

REPORT NUMBER: RAB03417

ISSUE DATE: 05/23/17

PAGE: 1 OF 9

DATE SAMPLE TESTED: 05/23/17

CATALOG NUMBER: RAIL400YNW/D10, RAILP400YNW/D10 (Standard Distribution)

LUMINAIRE: EXTRUDED METAL HOUSING WITH HEAT SINK FINS, FOUR WHITE

CIRCUIT BOARD WITH THREE HUNDRED LEDS ON EACH BOARD, METAL

REFLECTOR WITH SPECULAR FINISH, FLAT TRANSLUCENT LENS WITH FROSTED SIDE IN.

LAMPS: TWELVE HUNDRED LIGHT EMITTING DIODES (LEDs).

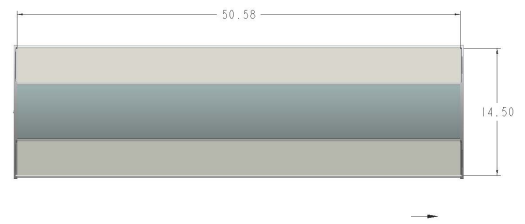
\*(SEE PAGE 2 FOR MORE INFORMATION)\*

### CANDELA DISTRIBUTION

	0.0	45.0	90.0	135.0	180.0
0	20348	20348	20348	20348	20348
5	20017	20246	20393	20289	20085
15	19028	19151	19215	19292	19230
25	17163	17085	17024	17303	17456
35	14633	14343	14093	14567	14914
45	11606	11231	10874	11435	11894
55	8484	8087	7776	8279	8751
65	5450	5136	4917	5319	5700
75	2610	2512	2492	2697	2866
85	407	766	1001	859	565
90	1	289	500	356	21
95	3	29	142	54	5
105	6	6	6	8	8
115	7	7	7	9	9
125	9	8	8	10	12
135	12	11	12	14	15
145	16	16	16	18	19
155	20	20	21	23	23
165	23	23	25	26	26
175	25	26	30	29	29
180	29	29	29	29	29

### FLUX

1920
5408
7909
9034
8742
7333
5198
2794
908
102
7
8
8
10
11
10
7
3



### ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	15238	30.8
0- 40	24272	49.1
0- 60	40348	81.7
0- 90	49248	99.7
90-120	117	0.2
90-130	125	0.3
90-150	145	0.3
90-180	164	0.3
0-180	49412	100.0

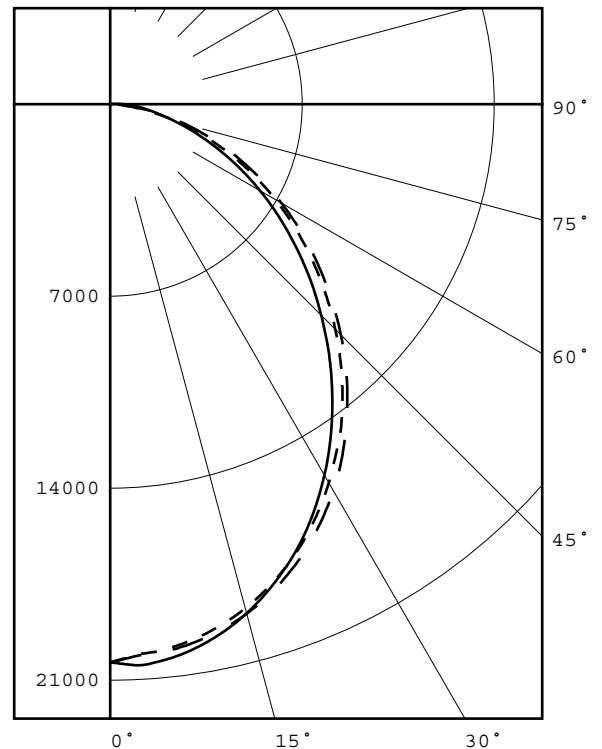
TOTAL INPUT WATTS = 400.3

EFFICACY = 123.4 Lm/W

CIE TYPE - DIRECT

PLANE : 0-DEG 90-DEG 180-DEG

SPACING CRITERIA : 1.2 1.2 1.2



#### LEGEND:

0-deg: - - - - -  
 90-deg: \_\_\_\_\_  
 180-deg: - - - - -

Checked P. ALBERS  
 Approved D. WANG-MUNSON

REPORT NUMBER: RAB03417

PAGE: 2 OF 9

ISSUE DATE: 05/23/17

DATE SAMPLE TESTED: 05/23/17

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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 = 400.34 W AT 120.0 VAC.

LED DRIVER: 4 x RDD-096-A2450

TEST PROCEDURE: IESNA LM-79-08

LM-80 DATA AVAILABLE FROM MANUFACTURER FOR SOLID STATE SOURCE

AMBIENT: 25.2

ACCREDITED LABORATORY CODE 201058-0

REPORT NUMBER: RAB03417

PAGE: 3 OF 9

ISSUE DATE: 05/23/17

DATE SAMPLE TESTED: 05/23/17

CATALOG NUMBER: RAIL400YNW/D10, RAILP400YNW/D10 (Standard Distribution)

PLANE : 0-DEG 90-DEG

BEAM ANGLE (50%) : 99.6 X 94.1 DEGREES

FIELD ANGLE (10%): 155.4 X 154.6 DEGREES

REPORT NUMBER: RAB03417  
ISSUE DATE: 05/23/17  
CATALOG NUMBER: RAIL400YNW/D10, RAILP400YNW/D10 (Standard Distribution)

PAGE: 4 OF 9

DATE SAMPLE TESTED: 05/23/17

PLANE : 0-DEG 90-DEG  
LUMINOUS LENGTH : 50.580 14.500

LUMINANCE DATA IN CANDELA/SQ METER			
ANGLE	AVERAGE	AVERAGE	AVERAGE
IN DEG	0-DEG	90-DEG	180-DEG
45	34676.	32489.	35536.
55	31249.	28641.	32233.
65	27244.	24580.	28494.
75	21305.	20341.	23394.
85	9866.	24264.	13696.

CATALOG NUMBER: RAIL400YNW/D10, RAILP400YNW/D10 (Standard Distribution)

[illegible]

REPORT NUMBER: RAB03417

PAGE: 6 OF 9

ISSUE DATE: 05/23/17

DATE SAMPLE TESTED: 05/23/17

CATALOG NUMBER: RAIL400YNW/D10, RAILP400YNW/D10 (Standard Distribution)

## ZONAL LUMEN SUMMARY

0- 5	486.
5- 10	1435.
10- 15	2317.
15- 20	3091.
20- 25	3723.
25- 30	4186.
30- 35	4468.
35- 40	4566.
40- 45	4487.
45- 50	4255.
50- 55	3896.
55- 60	3437.
60- 65	2896.
65- 70	2301.
70- 75	1688.
75- 80	1106.
80- 85	623.
85- 90	285.
90- 95	89.
95-100	13.
100-105	3.
105-110	4.
110-115	4.
115-120	4.
120-125	4.
125-130	4.
130-135	5.
135-140	5.
140-145	5.
145-150	5.
150-155	5.
155-160	5.
160-165	4.
165-170	3.
170-175	2.
175-180	1.

REPORT NUMBER: RAB03417

PAGE: 7 OF 9

ISSUE DATE: 05/23/17

DATE SAMPLE TESTED: 05/23/17

CATALOG NUMBER: RAIL400YNW/D10, RAILP400YNW/D10 (Standard Distribution)

### 5-DEGREE

#### ZONAL LUMEN SUMMARY

0- 5	486
5- 10	1435
10- 15	2317
15- 20	3091
20- 25	3723
25- 30	4186
30- 35	4468
35- 40	4566
40- 45	4487
45- 50	4255
50- 55	3896
55- 60	3437
60- 65	2896
65- 70	2301
70- 75	1688
75- 80	1106
80- 85	623
85- 90	285
90- 95	89
95-100	13
100-105	3
105-110	4
110-115	4
115-120	4
120-125	4
125-130	4
130-135	5
135-140	5
140-145	5
145-150	5
150-155	5
155-160	5
160-165	4
165-170	3
170-175	2
175-180	1

### 10-DEGREE

#### ZONAL LUMEN SUMMARY

0- 10	1920
0- 20	7329
0- 30	15238
0- 40	24272
0- 50	33015
0- 60	40348
0- 70	45545
0- 80	48340
0- 90	49248
0-100	49350
0-110	49357
0-120	49365
0-130	49373
0-140	49382
0-150	49393
0-160	49402
0-170	49409
0-180	49412

REPORT NUMBER: RAB03417  
ISSUE DATE: 05/23/17

PAGE: 8 OF 9  
DATE SAMPLE TESTED: 05/23/17

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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	100	97	106	102	99	95	98	95	92	94	92	89	90	88	87	84
2	100	92	85	80	97	90	84	79	86	81	77	83	79	75	80	77	73	71
3	91	81	73	67	89	80	72	66	77	70	65	74	69	64	71	67	63	61
4	84	72	64	57	82	71	63	57	68	62	56	66	60	55	64	59	55	52
5	77	65	56	50	75	64	56	49	62	54	49	60	53	48	58	52	48	46
6	72	59	50	44	70	58	50	44	56	49	43	54	48	43	53	47	42	40
7	67	53	45	39	65	53	44	39	51	44	38	50	43	38	48	42	38	36
8	62	49	41	35	61	48	40	35	47	40	35	46	39	34	44	38	34	32
9	58	45	37	32	57	44	37	31	43	36	31	42	36	31	41	35	31	29
10	55	42	34	29	53	41	34	29	40	33	28	39	33	28	38	32	28	26

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.

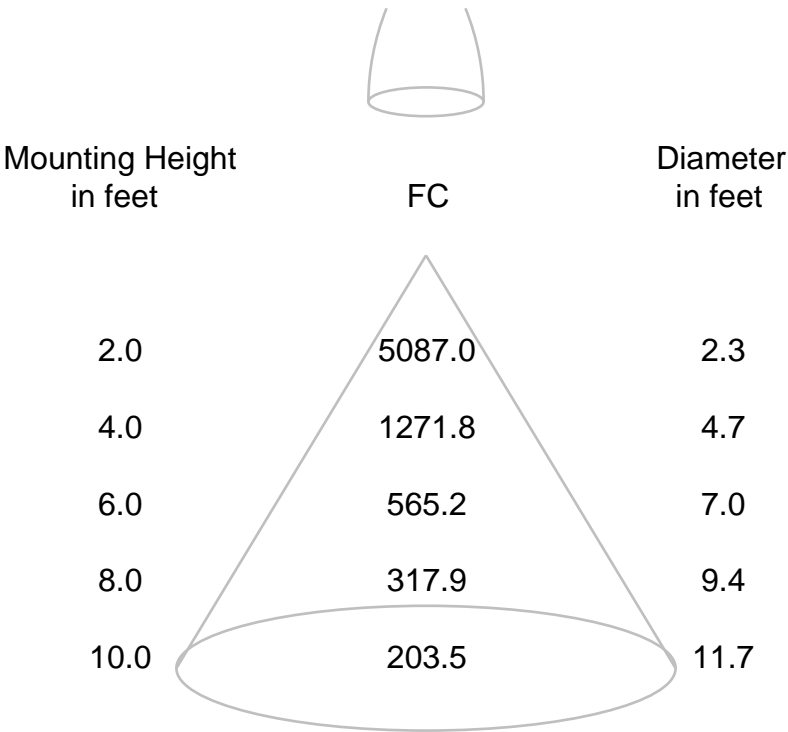


REPORT NUMBER: RAB03417  
 ISSUE DATE: 05/23/17  
 CATALOG NUMBER: RAIL400YNW/D10, RAILP400YNW/D10 (Standard Distribution)

PAGE: 9 OF 9  
 DATE SAMPLE TESTED: 05/23/17

# 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.

REPORT NUMBER: RAB03418  
DATE: 05/23/2017  
PREPARED FOR: RAB LIGHTING INC.  
CATALOG NUMBER: RAIL400YNW/D10, RAILP400YNW/D10 (Standard Distribution)

ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

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

LAMP: TWELVE HUNDRED LIGHT EMITTING DIODES (LEDS).

DRIVER: 4 x RDD-096-A2450

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	Calibration Due: N/A
	CHROMA PROGRAMMABLE DIGITAL POWER METER MODEL 66202	3/01/18
	OCEAN OPTICS QE65PRO Spectroradiometer	05/19/18
	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 (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 X.CAO

Approved D.WANG-MUNSON  
Lighting Engineer

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Page 2 of 4

### RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	49412 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4059
Chromaticity Ordinate y	0.3919
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2356
Chromaticity Ordinate v'	0.5118
Correlated Color Temp CCT (K)	3495
ANSI C78.377-2008 Duv	0.000
Total Radiant Flux (milliWatts)	150728 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	3.34
Input Power (Watts)	400.3
Input Power Factor (%)	99.9
Input Current THD (%)	2.7
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	123.4
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	1.47
Input Power (Watts)	388.9
Input Power Factor (%)	95.7
Input Current THD (%)	6.6
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	83
R1 Light greyish red	81
R2 Dark greyish yellow	89
R3 Strong yellowish green	95
R4 Moderate yellowish green	81
R5 Light bluish green	81
R6 Light blue	86
R7 Light violet	86
R8 Light reddish purple	64
R9 Strong red	11
R10 Strong yellow	74
R11 Strong green	79
R12 Strong blue	63
R13 Light yellowish pink (skin)	83
R14 Moderate olive green (leaf)	97

### \*NOTE:

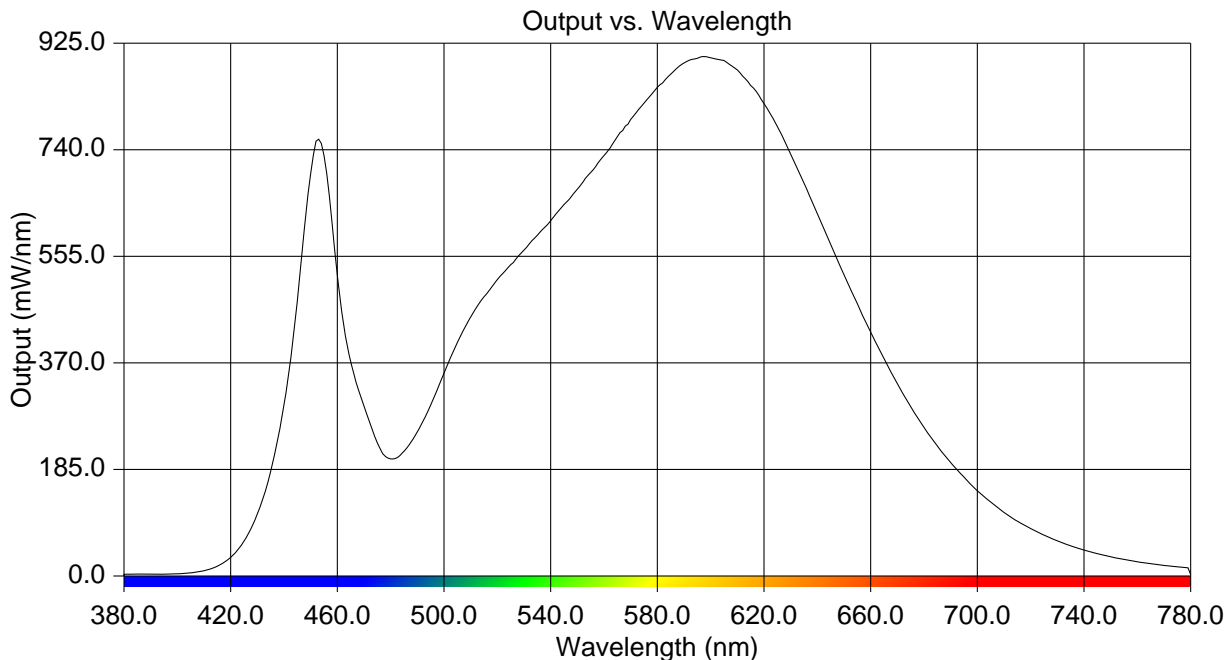
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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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Page 3 of 4

### RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	2.864	515	484.270	650	522.645
385	3.053	520	514.153	655	472.433
390	2.962	525	539.891	660	423.369
395	3.322	530	565.228	665	376.082
400	3.866	535	590.877	670	333.811
405	5.363	540	616.458	675	293.430
410	8.976	545	644.229	680	257.568
415	17.011	550	670.452	685	225.201
420	32.306	555	699.811	690	196.378
425	60.024	560	729.100	695	171.542
430	107.152	565	761.898	700	147.804
435	181.736	570	791.804	705	128.178
440	296.647	575	820.056	710	110.305
445	478.979	580	847.545	715	94.925
450	697.787	585	870.216	720	82.417
455	729.330	590	889.966	725	70.997
460	521.678	595	897.834	730	60.969
465	371.514	600	898.938	735	52.325
470	294.172	605	894.094	740	45.019
475	230.919	610	877.717	745	38.747
480	203.206	615	850.661	750	33.360
485	216.294	620	819.355	755	28.642
490	249.744	625	779.331	760	24.549
495	296.425	630	731.727	765	21.295
500	351.901	635	682.165	770	18.465
505	403.885	640	628.210	775	15.923
510	449.220	645	575.524	780	2.400



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Page 4 of 4

## CIE Chromaticity Diagram

