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

NVLAP TESTING
NVLAP LAB CODE 200927-0

Report No: **L121605911** **Issue Date: 2/8/2017**

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

Model Number: **131232-205**

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: 12/21/16 - 1/5/17

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:	131232-205
Driver Model Number:	N/A
Total Lumens:	2513.86
Input Voltage (VAC/60Hz):	120.00
Input Current (Amp):	0.17
Input Power (W):	19.70
Input Power Factor:	0.99
Current ATHD @ 120V(%):	11%
Current ATHD @ 277V(%):	N/A
Efficacy:	128
Color Rendering Index (CRI):	84
Correlated Color Temperature (K):	5272
Chromaticity Coordinate x:	0.3379
Chromaticity Coordinate y:	0.3452
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	1:05
Total Operating Time (Hours):	1:35
Off State Power(W):	0.00

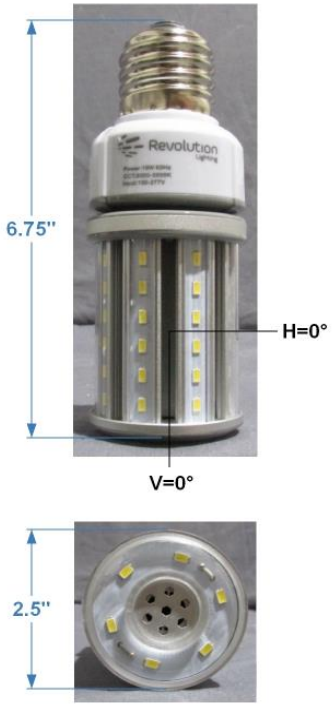

FIG. 1 LUMINAIRE

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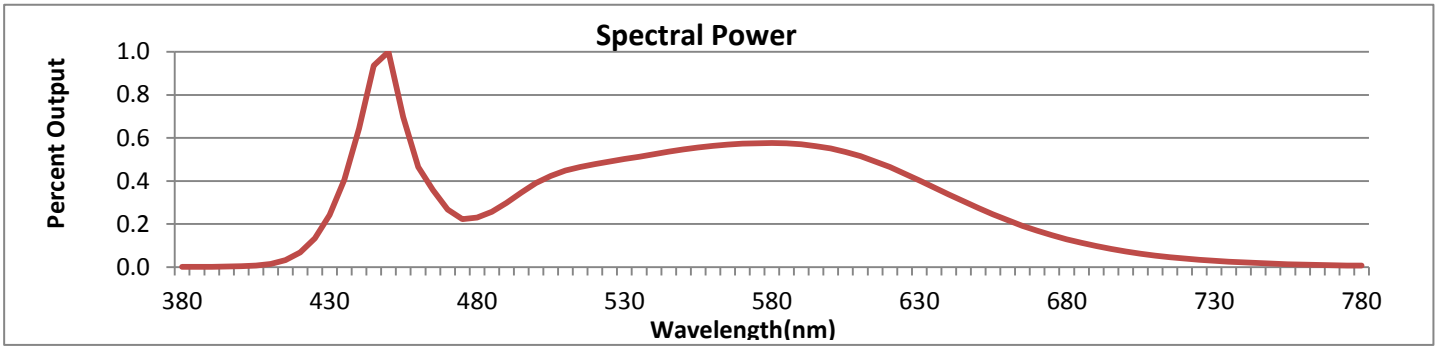


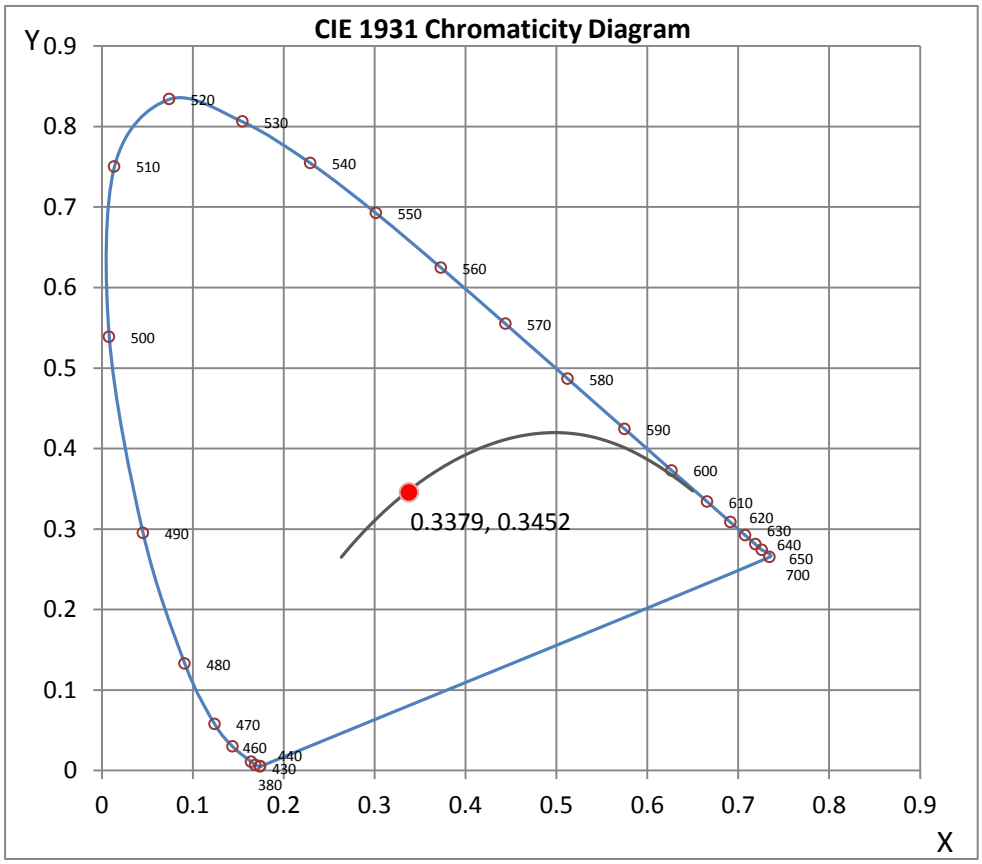
Wavelength	W/m²nm	440	0.6438	510	0.4480	580	0.5769	650	0.2749	720	0.0395
380	0.0009	450	1.0000	520	0.4790	590	0.5708	660	0.2181	730	0.0289
390	0.0014	460	0.4645	530	0.5019	600	0.5507	670	0.1690	740	0.0214
400	0.0034	470	0.2670	540	0.5248	610	0.5149	680	0.1287	750	0.0157
410	0.0147	480	0.2297	550	0.5470	620	0.4645	690	0.0972	760	0.0117
420	0.0685	490	0.2985	560	0.5627	630	0.4022	700	0.0725	770	0.0087
430	0.2422	500	0.3900	570	0.5730	640	0.3377	710	0.0536	780	0.0075

CRI & CCT

x	0.3379
y	0.3452
u'	0.2090
v'	0.4804
CRI	83.70
CCT	5272
Duv	-0.00025

R Values

R1	82.88
R2	87.39
R3	90.39
R4	84.92
R5	84.01
R6	82.58
R7	86.63
R8	70.72
R9	15.12
R10	70.09
R11	85.35
R12	67.25
R13	83.66
R14	94.48



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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 : L121605911.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L121605911
[TESTLAB] LIGHT LABORATORY, INC.
[ISSUEDATE] 1/5/2017
[MANUFAC] REVOLUTION LIGHTING
[LUMCAT] 131232-205
[LUMINAIRE] 19W 5000K E39 OMNIDIRECTIONAL 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, 19.70W
[TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	2514
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	128
Total Luminaire Watts	19.7
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	Circular w/ Sides
Luminous Length (0-180)	0.21 ft (Diameter)
Luminous Width (90-270)	0.21 ft (Diameter)
Luminous Height	0.25 ft

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	39984	39984	39984
55	42458	42458	42458
65	43177	43177	43177
75	43164	43164	43164
85	46373	46373	46373

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L121605911.IES

CANDELA TABULATION

	0
0	103.92
5	105.23
10	112.03
15	126.52
20	144.62
25	162.38
30	178.60
35	195.55
40	214.00
45	229.09
50	240.82
55	248.23
60	251.25
65	249.81
70	243.89
75	239.53
80	238.68
85	238.55
90	238.04
95	236.50
100	233.29
105	228.31
110	221.54
115	212.80
120	202.23
125	189.95
130	174.87
135	156.25
140	134.64
145	110.07
150	86.56
155	64.24
160	43.20
165	23.34
170	9.00
175	1.53
180	0.00

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L121605911.IES

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	46.77	N.A.	1.90
0-30	122.12	N.A.	4.90
0-40	245.55	N.A.	9.80
0-60	644.33	N.A.	25.60
0-80	1145.46	N.A.	45.60
0-90	1405.63	N.A.	55.90
10-90	1395.36	N.A.	55.50
20-40	198.78	N.A.	7.90
20-50	375.77	N.A.	14.90
40-70	645.60	N.A.	25.70
60-80	501.13	N.A.	19.90
70-80	254.31	N.A.	10.10
80-90	260.17	N.A.	10.30
90-110	498.68	N.A.	19.80
90-120	709.55	N.A.	28.20
90-130	879.53	N.A.	35.00
90-150	1070.08	N.A.	42.60
90-180	1108.23	N.A.	44.10
110-180	609.55	N.A.	24.20
0-180	2513.86	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	10.27
10-20	36.50
20-30	75.35
30-40	123.43
40-50	176.99
50-60	221.79
60-70	246.82
70-80	254.31
80-90	260.17
90-100	257.59
100-110	241.09
110-120	210.87
120-130	169.98
130-140	120.77
140-150	69.78
150-160	30.35
160-170	7.40
170-180	0.39

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L121605911.IES

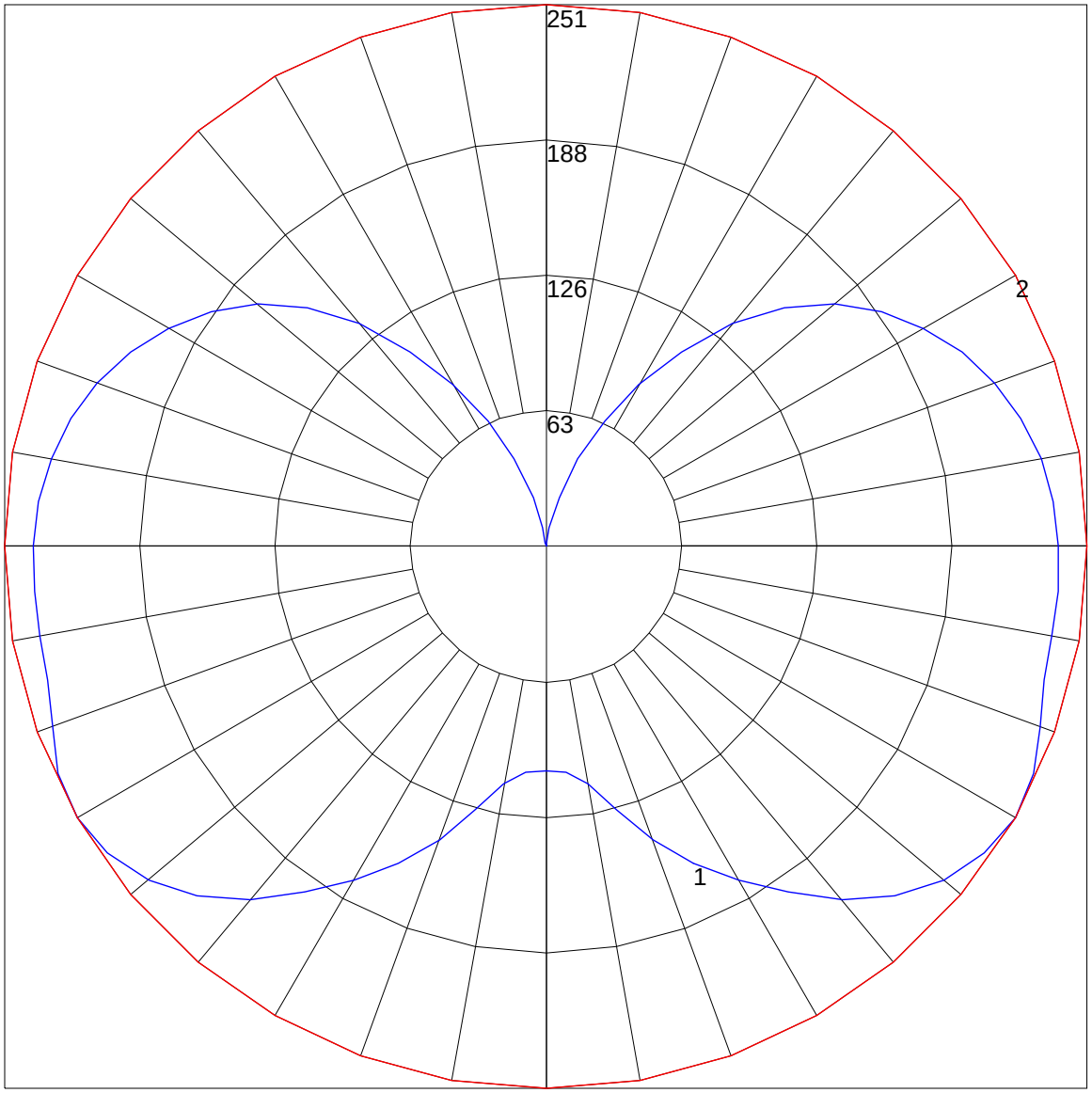
COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	109	109	109	109	101	101	101	101	87	87	87	74	74	74	62	62	62	56
1	94	87	81	76	86	81	75	71	68	64	60	57	54	51	46	44	42	36
2	83	73	65	58	76	67	60	54	57	51	46	47	42	38	38	34	31	26
3	75	63	53	46	68	58	49	42	48	42	36	40	34	30	32	27	24	20
4	68	54	45	37	62	50	41	34	42	35	29	34	29	24	27	23	19	15
5	61	48	38	31	56	44	35	29	37	30	24	30	24	20	24	19	16	12
6	56	42	33	26	51	39	30	24	33	26	20	27	21	17	21	17	13	10
7	52	38	29	22	47	35	26	21	29	22	17	24	18	14	19	15	11	8
8	48	34	25	19	44	31	23	18	26	20	15	22	16	12	17	13	10	7
9	44	31	22	17	41	28	21	15	24	18	13	20	15	11	16	12	8	6
10	41	28	20	15	38	26	19	14	22	16	12	18	13	10	15	10	7	5

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L121605911.IES

POLAR GRAPH



Maximum Candela = 251.25 Located At Horizontal Angle = 0, Vertical Angle = 60
1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (60) (Through Max. Cd.)