



8165 E Kaiser Blvd. Anaheim, CA 92808
 p. 714.282.2270
 f. 714.676.5558

Report No: L101606201

Date: 11/4/2016



NVLAP LAB CODE 200927-0

Report No: L101606201

Report Prepared For: Revolution Lighting Technologies (RVLT)
 4139 Guardian Street, Simi Valley, CA 93063

Model Number: 151041-103

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 151041-103. Received in working and undamaged condition. No modifications were necessary.

Testing Condition: Fixture is tested with no special conditions.

Sample Arrival Date: 10/26/16

Date of Tests: 10/28/16 - 11/3/16

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:	Revolution Lighting Technologies (RVLT)
Model Number:	151041-103
Driver Model Number:	REVOLUTION LED POWER SUPPLY 150000-D01
Total Lumens:	2145.88
Input Voltage (VAC/60Hz):	120.00
Input Current (Amp):	0.17
Input Power (W):	20.29
Input Power Factor:	0.99
Current ATHD @ 120V(%):	12%
Current ATHD @ 277V(%):	N/A
Efficacy:	106
Color Rendering Index (CRI):	83
Correlated Color Temperature (K):	4049
Chromaticity Coordinate x:	0.3794
Chromaticity Coordinate y:	0.3795
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:30
Total Operating Time (Hours):	1:10
Off State Power(W):	0.00

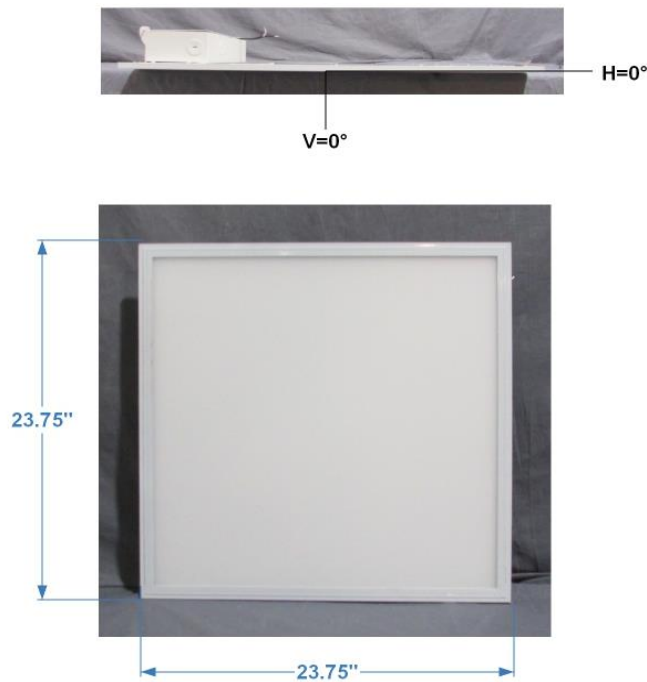
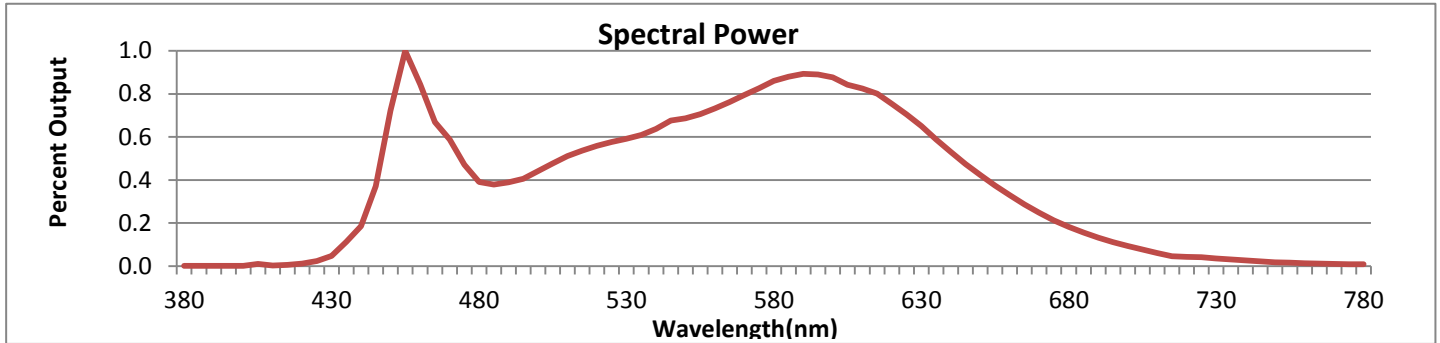


FIG. 1 LUMINAIRE

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



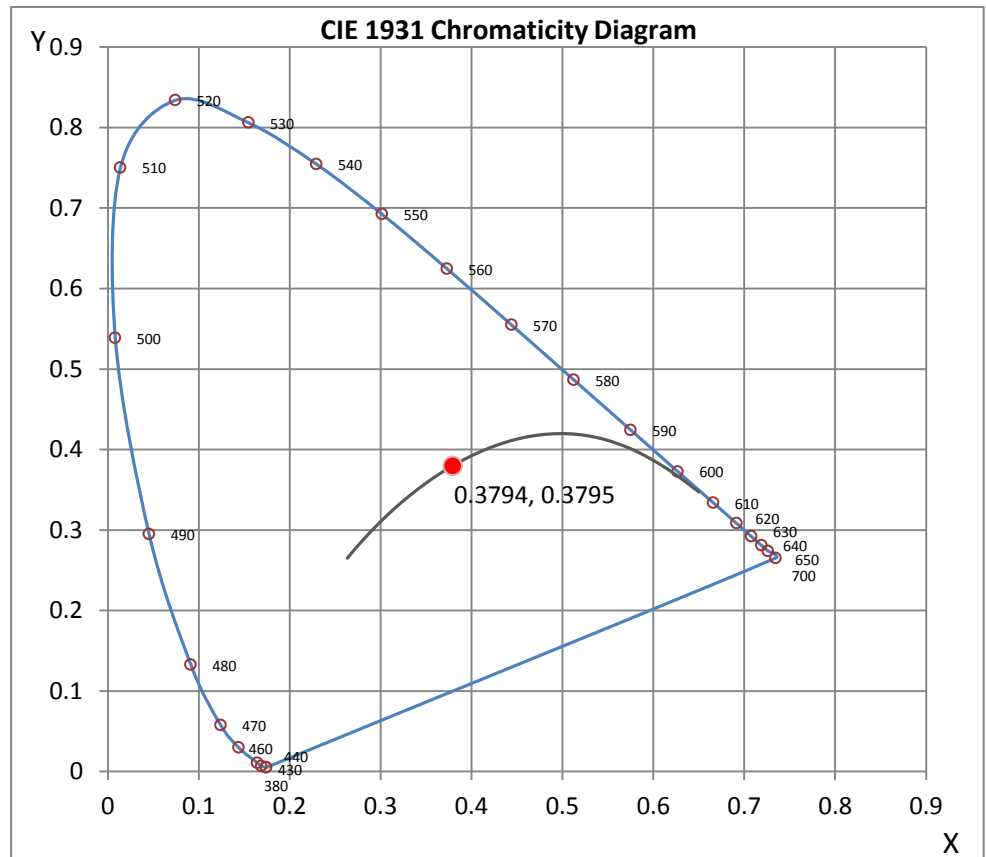
Wavelength	W/m ² nm	440	0.1851	510	0.5105	580	0.8599	650	0.4233	720	0.0427
380	0.0009	450	0.7215	520	0.5587	590	0.8926	660	0.3290	730	0.0356
390	0.0010	460	0.8443	530	0.5920	600	0.8761	670	0.2474	740	0.0257
400	0.0013	470	0.5883	540	0.6373	610	0.8251	680	0.1822	750	0.0182
410	0.0028	480	0.3909	550	0.6860	620	0.7538	690	0.1323	760	0.0132
420	0.0109	490	0.3885	560	0.7319	630	0.6511	700	0.0929	770	0.0101
430	0.0466	500	0.4406	570	0.7949	640	0.5309	710	0.0605	780	0.0089

CRI & CCT

x	0.3794
y	0.3795
u'	0.2233
v'	0.5026
CRI	83.00
CCT	4049
Duv	0.00159

R Values

R1	82.32
R2	93.73
R3	94.05
R4	78.16
R5	81.66
R6	90.07
R7	82.66
R8	61.64
R9	7.20
R10	84.23
R11	77.40
R12	62.05
R13	85.93
R14	97.25



*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 : 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*



8165 E. Kaiser Blvd. Anaheim, CA 92808
 p. 714.282.2270
 f. 714.676.5558

Photometric Test Report

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L101606201.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
 [TEST] L101606201
 [TESTLAB] LIGHT LABORATORY, INC.
 [ISSUEDATE] 11/3/2016
 [MANUFAC] REVOLUTION LIGHTING TECHNOLOGIES (RVLT)
 [LUMCAT] 151041-103
 [LUMINAIRE] 20W 2X2 ECO THIN PANEL 4000K
 [BALLASTCAT] REVOLUTION LED POWER SUPPLY 150000-D01
 [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, 20.29W
 [TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	2146
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	106
Total Luminaire Watts	20.29
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	1.26
Spacing Criterion (90-270)	1.22
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	2359	2304	2255
55	2241	2179	2128
65	2110	2047	1996
75	1806	1742	1694
85	1390	1315	1269

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L101606201.IES

CANDELA TABULATION

	<u>0.0</u>	<u>22.5</u>	<u>45.0</u>	<u>67.5</u>	<u>90.0</u>
0	776.39	776.39	776.39	776.39	776.39
5	773.09	772.51	772.07	772.07	772.68
10	762.79	761.65	760.59	759.60	759.62
15	745.03	743.74	741.31	739.12	738.62
20	720.91	719.03	715.21	711.64	710.24
25	689.85	687.38	681.99	676.93	675.15
30	652.73	649.62	642.98	636.76	634.43
35	609.63	606.27	598.69	591.74	588.99
40	561.29	557.77	549.60	542.15	539.23
45	508.18	504.56	496.32	488.74	485.71
50	451.21	447.82	439.80	432.62	429.85
55	391.56	388.21	380.83	374.33	371.81
60	335.85	332.95	326.40	320.60	318.33
65	271.66	269.09	263.58	258.71	256.92
70	206.08	204.02	199.57	195.73	194.30
75	142.40	140.35	137.33	134.52	133.53
80	84.64	83.49	81.12	79.22	78.55
85	36.90	36.19	34.92	34.00	33.70
90	0.00	0.00	0.00	0.00	0.00

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L101606201.IES

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	282.54	N.A.	13.20
0-30	596.85	N.A.	27.80
0-40	971.47	N.A.	45.30
0-60	1696.83	N.A.	79.10
0-80	2104.63	N.A.	98.10
0-90	2145.88	N.A.	100.00
10-90	2072.52	N.A.	96.60
20-40	688.93	N.A.	32.10
20-50	1072.02	N.A.	50.00
40-70	986.39	N.A.	46.00
60-80	407.80	N.A.	19.00
70-80	146.77	N.A.	6.80
80-90	41.26	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	2145.88	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	73.36
10-20	209.18
20-30	314.31
30-40	374.62
40-50	383.08
50-60	342.27
60-70	261.03
70-80	146.77
80-90	41.26
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

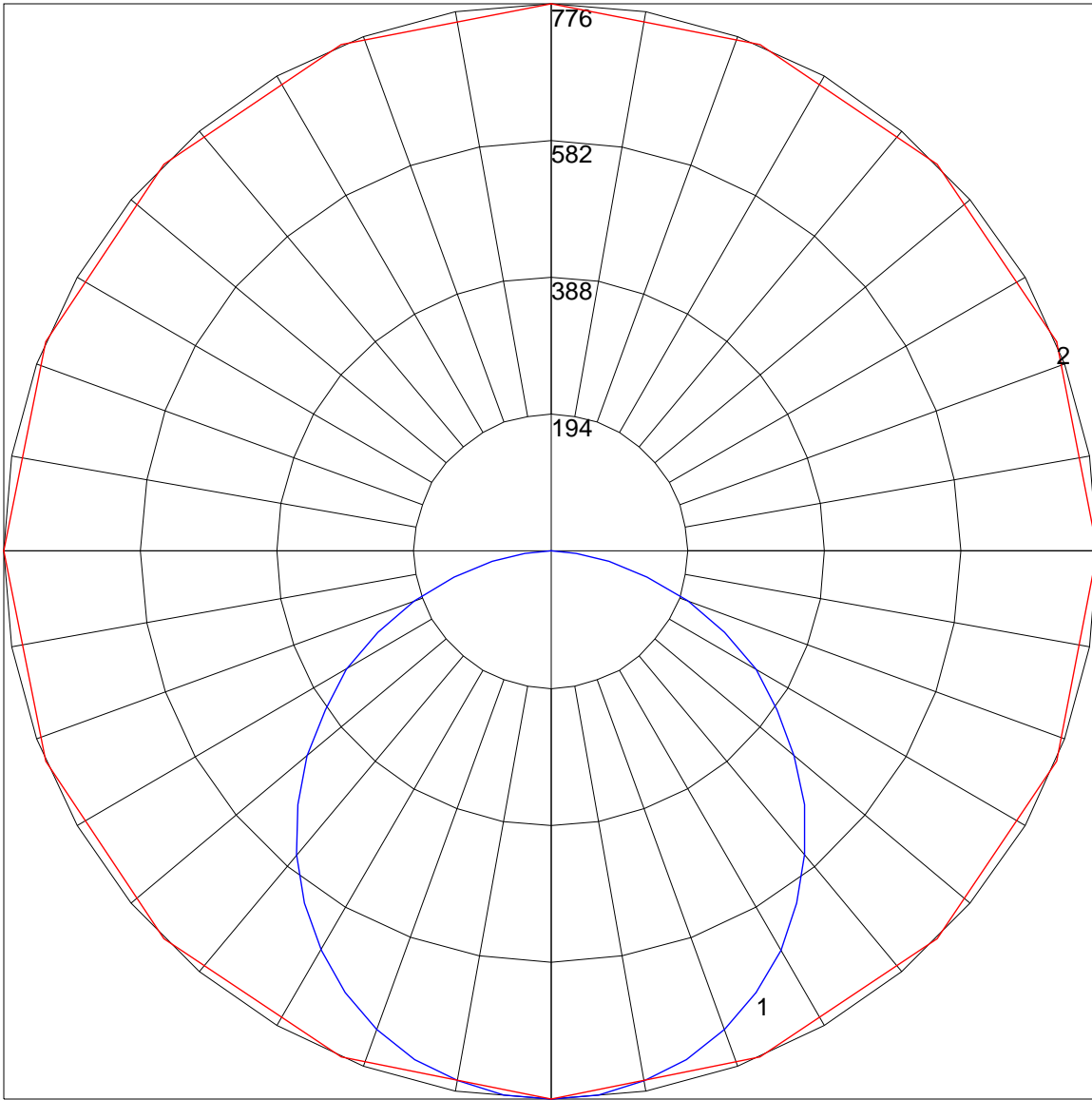
IES INDOOR REPORT
PHOTOMETRIC FILENAME : L101606201.IES

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	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	94	91	88	90	88	86	84
2	99	91	84	78	96	89	82	77	85	80	75	82	77	74	79	75	72	70
3	90	80	71	65	88	78	70	64	75	68	63	72	67	62	70	65	61	59
4	83	71	62	55	80	69	61	55	67	60	54	64	58	53	62	57	52	50
5	76	63	54	47	74	62	53	47	60	52	47	58	51	46	56	50	46	43
6	70	57	48	41	68	56	47	41	54	46	41	52	46	40	51	45	40	38
7	65	51	43	37	63	51	42	36	49	42	36	48	41	36	46	40	36	34
8	61	47	38	33	59	46	38	33	45	38	32	44	37	32	43	36	32	30
9	57	43	35	29	55	43	35	29	41	34	29	40	34	29	39	33	29	27
10	53	40	32	27	52	39	32	27	38	31	26	37	31	26	36	30	26	24

POLAR GRAPH



Maximum Candela = 776.39 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.)