

REPORT NUMBER: RAB03141

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ISSUE DATE: 04/05/17

DATE SAMPLE TESTED: 04/05/17

CATALOG NUMBER: RAIL225YNW/D10, RAILP225YNW/D10 (Standard Distribution)

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

LAMPS: SIX HUNDRED 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.

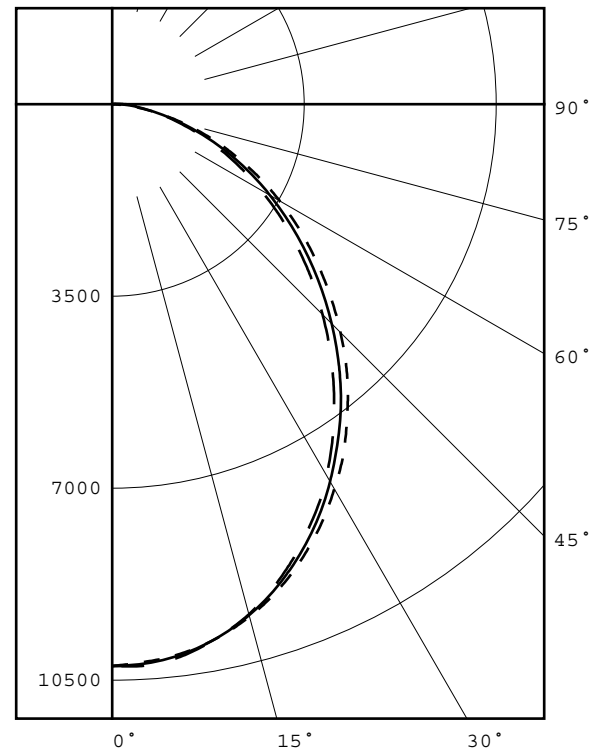
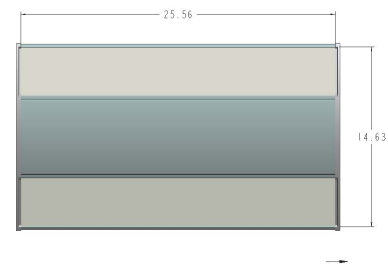
(SEE PAGE 2 FOR MORE INFORMATION)

CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0
0	10240	10240	10240	10240	10240
5	10155	10163	10178	10197	10215
15	9672	9662	9643	9629	9626
25	8720	8685	8610	8533	8504
35	7417	7355	7218	7084	7042
45	5887	5801	5659	5482	5423
55	4296	4217	4077	3906	3865
65	2768	2704	2600	2464	2434
75	1350	1321	1284	1221	1216
85	240	286	387	446	471
90	9	59	146	204	229
95	1	2	16	44	59
105	2	3	3	3	4
115	3	3	3	3	3
125	3	3	3	3	3
135	4	4	4	4	4
145	5	5	5	5	5
155	6	6	6	6	7
165	7	7	7	8	8
175	7	8	8	9	9
180	9	9	9	9	9

FLUX

966
2716
3961
4514
4360
3643
2572
1367
429
43
3
3
3
3
3
2
1



LEGEND:
 0-deg: - - - - -
 45-deg: - - - - -
 90-deg: - - - - -

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	7642	31.1
0- 40	12156	49.4
0- 60	20158	82.0
0- 90	24526	99.7
90-120	49	0.2
90-130	52	0.2
90-150	59	0.2
90-180	65	0.3
0-180	24590	100.0

TOTAL INPUT WATTS = 201.8

EFFICACY = 121.9 Lm/W

CIE TYPE - DIRECT

PLANE : 0-DEG 90-DEG

SPACING CRITERIA : 1.2 1.1

Checked P. ALBERS
 Approved D. WANG-MUNSON

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ADDITIONAL INFORMATION

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.

TOTAL INPUT WATTS = 201.76 W AT 120.0 VAC.

LED DRIVER: 2 x RDD-096-A2450

TEST PROCEDURE: IESNA LM-79-08

LM-80 DATA AVAILABLE FROM MANUFACTURER FOR SOLID STATE SOURCE

AMBIENT: 24.4

ACCREDITED LABORATORY CODE 201058-0

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PLANE : 0-DEG 90-DEG

BEAM ANGLE (50%) : 99.5 X 93.8 DEGREES

FIELD ANGLE (10%): 155.1 X 153.9 DEGREES

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PLANE : 0-DEG 90-DEG
LUMINOUS LENGTH :25.560 14.630

LUMINANCE DATA IN CANDELA/SQ METER

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 45-DEG	AVERAGE 90-DEG
45	34497.	33161.	31778.
55	31034.	29452.	27921.
65	27139.	25491.	23864.
75	21613.	20556.	19467.
85	11410.	18399.	22392.

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CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0
0.0	10240	10240	10240	10240	10240
5.0	10155	10163	10178	10197	10215
10.0	9976	9976	9982	9987	9988
15.0	9672	9662	9643	9629	9626
20.0	9250	9227	9178	9128	9115
25.0	8720	8685	8610	8533	8504
30.0	8100	8062	7944	7837	7819
35.0	7417	7355	7218	7084	7042
40.0	6680	6599	6456	6285	6235
45.0	5887	5801	5659	5482	5423
50.0	5085	5005	4855	4679	4636
55.0	4296	4217	4077	3906	3865
60.0	3524	3449	3324	3167	3130
65.0	2768	2704	2600	2464	2434
70.0	2039	1989	1913	1813	1795
75.0	1350	1321	1284	1221	1216
80.0	730	733	752	755	769
85.0	240	286	387	446	471
90.0	9	59	146	204	229
95.0	1	2	16	44	59
100.0	2	2	3	3	3
105.0	2	3	3	3	4
110.0	3	3	3	3	3
115.0	3	3	3	3	3
120.0	3	3	3	3	3
125.0	3	3	3	3	3
130.0	3	4	3	4	4
135.0	4	4	4	4	4
140.0	4	4	4	5	5
145.0	5	5	5	5	5
150.0	5	6	6	6	6
155.0	6	6	6	6	7
160.0	7	7	7	7	7
165.0	7	7	7	8	8
170.0	7	7	8	8	8
175.0	7	8	8	9	9
180.0	9	9	9	9	9

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ZONAL LUMEN SUMMARY

0- 5	244.
5- 10	721.
10- 15	1164.
15- 20	1551.
20- 25	1865.
25- 30	2096.
30- 35	2234.
35- 40	2280.
40- 45	2239.
45- 50	2120.
50- 55	1937.
55- 60	1706.
60- 65	1435.
65- 70	1137.
70- 75	830.
75- 80	537.
80- 85	297.
85- 90	132.
90- 95	38.
95-100	5.
100-105	2.
105-110	2.
110-115	2.
115-120	1.
120-125	1.
125-130	1.
130-135	2.
135-140	2.
140-145	2.
145-150	2.
150-155	2.
155-160	1.
160-165	1.
165-170	1.
170-175	1.
175-180	0.

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5-DEGREE

ZONAL LUMEN SUMMARY

0- 5	244
5- 10	721
10- 15	1164
15- 20	1551
20- 25	1865
25- 30	2096
30- 35	2234
35- 40	2280
40- 45	2239
45- 50	2120
50- 55	1937
55- 60	1706
60- 65	1435
65- 70	1137
70- 75	830
75- 80	537
80- 85	297
85- 90	132
90- 95	38
95-100	5
100-105	2
105-110	2
110-115	2
115-120	1
120-125	1
125-130	1
130-135	2
135-140	2
140-145	2
145-150	2
150-155	2
155-160	1
160-165	1
165-170	1
170-175	1
175-180	0

10-DEGREE

ZONAL LUMEN SUMMARY

0- 10	966
0- 20	3681
0- 30	7642
0- 40	12156
0- 50	16516
0- 60	20158
0- 70	22730
0- 80	24096
0- 90	24526
0-100	24569
0-110	24572
0-120	24575
0-130	24578
0-140	24581
0-150	24585
0-160	24587
0-170	24590
0-180	24590

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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	85	80	97	90	84	79	87	81	77	83	79	75	80	77	74	72
3	91	81	74	67	89	80	72	67	77	71	65	74	69	64	71	67	63	61
4	84	72	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	52	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	34	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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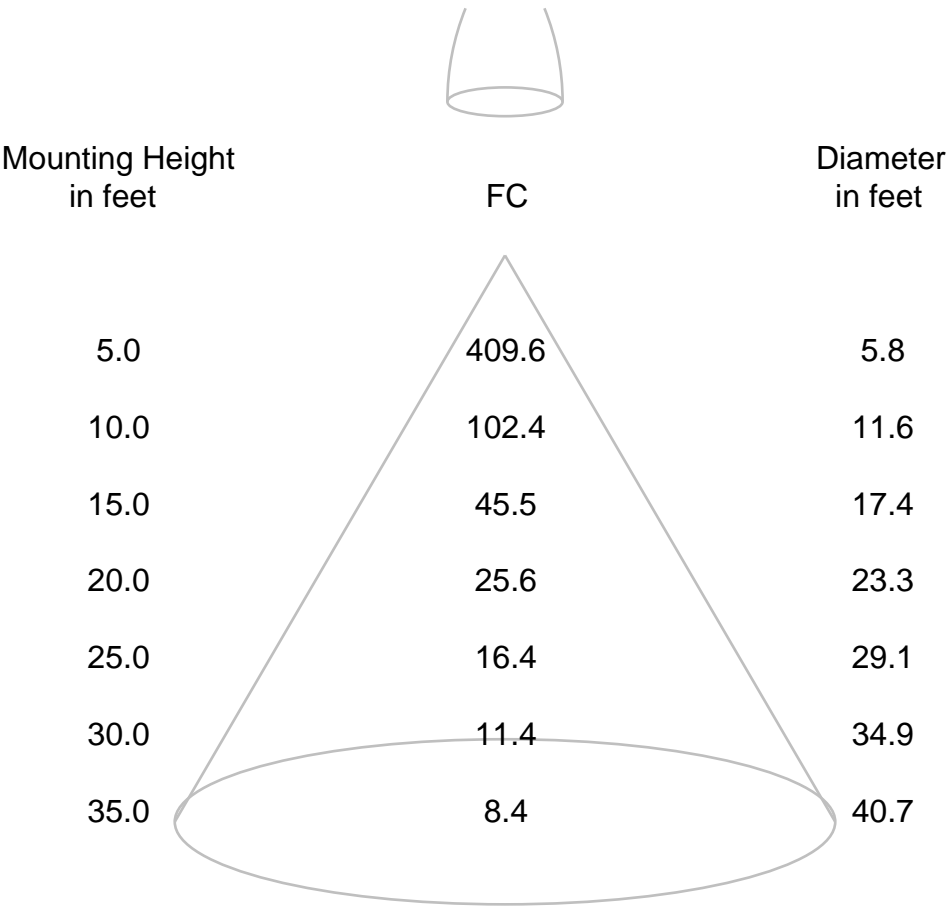
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CONE OF LIGHT DIAGRAM

(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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DATE: 04/03/2017
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: RAIL225YNW/D10, RAILP225YNW/D10 (Standard Distribution)

ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

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

LAMP: SIX HUNDRED LIGHT EMITTING DIODES (LEDS).

DRIVER: 2 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:
	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	03/07/18

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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RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	24590 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4052
Chromaticity Ordinate y	0.3911
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2355
Chromaticity Ordinate v'	0.5114
Correlated Color Temp CCT (K)	3506
ANSI C78.377-2008 Duv	0.000
Total Radiant Flux (milliWatts)	74958 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	1.68
Input Power (Watts)	201.8
Input Power Factor (%)	99.9
Input Current THD (%)	2.5
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	121.9
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.739
Input Power (Watts)	195.7
Input Power Factor (%)	95.5
Input Current THD (%)	6.7
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	85
R7 Light violet	85
R8 Light reddish purple	63
R9 Strong red	11
R10 Strong yellow	74
R11 Strong green	79
R12 Strong blue	63
R13 Light yellowish pink (skin)	82
R14 Moderate olive green (leaf)	97

*NOTE:

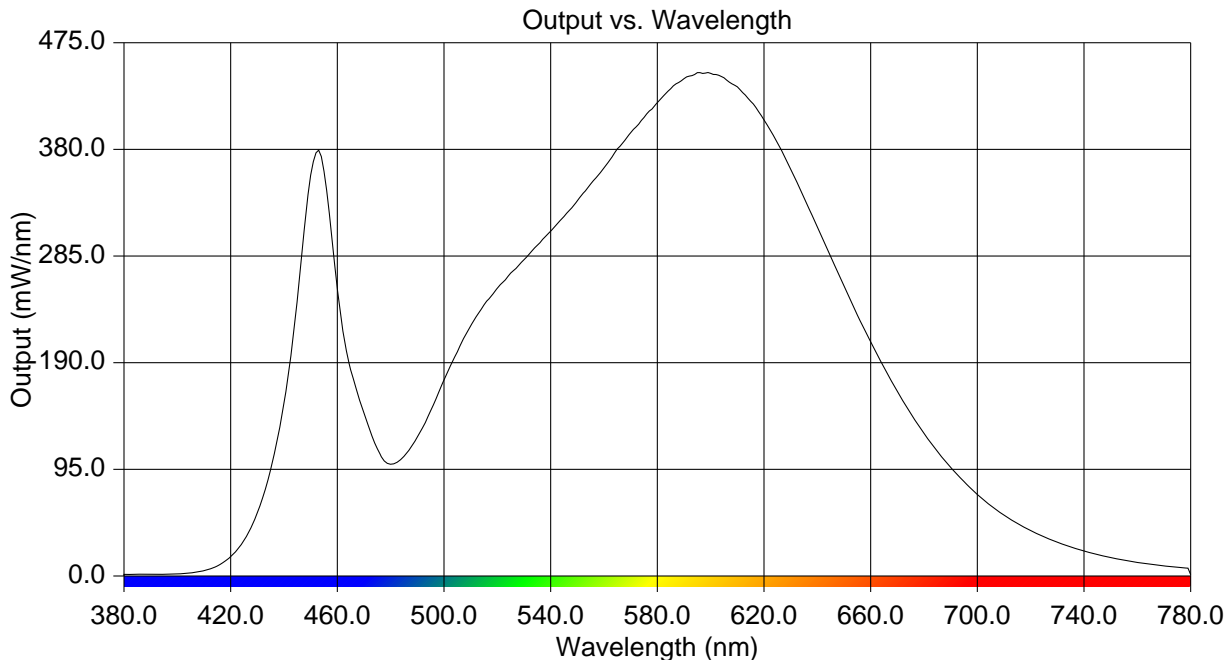
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RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	1.443	515	241.458	650	258.074
385	1.516	520	256.411	655	232.431
390	1.501	525	269.767	660	208.492
395	1.601	530	281.699	665	185.642
400	1.942	535	294.562	670	164.711
405	2.748	540	307.036	675	144.772
410	4.685	545	320.169	680	127.060
415	8.924	550	333.822	685	110.907
420	17.165	555	349.138	690	96.496
425	31.799	560	363.319	695	84.134
430	56.379	565	380.414	700	72.830
435	94.862	570	395.024	705	62.972
440	153.445	575	408.338	710	54.268
445	246.059	580	421.623	715	46.700
450	357.007	585	433.929	720	40.383
455	360.457	590	442.928	725	34.827
460	255.816	595	448.301	730	30.027
465	183.525	600	447.667	735	25.820
470	144.920	605	443.720	740	22.111
475	113.356	610	435.684	745	19.106
480	99.351	615	422.798	750	16.504
485	106.792	620	406.189	755	14.106
490	123.650	625	386.371	760	12.209
495	147.228	630	362.084	765	10.432
500	174.651	635	337.209	770	9.074
505	199.588	640	311.017	775	7.840
510	222.775	645	284.313	780	1.180



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CIE Chromaticity Diagram

