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Report No: L021601502

Date: 2/15/2016



NVLAP LAB CODE 200927-0

**Report No:** L021601502

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

**Model Number:** 151042-102

**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 151042-102. 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.

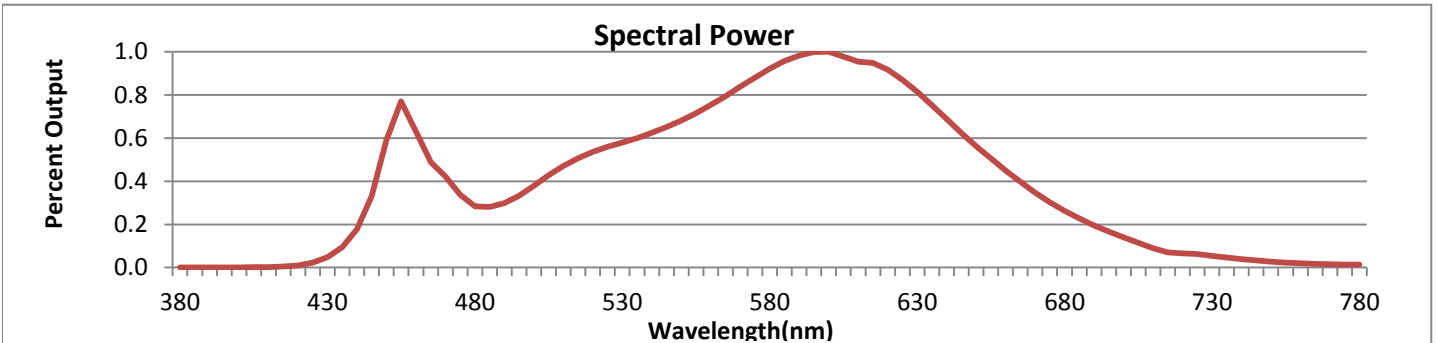
**Test Summary**

<b>Manufacturer:</b>	Revolution Lighting Technologies
<b>Model Number:</b>	151042-102
<b>Driver Model Number:</b>	XZ-POWER XZ-CI35B-420075
<b>Total Lumens:</b>	2831.48
<b>Input Voltage (VAC/60Hz):</b>	120.00
<b>Input Current (Amp):</b>	0.25
<b>Input Power (W):</b>	29.49
<b>Input Power Factor:</b>	0.98
<b>Current ATHD @ 120V(%):</b>	12%
<b>Current ATHD @ 277V(%):</b>	N/A
<b>Efficacy:</b>	96
<b>Color Rendering Index (CRI):</b>	83
<b>Correlated Color Temperature (K):</b>	3363
<b>Chromaticity Coordinate x:</b>	0.4140
<b>Chromaticity Coordinate y:</b>	0.3965
<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.



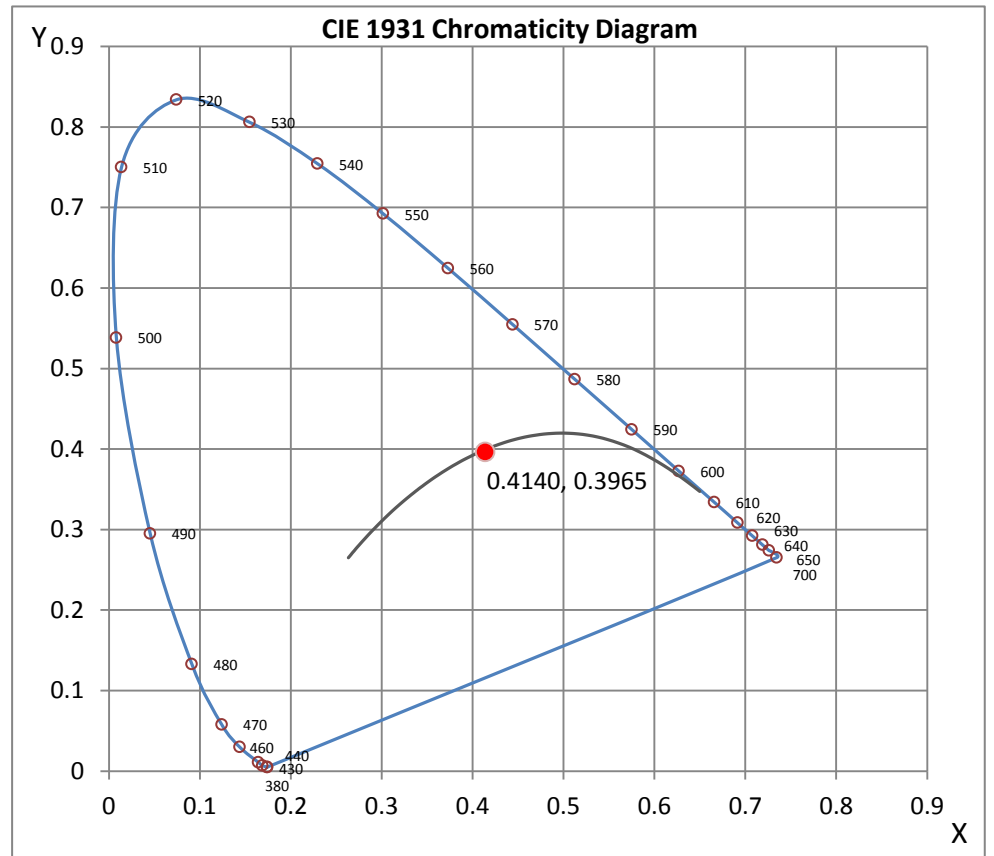
Wavelength	W/m <sup>2</sup> nm	440	0.0078	510	0.0207	580	0.0406	650	0.0248	720	0.0029
380	0.0000	450	0.0260	520	0.0236	590	0.0433	660	0.0199	730	0.0024
390	0.0000	460	0.0278	530	0.0255	600	0.0440	670	0.0153	740	0.0017
400	0.0001	470	0.0186	540	0.0276	610	0.0421	680	0.0116	750	0.0012
410	0.0001	480	0.0125	550	0.0300	620	0.0404	690	0.0086	760	0.0009
420	0.0004	490	0.0132	560	0.0333	630	0.0359	700	0.0061	770	0.0007
430	0.0021	500	0.0167	570	0.0369	640	0.0304	710	0.0040	780	0.0006

**CRI & CCT**

x	0.4140
y	0.3965
u'	0.2390
v'	0.5149
CRI	83.30
CCT	3363
Duv	0.00068

**R Values**

R1	82.09
R2	92.35
R3	95.69
R4	80.01
R5	81.78
R6	89.68
R7	83.48
R8	61.64
R9	11.31
R10	81.79
R11	79.02
R12	65.97
R13	84.84
R14	98.28



\*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 : L021601502.IES**

**DESCRIPTION INFORMATION (From Photometric File)**

IESNA:LM-63-2002  
 [TEST] L021601502  
 [TESTLAB] LIGHT LABORATORY, INC.  
 [ISSUEDATE] 2/13/2016  
 [MANUFAC] REVOLUTION LIGHTING TECHNOLOGIES  
 [LUMCAT] 151042-102  
 [LUMINAIRE] 30W 2x2 3500K Thin Panel  
 [BALLASTCAT] XZ-POWER XZ-CI35B-420075  
 [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, 29.49W  
 [TEST PROCEDURE] IESNA:LM-79-08

**CHARACTERISTICS**

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	2831
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	96
Total Luminaire Watts	29.49
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	1.24
Spacing Criterion (90-270)	1.26
Spacing Criterion (Diagonal)	1.36
Basic Luminous Shape	Rectangular
Luminous Length (0-180)	1.81 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	2971	3041	3115
55	2810	2879	2959
65	2656	2718	2788
75	2296	2321	2359
85	1808	1770	1732

IES INDOOR REPORT  
PHOTOMETRIC FILENAME : L021601502.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>	1017	1017	1017	1017	1017
<b>5</b>	1012	1012	1011	1012	1013
<b>10</b>	995	995	997	998	999
<b>15</b>	968	969	972	976	977
<b>20</b>	932	933	938	944	947
<b>25</b>	886	889	896	904	907
<b>30</b>	834	837	846	855	859
<b>35</b>	774	778	788	799	804
<b>40</b>	710	714	725	736	741
<b>45</b>	640	645	655	667	671
<b>50</b>	567	571	581	592	596
<b>55</b>	491	494	503	513	517
<b>60</b>	422	425	433	441	445
<b>65</b>	342	344	350	356	359
<b>70</b>	260	261	265	269	271
<b>75</b>	181	181	183	185	186
<b>80</b>	109	109	109	109	110
<b>85</b>	48	48	47	46	46
<b>90</b>	0	0	0	0	0

**IES INDOOR REPORT**  
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**ZONAL LUMEN SUMMARY**

Zone	Lumens	%Lamp	%Fixt
0-20	370.41	N.A.	13.10
0-30	783.38	N.A.	27.70
0-40	1276.63	N.A.	45.10
0-60	2234.63	N.A.	78.90
0-80	2776.18	N.A.	98.00
0-90	2831.48	N.A.	100.00
10-90	2735.37	N.A.	96.60
20-40	906.22	N.A.	32.00
20-50	1411.83	N.A.	49.90
40-70	1304.19	N.A.	46.10
60-80	541.56	N.A.	19.10
70-80	195.36	N.A.	6.90
80-90	55.29	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	2831.48	N.A.	100.00

Total Luminaire Efficiency = N.A.%

**ZONAL LUMEN SUMMARY**

Zone	Lumens
0-10	96.11
10-20	274.30
20-30	412.97
30-40	493.25
40-50	505.61
50-60	452.39
60-70	346.19
70-80	195.36
80-90	55.29
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

**IES INDOOR REPORT**  
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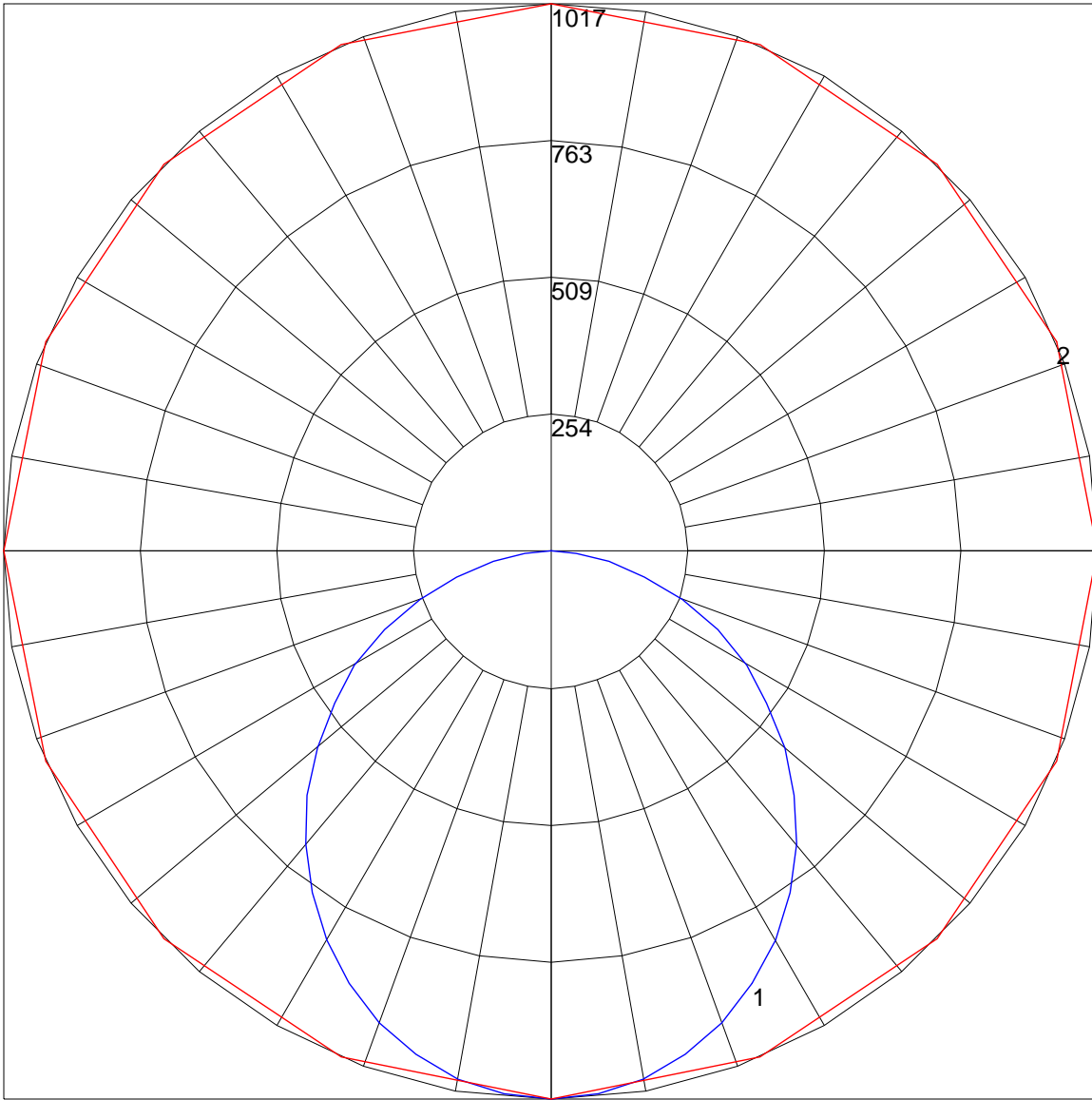
**COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD**

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	91	84	78	96	89	82	77	85	80	75	82	77	73	79	75	72	70
3	90	80	71	65	88	78	70	64	75	68	63	72	67	62	70	65	61	59
4	82	70	62	55	80	69	61	54	67	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	41	52	45	40	51	45	40	38
7	65	51	43	36	63	51	42	36	49	42	36	48	41	36	46	40	35	33
8	60	47	38	33	59	46	38	32	45	37	32	44	37	32	42	36	32	30
9	57	43	35	29	55	42	35	29	41	34	29	40	34	29	39	33	29	27
10	53	40	32	27	52	39	32	26	38	31	26	37	31	26	36	30	26	24



POLAR GRAPH



Maximum Candela = 1017 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.)