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TESTING
NVLAP LAB CODE: 201058-0

REPORT NUMBER: RAB04527 **PAGE:** 1 OF 6
ISSUE DATE: 08/14/18 **DATE SAMPLE TESTED:** 08/14/18
PREPARED FOR: RAB LIGHTING INC. RC LIGHTING
CATALOG NUMBER: CDL2[WD, S, PC, PS]-10W30D927-ODLENS
LUMINAIRE: EXTRUDED BLACK PAINTED ALUMINUM HOUSING, 1 WHITE CIRCUIT BOARD WITH ONE LED, POLYCARBONATE TIR LENS ON TOP OF THE LED, ALUMINUM TRIM DOOR WITH GLASS LENS.
LAMP: ONE WHITE LIGHT EMITTING DIODES (LEDS).
NOTE: THIS REPORT WITH THE USE OF THE NVLAP LOGO SHALL NOT BE USED BY THE CLIENT TO CLAIM PRODUCT CERTIFICATION, APPROVAL, OR ENDORSEMENT BY NVLAP, NIST, OR ANY AGENCY OF THE FEDERAL GOVERNMENT.
ABSOLUTE: NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.
WATT: TOTAL INPUT WATTS = 11.7 W AT 277.0 VAC.
LED DRIVER: LED DRIVER: RDP-010-3EV40-A026
PROCEDURE: TEST PROCEDURE: IESNA LM-79-08
NOTE: LM-80 DATA AVAILABLE FROM MANUFACTURER FOR SOLID STATE SOURCE
AMBIENT: 25.5
NVLAP LAB CODE: ACCREDITED LABORATORY CODE 201058-0

THIS REPORT WITH THE USE OF THE NVLAP LOGO SHALL NOT BE USED BY THE CLIENT TO CLAIM PRODUCT CERTIFICATION, APPROVAL, OR ENDORSEMENT BY NVLAP, NIST, OR ANY AGENCY OF THE FEDERAL GOVERNMENT.

Checked *X.CAO*

Approved *D.WANG-MUNSON*

REPORT NUMBER: RAB04527 **PAGE:** 2 OF 6
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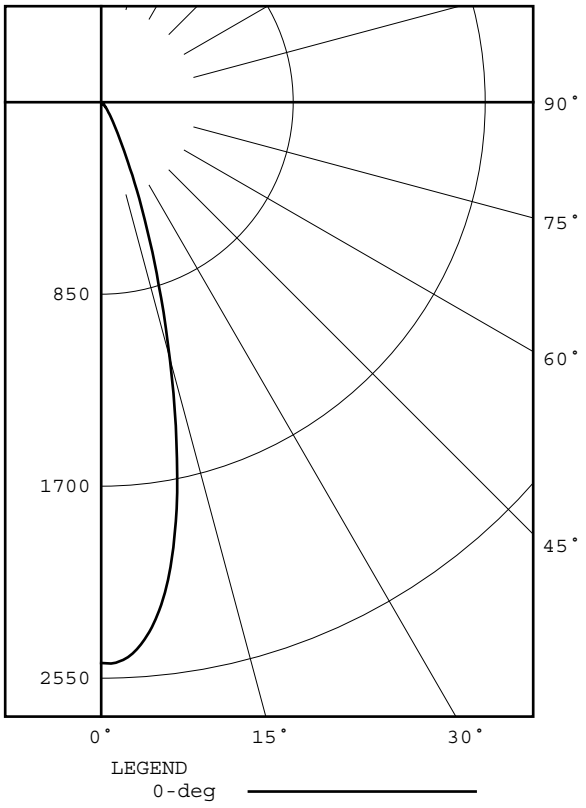
DEG	CANDELA	LUMENS
0	2483	
5	2365	211
15	1170	319
25	245	124
35	58	39
45	19	15
55	5	5
65	0	1
75	0	0
85	0	0
90	0	
95	0	0
105	0	0
115	0	0
125	0	0
135	0	0
145	0	0
155	0	0
165	0	0
175	0	0
180	0	

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	655	91.6
0- 40	694	97.2
0- 60	714	99.9
0- 90	714	100.0
90-120	0	0.0
90-130	0	0.0
90-150	0	0.0
90-180	0	0.0
0-180	714	100.0

EFFICACY = 61.0 lm/W
CIE TYPE - DIRECT
SPACING CRITERION: 0.48



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CANDELA DISTRIBUTION

0.0	2483	60.0	1	120.0	0	180.0	0
1.0	2486	61.0	1	121.0	0		
2.0	2475	62.0	1	122.0	0		
3.0	2453	63.0	1	123.0	0		
4.0	2415	64.0	0	124.0	0		
5.0	2365	65.0	0	125.0	0		
6.0	2302	66.0	0	126.0	0		
7.0	2225	67.0	1	127.0	0		
8.0	2131	68.0	1	128.0	0		
9.0	2021	69.0	0	129.0	0		
10.0	1896	70.0	0	130.0	0		
11.0	1761	71.0	0	131.0	0		
12.0	1613	72.0	0	132.0	0		
13.0	1467	73.0	0	133.0	0		
14.0	1318	74.0	0	134.0	0		
15.0	1170	75.0	0	135.0	0		
16.0	1036	76.0	0	136.0	0		
17.0	907	77.0	0	137.0	0		
18.0	789	78.0	0	138.0	0		
19.0	684	79.0	0	139.0	0		
20.0	586	80.0	0	140.0	0		
21.0	499	81.0	0	141.0	0		
22.0	422	82.0	0	142.0	0		
23.0	352	83.0	0	143.0	0		
24.0	293	84.0	0	144.0	0		
25.0	245	85.0	0	145.0	0		
26.0	208	86.0	0	146.0	0		
27.0	177	87.0	0	147.0	0		
28.0	152	88.0	0	148.0	0		
29.0	132	89.0	0	149.0	0		
30.0	115	90.0	0	150.0	0		
31.0	102	91.0	0	151.0	0		
32.0	89	92.0	0	152.0	0		
33.0	77	93.0	0	153.0	0		
34.0	67	94.0	0	154.0	0		
35.0	58	95.0	0	155.0	0		
36.0	52	96.0	0	156.0	0		
37.0	46	97.0	0	157.0	0		
38.0	42	98.0	0	158.0	0		
39.0	37	99.0	0	159.0	0		
40.0	33	100.0	0	160.0	0		
41.0	30	101.0	0	161.0	0		
42.0	27	102.0	0	162.0	0		
43.0	24	103.0	0	163.0	0		
44.0	21	104.0	0	164.0	0		
45.0	19	105.0	0	165.0	0		
46.0	17	106.0	0	166.0	0		
47.0	15	107.0	0	167.0	0		
48.0	13	108.0	0	168.0	0		
49.0	11	109.0	0	169.0	0		
50.0	10	110.0	0	170.0	0		
51.0	9	111.0	0	171.0	0		
52.0	8	112.0	0	172.0	0		
53.0	7	113.0	0	173.0	0		
54.0	6	114.0	0	174.0	0		
55.0	5	115.0	0	175.0	0		
56.0	4	116.0	0	176.0	0		
57.0	3	117.0	0	177.0	0		
58.0	3	118.0	0	178.0	0		
59.0	2	119.0	0	179.0	0		

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CATALOG NUMBER: CDL2[WD, S, PC, PS]-10W30D927-ODLENS

5-DEGREE ZONAL LUMEN SUMMARY

ZONAL	LUMEN SUMMARY
0- 5	58
5- 10	153
10- 15	180
15- 20	139
20- 25	82
25- 30	43
30- 35	25
35- 40	15
40- 45	9
45- 50	6
50- 55	3
55- 60	1
60- 65	0
65- 70	0
70- 75	0
75- 80	0
80- 85	0
85- 90	0
90- 95	0
95-100	0
100-105	0
105-110	0
110-115	0
115-120	0
120-125	0
125-130	0
130-135	0
135-140	0
140-145	0
145-150	0
150-155	0
155-160	0
160-165	0
165-170	0
170-175	0
175-180	0

10-DEGREE ZONAL LUMEN SUMMARY

ZONAL	LUMEN SUMMARY
0- 10	211
0- 20	530
0- 30	655
0- 40	694
0- 50	709
0- 60	714
0- 70	714
0- 80	714
0- 90	714
0-100	714
0-110	714
0-120	714
0-130	714
0-140	714
0-150	714
0-160	714
0-170	714
0-180	714

REPORT NUMBER: RAB04527 **PAGE:** 5 OF 6
ISSUE DATE: 08/14/18 **DATE SAMPLE TESTED:** 08/14/18
PREPARED FOR: RAB LIGHTING INC. RC LIGHTING
CATALOG NUMBER: CDL2[WD, S, PC, PS]-10W30D927-ODLENS

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	115	113	111	109	112	110	109	107	106	105	104	103	102	101	99	99	98	96
2	111	107	104	101	109	105	102	100	102	100	98	99	97	96	97	95	94	92
3	107	102	98	95	105	101	97	94	98	95	93	96	93	91	94	92	90	89
4	103	97	93	90	102	96	92	89	94	91	88	92	90	87	91	88	87	85
5	100	93	89	86	98	93	88	85	91	87	85	89	86	84	88	85	83	82
6	97	90	85	82	95	89	85	82	88	84	81	87	83	81	85	83	80	79
7	93	87	82	79	92	86	82	79	85	81	78	84	80	78	83	80	78	77
8	91	84	79	76	90	83	79	76	82	78	76	81	78	75	80	77	75	74
9	88	81	76	73	87	80	76	73	80	76	73	79	75	73	78	75	73	72
10	85	78	74	71	85	78	74	71	77	73	71	76	73	71	76	73	70	69

ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS TEST SAMPLE.

REPORT NUMBER: RAB04527 **PAGE:** 6 OF 6
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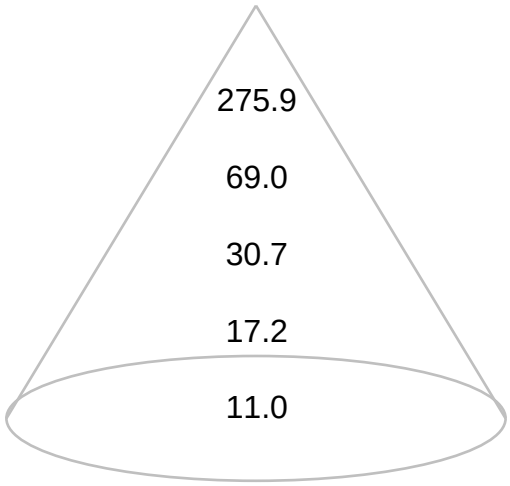
CATALOG NUMBER: CDL2[WD, S, PC, PS]-10W30D927-ODLENS

CONE OF LIGHT DIAGRAM

(diameter shown is where fc/lux value is half the fc/lux at nadir)

Mounting Height in feet/meters	FC/LUX	Diameter in feet/meters
3.0	275.9	1.5
6.0	69.0	2.9
9.0	30.7	4.4
12.0	17.2	5.9
15.0	11.0	7.3



If distances are feet, results are footcandles.
If distances are meters, results are lux.

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TESTING
NVLAP LAB CODE: 201058-0

REPORT NUMBER: RAB04550
DATE: 8/27/2018
PREPARED FOR: RAB LIGHTING INC. RC LIGHTING
CATALOG NUMBER: CDL2[WD, WU, S, PC, PS]-10W30D927-ODLENS

ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

LUMINAIRE: EXTRUDED BLACK PAINTED ALUMINUM HOUSING, 1 WHITE CIRCUIT BOARD WITH ONE LED, POLYCARBONATE TIR LENS ON TOP OF THE LED, ALUMINUM TRIM DOOR WITH GLASS LENS.

LAMP: ONE WHITE LIGHT EMITTING DIODES (LEDS).

DRIVER: RDP-010-3EV40-A026

OBJECT OF TEST: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT THE RATED INPUT VOLTAGES (277.0 AND 120.0 VAC, 60Hz) TO THE TEST SAMPLE.

INSTRUMENTS:	Calibration Due:
GWINSTEK PROGRAMMABLE AC POWER SOURCE APS-7100	N/A
CHROMA PROGRAMMABLE DIGITAL POWER METER MODEL 66202	3/08/19
OCEAN OPTICS QE65PRO Spectroradiometer	08/22/19
RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry	08/22/19

OBJECT OF TEST: Measure the Absolute Flux in lumens*, Total Radiant Flux*, Spectral Power Distribution (SPD), Correlated Color Temperature (CCT), Color Rendering Indices (CRIa,1-14), Chromaticity Coordinates (x,y; u'v'), ANSI C78.377 Duv, and electrical data including ANSI C82.77-2002 Power Factor (PF), and Total Harmonic Distortion (THD) to the test sample. Measure electrical data including Total Harmonic Distortion (THD) at maximum nominal rated input voltage. Report Off-State Power.

PROCEDURE: The test sample was mounted inside the integrating sphere, energized, and allowed to stabilize. After stabilization occurred, measurements were taken. In order to measure mean performance, multiple data sets were recorded and averaged. Readings were taken with the test sample operating at 60 HZ input in a 25 +/-1 degree Celsius free air ambient and in accordance with IESNA LM-79-08. Electrical data was also recorded at maximum nominal rated input voltage (120.0 VAC). All data are traceable to the National Institute of Standards and Technology. Off-State Power was reported with no voltage applied to the sample.

*NOTE: Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even when these effects are compensated for, are likely to have a greater variation in results compared to the flux output calculated from a goniophotometric exploration since these artifacts do not affect the goniophotometric results.

RESULTS: (continued subsequent pages)

Checked X.CAO
Approved D.WANG-MUNSON
Lighting Engineer

REPORT NUMBER: RAB04550 Page 2 of 4
DATE: 8/27/2018
PREPARED FOR: RAB LIGHTING INC. RC LIGHTING
CATALOG NUMBER: CDL2[WD, WU, S, PC, PS]-10W30D927-ODLENS

RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	714 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4628
Chromaticity Ordinate y	0.4137
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2630
Chromaticity Ordinate v'	0.5290
Correlated Color Temp CCT (K)	2683
ANSI C78.377-2008 Duv	0.001
Total Radiant Flux (milliWatts)	2526 *
ELECTRICAL	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.048
Input Power (Watts)	11.7
Input Power Factor (%)	88.1
Input Current THD (%)	25.7
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	61.0
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.093
Input Power (Watts)	11.0
Input Power Factor (%)	99.3
Input Current THD (%)	9.9
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	92
R1 Light greyish red	92
R2 Dark greyish yellow	96
R3 Strong yellowish green	98
R4 Moderate yellowish green	92
R5 Light bluish green	92
R6 Light blue	96
R7 Light violet	92
R8 Light reddish purple	80
R9 Strong red	57
R10 Strong yellow	89
R11 Strong green	93
R12 Strong blue	83
R13 Light yellowish pink (skin)	93
R14 Moderate olive green (leaf)	98

*NOTE: Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even when these effects are compensated for, are likely to have a greater variation in results compared to the flux output calculated from a goniophotometric exploration since these artifacts do not affect the goniophotometric results.

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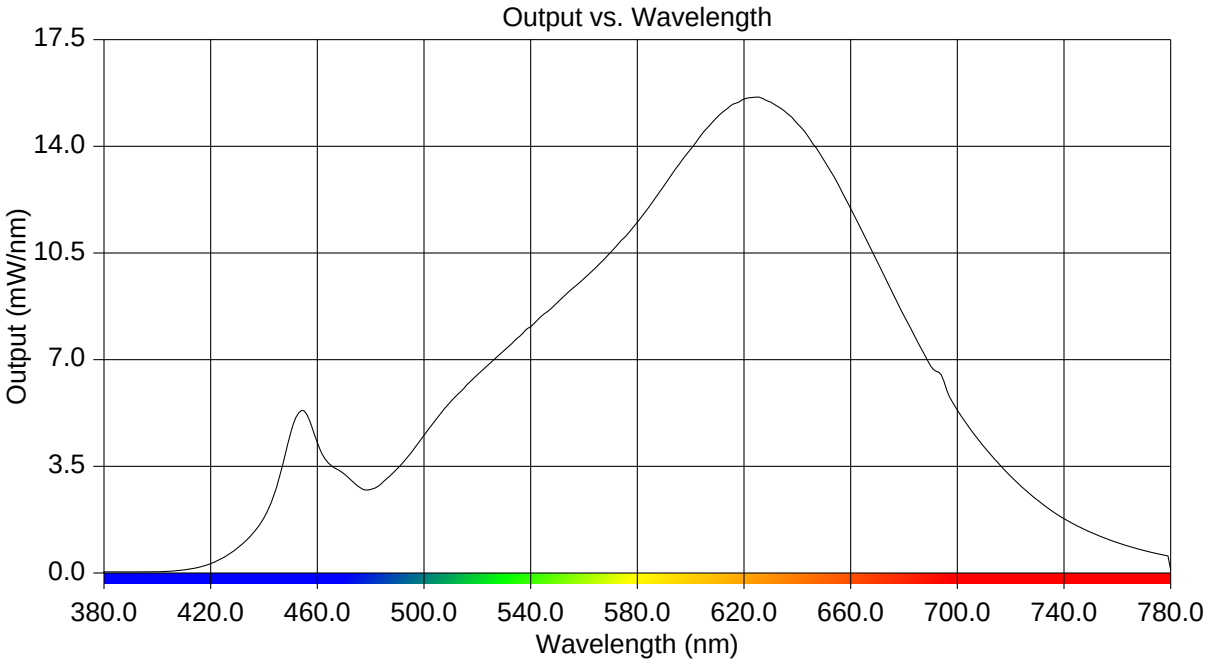
RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.034	515	6.061	650	13.538
385	0.036	520	6.494	655	12.805
390	0.034	525	6.902	660	11.959
395	0.034	530	7.299	665	11.091
400	0.040	535	7.710	670	10.223
405	0.057	540	8.077	675	9.320
410	0.101	545	8.497	680	8.439
415	0.175	550	8.873	685	7.601
420	0.309	555	9.285	690	6.790
425	0.514	560	9.658	695	6.284
430	0.817	565	10.080	700	5.345
435	1.217	570	10.520	705	4.711
440	1.803	575	10.994	710	4.137
445	2.904	580	11.499	715	3.647
450	4.582	585	12.082	720	3.180
455	5.323	590	12.709	725	2.762
460	4.279	595	13.337	730	2.395
465	3.537	600	13.897	735	2.065
470	3.254	605	14.490	740	1.786
475	2.865	610	14.957	745	1.542
480	2.741	615	15.335	750	1.341
485	3.016	620	15.554	755	1.157
490	3.423	625	15.622	760	0.994
495	3.925	630	15.453	765	0.859
500	4.508	635	15.174	770	0.734
505	5.107	640	14.744	775	0.634
510	5.626	645	14.187	780	0.095



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CIE Chromaticity Diagram