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Report No: L021601503

Date: 2/15/2016



NVLAP LAB CODE 200927-0

**Report No:** L021601503

**Report Prepared For:** Revolution Lighting Technologies  
 4139 Guardian Street, Simi Valley, CA 93063

**Model Number:** 153043-102

**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 153043-102. Received in working and undamaged condition. No modifications were necessary.

**Testing Condition:** Fixture is tested with no special conditions.

**Sample Arrival Date:** 2/8/16

**Date of Tests:** 2/10/16 - 2/11/16

**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>	Revolution Lighting Technologies
<b>Model Number:</b>	153043-102
<b>Driver Model Number:</b>	XZ-POWER XZ-CI35B-420083
<b>Total Lumens:</b>	2916.87
<b>Input Voltage (VAC/60Hz):</b>	120.00
<b>Input Current (Amp):</b>	0.29
<b>Input Power (W):</b>	33.45
<b>Input Power Factor:</b>	0.97
<b>Current ATHD @ 120V(%):</b>	12%
<b>Current ATHD @ 277V(%):</b>	N/A
<b>Efficacy:</b>	87
<b>Color Rendering Index (CRI):</b>	82
<b>Correlated Color Temperature (K):</b>	3409
<b>Chromaticity Coordinate x:</b>	0.4125
<b>Chromaticity Coordinate y:</b>	0.3983
<b>Ambient Temperature (°C):</b>	25.0
<b>Stabilization Time (Hours):</b>	0:30
<b>Total Operating Time (Hours):</b>	1:00
<b>Off State Power(W):</b>	0.00

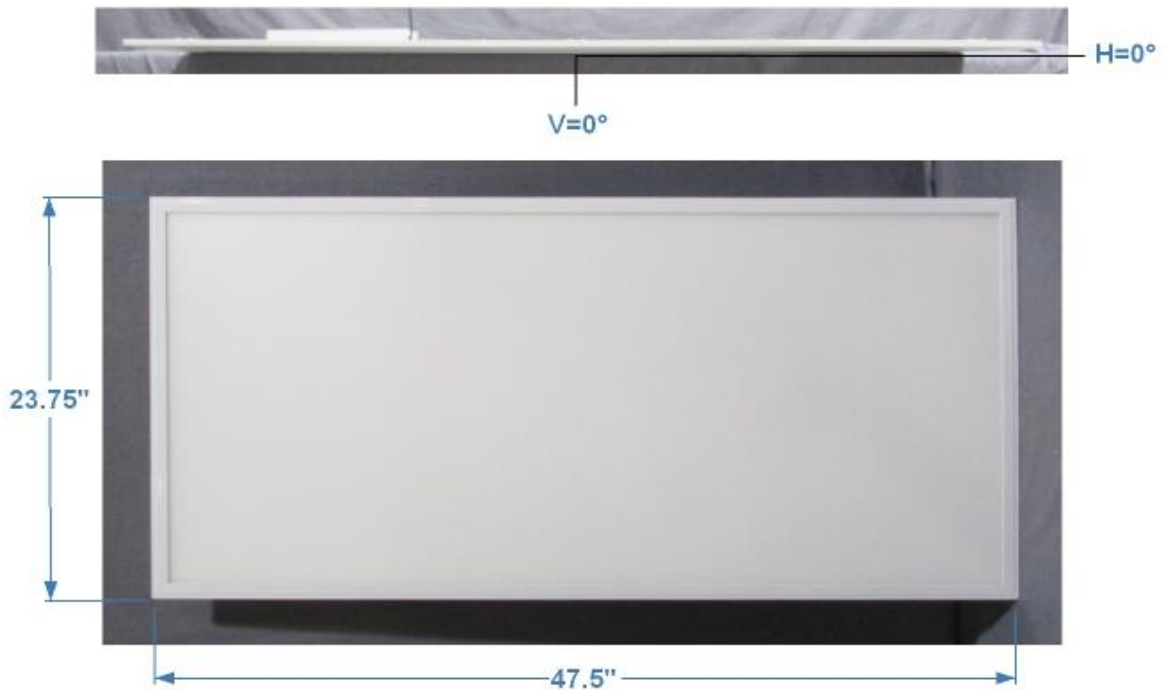
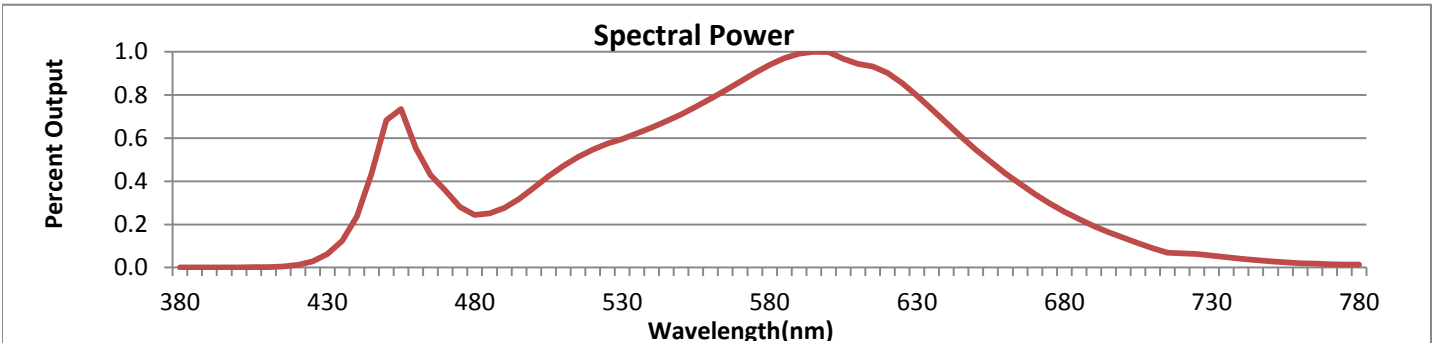


FIG. 1 LUMINAIRE

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



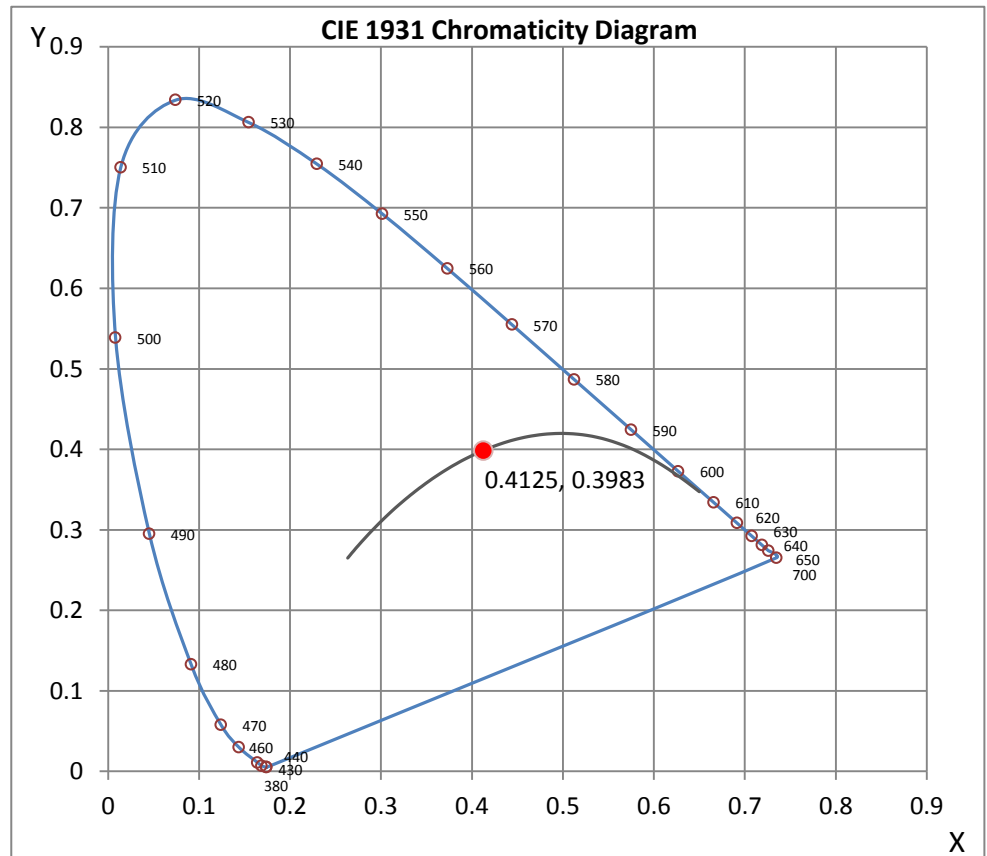
Wavelength	W/m <sup>2</sup> nm	440	0.0204	510	0.0407	580	0.0812	650	0.0472	720	0.0057
380	0.0001	450	0.0590	520	0.0472	590	0.0857	660	0.0378	730	0.0048
390	0.0001	460	0.0479	530	0.0514	600	0.0862	670	0.0294	740	0.0035
400	0.0001	470	0.0309	540	0.0560	610	0.0815	680	0.0223	750	0.0025
410	0.0002	480	0.0211	550	0.0613	620	0.0779	690	0.0166	760	0.0018
420	0.0011	490	0.0239	560	0.0676	630	0.0688	700	0.0120	770	0.0014
430	0.0054	500	0.0319	570	0.0744	640	0.0579	710	0.0077	780	0.0012

**CRI & CCT**

x	0.4125
y	0.3983
u'	0.2373
v'	0.5154
CRI	81.70
CCT	3409
Duv	0.00175

**R Values**

R1	79.57
R2	89.59
R3	96.42
R4	78.92
R5	79.16
R6	85.81
R7	84.15
R8	60.27
R9	4.91
R10	75.53
R11	77.15
R12	61.63
R13	81.96
R14	98.25



\*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 : JEFF AHN

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 : L021601503.IES**

**DESCRIPTION INFORMATION (From Photometric File)**

IESNA:LM-63-2002  
 [TEST] L021601503  
 [TESTLAB] LIGHT LABORATORY, INC.  
 [ISSUEDATE] 2/13/2016  
 [MANUFAC] REVOLUTION LIGHTING TECHNOLOGIES  
 [LUMCAT] 153043-102  
 [LUMINAIRE] 35W 2x4 Thin Panel 3500K  
 [BALLASTCAT] XZ-POWER XZ-CI35B-420083  
 [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, 33.45W  
 [TEST PROCEDURE] IESNA:LM-79-08

**CHARACTERISTICS**

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	2917
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	87
Total Luminaire Watts	33.45
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	1.24
Spacing Criterion (90-270)	1.26
Spacing Criterion (Diagonal)	1.38
Basic Luminous Shape	Rectangular
Luminous Length (0-180)	3.79 ft
Luminous Width (90-270)	1.81 ft
Luminous Height	0.00 ft

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

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	1481	1499	1516
55	1408	1424	1440
65	1332	1346	1361
75	1157	1157	1163
85	917	899	881

IES INDOOR REPORT  
PHOTOMETRIC FILENAME : L021601503.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>	1035	1035	1035	1035	1035
<b>5</b>	1027	1028	1030	1031	1032
<b>10</b>	1012	1013	1015	1017	1018
<b>15</b>	987	988	991	994	996
<b>20</b>	952	954	958	962	964
<b>25</b>	909	911	917	921	924
<b>30</b>	859	861	867	872	875
<b>35</b>	801	804	810	816	818
<b>40</b>	738	740	746	752	755
<b>45</b>	668	670	676	682	684
<b>50</b>	594	596	601	606	608
<b>55</b>	515	516	521	525	527
<b>60</b>	443	444	448	452	453
<b>65</b>	359	360	363	366	367
<b>70</b>	274	275	276	278	278
<b>75</b>	191	191	191	192	192
<b>80</b>	116	115	115	114	114
<b>85</b>	51	50	50	49	49
<b>90</b>	0	0	0	0	0

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**ZONAL LUMEN SUMMARY**

Zone	Lumens	%Lamp	%Fixt
0-20	377.46	N.A.	12.90
0-30	799.71	N.A.	27.40
0-40	1306.21	N.A.	44.80
0-60	2295.39	N.A.	78.70
0-80	2858.55	N.A.	98.00
0-90	2916.87	N.A.	100.00
10-90	2819.04	N.A.	96.60
20-40	928.74	N.A.	31.80
20-50	1450.1	N.A.	49.70
40-70	1348.2	N.A.	46.20
60-80	563.16	N.A.	19.30
70-80	204.14	N.A.	7.00
80-90	58.32	N.A.	2.00
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	2916.87	N.A.	100.00

Total Luminaire Efficiency = N.A.%

**ZONAL LUMEN SUMMARY**

Zone	Lumens
0-10	97.82
10-20	279.64
20-30	422.24
30-40	506.50
40-50	521.35
50-60	467.83
60-70	359.02
70-80	204.14
80-90	58.32
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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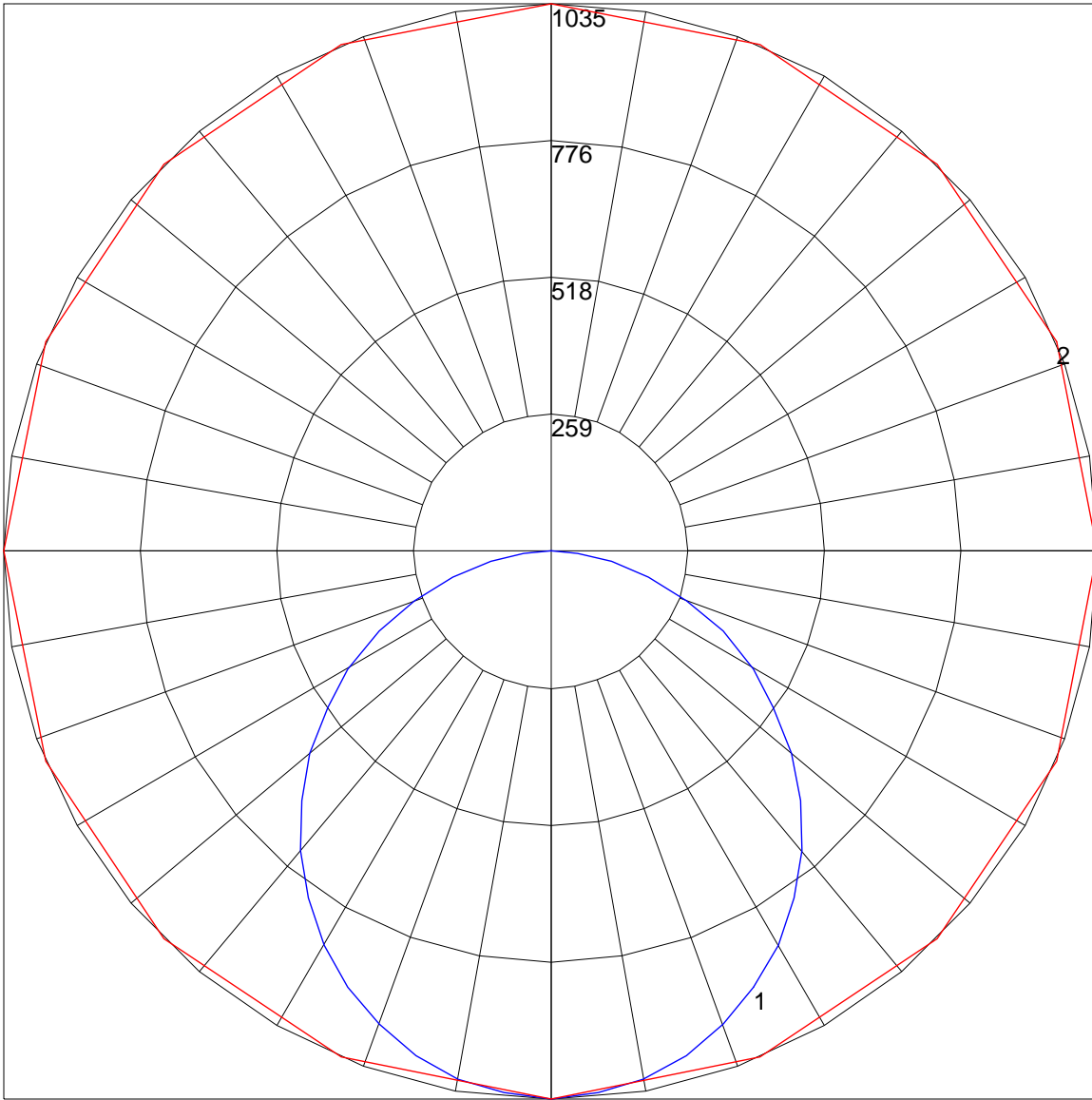
**COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD**

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	84	78	96	89	82	77	85	80	75	82	77	73	79	75	72	69
3	90	79	71	65	87	78	70	64	75	68	63	72	66	62	69	65	61	58
4	82	70	61	55	80	69	61	54	66	59	54	64	58	53	62	57	52	50
5	76	63	54	47	74	62	53	47	60	52	46	58	51	46	56	50	45	43
6	70	57	48	41	68	56	47	41	54	46	40	52	45	40	50	44	40	38
7	65	51	42	36	63	50	42	36	49	41	36	47	41	36	46	40	35	33
8	60	47	38	32	59	46	38	32	45	37	32	43	37	32	42	36	32	30
9	56	43	35	29	55	42	34	29	41	34	29	40	33	29	39	33	29	27
10	53	40	32	26	52	39	31	26	38	31	26	37	31	26	36	30	26	24



POLAR GRAPH



Maximum Candela = 1035 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.)