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Report No: L041609103

Date: 5/2/2016



NVLAP LAB CODE 200927-0

Report No: L041609103

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

Model Number: LTR300-WW

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-WW. Received in working and undamaged condition. No modifications were necessary.

Testing Condition: Fixture is tested with no special conditions.

Sample Arrival Date: 4/28/16

Date of Tests: 5/2/16 - 5/2/16

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-WW
Driver Model Number:	N/A
Total Lumens:	826.39
Input Voltage (VDC):	12.00
Input Current (Amp):	0.72
Input Power (W):	8.66
Input Power Factor:	1.00
Current ATHD @ 120V(%):	N/A
Current ATHD @ 277V(%):	N/A
Efficacy:	95
Color Rendering Index (CRI):	87
Correlated Color Temperature (K):	3453
Chromaticity Coordinate x:	0.4074
Chromaticity Coordinate y:	0.3906
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:50
Total Operating Time (Hours):	1:10
Off State Power(W):	0.00

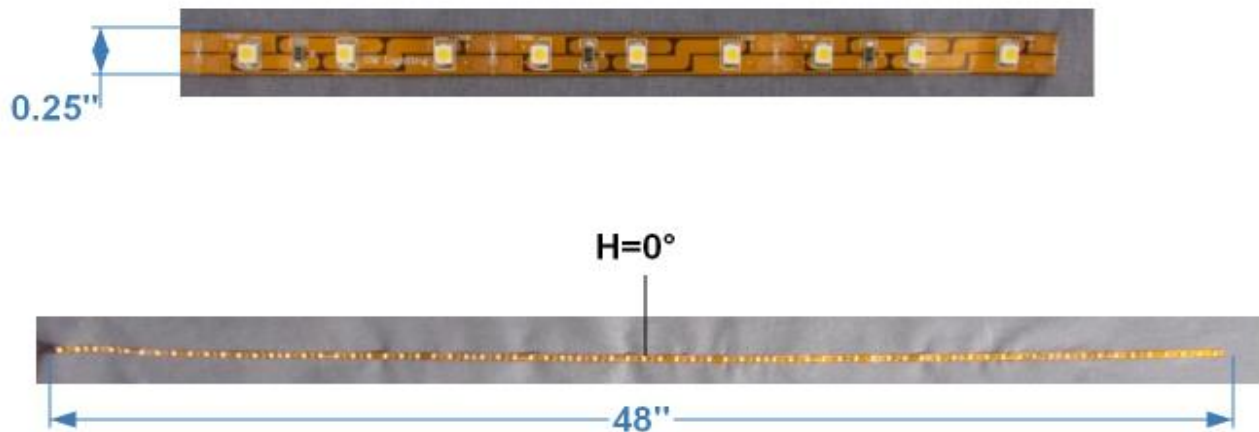
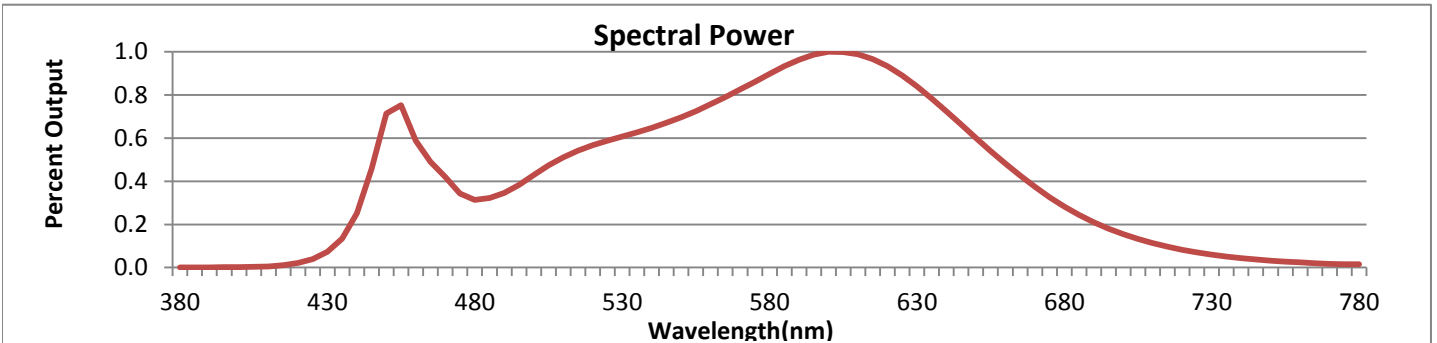


FIG. 1 LUMINAIRE

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



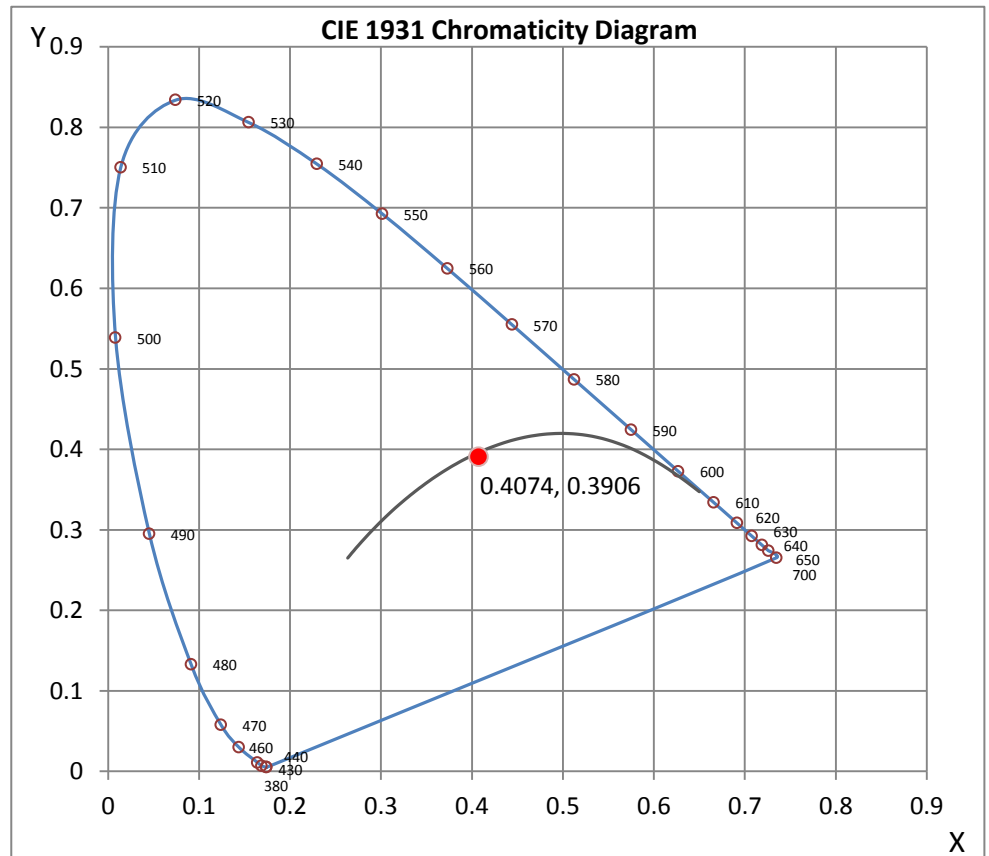
Wavelength	W/m ² nm	440	0.0027	510	0.0055	580	0.0097	650	0.0065	720	0.0009
380	0.0000	450	0.0077	520	0.0061	590	0.0104	660	0.0052	730	0.0006
390	0.0000	460	0.0063	530	0.0066	600	0.0108	670	0.0040	740	0.0005
400	0.0000	470	0.0045	540	0.0070	610	0.0107	680	0.0031	750	0.0003
410	0.0001	480	0.0034	550	0.0075	620	0.0101	690	0.0023	760	0.0003
420	0.0002	490	0.0037	560	0.0082	630	0.0091	700	0.0017	770	0.0002
430	0.0008	500	0.0046	570	0.0089	640	0.0078	710	0.0012	780	0.0002

CRI & CCT

x	0.4074
y	0.3906
u'	0.2371
v'	0.5115
CRI	86.50
CCT	3453
Duv	-0.00051

R Values

R1	86.05
R2	94.23
R3	96.40
R4	84.62
R5	85.97
R6	92.02
R7	85.66
R8	67.36
R9	24.32
R10	85.89
R11	84.60
R12	71.66
R13	88.42
R14	98.73



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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 : Keyur Patel

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: 9*

*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 INDOOR REPORT
PHOTOMETRIC FILENAME : L041609103.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
 [TEST] L041609103
 [TESTLAB] LIGHT LABORATORY, INC.
 [ISSUEDATE] 5/2/2016
 [MANUFAC] GM LIGHTING
 [LUMCAT] LTR300-WW
 [LUMINAIRE] 4 FT HO Flexible 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, 8.66W
 [TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	826
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	95
Total Luminaire Watts	8.66
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	1.30
Spacing Criterion (90-270)	1.30
Spacing Criterion (Diagonal)	1.42
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	73691	73851	73786
55	71653	71794	71733
65	66929	67094	67094
75	56123	56476	55687
85	40378	39484	36245

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L041609103.IES

CANDELA TABULATION

	<u>0.0</u>	<u>22.5</u>	<u>45.0</u>	<u>67.5</u>	<u>90.0</u>
0	280.01	280.01	280.01	280.01	280.01
5	278.98	279.02	279.06	278.98	278.47
10	275.79	275.79	275.79	275.83	275.37
15	270.42	270.42	270.55	270.55	270.00
20	262.95	263.04	263.16	263.12	262.62
25	253.30	253.26	253.43	253.56	252.80
30	241.56	241.60	241.56	241.73	241.56
35	227.88	227.76	228.01	228.22	227.88
40	212.19	212.07	212.02	212.36	211.77
45	193.82	194.07	194.24	194.66	194.07
50	174.77	174.69	174.60	174.98	174.94
55	152.87	152.96	153.17	153.25	153.04
60	129.71	129.88	129.97	129.76	129.30
65	105.21	105.34	105.47	105.89	105.47
70	80.63	79.96	80.09	80.42	80.46
75	54.03	54.41	54.37	53.70	53.61
80	31.72	31.72	31.55	31.04	30.63
85	13.09	13.09	12.80	12.50	11.75
90	0.00	0.00	0.00	0.00	0.00

IES INDOOR REPORT
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ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	102.89	N.A.	12.50
0-30	219.68	N.A.	26.60
0-40	362.25	N.A.	43.80
0-60	648.72	N.A.	78.50
0-80	810.93	N.A.	98.10
0-90	826.39	N.A.	100.00
10-90	799.86	N.A.	96.80
20-40	259.36	N.A.	31.40
20-50	409.16	N.A.	49.50
40-70	390.71	N.A.	47.30
60-80	162.21	N.A.	19.60
70-80	57.97	N.A.	7.00
80-90	15.45	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	826.39	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	26.53
10-20	76.36
20-30	116.79
30-40	142.57
40-50	149.80
50-60	136.67
60-70	104.24
70-80	57.97
80-90	15.45
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

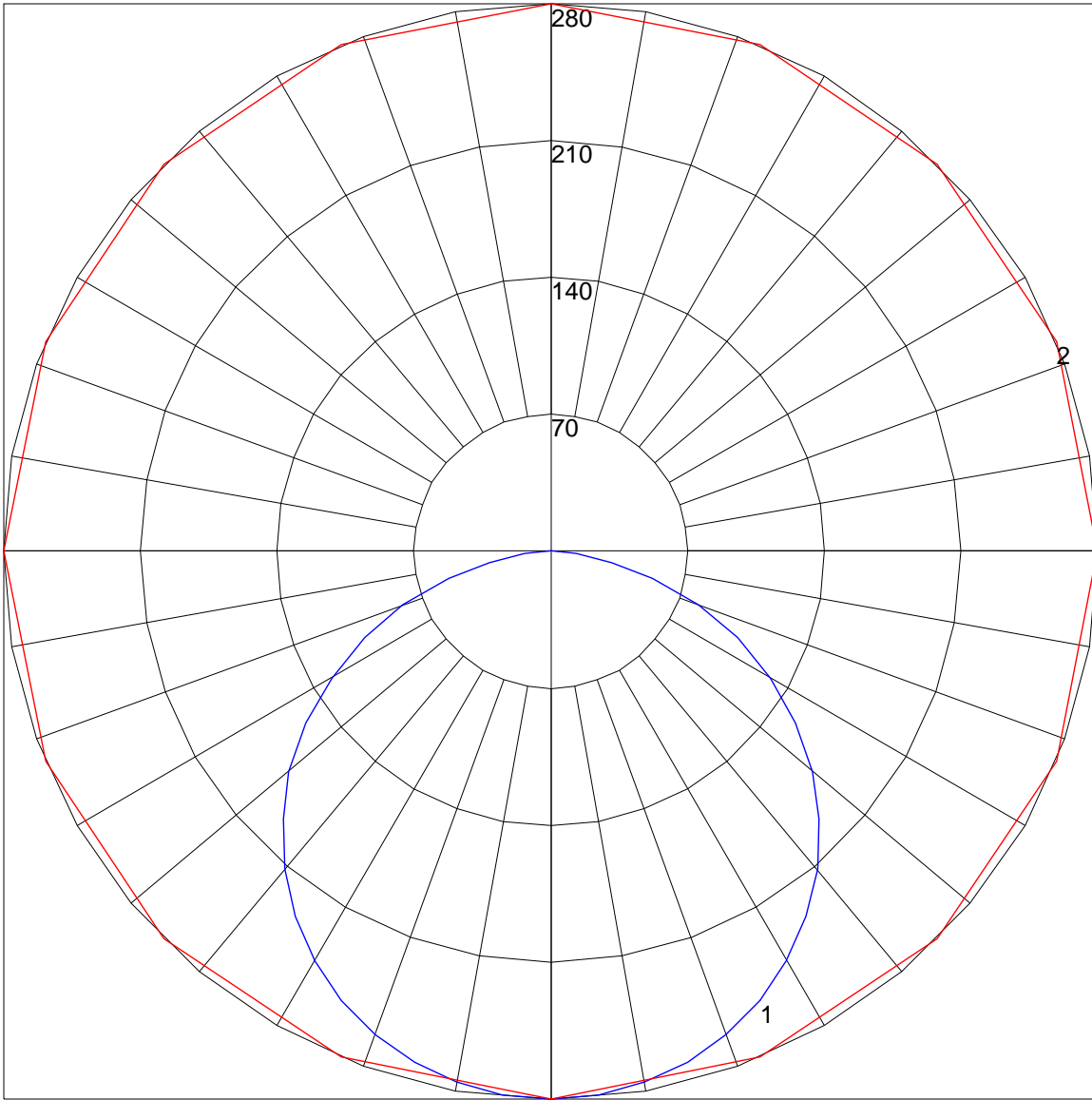
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	79	75	82	77	73	79	75	72	69
3	90	79	71	64	87	78	70	64	75	68	63	72	66	61	69	64	60	58
4	82	70	61	54	80	69	60	54	66	59	53	64	57	52	62	56	52	49
5	75	62	53	47	73	61	53	46	59	52	46	57	51	45	55	49	45	43
6	70	56	47	41	68	55	47	40	53	46	40	52	45	40	50	44	39	37
7	65	51	42	36	63	50	42	36	48	41	35	47	40	35	46	39	35	33
8	60	46	38	32	58	46	37	32	44	37	32	43	36	31	42	36	31	29
9	56	42	34	29	55	42	34	29	41	33	28	40	33	28	39	33	28	26
10	53	39	31	26	51	39	31	26	38	31	26	37	30	26	36	30	25	24

POLAR GRAPH



Maximum Candela = 280.01 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.)