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Report No: L041608102

Date: 4/28/2016



NVLAP LAB CODE 200927-0

Report No: L041608102

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

Model Number: LTR300-SO-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 LTR300-SO-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: 4/26/16 - 4/28/16

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

Manufacturer:	GM LIGHTING
Model Number:	LTR300-SO-27
Driver Model Number:	N/A
Total Lumens:	613.88
Input Voltage (VDC):	12.00
Input Current (Amp):	0.49
Input Power (W):	5.88
Input Power Factor:	1.00
Current ATHD @ 120V(%):	N/A
Current ATHD @ 277V(%):	N/A
Efficacy:	104
Color Rendering Index (CRI):	82
Correlated Color Temperature (K):	2721
Chromaticity Coordinate x:	0.4549
Chromaticity Coordinate y:	0.4043
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:35
Total Operating Time (Hours):	0:55
Off State Power(W):	0.00

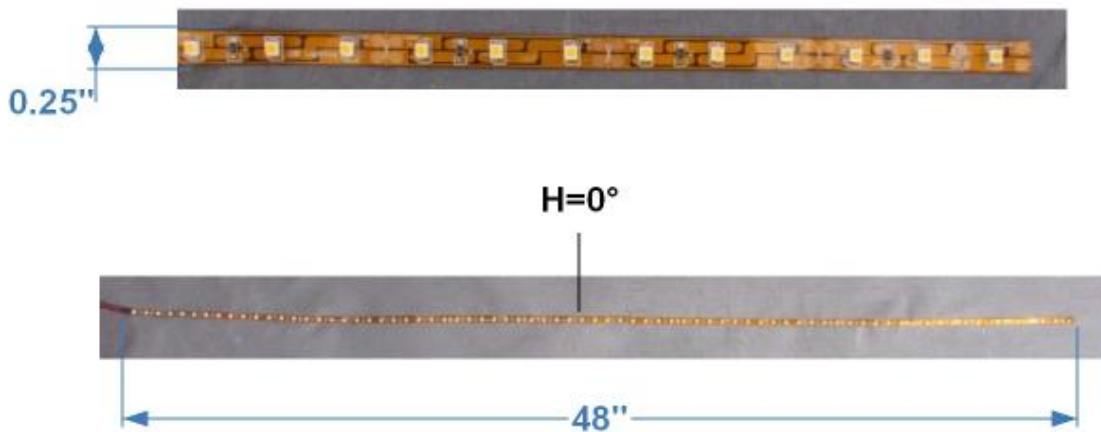
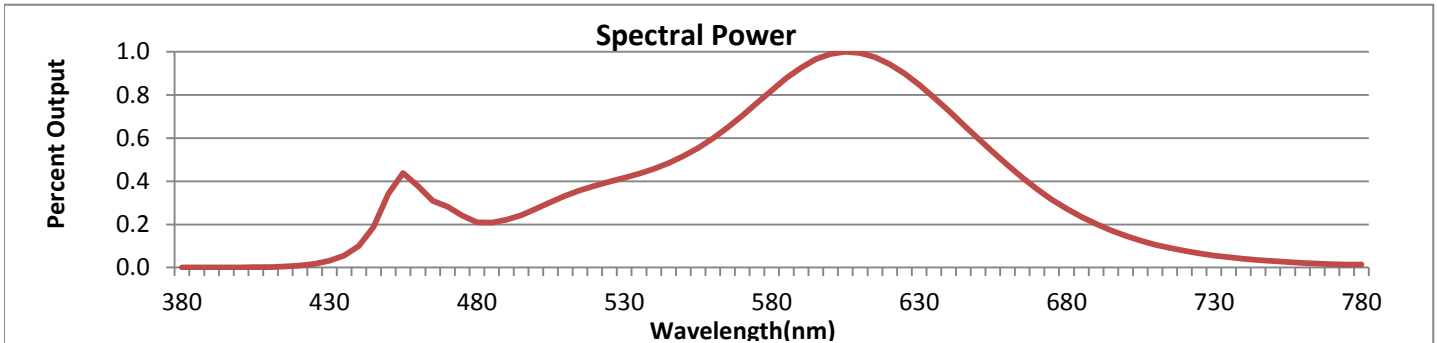


FIG. 1 LUMINAIRE

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



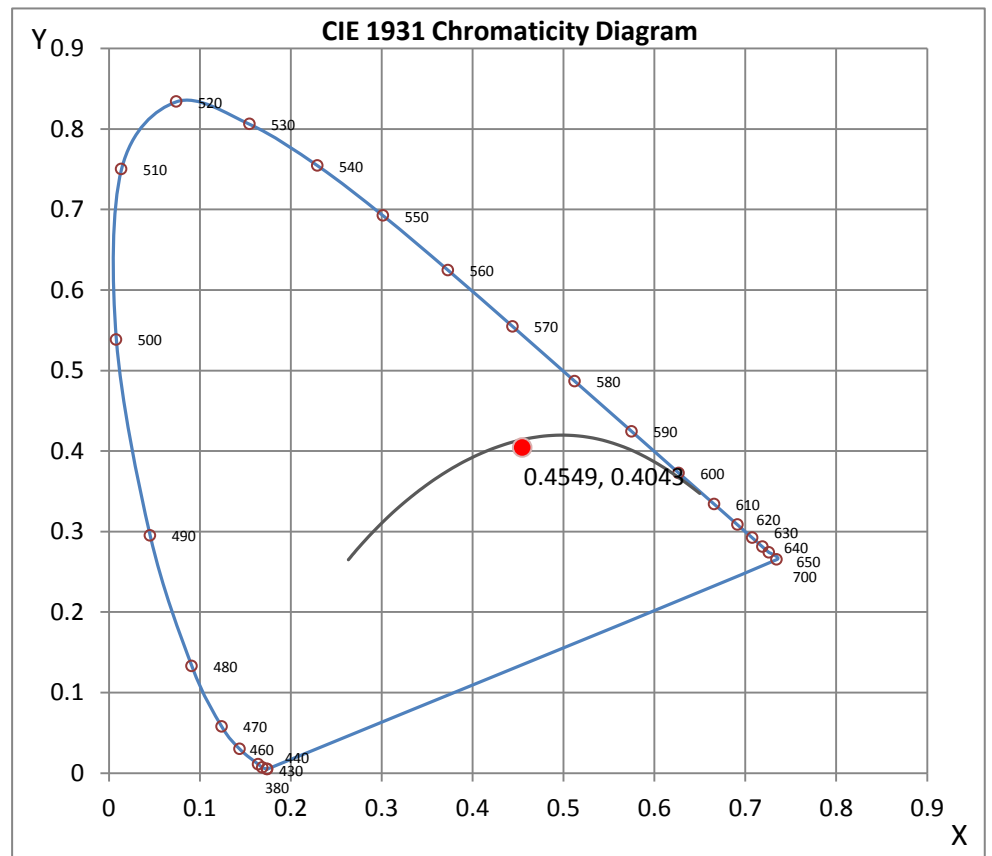
Wavelength	W/m ² nm	440	0.0010	510	0.0032	580	0.0079	650	0.0058	720	0.0007
380	0.0000	450	0.0033	520	0.0037	590	0.0089	660	0.0046	730	0.0005
390	0.0000	460	0.0036	530	0.0040	600	0.0096	670	0.0035	740	0.0004
400	0.0000	470	0.0027	540	0.0044	610	0.0096	680	0.0026	750	0.0003
410	0.0000	480	0.0020	550	0.0050	620	0.0091	690	0.0019	760	0.0002
420	0.0001	490	0.0021	560	0.0058	630	0.0082	700	0.0014	770	0.0002
430	0.0003	500	0.0026	570	0.0068	640	0.0070	710	0.0010	780	0.0001

CRI & CCT

x	0.4549
y	0.4043
u'	0.2621
v'	0.5242
CRI	82.00
CCT	2721
Duv	-0.00192

R Values

R1	81.78
R2	94.29
R3	91.32
R4	78.57
R5	82.39
R6	93.87
R7	78.77
R8	55.30
R9	6.89
R10	87.46
R11	78.32
R12	77.81
R13	85.09
R14	95.96



*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.

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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 : L041608102.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
 [TEST] L041608102
 [TESTLAB] LIGHT LABORATORY, INC.
 [ISSUEDATE] 4/28/2016
 [MANUFAC] GM LIGHTING
 [LUMCAT] LTR300-SO-27
 [LUMINAIRE] 4FT Standard Output Led Linear Ribbon
 [LAMPPOSITION] 0,0
 [LAMPCAT] N/A
 [OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND
 [MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.
 [POWER SUPPLY] 12VDC CONSTANT VOLTAGE SOURCE
 [INPUT] 12VDC, 5.88W
 [TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	614
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	104
Total Luminaire Watts	5.88
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	1.28
Spacing Criterion (90-270)	1.28
Spacing Criterion (Diagonal)	1.40
Basic Luminous Shape	Rectangular
Luminous Length (0-180)	0.01 ft
Luminous Width (90-270)	4.00 ft
Luminous Height	0.00 ft

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	54677	54788	54966
55	52661	52876	52895
65	48729	48919	49320
75	41830	41705	41487
85	30538	29520	28718

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L041608102.IES

CANDELA TABULATION

	<u>0.0</u>	<u>22.5</u>	<u>45.0</u>	<u>67.5</u>	<u>90.0</u>
0	211.12	211.12	211.12	211.12	211.12
5	210.35	210.35	210.43	210.26	210.09
10	207.58	207.70	207.87	207.70	207.58
15	203.47	203.51	203.72	203.47	203.38
20	197.51	197.68	197.80	197.68	197.51
25	190.04	190.00	190.21	190.21	190.04
30	180.64	180.85	181.02	180.81	180.98
35	169.82	170.20	170.45	170.07	170.41
40	157.99	157.70	157.99	158.12	157.82
45	143.81	143.98	144.10	144.27	144.57
50	128.71	129.13	129.00	129.21	129.63
55	112.35	112.56	112.81	112.85	112.85
60	94.89	94.85	95.23	95.40	94.89
65	76.60	76.77	76.90	77.02	77.53
70	58.15	58.61	58.31	58.48	58.90
75	40.27	39.98	40.15	40.40	39.94
80	23.66	23.58	23.66	23.70	23.16
85	9.90	9.78	9.57	9.52	9.31
90	0.00	0.00	0.00	0.00	0.00

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ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	77.45	N.A.	12.60
0-30	165.07	N.A.	26.90
0-40	271.52	N.A.	44.20
0-60	483.28	N.A.	78.70
0-80	602.23	N.A.	98.10
0-90	613.88	N.A.	100.00
10-90	593.89	N.A.	96.70
20-40	194.07	N.A.	31.60
20-50	305.21	N.A.	49.70
40-70	287.87	N.A.	46.90
60-80	118.95	N.A.	19.40
70-80	42.84	N.A.	7.00
80-90	11.66	N.A.	1.90
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	613.88	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	19.99
10-20	57.46
20-30	87.62
30-40	106.45
40-50	111.15
50-60	100.61
60-70	76.11
70-80	42.84
80-90	11.66
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

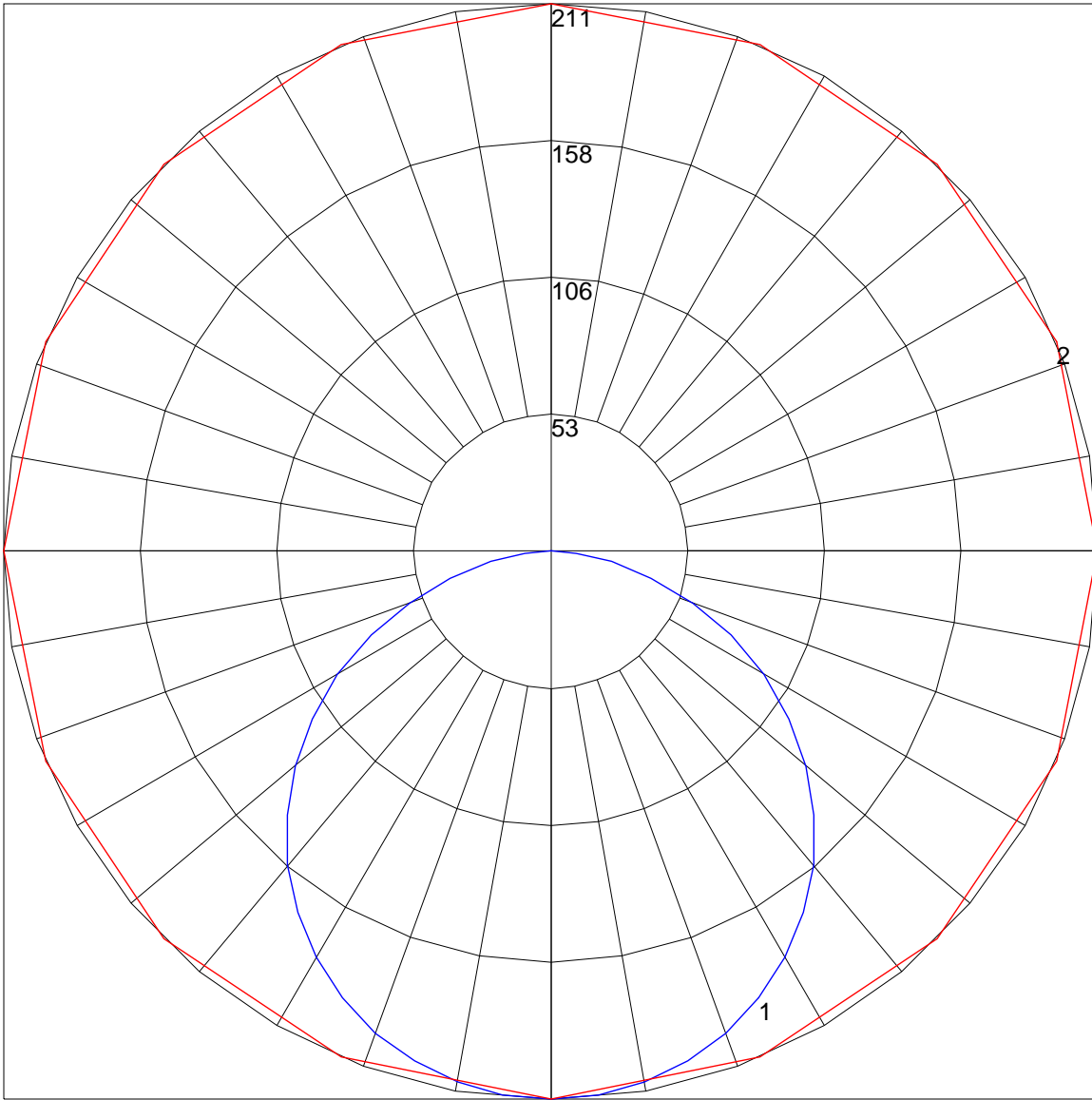
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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
1	109	104	100	96	106	102	98	94	97	94	91	93	91	88	90	88	86	84
2	99	90	83	78	96	88	82	77	85	80	75	82	77	73	79	75	72	69
3	90	79	71	64	87	78	70	64	75	68	63	72	66	62	69	65	61	58
4	82	70	61	54	80	69	60	54	66	59	53	64	58	53	62	56	52	50
5	76	63	53	47	73	61	53	47	59	52	46	57	51	45	55	50	45	43
6	70	56	47	41	68	55	47	41	53	46	40	52	45	40	50	44	39	37
7	65	51	42	36	63	50	42	36	49	41	36	47	40	35	46	40	35	33
8	60	46	38	32	59	46	38	32	44	37	32	43	36	32	42	36	31	29
9	56	43	34	29	55	42	34	29	41	34	29	40	33	28	39	33	28	26
10	53	39	31	26	51	39	31	26	38	31	26	37	30	26	36	30	26	24

POLAR GRAPH



Maximum Candela = 211.12 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.)