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NVLAP TESTING
NVLAP LAB CODE: 201058-0

REPORT NUMBER: RAB04627 **PAGE:** 1 OF 6
ISSUE DATE: 09/12/18 **DATE SAMPLE TESTED:** 09/12/18
PREPARED FOR: RAB LIGHTING INC. RC LIGHTING
CATALOG NUMBER: CDL2[WD, S, PC, PS]-10W40D930-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 = 11.9 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: 25.6
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*

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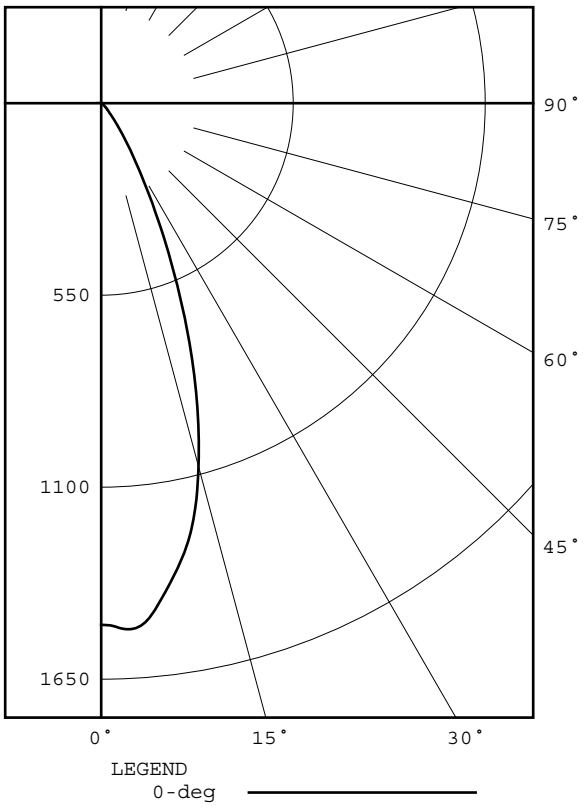
DEG	CANDELA	LUMENS
0	1494	
5	1489	136
15	1078	293
25	424	197
35	100	65
45	22	18
55	5	5
65	0	1
75	0	0
85	0	0
90	0	
95	0	0
105	0	0
115	0	0
125	0	0
135	0	0
145	0	0
155	0	0
165	0	0
175	0	0
180	0	

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	626	87.6
0- 40	691	96.7
0- 60	714	99.9
0- 90	715	100.0
90-120	0	0.0
90-130	0	0.0
90-150	0	0.0
90-180	0	0.0
0-180	715	100.0

EFFICACY = 60.1 lm/W
CIE TYPE - DIRECT
SPACING CRITERION: 0.63



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CANDELA DISTRIBUTION

0.0	1494	60.0	1	120.0	0	180.0	0
1.0	1496	61.0	1	121.0	0		
2.0	1504	62.0	1	122.0	0		
3.0	1509	63.0	1	123.0	0		
4.0	1505	64.0	0	124.0	0		
5.0	1489	65.0	0	125.0	0		
6.0	1462	66.0	1	126.0	0		
7.0	1428	67.0	1	127.0	0		
8.0	1395	68.0	0	128.0	0		
9.0	1360	69.0	0	129.0	0		
10.0	1327	70.0	1	130.0	0		
11.0	1288	71.0	0	131.0	0		
12.0	1245	72.0	0	132.0	0		
13.0	1194	73.0	1	133.0	0		
14.0	1139	74.0	1	134.0	0		
15.0	1078	75.0	0	135.0	0		
16.0	1015	76.0	0	136.0	0		
17.0	949	77.0	0	137.0	0		
18.0	882	78.0	0	138.0	0		
19.0	817	79.0	0	139.0	0		
20.0	748	80.0	0	140.0	0		
21.0	677	81.0	0	141.0	0		
22.0	610	82.0	0	142.0	0		
23.0	541	83.0	0	143.0	0		
24.0	479	84.0	0	144.0	0		
25.0	424	85.0	0	145.0	0		
26.0	371	86.0	0	146.0	0		
27.0	324	87.0	0	147.0	0		
28.0	282	88.0	0	148.0	0		
29.0	245	89.0	0	149.0	0		
30.0	209	90.0	0	150.0	0		
31.0	177	91.0	0	151.0	0		
32.0	152	92.0	0	152.0	0		
33.0	132	93.0	0	153.0	0		
34.0	115	94.0	0	154.0	0		
35.0	100	95.0	0	155.0	0		
36.0	85	96.0	0	156.0	0		
37.0	71	97.0	0	157.0	0		
38.0	58	98.0	0	158.0	0		
39.0	48	99.0	0	159.0	0		
40.0	41	100.0	0	160.0	0		
41.0	35	101.0	0	161.0	0		
42.0	31	102.0	0	162.0	0		
43.0	27	103.0	0	163.0	0		
44.0	25	104.0	0	164.0	0		
45.0	22	105.0	0	165.0	0		
46.0	20	106.0	0	166.0	0		
47.0	17	107.0	0	167.0	0		
48.0	15	108.0	0	168.0	0		
49.0	14	109.0	0	169.0	0		
50.0	12	110.0	0	170.0	0		
51.0	11	111.0	0	171.0	0		
52.0	9	112.0	0	172.0	0		
53.0	8	113.0	0	173.0	0		
54.0	7	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]-10W40D930-ODLENS

5-DEGREE ZONAL LUMEN SUMMARY

0- 5	36
5- 10	100
10- 15	143
15- 20	150
20- 25	120
25- 30	77
30- 35	43
35- 40	22
40- 45	11
45- 50	7
50- 55	4
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

0- 10	136
0- 20	429
0- 30	626
0- 40	691
0- 50	709
0- 60	714
0- 70	714
0- 80	715
0- 90	715
0-100	715
0-110	715
0-120	715
0-130	715
0-140	715
0-150	715
0-160	715
0-170	715
0-180	715

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CATALOG NUMBER: CDL2[WD, S, PC, PS]-10W40D930-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	114	112	110	108	112	110	108	106	106	104	103	102	101	100	99	98	97	95
2	110	105	102	99	108	104	101	98	101	98	96	98	96	94	95	93	92	90
3	105	100	96	92	103	98	95	91	96	93	90	94	91	89	91	89	87	86
4	101	95	90	86	99	94	89	86	91	88	85	90	86	84	88	85	83	82
5	97	90	85	81	96	89	84	81	87	83	80	86	82	80	84	81	79	78
6	93	86	81	77	92	85	80	77	84	79	76	82	79	76	81	78	75	74
7	90	82	77	73	88	81	76	73	80	76	73	79	75	72	78	74	72	71
8	86	78	73	70	85	78	73	70	77	72	69	76	72	69	75	71	69	68
9	83	75	70	67	82	75	70	67	74	69	66	73	69	66	72	69	66	65
10	80	72	67	64	79	72	67	64	71	67	64	70	66	63	69	66	63	62

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: RAB04627 **PAGE:** 6 OF 6
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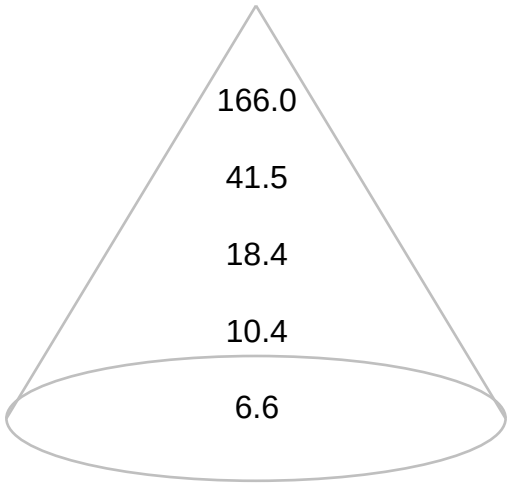
CATALOG NUMBER: CDL2[WD, S, PC, PS]-10W40D930-ODLENS

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	166.0	2.0
6.0	41.5	3.9
9.0	18.4	5.9
12.0	10.4	7.9
15.0	6.6	9.8



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: RAB04629
DATE: 9/12/2018
PREPARED FOR: RAB LIGHTING INC. RC LIGHTING
CATALOG NUMBER: CDL2[WD, WU, S, PC, PS]-10W40D930-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

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DATE: 9/12/2018
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CATALOG NUMBER: CDL2[WD, WU, S, PC, PS]-10W40D930-ODLENS

RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	715 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4347
Chromaticity Ordinate y	0.4039
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2492
Chromaticity Ordinate v'	0.5210
Correlated Color Temp CCT (K)	3037
ANSI C78.377-2008 Duv	0.000
Total Radiant Flux (milliWatts)	2495 *
ELECTRICAL	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.049
Input Power (Watts)	11.9
Input Power Factor (%)	87.4
Input Current THD (%)	26.4
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	60.1
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.095
Input Power (Watts)	11.2
Input Power Factor (%)	98.8
Input Current THD (%)	13.3
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	93
R1 Light greyish red	93
R2 Dark greyish yellow	97
R3 Strong yellowish green	99
R4 Moderate yellowish green	92
R5 Light bluish green	93
R6 Light blue	96
R7 Light violet	92
R8 Light reddish purple	83
R9 Strong red	62
R10 Strong yellow	91
R11 Strong green	92
R12 Strong blue	80
R13 Light yellowish pink (skin)	94
R14 Moderate olive green (leaf)	99

*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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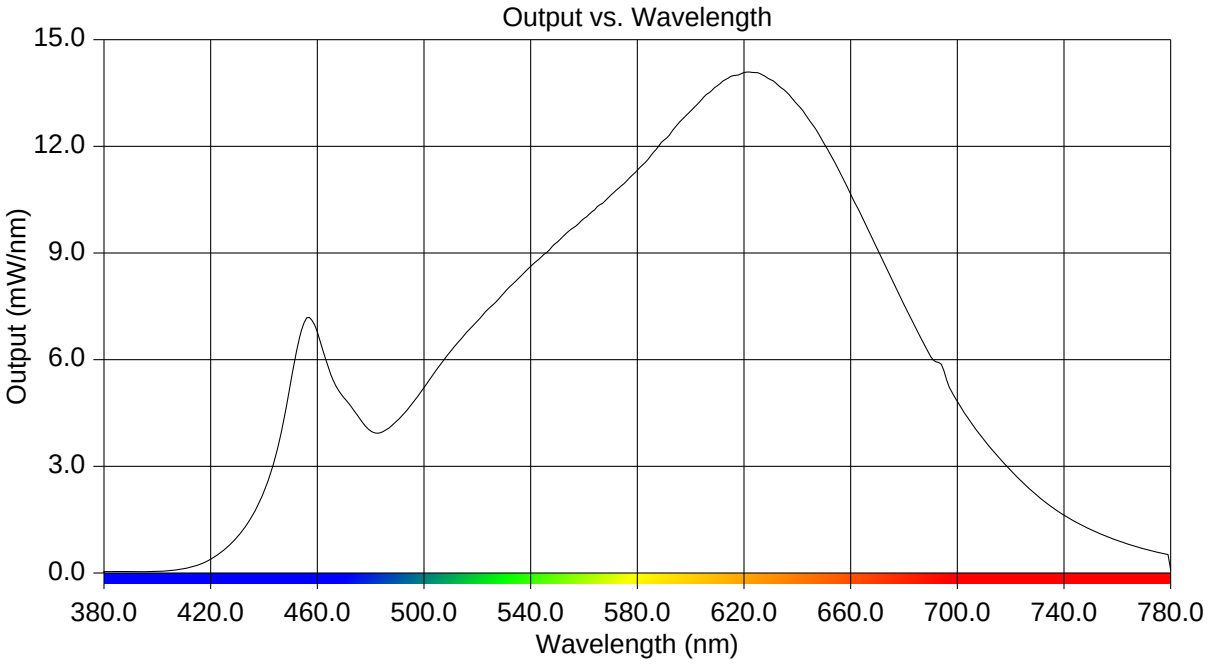
RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.037	515	6.681	650	12.082
385	0.037	520	7.085	655	11.414
390	0.037	525	7.486	660	10.665
395	0.040	530	7.875	665	9.905
400	0.046	535	8.259	670	9.116
405	0.069	540	8.623	675	8.331
410	0.120	545	8.963	680	7.536
415	0.218	550	9.307	685	6.799
420	0.387	555	9.659	690	6.088
425	0.641	560	9.971	695	5.682
430	1.019	565	10.306	700	4.823
435	1.543	570	10.622	705	4.251
440	2.283	575	10.950	710	3.742
445	3.485	580	11.326	715	3.298
450	5.340	585	11.733	720	2.887
455	7.033	590	12.175	725	2.511
460	6.781	595	12.610	730	2.171
465	5.590	600	12.995	735	1.878
470	4.926	605	13.392	740	1.622
475	4.441	610	13.704	745	1.406
480	4.002	615	13.966	750	1.229
485	3.994	620	14.076	755	1.061
490	4.290	625	14.073	760	0.915
495	4.693	630	13.875	765	0.788
500	5.214	635	13.591	770	0.680
505	5.752	640	13.176	775	0.584
510	6.238	645	12.681	780	0.088



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CIE Chromaticity Diagram