

REPORT NUMBER: RAB01687

ISSUE DATE: 01/29/16

PREPARED FOR: RAB LIGHTING INC.

CATALOG NUMBER: RAIL150YNW/480

LUMINAIRE: EXTRUDED METAL HOUSING WITH HEAT SINK FINS, FOUR WHITE
CIRCUIT BOARD WITH NINETY SIX LEDS ON EACH BOARD, METAL REFLECTOR
WITH SPECULAR FINISH, FLAT TRANSLUCENT LENS WITH FROSTED SIDE IN.
LAMPS: THREE HUNDRED AND EIGHTY FOUR LIGHT EMITTING DIODES (LEDs).

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.

TOTAL INPUT WATTS = 149.11 W AT 480.0 VAC.

LED DRIVER: 2 x RD-S075-A1400/480

(SEE PAGE 2 FOR MORE INFORMATION)

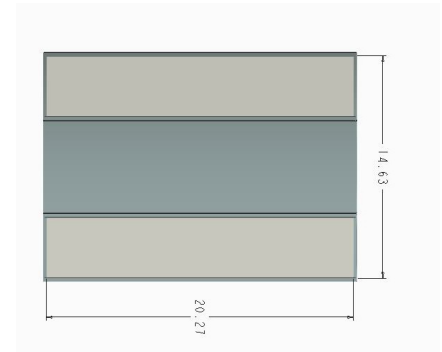
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CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0
0	6724	6724	6724	6724	6724
5	6689	6692	6687	6680	6683
15	6396	6386	6348	6313	6305
25	5792	5764	5677	5596	5566
35	4930	4882	4755	4636	4578
45	3905	3838	3696	3557	3489
55	2834	2787	2642	2530	2465
65	1816	1780	1670	1591	1541
75	900	875	815	781	750
85	171	184	206	234	236
90	5	29	62	88	93
95	0	0	1	9	11
105	0	0	1	1	1
115	1	1	1	1	1
125	1	1	1	1	1
135	2	2	2	2	2
145	2	2	3	3	3
155	3	3	3	4	4
165	3	3	4	4	4
175	4	4	4	5	5
180	4	4	4	4	4

FLUX

634
1787
2612
2972
2854
2372
1667
880
248
14
1
1
1
1
2
2
1
0



ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	5034	31.4
0- 40	8005	49.9
0- 60	13231	82.4
0- 90	16026	99.9
90-120	16	0.1
90-130	17	0.1
90-150	20	0.1
90-180	23	0.1
0-180	16050	100.0

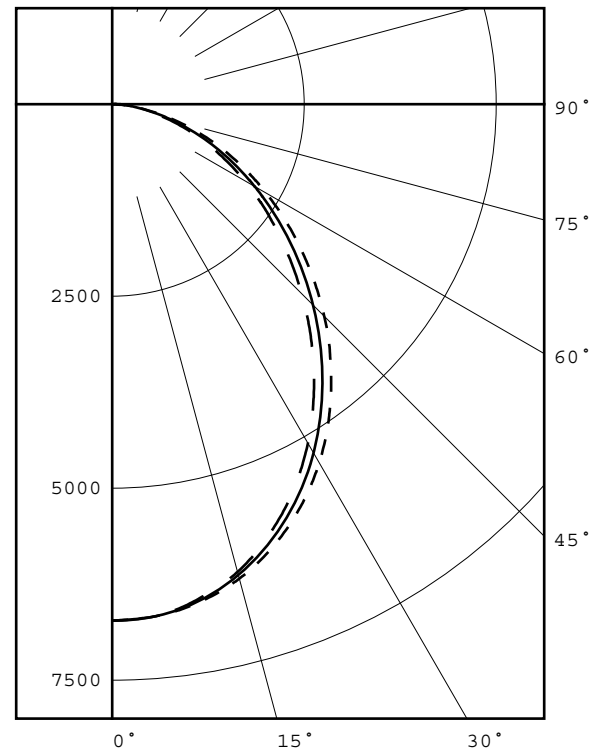
TOTAL INPUT WATTS = 149.1

EFFICACY = 107.6 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

TEST PROCEDURE: IESNA LM-79-08
TEST DISTANCE: 28.25 FEET
ACCREDITED LABORATORY CODE 201058-0
LM-80 DATA AVAILABLE FROM MANUFACTURER FOR SOLID STATE SOURCE

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PLANE : 0-DEG 90-DEG
BEAM ANGLE (50%) : 100.1 X 92.4 DEGREES
FIELD ANGLE (10%) : 155.4 X 152.4 DEGREES

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PLANE : 0-DEG 90-DEG
LUMINOUS LENGTH :20.270 14.630

LUMINANCE DATA IN CANDELA/SQ METER

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 45-DEG	AVERAGE 90-DEG
45	28854.	27310.	25781.
55	25816.	24067.	22454.
65	22451.	20646.	19052.
75	18169.	16453.	15141.
85	10251.	12349.	14148.

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CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0
0.0	6724	6724	6724	6724	6724
5.0	6689	6692	6687	6680	6683
10.0	6580	6580	6564	6541	6534
15.0	6396	6386	6348	6313	6305
20.0	6128	6109	6046	5987	5968
25.0	5792	5764	5677	5596	5566
30.0	5391	5352	5243	5137	5096
35.0	4930	4882	4755	4636	4578
40.0	4425	4376	4231	4101	4036
45.0	3905	3838	3696	3557	3489
50.0	3365	3304	3165	3030	2959
55.0	2834	2787	2642	2530	2465
60.0	2315	2265	2143	2046	1988
65.0	1816	1780	1670	1591	1541
70.0	1350	1312	1226	1165	1127
75.0	900	875	815	781	750
80.0	493	487	462	455	443
85.0	171	184	206	234	236
90.0	5	29	62	88	93
95.0	0	0	1	9	11
100.0	0	0	0	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	2	3
145.0	2	2	3	3	3
150.0	3	3	3	3	3
155.0	3	3	3	4	4
160.0	3	3	4	4	4
165.0	3	3	4	4	4
170.0	4	4	4	4	4
175.0	4	4	4	5	5
180.0	4	4	4	4	4

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ZONAL LUMEN SUMMARY

0- 5	160.
5- 10	474.
10- 15	766.
15- 20	1022.
20- 25	1230.
25- 30	1382.
30- 35	1472.
35- 40	1500.
40- 45	1468.
45- 50	1385.
50- 55	1263.
55- 60	1109.
60- 65	930.
65- 70	737.
70- 75	536.
75- 80	344.
80- 85	180.
85- 90	68.
90- 95	14.
95-100	1.
100-105	0.
105-110	0.
110-115	1.
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	0.
170-175	0.
175-180	0.

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5-DEGREE ZONAL LUMEN SUMMARY

0- 5	160
5- 10	474
10- 15	766
15- 20	1022
20- 25	1230
25- 30	1382
30- 35	1472
35- 40	1500
40- 45	1468
45- 50	1385
50- 55	1263
55- 60	1109
60- 65	930
65- 70	737
70- 75	536
75- 80	344
80- 85	180
85- 90	68
90- 95	14
95-100	1
100-105	0
105-110	0
110-115	1
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	0
170-175	0
175-180	0

10-DEGREE ZONAL LUMEN SUMMARY

0- 10	634
0- 20	2422
0- 30	5034
0- 40	8005
0- 50	10859
0- 60	13231
0- 70	14898
0- 80	15778
0- 90	16026
0-100	16041
0-110	16041
0-120	16042
0-130	16043
0-140	16045
0-150	16047
0-160	16048
0-170	16049
0-180	16050

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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	103	99	96	98	95	93	94	92	90	91	89	87	85
2	100	92	86	80	97	90	84	79	87	82	77	84	79	76	80	77	74	72
3	92	82	74	68	89	80	73	67	77	71	66	74	69	65	72	67	63	61
4	84	73	64	58	82	71	64	57	69	62	57	67	61	56	64	59	55	53
5	78	65	57	50	76	64	56	50	62	55	49	60	54	49	58	53	48	46
6	72	59	50	44	70	58	50	44	56	49	44	55	48	43	53	47	43	41
7	67	54	45	39	65	53	45	39	51	44	39	50	43	39	49	43	38	36
8	62	49	41	35	61	49	41	35	47	40	35	46	39	35	45	39	35	33
9	58	45	37	32	57	45	37	32	44	37	32	42	36	31	41	36	31	30
10	55	42	34	29	54	41	34	29	40	34	29	39	33	29	39	33	29	27

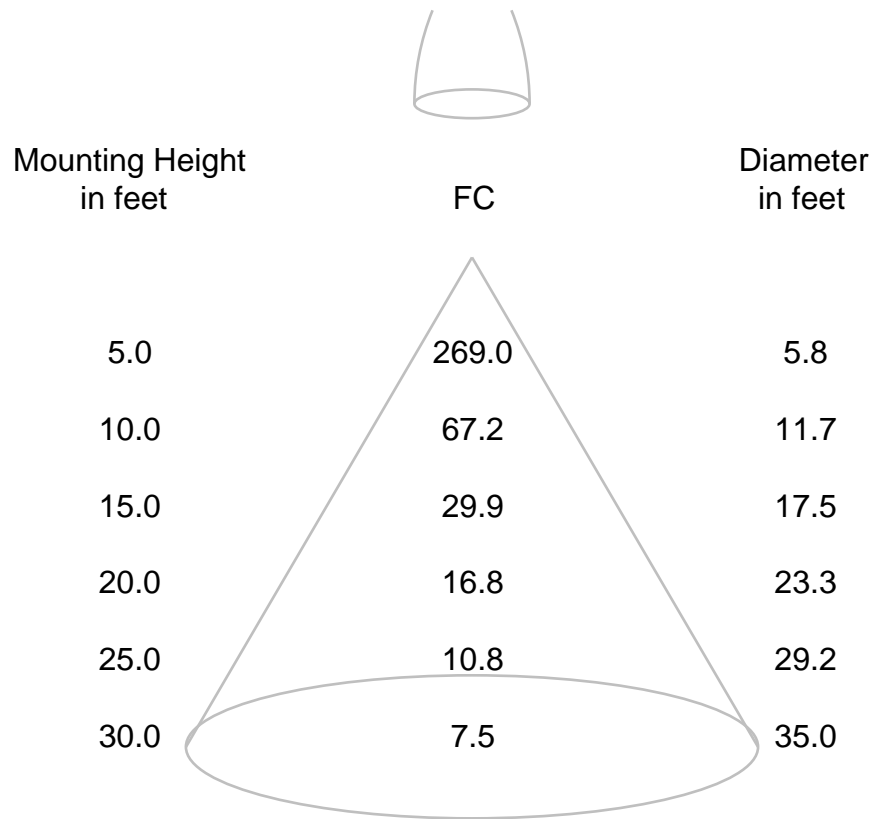
ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS LUMINAIRE SAMPLE.

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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: 1/29/2016
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: RAIL150YNW/480

ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

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

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

DRIVER: 2 x RD-S075-A1400/480

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	Calibration Due: N/A
	CHROMA PROGRAMMABLE DIGITAL POWER METER MODEL 66202	3/9/16
	OCEAN OPTICS QE65PRO Spectroradiometer	1/25/17
	RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry	1/25/17

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)	16050 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4064
Chromaticity Ordinate y	0.3881
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2375
Chromaticity Ordinate v'	0.5103
Correlated Color Temp CCT (K)	3454
ANSI C78.377-2008 Duv	-0.001
Total Radiant Flux (milliWatts)	50311 *
ELECTRICAL	
Input Voltage (Volts AC)	480.0
Input Current (Amps AC)	0.340
Input Power (Watts)	149.1
Input Power Factor (%)	91.3
Input Current THD (%)	16.5
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	107.6
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	347.0
Input Current (Amps AC)	0.431
Input Power (Watts)	148.2
Input Power Factor (%)	99.1
Input Current THD (%)	11.1
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	82
R1 Light greyish red	81
R2 Dark greyish yellow	87
R3 Strong yellowish green	92
R4 Moderate yellowish green	82
R5 Light bluish green	81
R6 Light blue	83
R7 Light violet	86
R8 Light reddish purple	66
R9 Strong red	17
R10 Strong yellow	70
R11 Strong green	80
R12 Strong blue	63
R13 Light yellowish pink (skin)	82
R14 Moderate olive green (leaf)	95

*NOTE:

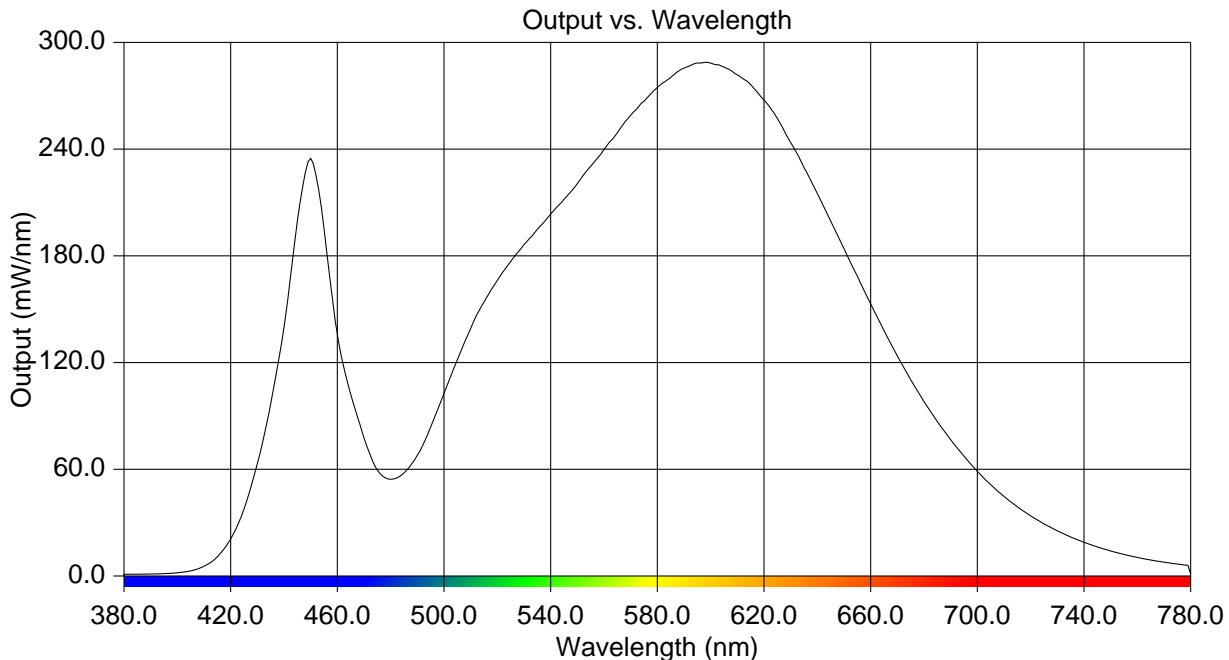
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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	0.910	515	153.981	650	184.047
385	1.028	520	166.476	655	168.688
390	1.122	525	176.973	660	152.994
395	1.323	530	186.443	665	138.208
400	1.784	535	194.980	670	123.850
405	2.860	540	203.525	675	110.477
410	5.515	545	211.713	680	98.233
415	10.804	550	220.702	685	86.780
420	20.777	555	230.437	690	76.463
425	37.729	560	239.826	695	67.461
430	63.236	565	249.064	700	58.962
435	96.692	570	259.181	705	51.484
440	139.707	575	266.990	710	44.926
445	199.601	580	274.788	715	38.834
450	234.971	585	280.534	720	33.723
455	195.472	590	285.674	725	29.336
460	135.922	595	288.604	730	25.404
465	102.193	600	288.491	735	21.885
470	77.557	605	286.214	740	18.944
475	59.834	610	281.856	745	16.386
480	54.315	615	276.408	750	14.081
485	57.908	620	267.629	755	12.114
490	67.913	625	257.366	760	10.470
495	83.495	630	243.723	765	8.982
500	102.832	635	229.759	770	7.775
505	121.677	640	215.192	775	6.733
510	139.194	645	199.736	780	1.010



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CIE Chromaticity Diagram

