

REPORT NUMBER: RAB04593

PAGE: 1 OF 6

ISSUE DATE: 09/05/18

DATE SAMPLE TESTED: 09/05/18

PREPARED FOR: RAB LIGHTING INC. RC LIGHTING

CATALOG NUMBER: CDL6 [WD, S, PC, PS] -26W50D927-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.

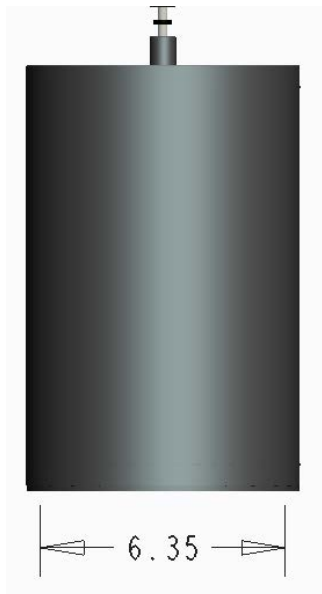
WATT: TOTAL INPUT WATTS = 27.8 W AT 120.0 VAC.

LED DRIVER: LED DRIVER: RDD-30W-042SE-A0700

PROCEDURE: TEST PROCEDURE: IESNA LM-79-08

NOTE: LM-80 DATA AVAILABLE FROM MANUFACTURER FOR SOLID STATE SOURCE
AMBIENT: 24.3

NVLAP LAB CODE: ACCREDITED LABORATORY CODE 201058-0



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Checked X.CAO

Approved D.WANG-MUNSON

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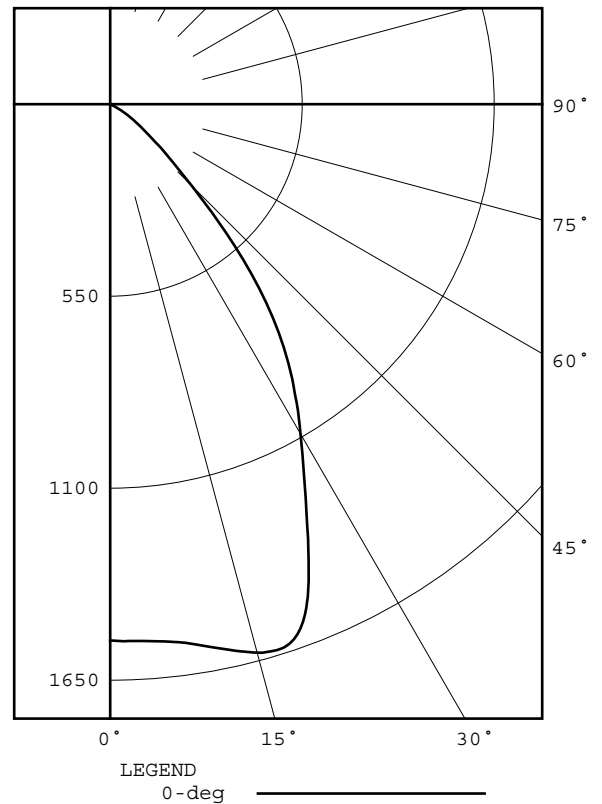
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DEG	CANDELA	LUMENS
0	1536	
5	1544	148
15	1627	458
25	1336	614
35	879	541
45	331	270
55	90	84
65	5	10
75	1	1
85	0	0
90	0	
95	0	0
105	0	0
115	0	0
125	0	0
135	0	0
145	0	0
155	0	0
165	0	0
175	0	0
180	0	

ZONAL ZONE	LUMEN LUMENS	SUMMARY %FIXT
0- 30	1220	57.4
0- 40	1761	82.8
0- 60	2115	99.4
0- 90	2127	100.0
90-120	0	0.0
90-130	0	0.0
90-150	0	0.0
90-180	0	0.0
0-180	2127	100.0

EFFICACY = 76.5 lm/W
CIE TYPE - DIRECT
SPACING CRITERION: 1.08



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CANDELA DISTRIBUTION

0.0	1536	60.0	38	120.0	0	180.0	0
1.0	1538	61.0	29	121.0	0		
2.0	1539	62.0	21	122.0	0		
3.0	1539	63.0	13	123.0	0		
4.0	1542	64.0	8	124.0	0		
5.0	1544	65.0	5	125.0	0		
6.0	1547	66.0	3	126.0	0		
7.0	1553	67.0	2	127.0	0		
8.0	1558	68.0	2	128.0	0		
9.0	1567	69.0	2	129.0	0		
10.0	1576	70.0	2	130.0	0		
11.0	1587	71.0	2	131.0	0		
12.0	1597	72.0	1	132.0	0		
13.0	1607	73.0	1	133.0	0		
14.0	1617	74.0	1	134.0	0		
15.0	1627	75.0	1	135.0	0		
16.0	1632	76.0	1	136.0	0		
17.0	1635	77.0	1	137.0	0		
18.0	1632	78.0	1	138.0	0		
19.0	1620	79.0	1	139.0	0		
20.0	1596	80.0	1	140.0	0		
21.0	1560	81.0	1	141.0	0		
22.0	1512	82.0	1	142.0	0		
23.0	1456	83.0	1	143.0	0		
24.0	1396	84.0	1	144.0	0		
25.0	1336	85.0	0	145.0	0		
26.0	1281	86.0	0	146.0	0		
27.0	1228	87.0	0	147.0	0		
28.0	1180	88.0	0	148.0	0		
29.0	1133	89.0	0	149.0	0		
30.0	1091	90.0	0	150.0	0		
31.0	1050	91.0	0	151.0	0		
32.0	1007	92.0	0	152.0	0		
33.0	965	93.0	0	153.0	0		
34.0	924	94.0	0	154.0	0		
35.0	879	95.0	0	155.0	0		
36.0	833	96.0	0	156.0	0		
37.0	784	97.0	0	157.0	0		
38.0	732	98.0	0	158.0	0		
39.0	677	99.0	0	159.0	0		
40.0	618	100.0	0	160.0	0		
41.0	559	101.0	0	161.0	0		
42.0	497	102.0	0	162.0	0		
43.0	436	103.0	0	163.0	0		
44.0	380	104.0	0	164.0	0		
45.0	331	105.0	0	165.0	0		
46.0	287	106.0	0	166.0	0		
47.0	251	107.0	0	167.0	0		
48.0	222	108.0	0	168.0	0		
49.0	195	109.0	0	169.0	0		
50.0	171	110.0	0	170.0	0		
51.0	149	111.0	0	171.0	0		
52.0	131	112.0	0	172.0	0		
53.0	116	113.0	0	173.0	0		
54.0	102	114.0	0	174.0	0		
55.0	90	115.0	0	175.0	0		
56.0	79	116.0	0	176.0	0		
57.0	68	117.0	0	177.0	0		
58.0	58	118.0	0	178.0	0		
59.0	48	119.0	0	179.0	0		

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5-DEGREE
ZONAL LUMEN SUMMARY

0- 5	37
5- 10	112
10- 15	190
15- 20	268
20- 25	309
25- 30	305
30- 35	290
35- 40	251
40- 45	173
45- 50	97
50- 55	54
55- 60	29
60- 65	9
65- 70	1
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	148
0- 20	607
0- 30	1220
0- 40	1761
0- 50	2031
0- 60	2115
0- 70	2125
0- 80	2126
0- 90	2127
0-100	2127
0-110	2127
0-120	2127
0-130	2127
0-140	2127
0-150	2127
0-160	2127
0-170	2127
0-180	2127

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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	119	116	116	116	116	116	111	111	111	111	111	106	106	106	106	102	102	102	102	100
1	113	110	107	105	105	110	108	105	103	103	104	102	100	100	98	97	96	95	94	94	96	95	94	92
2	107	101	97	93	93	104	99	95	92	92	96	93	90	93	90	88	90	88	86	86	90	88	86	84
3	100	93	88	83	83	98	92	87	83	83	89	85	81	87	83	80	84	81	79	79	84	81	79	77
4	94	86	80	75	75	93	85	79	75	75	83	78	74	81	76	73	79	75	72	72	79	75	72	70
5	89	80	73	68	68	87	79	73	68	68	77	71	67	75	70	67	73	69	66	66	73	69	66	65
6	84	74	67	62	62	82	73	67	62	62	71	66	62	70	65	61	69	64	61	61	69	64	61	59
7	79	69	62	57	57	77	68	62	57	57	67	61	57	65	60	56	64	60	56	56	64	60	56	55
8	74	64	57	53	53	73	63	57	53	53	62	56	52	61	56	52	60	55	52	52	60	55	52	50
9	70	60	53	49	49	69	59	53	49	49	58	53	49	57	52	48	56	52	48	48	56	52	48	47
10	67	56	50	45	45	66	56	49	45	45	55	49	45	54	49	45	53	48	45	45	53	48	45	43

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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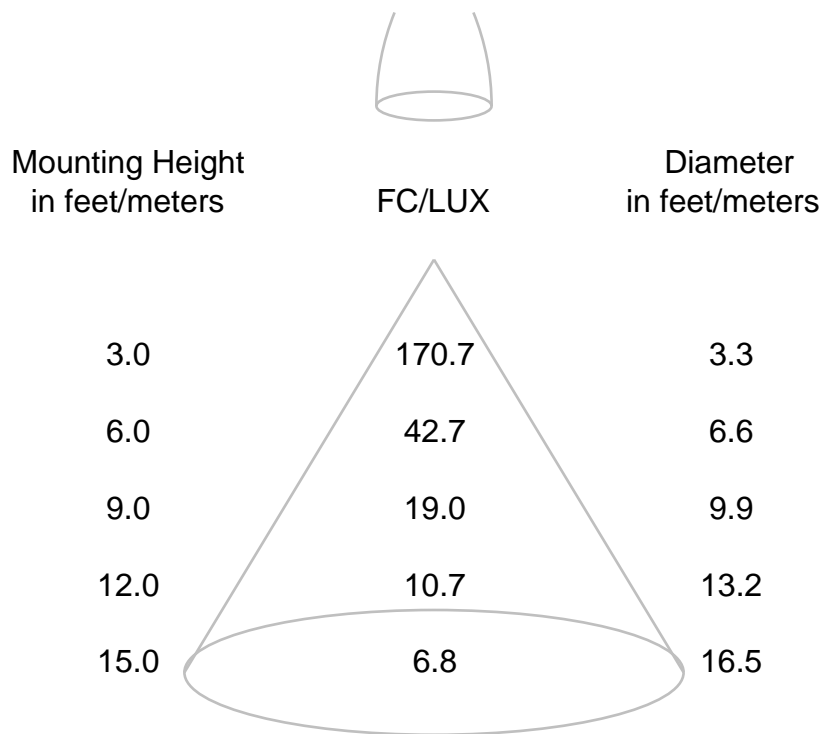
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CONE OF LIGHT DIAGRAM

(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.

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CATALOG NUMBER: CDL6 [WD, WU, S, PC, PS] -26W50D927-ODLENS

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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-A0700

OBJECT OF TEST: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT THE RATED INPUT VOLTAGES (120.0 AND 277.0 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 (277.0 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)	2127 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4598
Chromaticity Ordinate y	0.4159
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2601
Chromaticity Ordinate v'	0.5294
Correlated Color Temp CCT (K)	2741
ANSI C78.377-2008 Duv	0.002
Total Radiant Flux (milliWatts)	7339 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.235
Input Power (Watts)	27.8
Input Power Factor (%)	98.5
Input Current THD (%)	13.0
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
76.5	
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.110
Input Power (Watts)	27.7
Input Power Factor (%)	90.9
Input Current THD (%)	18.2
Input Voltage THD (%)	0.2
Off-State Power (Watts)	
0.0	

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	90
R1 Light greyish red	90
R2 Dark greyish yellow	95
R3 Strong yellowish green	99
R4 Moderate yellowish green	90
R5 Light bluish green	89
R6 Light blue	94
R7 Light violet	91
R8 Light reddish purple	77
R9 Strong red	50
R10 Strong yellow	87
R11 Strong green	90
R12 Strong blue	79
R13 Light yellowish pink (skin)	91
R14 Moderate olive green (leaf)	99

*NOTE:

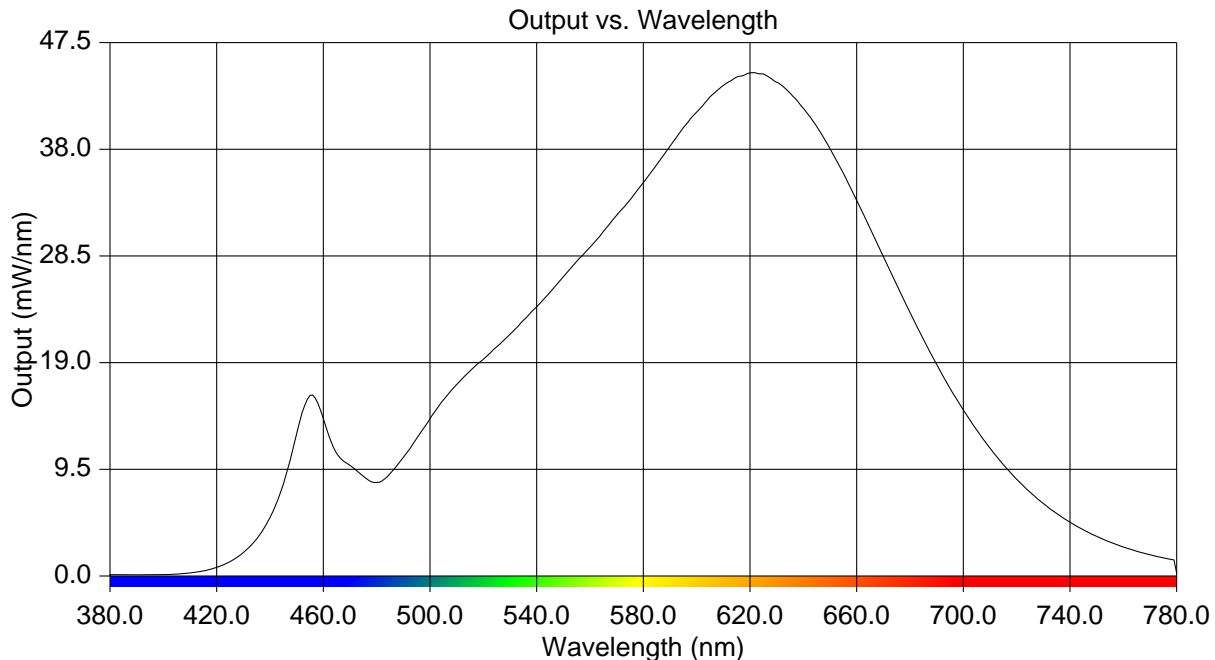
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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	0.108	515	18.257	650	38.058
385	0.108	520	19.308	655	35.872
390	0.108	525	20.407	660	33.472
395	0.105	530	21.519	665	30.968
400	0.130	535	22.770	670	28.466
405	0.170	540	23.965	675	25.943
410	0.264	545	25.285	680	23.475
415	0.452	550	26.631	685	21.071
420	0.773	555	28.023	690	18.797
425	1.278	560	29.288	695	16.717
430	2.084	565	30.670	700	14.763
435	3.302	570	32.159	705	13.000
440	5.196	575	33.493	710	11.392
445	8.198	580	35.013	715	9.930
450	12.659	585	36.642	720	8.630
455	16.084	590	38.261	725	7.481
460	14.013	595	39.931	730	6.441
465	10.911	600	41.320	735	5.561
470	9.848	605	42.680	740	4.774
475	8.876	610	43.692	745	4.102
480	8.326	615	44.442	750	3.546
485	9.109	620	44.809	755	3.026
490	10.573	625	44.716	760	2.589
495	12.246	630	43.975	765	2.216
500	13.989	635	43.010	770	1.886
505	15.684	640	41.642	775	1.619
510	17.067	645	40.025	780	0.242



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CIE Chromaticity Diagram

