9-27  
 [LUMINAIRE] 1"L. X 9"W. X 1"H. LED LINEAR LIGHT BAR  
 [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, 4.04W  
 [TEST PROCEDURE] IESNA:LM-79-08

**CHARACTERISTICS**

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	183
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	45
Total Luminaire Watts	4.04
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	1.26
Spacing Criterion (90-270)	1.20
Spacing Criterion (Diagonal)	1.34
Basic Luminous Shape	Rectangular w/Sides
Luminous Length (0-180)	0.08 ft
Luminous Width (90-270)	0.75 ft
Luminous Height	0.02 ft

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

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	8200	8050	8762
55	7458	7212	7905
65	6811	6367	6900
75	6373	5576	5442
85	6349	5090	2506

**IES INDOOR REPORT  
PHOTOMETRIC FILENAME : L041608001.IES**

**CANDELA TABULATION**

	<u>0.0</u>	<u>22.5</u>	<u>45.0</u>	<u>67.5</u>	<u>90.0</u>
<b>0</b>	60.41	60.41	60.41	60.41	60.41
<b>5</b>	60.16	60.03	60.08	59.99	60.08
<b>10</b>	59.24	59.11	58.94	58.82	58.82
<b>15</b>	57.81	57.60	57.52	57.26	57.05
<b>20</b>	55.96	55.80	55.29	54.87	54.71
<b>25</b>	53.61	53.28	52.61	51.89	51.77
<b>30</b>	50.76	50.38	49.34	48.37	47.99
<b>35</b>	47.57	47.11	45.94	44.59	43.97
<b>40</b>	44.13	43.59	42.04	40.40	39.77
<b>45</b>	40.44	39.90	37.97	36.20	35.49
<b>50</b>	36.58	35.79	33.73	31.67	30.71
<b>55</b>	32.39	31.59	29.53	27.19	26.26
<b>60</b>	28.44	27.69	25.34	22.82	21.73
<b>65</b>	24.67	23.79	21.31	18.50	17.20
<b>70</b>	21.14	20.05	17.45	14.35	12.67
<b>75</b>	17.79	16.74	13.93	10.40	8.64
<b>80</b>	14.68	13.72	10.78	6.96	4.78
<b>85</b>	11.91	10.95	8.01	4.11	1.59
<b>90</b>	9.48	8.52	5.75	2.18	0.00
<b>95</b>	7.30	6.46	4.03	1.13	0.00
<b>100</b>	5.54	4.78	2.73	0.63	0.00
<b>105</b>	4.20	3.48	1.89	0.46	0.00
<b>110</b>	3.10	2.56	1.34	0.34	0.00
<b>115</b>	2.27	1.89	1.01	0.29	0.08
<b>120</b>	1.76	1.34	0.76	0.34	0.08
<b>125</b>	1.34	1.09	0.59	0.34	0.08
<b>130</b>	1.01	0.84	0.59	0.29	0.17
<b>135</b>	0.84	0.76	0.50	0.25	0.17
<b>140</b>	0.76	0.59	0.50	0.21	0.17
<b>145</b>	0.59	0.59	0.38	0.21	0.17
<b>150</b>	0.00	0.50	0.34	0.21	0.17
<b>155</b>	0.00	0.00	0.00	0.00	0.00
<b>160</b>	0.00	0.00	0.00	0.00	0.00
<b>165</b>	0.00	0.00	0.00	0.00	0.00
<b>170</b>	0.00	0.00	0.00	0.00	0.00
<b>175</b>	0.00	0.00	0.00	0.00	0.00
<b>180</b>	0.00	0.00	0.00	0.00	0.00

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**ZONAL LUMEN SUMMARY**

Zone	Lumens	%Lamp	%Fixt
0-20	21.90	N.A.	12.00
0-30	46.13	N.A.	25.20
0-40	74.80	N.A.	40.90
0-60	130.46	N.A.	71.30
0-80	165.87	N.A.	90.60
0-90	174.18	N.A.	95.20
10-90	168.48	N.A.	92.10
20-40	52.91	N.A.	28.90
20-50	82.21	N.A.	44.90
40-70	76.63	N.A.	41.90
60-80	35.40	N.A.	19.30
70-80	14.43	N.A.	7.90
80-90	8.32	N.A.	4.50
90-110	6.43	N.A.	3.50
90-120	7.54	N.A.	4.10
90-130	8.17	N.A.	4.50
90-150	8.80	N.A.	4.80
90-180	8.84	N.A.	4.80
110-180	2.41	N.A.	1.30
0-180	183.02	N.A.	100.00

Total Luminaire Efficiency = N.A.%

**ZONAL LUMEN SUMMARY**

Zone	Lumens
0-10	5.70
10-20	16.20
20-30	24.23
30-40	28.68
40-50	29.30
50-60	26.35
60-70	20.98
70-80	14.43
80-90	8.32
90-100	4.27
100-110	2.16
110-120	1.11
120-130	0.63
130-140	0.39
140-150	0.24
150-160	0.04
160-170	0.00
170-180	0.00

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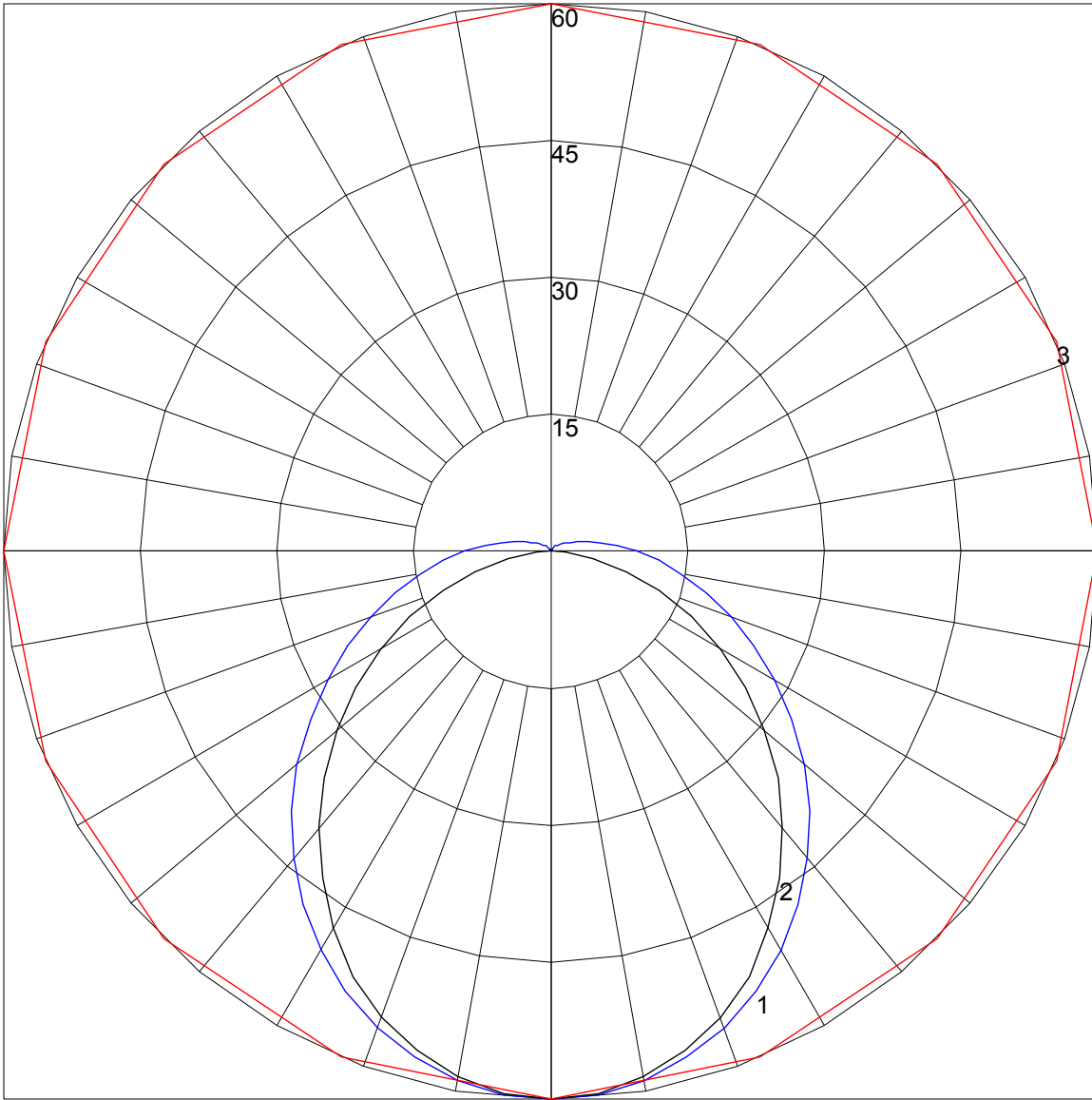
**COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD**

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	118	118	118	118	115	115	115	115	108	108	108	103	103	103	98	98	98	95
1	106	101	96	92	103	98	94	90	93	90	86	88	86	83	84	82	80	77
2	96	88	80	74	93	85	79	73	81	75	71	77	72	68	73	69	66	64
3	88	77	68	62	85	75	67	61	71	64	59	68	62	57	65	60	56	53
4	80	68	59	52	78	66	58	51	63	56	50	60	54	49	58	52	48	45
5	74	61	52	45	71	59	51	44	57	49	43	54	48	42	52	46	42	39
6	68	55	46	39	66	53	45	39	51	44	38	49	42	37	47	41	37	34
7	63	50	41	34	61	49	40	34	47	39	34	45	38	33	43	37	32	30
8	59	45	37	31	57	44	36	31	43	35	30	41	34	30	39	34	29	27
9	55	42	33	28	53	41	33	27	39	32	27	38	31	27	36	31	26	24
10	52	38	30	25	50	38	30	25	36	29	25	35	29	24	34	28	24	22



POLAR GRAPH



Maximum Candela = 60.41 Located At Horizontal Angle = 0, Vertical Angle = 0  
# 1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)  
# 2 - Vertical Plane Through Horizontal Angles (90 - 270)  
# 3 - Horizontal Cone Through Vertical Angle (0) (Through Max. Cd.)