

REPORT NUMBER: RAB03412

ISSUE DATE: 05/22/17

PREPARED FOR: RAB LIGHTING INC.

PAGE: 1 OF 9

DATE SAMPLE TESTED: 05/22/17

CATALOG NUMBER: RAIL185NW/480/D10, RAILP185NW/480/D10 (Standard Distribution) (ALSO APPLIES TO 347 RCL)

LUMINAIRE: EXTRUDED METAL HOUSING WITH HEAT SINK FINS, TWO WHITE CIRCUIT BOARD WITH TWO HUNDRED AND FIFTY TWO LEDS ON EACH BOARD, METAL REFLECTOR WITH SPECULAR FINISH, FLAT TRANSLUCENT LENS WITH FROSTED SIDE IN.

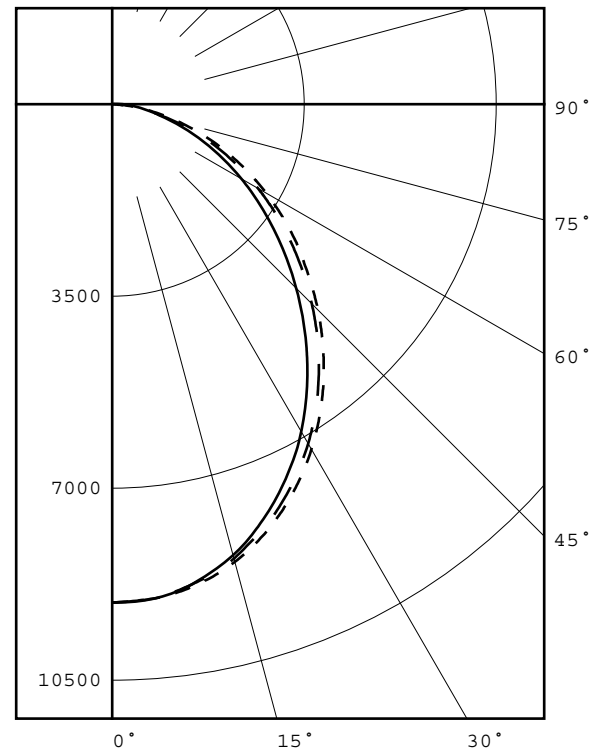
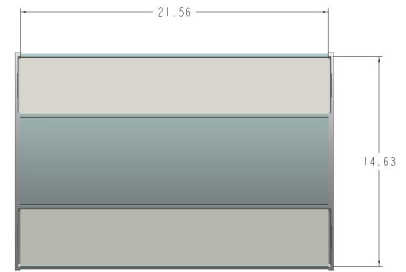
LAMPS: FIVE HUNDRED AND FOUR LIGHT EMITTING DIODES (LEDs).

\*(SEE PAGE 2 FOR MORE INFORMATION)\*

### CANDELA DISTRIBUTION

	0.0	45.0	90.0	135.0	180.0	
0	9086	9086	9086	9086	9086	
5	9040	9039	9040	9030	9022	857
15	8638	8576	8513	8535	8575	2409
25	7806	7663	7507	7586	7698	3511
35	6654	6422	6197	6340	6521	3997
45	5303	5031	4745	4924	5147	3851
55	3931	3639	3358	3526	3749	3218
65	2566	2334	2111	2233	2405	2276
75	1282	1157	1047	1079	1141	1208
85	252	346	401	311	174	374
90	10	129	187	107	1	
95	0	16	47	10	2	36
105	2	2	3	3	3	3
115	2	2	3	3	3	3
125	2	2	3	3	3	3
135	3	3	4	4	4	3
145	4	4	5	5	5	3
155	5	6	6	6	6	3
165	6	6	7	7	7	2
175	7	8	9	8	8	1
180	8	8	8	8	8	

### FLUX



LEGEND:  
 0-deg: - - - - -  
 90-deg: ————  
 180-deg: - . - . - .

### ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	6777	31.2
0- 40	10774	49.5
0- 60	17842	82.0
0- 90	21700	99.7
90-120	41	0.2
90-130	44	0.2
90-150	50	0.2
90-180	55	0.3
0-180	21755	100.0

TOTAL INPUT WATTS = 169.3

EFFICACY = 128.5 Lm/W

CIE TYPE - DIRECT

PLANE : 0-DEG 90-DEG 180-DEG

SPACING CRITERIA : 1.2 1.1 1.2

Checked X.CAO  
 Approved D.WANG-MUNSON

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PAGE: 2 OF 9  
DATE SAMPLE TESTED: 05/22/17

ADDITIONAL INFORMATION

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.

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.

TOTAL INPUT WATTS = 169.3 W AT 347.0 VAC.

LED DRIVER: 2 x RDD-096-A3600-240C

TEST PROCEDURE: IESNA LM-79-08

LM-80 DATA AVAILABLE FROM MANUFACTURER FOR SOLID STATE SOURCE

AMBIENT: 24.7

ACCREDITED LABORATORY CODE 201058-0

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PAGE: 3 OF 9  
DATE SAMPLE TESTED: 05/22/17

PLANE : 0-DEG 90-DEG  
BEAM ANGLE (50%) : 99.7 X 92.8 DEGREES  
FIELD ANGLE (10%) : 155.3 X 153.3 DEGREES

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PAGE: 4 OF 9  
DATE SAMPLE TESTED: 05/22/17

PLANE : 0-DEG 90-DEG  
LUMINOUS LENGTH :21.560 14.630

LUMINANCE DATA IN CANDELA/SQ METER

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 90-DEG	AVERAGE 180-DEG
45	36840.	32963.	35756.
55	33666.	28759.	32107.
65	29826.	24537.	27954.
75	24332.	19872.	21656.
85	14203.	22601.	9807.



REPORT NUMBER: RAB03412  
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PAGE: 6 OF 9  
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ZONAL LUMEN SUMMARY

0- 5	217.
5- 10	640.
10- 15	1033.
15- 20	1376.
20- 25	1653.
25- 30	1858.
30- 35	1979.
35- 40	2018.
40- 45	1979.
45- 50	1872.
50- 55	1711.
55- 60	1507.
60- 65	1269.
65- 70	1007.
70- 75	734.
75- 80	474.
80- 85	260.
85- 90	114.
90- 95	32.
95-100	4.
100-105	1.
105-110	1.
110-115	1.
115-120	1.
120-125	1.
125-130	1.
130-135	1.
135-140	1.
140-145	2.
145-150	1.
150-155	1.
155-160	1.
160-165	1.
165-170	1.
170-175	1.
175-180	0.

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PAGE: 7 OF 9  
 DATE SAMPLE TESTED: 05/22/17

### 5-DEGREE ZONAL LUMEN SUMMARY

0- 5	217
5- 10	640
10- 15	1033
15- 20	1376
20- 25	1653
25- 30	1858
30- 35	1979
35- 40	2018
40- 45	1979
45- 50	1872
50- 55	1711
55- 60	1507
60- 65	1269
65- 70	1007
70- 75	734
75- 80	474
80- 85	260
85- 90	114
90- 95	32
95-100	4
100-105	1
105-110	1
110-115	1
115-120	1
120-125	1
125-130	1
130-135	1
135-140	1
140-145	2
145-150	1
150-155	1
155-160	1
160-165	1
165-170	1
170-175	1
175-180	0

### 10-DEGREE ZONAL LUMEN SUMMARY

0- 10	857
0- 20	3266
0- 30	6777
0- 40	10774
0- 50	14624
0- 60	17842
0- 70	20118
0- 80	21326
0- 90	21700
0-100	21736
0-110	21739
0-120	21741
0-130	21744
0-140	21747
0-150	21750
0-160	21752
0-170	21754
0-180	21755

REPORT NUMBER: RAB03412  
ISSUE DATE: 05/22/17

PAGE: 8 OF 9  
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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	105	101	97	107	102	99	95	98	95	92	94	92	89	91	89	87	85
2	100	92	86	80	97	90	84	79	87	82	77	83	79	75	80	77	74	72
3	91	81	74	67	89	80	73	67	77	71	65	74	69	64	71	67	63	61
4	84	73	64	58	82	71	63	57	69	62	56	66	60	56	64	59	55	53
5	78	65	56	50	75	64	56	50	62	55	49	60	54	49	58	53	48	46
6	72	59	50	44	70	58	50	44	56	49	43	54	48	43	53	47	43	41
7	67	54	45	39	65	53	45	39	51	44	39	50	43	38	48	43	38	36
8	62	49	41	35	61	48	40	35	47	40	35	46	39	35	45	39	34	32
9	58	45	37	32	57	45	37	32	43	36	31	42	36	31	41	35	31	29
10	55	42	34	29	53	41	34	29	40	33	29	39	33	29	38	33	28	27

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 LUMINAIRE SAMPLE.

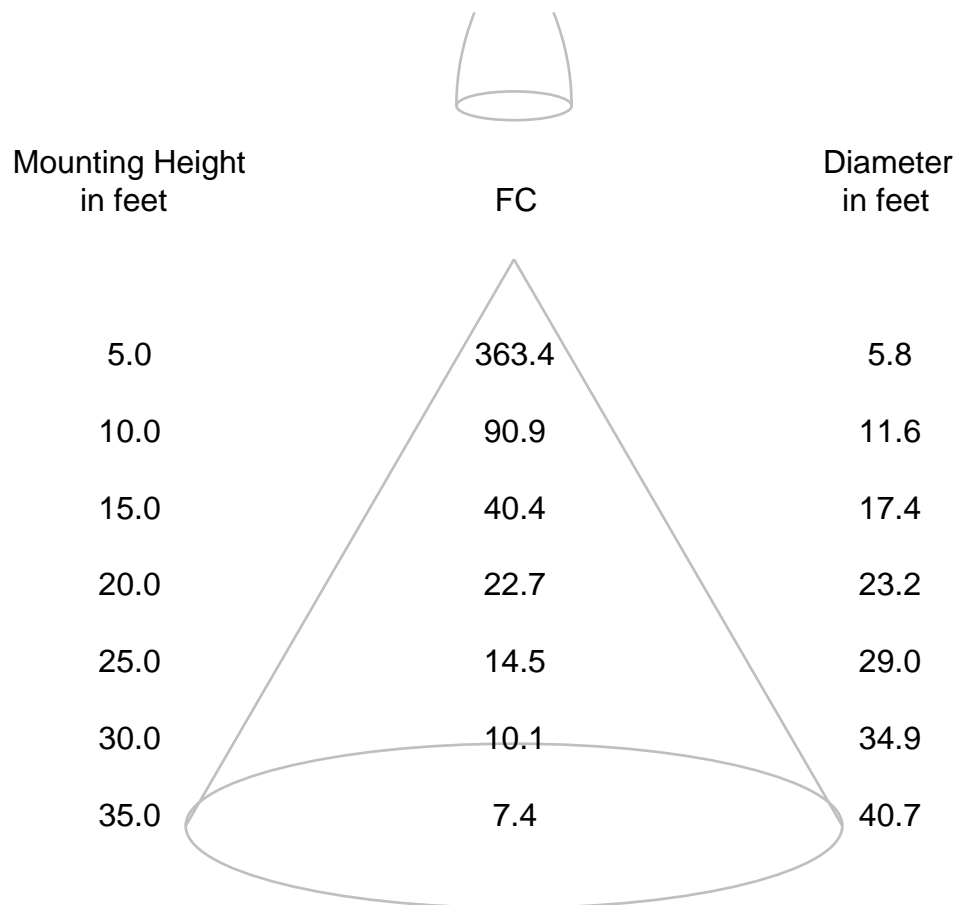


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PAGE: 9 OF 9  
DATE SAMPLE TESTED: 05/22/17

## CONE OF LIGHT DIAGRAM

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



Note: The candela values used to generate this diagram were obtained by averaging the photometric data into a single plane.

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PREPARED FOR: RAB LIGHTING INC.  
CATALOG NUMBER: RAIL185NW/480/D10, RAILP185NW/480/D10 (Standard Distribution) (ALSO APPLIES TO 347 RCL)

ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

LUMINAIRE: EXTRUDED METAL HOUSING WITH HEAT SINK FINS, TWO WHITE CIRCUIT BOARD WITH TWO HUNDRED AND FIFTY TWO LEDS ON EACH BOARD, METAL REFLECTOR WITH SPECULAR FINISH, FLAT TRANSLUCENT LENS WITH FROSTED SIDE IN.

LAMP: FIVE HUNDRED AND FOUR LIGHT EMITTING DIODES (LEDS).

DRIVER: 2 x RDD-096-A3600-240C

OBJECT OF TEST: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT THE RATED INPUT VOLTAGES (347.0 AND 480.0 VAC, 60Hz) TO THE TEST SAMPLE.

INSTRUMENTS:	GWINSTEK PROGRAMMABLE AC POWER SOURCE APS-7100	Calibration Due:
	CHROMA PROGRAMMABLE DIGITAL POWER METER MODEL 66202	N/A
	OCEAN OPTICS QE65PRO Spectroradiometer	3/01/18
	RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry	05/19/18

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 (480.0 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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Page 2 of 4

### RESULTS:

<b>PHOTOMETRIC</b>	
Total Integrated Flux (lumens)	21755 *
<b>SPECTRORADIOMETRIC</b>	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3783
Chromaticity Ordinate y	0.3708
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2261
Chromaticity Ordinate v'	0.4986
Correlated Color Temp CCT (K)	4016
ANSI C78.377-2008 Duv	-0.002
Total Radiant Flux (milliWatts)	64130 *
<b>ELECTRICAL</b>	
Input Voltage (Volts AC)	347.0
Input Current (Amps AC)	0.493
Input Power (Watts)	169.3
Input Power Factor (%)	99.0
Input Current THD (%)	9.6
Input Voltage THD (%)	0.2
<b>EFFICACY (Lumens/Watt)</b>	
	128.5
<b>ELECTRICAL AT MAX NONIMAL INPUT</b>	
Input Voltage (Volts AC)	480.0
Input Current (Amps AC)	0.370
Input Power (Watts)	168.9
Input Power Factor (%)	95.2
Input Current THD (%)	11.5
Input Voltage THD (%)	0.2
<b>Off-State Power (Watts)</b>	
	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	77
R1 Light greyish red	74
R2 Dark greyish yellow	85
R3 Strong yellowish green	92
R4 Moderate yellowish green	74
R5 Light bluish green	75
R6 Light blue	79
R7 Light violet	82
R8 Light reddish purple	54
R9 Strong red	-18
R10 Strong yellow	65
R11 Strong green	71
R12 Strong blue	53
R13 Light yellowish pink (skin)	77
R14 Moderate olive green (leaf)	96

### \*NOTE:

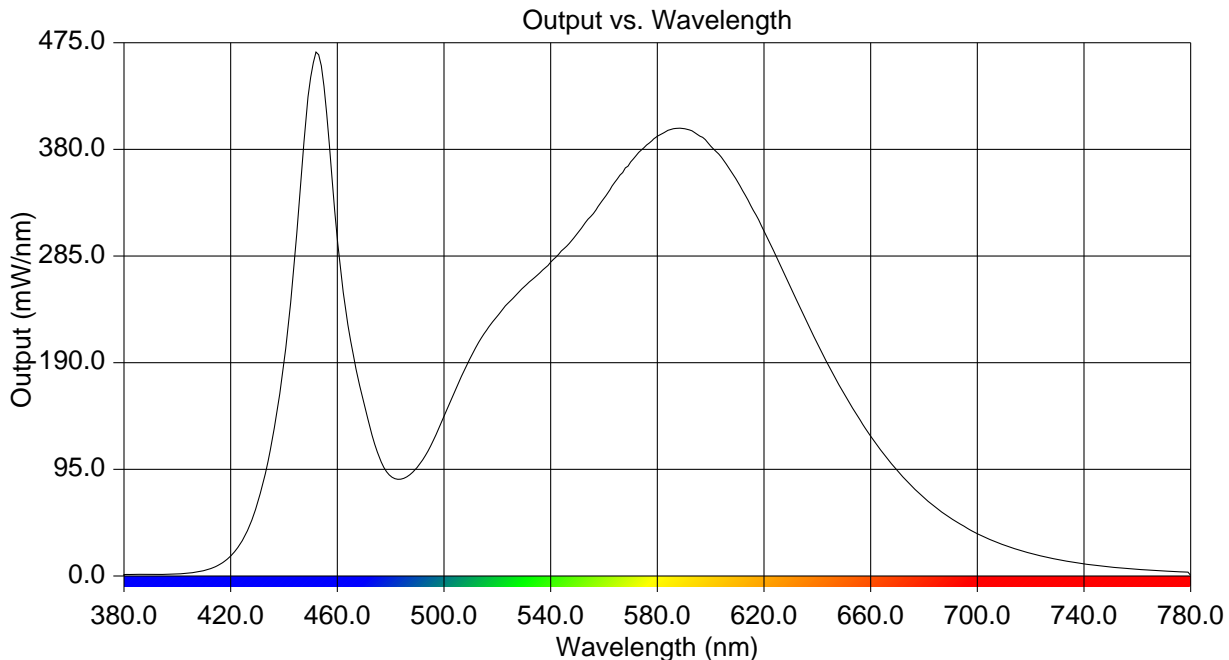
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Page 3 of 4

### RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	1.250	515	215.679	650	162.499
385	1.281	520	231.465	655	143.116
390	1.379	525	245.425	660	124.583
395	1.541	530	257.272	665	108.348
400	1.885	535	267.942	670	93.839
405	2.742	540	279.540	675	81.007
410	4.745	545	291.541	680	69.714
415	9.129	550	304.776	685	59.925
420	17.818	555	320.097	690	51.421
425	34.189	560	336.098	695	44.379
430	64.291	565	353.627	700	37.681
435	114.047	570	368.758	705	32.163
440	190.292	575	381.476	710	27.587
445	311.954	580	391.669	715	23.527
450	444.104	585	397.630	720	20.169
455	436.063	590	398.615	725	17.249
460	300.398	595	393.273	730	14.785
465	209.345	600	382.910	735	12.630
470	153.450	605	369.756	740	10.847
475	110.430	610	351.678	745	9.287
480	89.008	615	330.041	750	7.981
485	87.119	620	307.498	755	6.842
490	96.859	625	282.681	760	5.934
495	115.838	630	256.701	765	5.097
500	142.288	635	231.832	770	4.439
505	169.823	640	207.148	775	3.806
510	194.657	645	183.767	780	0.580



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Page 4 of 4

## CIE Chromaticity Diagram

