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Report No: L121500506

Date: 12/9/2015



NVLAP LAB CODE 200927-0

Report No: L121500506

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

Model Number: 153045-102

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 153045-102 . Received in working and undamaged condition. No modifications were necessary.

Testing Condition: Fixture is tested with no special conditions.

Sample Arrival Date: 12/1/15

Date of Tests: 12/8/15 - 12/9/15

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-S3	1/15/16
Xitron Power Analyzer	2801	MT-EL02-1	12/9/15
BK Precision DC Power Supply	1747	PSDC-04	01/08/16
Fluke Digital Thermometer	52k/J	MT-TP02-GC	01/05/16
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
Model Number:	153045-102
Driver Model Number:	BESON LED POWER SUPPLY BSD-E501D-371200
Total Lumens:	4279.60
Input Voltage (VAC/60Hz):	120.00
Input Current (Amp):	0.44
Input Power (W):	51.72
Input Power Factor:	0.99
Current ATHD @ 120V(%):	15%
Current ATHD @ 277V(%):	N/A
Efficacy:	83
Color Rendering Index (CRI):	82
Correlated Color Temperature (K):	3439
Chromaticity Coordinate x:	0.4103
Chromaticity Coordinate y:	0.3964
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:45
Total Operating Time (Hours):	1:15
Off State Power(W):	0.00

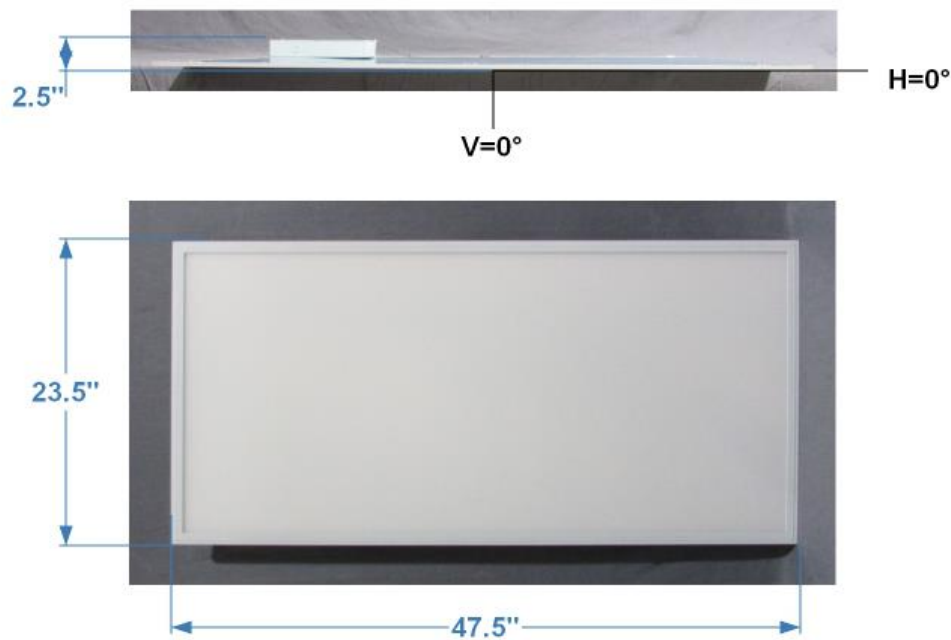
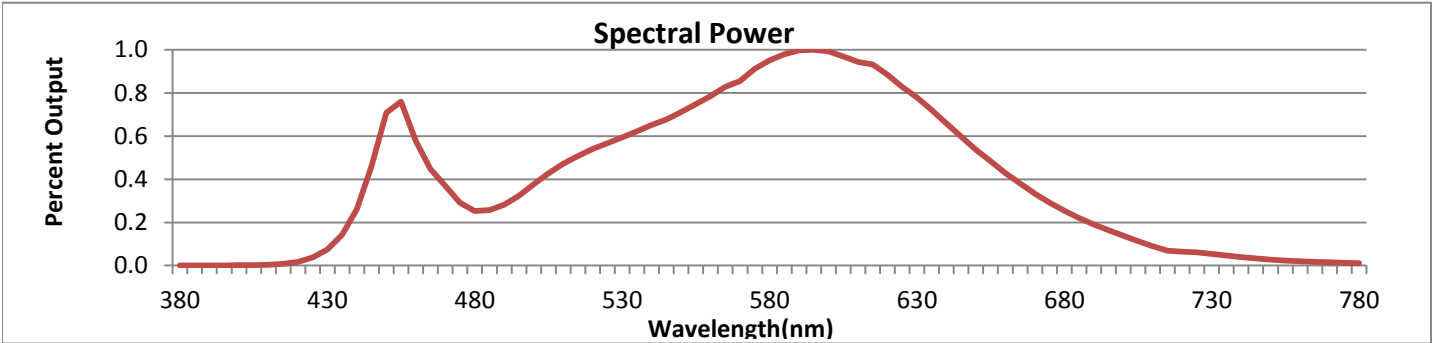


FIG. 1 LUMINAIRE

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



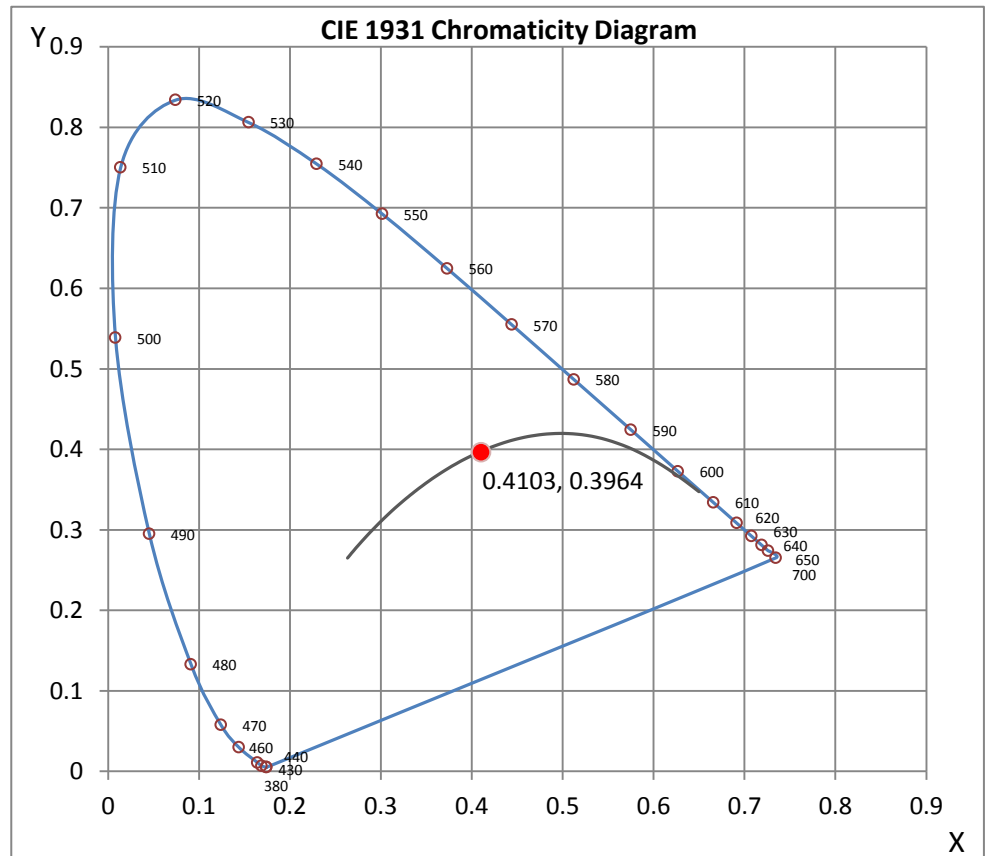
Wavelength	W/m ² nm	440	0.2613	510	0.4719	580	0.9516	650	0.5382	720	0.0638
380	0.0009	450	0.7085	520	0.5408	590	0.9970	660	0.4298	730	0.0538
390	0.0010	460	0.5776	530	0.5948	600	0.9927	670	0.3331	740	0.0389
400	0.0014	470	0.3699	540	0.6516	610	0.9436	680	0.2543	750	0.0271
410	0.0035	480	0.2531	550	0.7112	620	0.8843	690	0.1908	760	0.0192
420	0.0169	490	0.2826	560	0.7850	630	0.7792	700	0.1380	770	0.0146
430	0.0744	500	0.3767	570	0.8559	640	0.6599	710	0.0891	780	0.0110

CRI & CCT

x	0.4103
y	0.3964
u'	0.2366
v'	0.5143
CRI	81.80
CCT	3439
Duv	0.00139

R Values

R1	79.68
R2	89.72
R3	96.33
R4	78.95
R5	79.31
R6	85.90
R7	84.13
R8	60.45
R9	5.21
R10	75.73
R11	77.14
R12	62.13
R13	82.11
R14	98.21



*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*



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Photometric Test Report

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L121500506.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
 [TEST] L121500506
 [TESTLAB] LIGHT LABORATORY, INC.
 [ISSUEDATE] 12/9/2015
 [MANUFAC] REVOLUTION LIGHTING TECHNOLOGIES
 [LUMCAT] 153045-102
 [LUMINAIRE] 50W 2x4 LED Dimmable Thin Panel 3500K
 [MORE] SIZE: 47.5"L. X 23.5"W. X 2.5"H.
 [BALLASTCAT] BESON LED POWER SUPPLY BSD-E501D-371200
 [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, 51.72W
 [TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	4280
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	83
Total Luminaire Watts	51.72
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)	3.81 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	2163	2188	2214
55	2061	2080	2104
65	1952	1967	1981
75	1717	1711	1711
85	1396	1342	1306

IES INDOOR REPORT
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CANDELA TABULATION

	<u>0.0</u>	<u>22.5</u>	<u>45.0</u>	<u>67.5</u>	<u>90.0</u>
0	1511	1511	1511	1511	1511
5	1501	1502	1504	1506	1507
10	1479	1479	1483	1486	1487
15	1442	1443	1448	1453	1454
20	1392	1394	1401	1407	1409
25	1330	1333	1341	1348	1351
30	1257	1261	1269	1278	1281
35	1174	1178	1187	1196	1199
40	1082	1086	1094	1103	1107
45	981	984	992	1001	1004
50	873	876	883	890	893
55	758	760	765	772	774
60	648	650	654	659	661
65	529	530	533	536	537
70	406	406	406	408	408
75	285	284	284	284	284
80	173	171	170	169	168
85	78	77	75	73	73
90	0	0	0	0	0

IES INDOOR REPORT
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ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	551.51	N.A.	12.90
0-30	1169.29	N.A.	27.30
0-40	1911.59	N.A.	44.70
0-60	3363.66	N.A.	78.60
0-80	4192.39	N.A.	98.00
0-90	4279.6	N.A.	100.00
10-90	4136.71	N.A.	96.70
20-40	1360.08	N.A.	31.80
20-50	2125.41	N.A.	49.70
40-70	1978.68	N.A.	46.20
60-80	828.73	N.A.	19.40
70-80	302.13	N.A.	7.10
80-90	87.21	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	4279.6	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	142.89
10-20	408.62
20-30	617.79
30-40	742.29
40-50	765.33
50-60	686.75
60-70	526.60
70-80	302.13
80-90	87.21
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

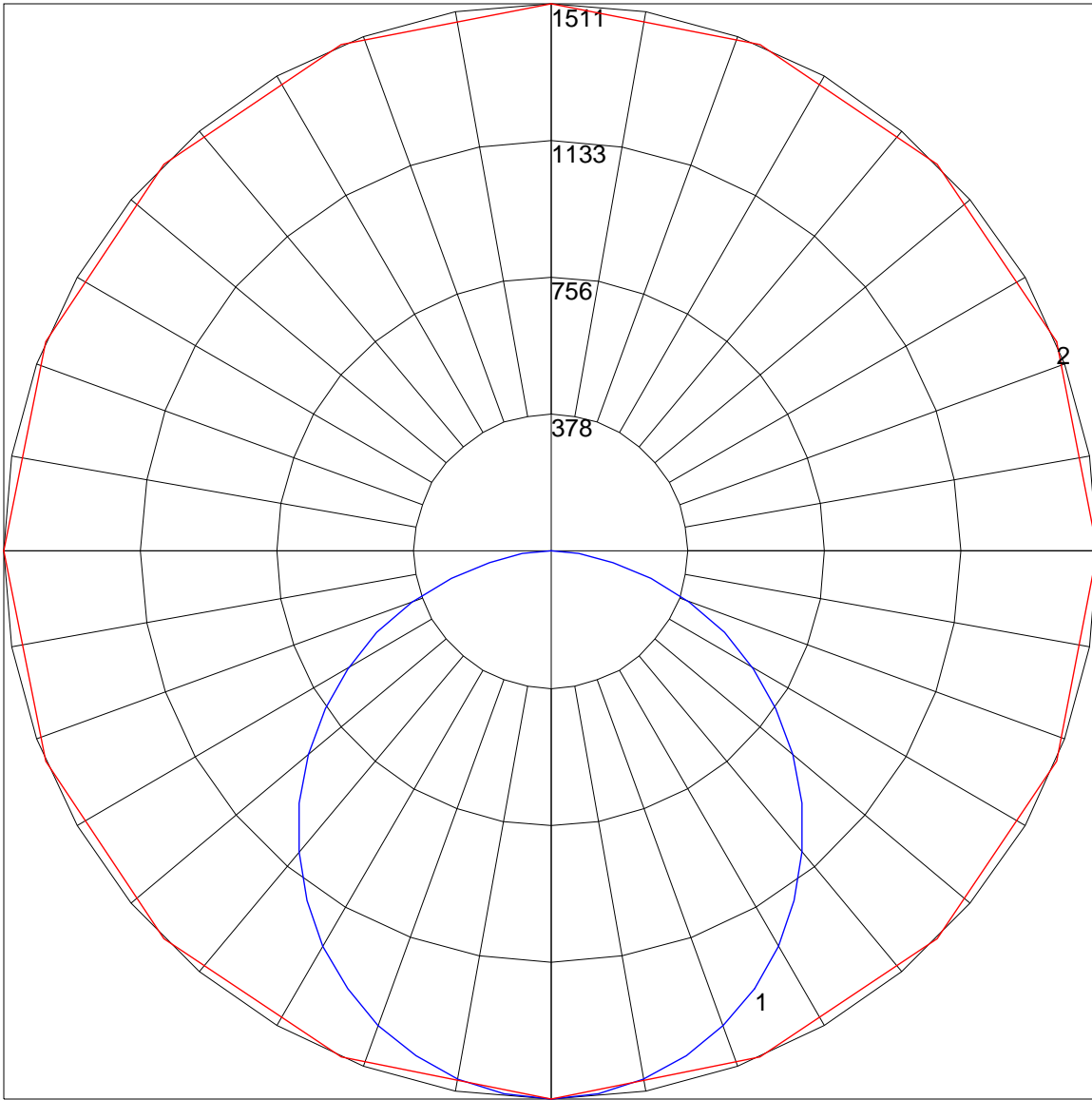
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	99	96	106	102	98	94	97	94	91	93	91	88	90	88	86	83
2	99	90	83	78	96	88	82	77	85	80	75	82	77	73	79	75	72	69
3	90	79	71	64	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	53	64	58	53	62	56	52	50
5	76	63	54	47	74	62	53	47	59	52	46	57	51	46	56	50	45	43
6	70	56	47	41	68	55	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	35	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	28	27
10	53	40	32	26	52	39	31	26	38	31	26	37	31	26	36	30	26	24

POLAR GRAPH



Maximum Candela = 1511 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.)