LIGHT LABORATORY INC.
8165 E Kaiser Blvd. Anaheim, CA 92808
www.lightlaboratory.com

NVLAP TESTING
NVLAP LAB CODE 200927-0

Report No: **L121605904** **Issue Date: 2/8/2017**

Report Prepared For: Revolution Lighting
4139 Guardian St. Simi Valley CA 93063

Model Number: **131331-003**

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

Testing Condition: Fixture is tested with no special conditions.

Sample Arrival Date: 12/21/16

Date of Tests: 1/5/17 - 1/10/17

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	11/28/17
ITECH	IT6122	PS-DC03-S1	11/28/17
Fluke Digital Thermometer	52k/J	MT-TP02-GC	11/28/17
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.

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Test Summary	
Manufacturer:	Revolution Lighting
Model Number:	131331-003
Driver Model Number:	N/A
Total Lumens:	3887.58
Input Voltage (VAC/60Hz):	120.00
Input Current (Amp):	0.24
Input Power (W):	27.35
Input Power Factor:	0.94
Current ATHD @ 120V(%):	15%
Current ATHD @ 277V(%):	N/A
Efficacy:	142
Color Rendering Index (CRI):	85
Correlated Color Temperature (K):	3928
Chromaticity Coordinate x:	0.3841
Chromaticity Coordinate y:	0.3804
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:55
Total Operating Time (Hours):	1:30
Off State Power(W):	0.00

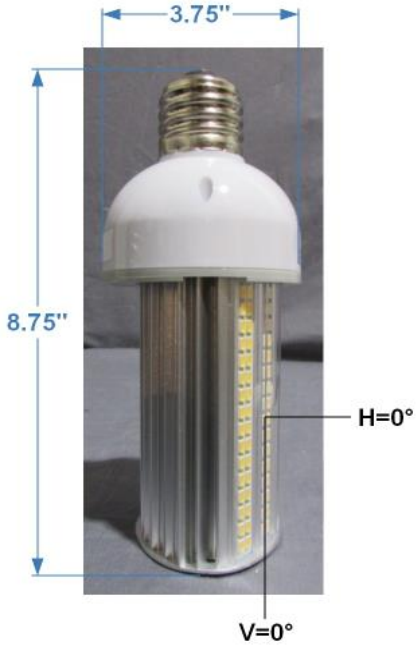

FIG. 1 LUMINAIRE

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

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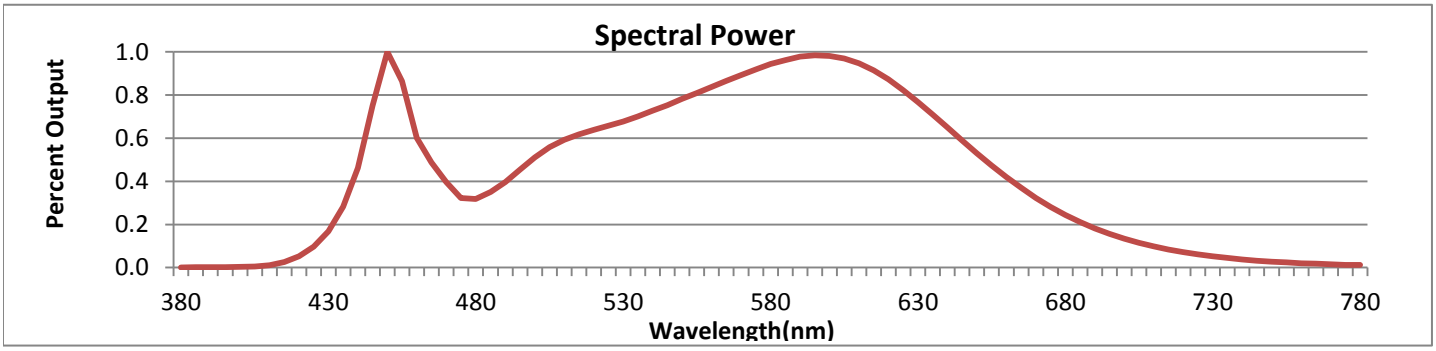


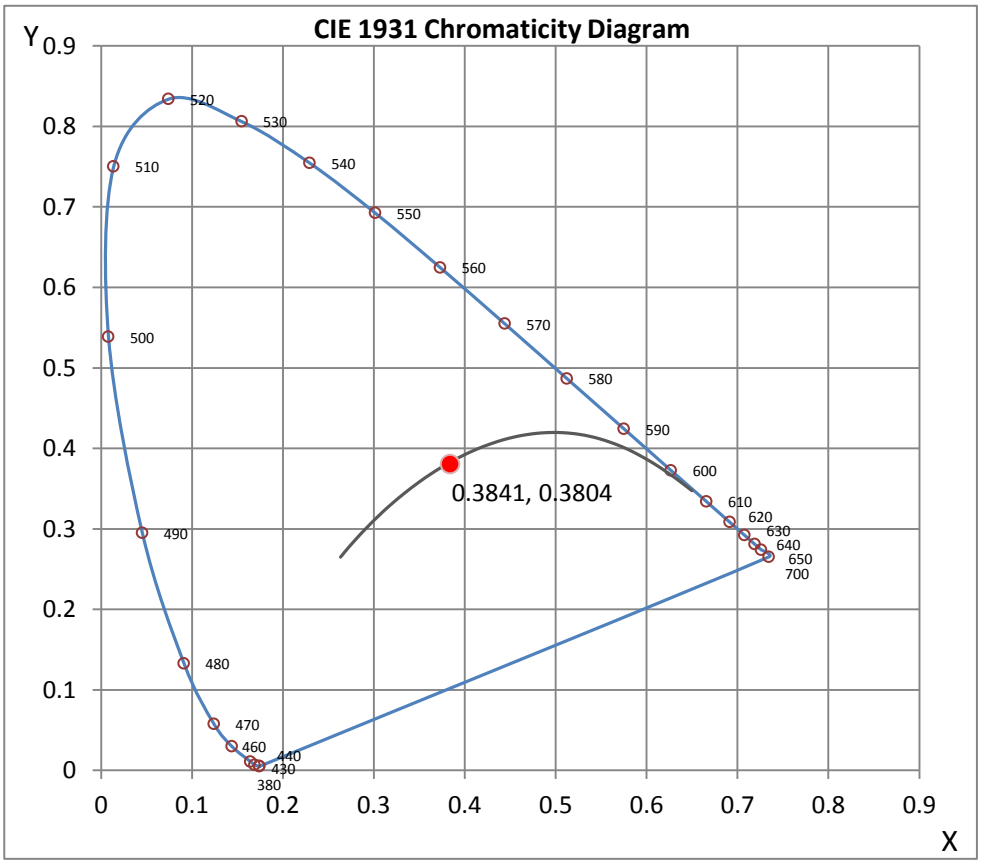
Wavelength	W/m²nm	440	0.4619	510	0.5928	580	0.9439	650	0.5308	720	0.0715
380	0.0010	450	1.0000	520	0.6390	590	0.9786	660	0.4202	730	0.0520
390	0.0013	460	0.6011	530	0.6776	600	0.9819	670	0.3232	740	0.0380
400	0.0028	470	0.3962	540	0.7270	610	0.9469	680	0.2441	750	0.0278
410	0.0111	480	0.3180	550	0.7823	620	0.8732	690	0.1820	760	0.0205
420	0.0518	490	0.3972	560	0.8377	630	0.7674	700	0.1342	770	0.0152
430	0.1681	500	0.5113	570	0.8928	640	0.6499	710	0.0981	780	0.0130

CRI & CCT

x	0.3841
y	0.3804
u'	0.2261
v'	0.5037
CRI	84.50
CCT	3928
Duv	0.00065

R Values

R1	82.83
R2	90.75
R3	96.19
R4	83.32
R5	83.06
R6	87.19
R7	86.56
R8	66.18
R9	14.39
R10	78.18
R11	82.62
R12	67.15
R13	84.83
R14	97.93



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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:

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 : L121605904.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L121605904
[TESTLAB] LIGHT LABORATORY, INC.
[ISSUEDATE] 1/10/2017
[MANUFAC] REVOLUTION LIGHTING
[LUMCAT] 131331-003
[LUMINAIRE] 30W 4000K E39 Semi-Directional Utility Lamp
[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, 27.35W
[TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	3888
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	142
Total Luminaire Watts	27.35
Ballast Factor	1.00
CIE Type	General Diffuse
Spacing Criterion (0-180)	N.A.
Spacing Criterion (90-270)	N.A.
Spacing Criterion (Diagonal)	N.A.
Basic Luminous Shape	Rectangular w/Sides
Luminous Length (0-180)	0.06 ft
Luminous Width (90-270)	0.27 ft
Luminous Height	0.40 ft

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	103975	82961	92702
55	109409	85996	106470
65	112294	87940	118655
75	114071	89201	130381
85	115690	90200	142583

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L121605904.IES

CANDELA TABULATION

	0.0	22.5	45.0	67.5	90.0	112.5	135.0	157.5	180.0
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	51.82	45.09	47.33	28.98	23.67	0.00	0.00	0.00	0.00
10	122.06	105.37	99.81	58.62	36.95	0.00	0.00	0.00	0.00
15	221.21	197.05	170.39	103.13	64.27	0.00	0.00	0.00	0.00
20	334.14	299.43	249.19	151.79	87.02	0.00	0.00	0.00	0.00
25	444.41	397.75	319.19	205.35	117.58	0.00	0.00	0.00	0.00
30	554.85	501.46	394.42	259.82	149.30	0.00	0.00	0.00	0.00
35	663.46	603.51	471.65	305.91	182.35	0.00	0.00	0.00	0.00
40	763.11	693.11	540.98	357.39	216.56	0.00	0.00	0.00	0.00
45	849.13	773.57	597.53	402.48	245.04	0.00	0.00	0.00	0.00
50	925.20	845.06	643.95	444.99	267.38	0.00	0.00	0.00	0.00
55	994.61	906.93	685.72	480.20	286.64	0.00	0.00	0.00	0.00
60	1047.76	959.90	720.26	508.85	302.75	0.00	0.00	0.00	0.00
65	1093.59	1004.00	747.75	534.84	315.54	0.00	0.00	0.00	0.00
70	1127.31	1036.80	768.34	553.27	325.09	0.00	0.00	0.00	0.00
75	1151.05	1060.46	782.62	566.06	331.90	0.00	0.00	0.00	0.00
80	1166.17	1075.33	789.85	574.37	334.89	0.00	0.00	0.00	0.00
85	1172.64	1081.14	791.76	577.52	335.72	0.00	0.00	0.00	0.00
90	1169.16	1079.64	788.60	575.78	334.14	0.00	0.00	0.00	0.00
95	1156.20	1068.35	778.39	569.05	328.74	0.00	0.00	0.00	0.00
100	1126.97	1041.03	757.46	553.11	319.36	0.00	0.00	0.00	0.00
105	1074.00	1000.68	725.66	526.62	307.24	0.00	0.00	0.00	0.00
110	1010.39	946.95	687.38	497.97	292.87	0.00	0.00	0.00	0.00
115	954.92	892.23	648.93	469.82	275.35	0.00	0.00	0.00	0.00
120	897.79	834.19	605.34	431.96	250.52	0.00	0.00	0.00	0.00
125	831.03	769.83	554.93	395.01	223.12	0.00	0.00	0.00	0.00
130	738.53	691.28	502.12	353.65	193.23	0.00	0.00	0.00	0.00
135	642.87	605.25	443.00	310.47	166.32	0.00	0.00	0.00	0.00
140	552.36	519.06	379.23	266.55	139.09	0.00	0.00	0.00	0.00
145	437.94	419.50	312.05	215.23	110.94	0.00	0.00	0.00	0.00
150	330.65	321.77	236.16	167.07	82.29	0.00	0.00	0.00	0.00
155	227.69	225.61	167.15	117.66	57.13	0.00	0.00	0.00	0.00
160	127.71	134.69	98.90	80.13	31.39	0.00	0.00	0.00	0.00
165	51.15	77.47	42.18	33.30	15.86	0.00	0.00	0.00	0.00
170	4.48	9.80	7.97	10.63	6.73	0.00	0.00	0.00	0.00
175	0.83	0.83	0.91	0.83	1.99	0.00	0.00	0.00	0.00
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L121605904.IES

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	26.59	N.A.	0.70
0-30	100.65	N.A.	2.60
0-40	249.85	N.A.	6.40
0-60	805.79	N.A.	20.70
0-80	1633.24	N.A.	42.00
0-90	2092.35	N.A.	53.80
10-90	2089.71	N.A.	53.80
20-40	223.26	N.A.	5.70
20-50	459.48	N.A.	11.80
40-70	945.71	N.A.	24.30
60-80	827.45	N.A.	21.30
70-80	437.68	N.A.	11.30
80-90	459.11	N.A.	11.80
90-110	860.24	N.A.	22.10
90-120	1202.57	N.A.	30.90
90-130	1466.43	N.A.	37.70
90-150	1746.64	N.A.	44.90
90-180	1795.23	N.A.	46.20
110-180	935.00	N.A.	24.10
0-180	3887.58	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	2.64
10-20	23.95
20-30	74.06
30-40	149.20
40-50	236.22
50-60	319.72
60-70	389.77
70-80	437.68
80-90	459.11
90-100	451.53
100-110	408.71
110-120	342.33
120-130	263.86
130-140	179.23
140-150	100.98
150-160	40.46
160-170	7.93
170-180	0.20

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L121605904.IES

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	108	108	108	108	100	100	100	100	85	85	85	72	72	72	60	60	60	54
1	92	86	79	74	85	79	73	68	66	61	57	54	51	48	43	41	38	33
2	82	71	63	55	75	65	58	51	54	48	43	44	39	35	34	31	27	23
3	73	61	51	43	66	55	47	40	46	39	33	37	31	27	28	24	21	16
4	66	52	42	35	60	48	39	32	39	32	27	32	26	21	24	20	16	12
5	60	46	36	29	54	42	33	26	34	27	22	28	22	17	21	17	13	10
6	55	40	31	24	50	37	28	22	30	23	18	24	19	14	19	14	11	8
7	50	36	27	20	46	33	25	19	27	20	15	22	16	12	17	12	9	6
8	46	32	23	17	42	30	22	16	25	18	13	20	14	10	15	11	8	5
9	43	29	21	15	39	27	19	14	22	16	11	18	13	9	14	10	7	4
10	40	27	19	13	37	24	17	12	20	14	10	16	11	8	13	9	6	4

IES INDOOR REPORT
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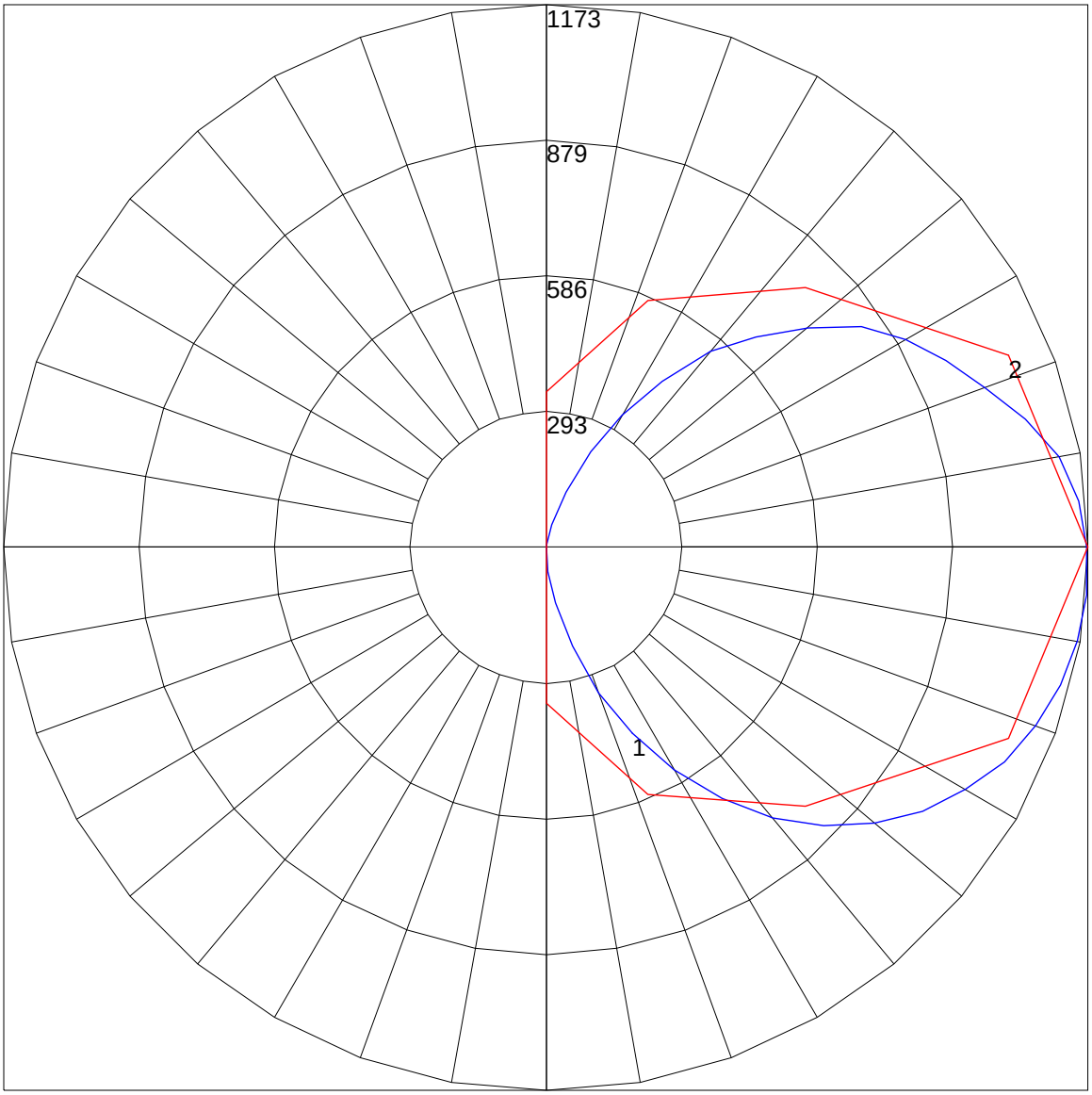
POLAR GRAPH



Maximum Candela = 1172.64 Located At Horizontal Angle = 0, Vertical Angle = 85
1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (85) (Through Max. Cd.)