

REPORT NUMBER:RAB04579

PAGE: 1 OF 6

ISSUE DATE:09/04/18

DATE SAMPLE TESTED: 09/04/18

PREPARED FOR: RAB LIGHTING INC. RC LIGHTING

CATALOG NUMBER: CDL4 [WD, S, PC, PS] -20W50D927-ODLENS

LUMINAIRE: EXTRUDED BLACK PAINTED METAL HOUSING, CAST FINNED METAL HEAT SINK, 1 WHITE CIRCUIT BOARD WITH 1 LED, MOLDED PLASTIC UPPER REFLECTOR, HOLOGRAPHIC PLASTIC LENS OVER UPPER APERTURE OF LOWER REFLECTOR, 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.

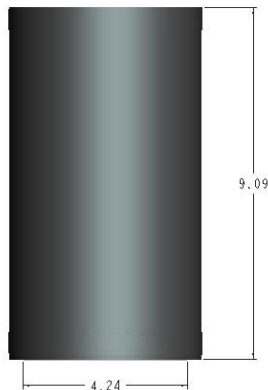
WATT: TOTAL INPUT WATTS = 19.8 W AT 277.0 VAC.

LED DRIVER: LED DRIVER: RDD-30W-042SE-A0500

PROCEDURE: TEST PROCEDURE: IESNA LM-79-08

NOTE: LM-80 DATA AVAILABLE FROM MANUFACTURER FOR SOLID STATE SOURCE
AMBIENT: 25.0

NVLAP LAB CODE: ACCREDITED LABORATORY CODE 201058-0



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Checked X.CAO

Approved D.WANG-MUNSON

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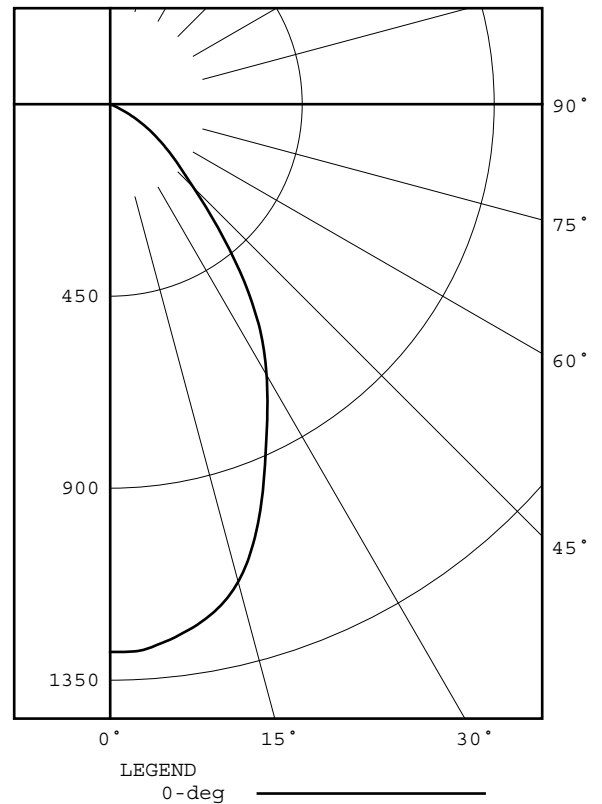
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CATALOG NUMBER: CDL4 [WD, S, PC, PS] -20W50D927-ODLENS

DEG	CANDELA	LUMENS
0	1284	
5	1272	120
15	1159	322
25	866	399
35	590	363
45	276	221
55	129	116
65	26	30
75	2	2
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 ZONE	LUMEN LUMENS	SUMMARY %FIXT
0- 30	842	53.5
0- 40	1205	76.6
0- 60	1541	97.9
0- 90	1574	100.0
90-120	0	0.0
90-130	0	0.0
90-150	0	0.0
90-180	0	0.0
0-180	1574	100.0

EFFICACY = 79.5 lm/W
CIE TYPE - DIRECT
SPACING CRITERION: 0.94



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CANDELA DISTRIBUTION

0.0	1284
5.0	1272
10.0	1232
15.0	1159
20.0	1024
25.0	866
30.0	733
35.0	590
40.0	420
45.0	276
50.0	191
55.0	129
60.0	73
65.0	26
70.0	4
75.0	2
80.0	1
85.0	0
90.0	0
95.0	0
100.0	0
105.0	0
110.0	0
115.0	0
120.0	0
125.0	0
130.0	0
135.0	0
140.0	0
145.0	0
150.0	0
155.0	0
160.0	0
165.0	0
170.0	0
175.0	0
180.0	0

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5-DEGREE
ZONAL LUMEN SUMMARY

0- 5	31
5- 10	90
10- 15	142
15- 20	180
20- 25	198
25- 30	202
30- 35	195
35- 40	168
40- 45	128
45- 50	93
50- 55	69
55- 60	46
60- 65	23
65- 70	6
70- 75	1
75- 80	1
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	120
0- 20	442
0- 30	842
0- 40	1205
0- 50	1426
0- 60	1541
0- 70	1571
0- 80	1573
0- 90	1574
0-100	1574
0-110	1574
0-120	1574
0-130	1574
0-140	1574
0-150	1574
0-160	1574
0-170	1574
0-180	1574

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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

EFFECTIVE FLOOR CAVITY REFLECTANCE 0.20

RC RW	80				70				50			30			10			0			
	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	111	111	111	106	106	106	102	102	102	100
1	113	109	107	104	110	107	105	102	103	101	99	99	98	96	96	95	93	96	95	93	92
2	106	100	95	92	104	98	94	91	95	92	89	92	89	87	89	87	85	89	87	85	83
3	99	92	86	81	97	90	85	81	88	83	79	85	81	78	83	80	77	83	80	77	75
4	93	84	78	73	91	83	77	73	81	76	72	79	74	71	77	73	70	77	73	70	68
5	87	78	71	66	86	77	70	66	75	69	65	73	68	64	71	67	64	71	67	64	62
6	82	72	65	60	81	71	65	60	69	64	59	68	63	59	67	62	58	67	62	58	57
7	77	67	60	55	76	66	59	55	65	59	54	63	58	54	62	57	54	62	57	54	52
8	73	62	55	51	72	61	55	50	60	54	50	59	54	50	58	53	50	58	53	50	48
9	69	58	51	47	68	57	51	47	56	51	46	55	50	46	55	50	46	55	50	46	45
10	65	54	48	43	64	54	48	43	53	47	43	52	47	43	51	46	43	51	46	43	41

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.

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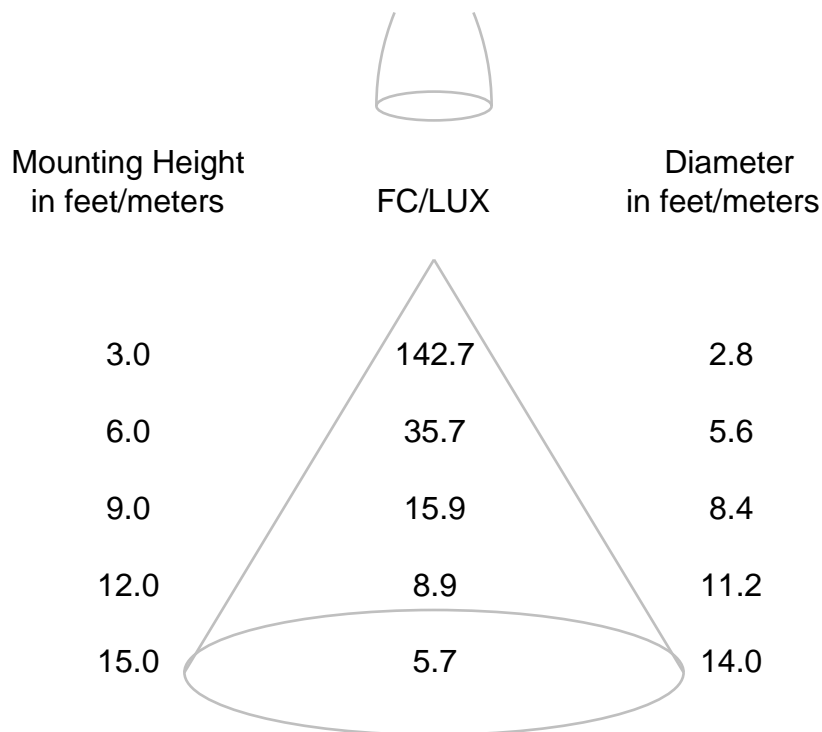
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CONE OF LIGHT DIAGRAM

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



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

REPORT NUMBER: RAB04580
DATE: 8/30/2018
PREPARED FOR: RAB LIGHTING INC. RC LIGHTING
CATALOG NUMBER: CDL4 [WD, WU, S, PC, PS] -20W50D927-ODLENS

ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

LUMINAIRE: EXTRUDED BLACK PAINTED METAL HOUSING, CAST FINNED METAL HEAT SINK, 1 WHITE CIRCUIT BOARD WITH 1 LED, MOLDED PLASTIC UPPER REFLECTOR, HOLOGRAPHIC PLASTIC LENS OVER UPPER APERTURE OF LOWER REFLECTOR, ALUMINUM TRIM DOOR WITH GLASS LENS.

LAMP: ONE WHITE LIGHT EMITTING DIODES (LEDS).

DRIVER: RDD-30W-042SE-A0500

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: GWINSTEK PROGRAMMABLE AC POWER SOURCE APS-7100
CHROMA PROGRAMMABLE DIGITAL POWER METER MODEL 66202
OCEAN OPTICS QE65PRO Spectroradiometer
RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry

Calibration Due:
N/A
3/08/19
08/22/19
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	<u>X.CAO</u>
Approved	<u>D.WANG-MUNSON</u> Lighting Engineer

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RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	1574 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4611
Chromaticity Ordinate y	0.4147
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2614
Chromaticity Ordinate v'	0.5291
Correlated Color Temp CCT (K)	2714
ANSI C78.377-2008 Duv	0.001
Total Radiant Flux (milliWatts)	5461 *
ELECTRICAL	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.083
Input Power (Watts)	19.8
Input Power Factor (%)	86.1
Input Current THD (%)	22.8
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
79.5	
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.163
Input Power (Watts)	19.1
Input Power Factor (%)	98.1
Input Current THD (%)	13.5
Input Voltage THD (%)	0.2
Off-State Power (Watts)	
0.0	

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	91
R1 Light greyish red	90
R2 Dark greyish yellow	95
R3 Strong yellowish green	99
R4 Moderate yellowish green	90
R5 Light bluish green	90
R6 Light blue	95
R7 Light violet	90
R8 Light reddish purple	77
R9 Strong red	51
R10 Strong yellow	89
R11 Strong green	90
R12 Strong blue	81
R13 Light yellowish pink (skin)	91
R14 Moderate olive green (leaf)	99

*NOTE:

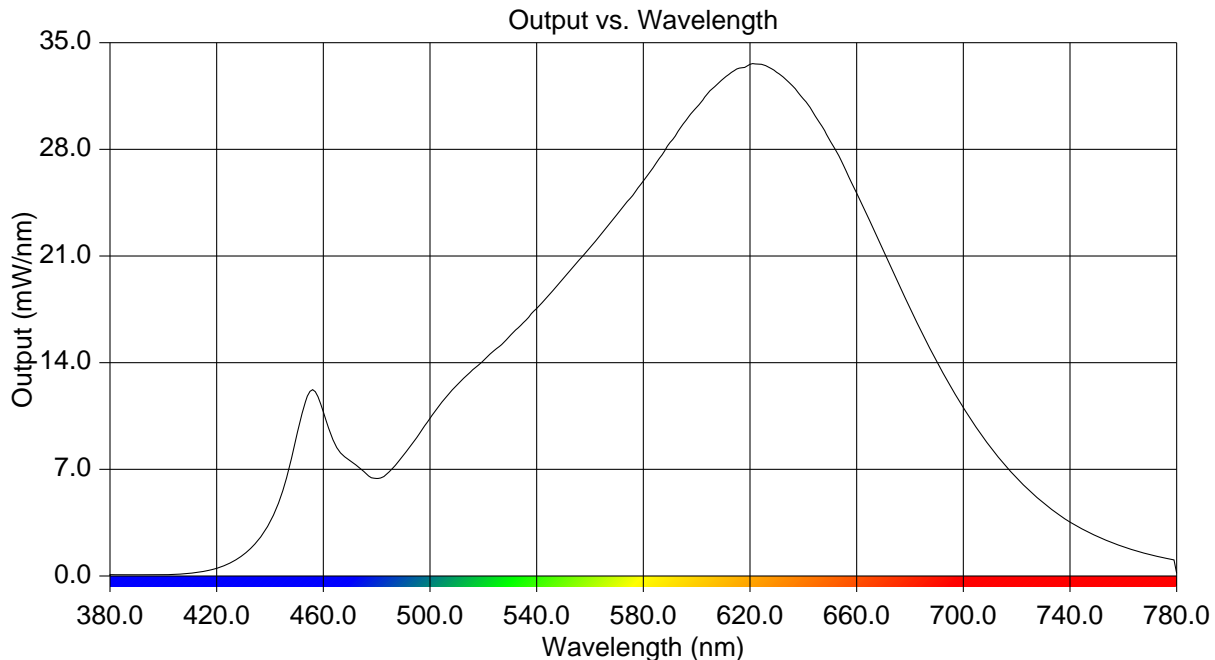
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RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.086	515	13.357	650	28.561
385	0.080	520	14.125	655	26.970
390	0.073	525	14.930	660	25.163
395	0.081	530	15.752	665	23.282
400	0.092	535	16.624	670	21.366
405	0.112	540	17.555	675	19.446
410	0.176	545	18.526	680	17.582
415	0.295	550	19.503	685	15.790
420	0.506	555	20.565	690	14.077
425	0.849	560	21.542	695	12.516
430	1.397	565	22.631	700	11.044
435	2.233	570	23.709	705	9.714
440	3.548	575	24.765	710	8.511
445	5.710	580	25.899	715	7.405
450	9.201	585	27.147	720	6.427
455	12.117	590	28.447	725	5.573
460	10.773	595	29.680	730	4.796
465	8.453	600	30.755	735	4.134
470	7.572	605	31.847	740	3.535
475	6.864	610	32.644	745	3.043
480	6.399	615	33.270	750	2.628
485	6.897	620	33.580	755	2.239
490	7.916	625	33.560	760	1.920
495	9.074	630	33.054	765	1.635
500	10.337	635	32.324	770	1.401
505	11.532	640	31.310	775	1.201
510	12.525	645	30.039	780	0.178



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CIE Chromaticity Diagram

