

REPORT NUMBER: RAB03410

ISSUE DATE: 05/19/17

PAGE: 1 OF 9

DATE SAMPLE TESTED: 05/19/17

CATALOG NUMBER: RAIL150YNW/480/D10, RAILP150YNW/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 TEN LEDS ON EACH BOARD, METAL REFLECTOR WITH SPECULAR FINISH, FLAT TRANSLUCENT LENS WITH FROSTED SIDE IN.

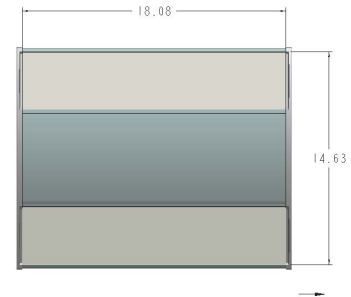
LAMPS: FOUR HUNDRED AND TWENTY LIGHT EMITTING DIODES (LEDs).

(SEE PAGE 2 FOR MORE INFORMATION)

CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0	
0	7118	7118	7118	7118	7118	
5	7084	7090	7085	7072	7078	672
15	6750	6748	6716	6681	6677	1890
25	6072	6055	5985	5919	5895	2753
35	5143	5112	5008	4917	4864	3132
45	4080	4023	3904	3802	3770	3021
55	2975	2927	2827	2717	2688	2529
65	1914	1874	1806	1729	1699	1788
75	931	913	889	857	846	949
85	161	193	264	310	326	296
90	1	37	97	140	155	
95	0	0	9	30	38	28
105	0	0	1	1	1	1
115	1	1	1	1	1	1
125	1	1	1	1	1	1
135	2	2	2	2	2	2
145	3	3	3	3	3	2
155	3	3	4	4	4	2
165	4	4	4	4	4	1
175	4	5	5	5	5	0
180	5	5	5	5	5	

FLUX



ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	5315	31.1
0- 40	8447	49.5
0- 60	13997	82.0
0- 90	17030	99.8
90-120	30	0.2
90-130	31	0.2
90-150	34	0.2
90-180	37	0.2
0-180	17067	100.0

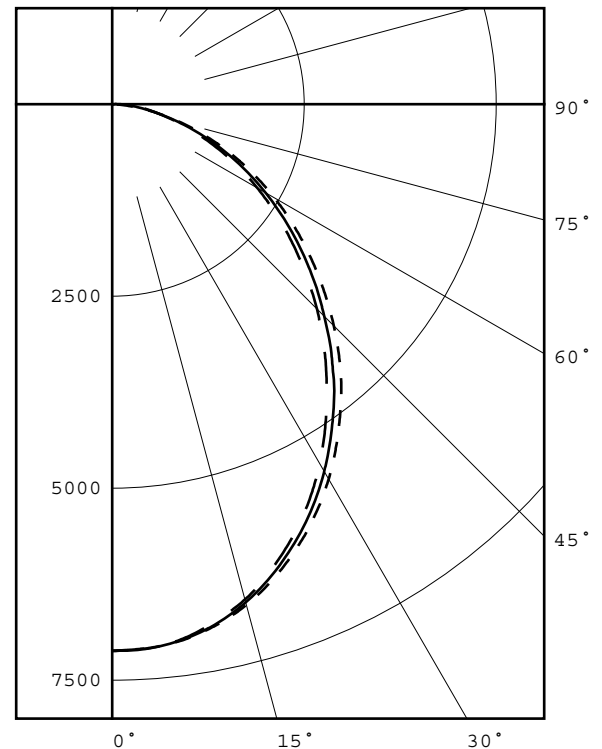
TOTAL INPUT WATTS = 134.9

EFFICACY = 126.5 Lm/W

CIE TYPE - DIRECT

PLANE : 0-DEG 90-DEG

SPACING CRITERIA : 1.2 1.1



LEGEND:

0-deg: - - - - -
45-deg: _____
90-deg: - - - - -

Checked

X.CAO

Approved

D.WANG-MUNSON

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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 = 134.95 W AT 480.0 VAC.

LED DRIVER: 2 x RDD-H65-42B-A1400

TEST PROCEDURE: IESNA LM-79-08

LM-80 DATA AVAILABLE FROM MANUFACTURER FOR SOLID STATE SOURCE

AMBIENT: 24.5

ACCREDITED LABORATORY CODE 201058-0

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Distribution) (ALSO APPLIES TO 347 RCL)

PLANE : 0-DEG 90-DEG

BEAM ANGLE (50%) : 99.3 X 93.8 DEGREES

FIELD ANGLE (10%): 154.9 X 154.0 DEGREES

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CATALOG NUMBER: RAIL150YNW/480/D10, RAILP150YNW/480/D10 (Standard

PLANE : 0-DEG 90-DEG
LUMINOUS LENGTH :18.080 14.630

LUMINANCE DATA IN CANDELA/SQ METER

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 45-DEG	AVERAGE 90-DEG
45	33799.	32341.	31231.
55	30383.	28871.	27452.
65	26529.	25032.	23549.
75	21071.	20120.	19147.
85	10821.	17744.	21911.

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CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0
0.0	7118	7118	7118	7118	7118
5.0	7084	7090	7085	7072	7078
10.0	6964	6966	6953	6927	6925
15.0	6750	6748	6716	6681	6677
20.0	6443	6435	6384	6332	6318
25.0	6072	6055	5985	5919	5895
30.0	5637	5611	5521	5445	5405
35.0	5143	5112	5008	4917	4864
40.0	4634	4580	4466	4367	4318
45.0	4080	4023	3904	3802	3770
50.0	3521	3464	3361	3251	3219
55.0	2975	2927	2827	2717	2688
60.0	2439	2394	2305	2203	2183
65.0	1914	1874	1806	1729	1699
70.0	1407	1376	1329	1271	1242
75.0	931	913	889	857	846
80.0	502	503	517	532	535
85.0	161	193	264	310	326
90.0	1	37	97	140	155
95.0	0	0	9	30	38
100.0	0	0	1	1	1
105.0	0	0	1	1	1
110.0	1	1	1	1	1
115.0	1	1	1	1	1
120.0	1	1	1	1	1
125.0	1	1	1	1	1
130.0	1	1	2	2	2
135.0	2	2	2	2	2
140.0	2	2	2	3	3
145.0	3	3	3	3	3
150.0	3	3	3	3	4
155.0	3	3	4	4	4
160.0	4	4	4	4	4
165.0	4	4	4	4	4
170.0	4	4	4	5	5
175.0	4	5	5	5	5
180.0	5	5	5	5	5

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CATALOG NUMBER: RAIL150YNW/480/D10, RAILP150YNW/480/D10 (Standard

ZONAL LUMEN SUMMARY

0- 5	170.
5- 10	502.
10- 15	810.
15- 20	1079.
20- 25	1297.
25- 30	1457.
30- 35	1551.
35- 40	1582.
40- 45	1552.
45- 50	1469.
50- 55	1344.
55- 60	1184.
60- 65	997.
65- 70	791.
70- 75	576.
75- 80	373.
80- 85	206.
85- 90	90.
90- 95	25.
95-100	3.
100-105	0.
105-110	0.
110-115	0.
115-120	0.
120-125	0.
125-130	1.
130-135	1.
135-140	1.
140-145	1.
145-150	1.
150-155	1.
155-160	1.
160-165	1.
165-170	1.
170-175	0.
175-180	0.

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CATALOG NUMBER: RAIL150YNW/480/D10, RAILP150YNW/480/D10 (Standard Distribution) (ALSO APPLIES TO 347 RCL)

5-DEGREE

ZONAL LUMEN SUMMARY

0- 5	170
5- 10	502
10- 15	810
15- 20	1079
20- 25	1297
25- 30	1457
30- 35	1551
35- 40	1582
40- 45	1552
45- 50	1469
50- 55	1344
55- 60	1184
60- 65	997
65- 70	791
70- 75	576
75- 80	373
80- 85	206
85- 90	90
90- 95	25
95-100	3
100-105	0
105-110	0
110-115	0
115-120	0
120-125	0
125-130	1
130-135	1
135-140	1
140-145	1
145-150	1
150-155	1
155-160	1
160-165	1
165-170	1
170-175	0
175-180	0

10-DEGREE

ZONAL LUMEN SUMMARY

0- 10	672
0- 20	2562
0- 30	5315
0- 40	8447
0- 50	11468
0- 60	13997
0- 70	15785
0- 80	16734
0- 90	17030
0-100	17058
0-110	17058
0-120	17059
0-130	17060
0-140	17062
0-150	17064
0-160	17066
0-170	17067
0-180	17067

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CATALOG NUMBER: RAIL150YNW/480/D10, RAILP150YNW/480/D10 (Standard

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	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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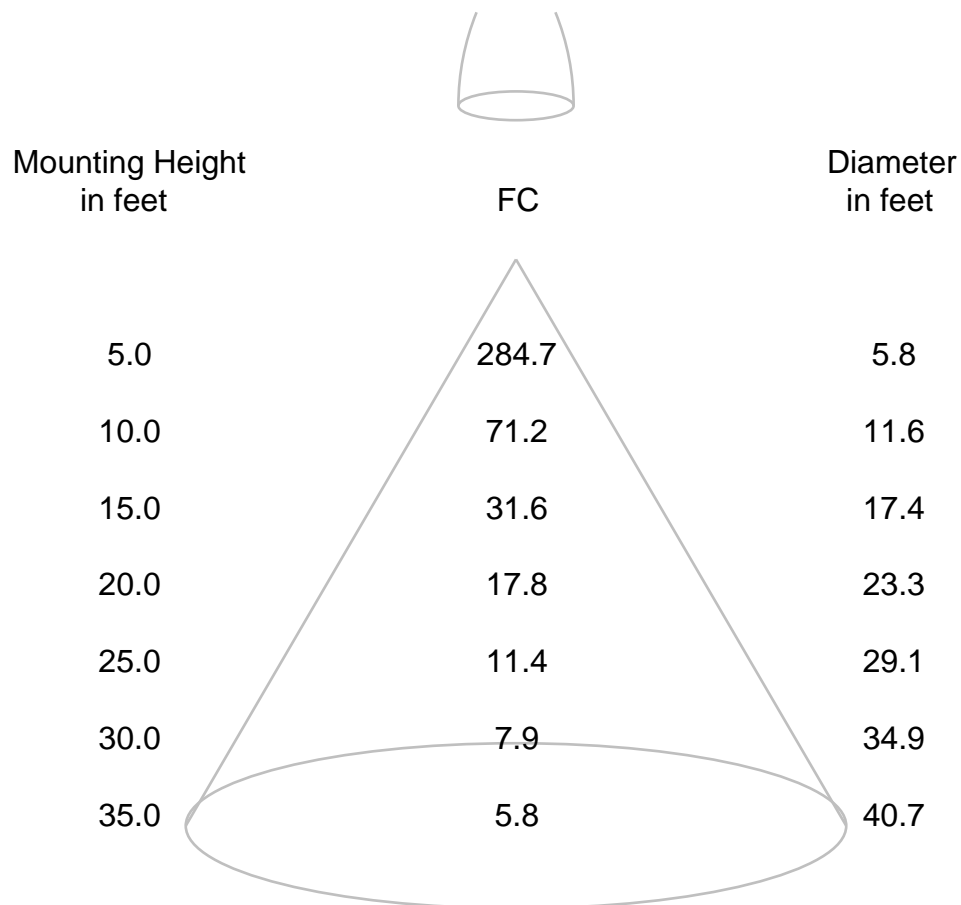
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CONE OF LIGHT DIAGRAM

(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.

REPORT NUMBER: RAB03411
DATE: 05/19/2017
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: RAIL150YNW/480/D10, RAILP150YNW/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 TEN LEDS ON EACH BOARD, METAL REFLECTOR WITH SPECULAR FINISH, FLAT TRANSLUCENT LENS WITH FROSTED SIDE IN.
LAMP: FOUR HUNDRED AND TWENTY LIGHT EMITTING DIODES (LEDS).
DRIVER: 2 x RDD-H65-42B-A1400
OBJECT OF TEST: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT THE RATED INPUT VOLTAGES (480.0 AND 347.0 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
3/01/18
05/19/18
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 (347.0 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)	17067 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4054
Chromaticity Ordinate y	0.3916
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2354
Chromaticity Ordinate v'	0.5116
Correlated Color Temp CCT (K)	3504
ANSI C78.377-2008 Duv	0.000
Total Radiant Flux (milliWatts)	52015 *
ELECTRICAL	
Input Voltage (Volts AC)	480.0
Input Current (Amps AC)	0.297
Input Power (Watts)	134.9
Input Power Factor (%)	94.5
Input Current THD (%)	13.1
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	126.5
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	347.0
Input Current (Amps AC)	0.386
Input Power (Watts)	132.3
Input Power Factor (%)	98.8
Input Current THD (%)	5.7
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	86
R7 Light violet	85
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:

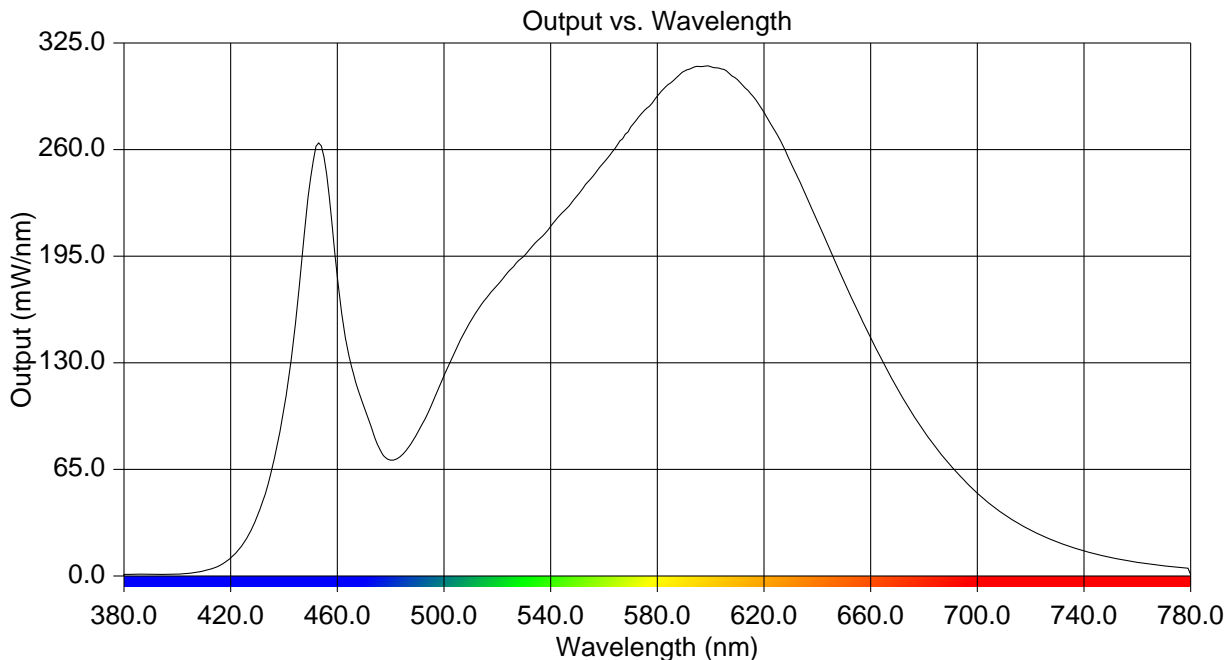
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even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

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.930	515	167.641	650	179.339
385	0.998	520	177.222	655	162.073
390	0.998	525	186.892	660	145.017
395	1.032	530	194.921	665	129.150
400	1.287	535	204.226	670	114.305
405	1.772	540	213.079	675	100.607
410	2.975	545	222.362	680	88.348
415	5.658	550	231.630	685	77.033
420	10.923	555	241.962	690	67.126
425	20.265	560	251.964	695	58.520
430	36.471	565	262.645	700	50.447
435	62.109	570	273.566	705	43.607
440	101.839	575	283.443	710	37.642
445	165.265	580	292.571	715	32.349
450	242.731	585	300.484	720	27.938
455	255.292	590	307.708	725	23.966
460	182.280	595	310.601	730	20.692
465	129.737	600	310.401	735	17.795
470	102.999	605	308.699	740	15.279
475	80.292	610	302.535	745	13.151
480	70.529	615	293.904	750	11.285
485	74.958	620	282.584	755	9.725
490	87.063	625	268.890	760	8.377
495	102.995	630	252.041	765	7.172
500	122.009	635	234.551	770	6.221
505	139.994	640	216.349	775	5.376
510	155.456	645	198.101	780	0.801



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CIE Chromaticity Diagram

