

REPORT NUMBER: RAB03319

ISSUE DATE: 05/10/17

CATALOG NUMBER: RTLED1X4-29YNW/D10

LUMINAIRE: WHITE PAINTED SHEET METAL HOUSING, 2 WHITE CIRCUIT BOARDS  
EACH WITH 60 LEDS, MATTE WHITE POLYCARBONATE LENS IN THE CENTER,  
ROUGH SURFACE FACING OUT. FIXTURE WAS MOUNTED IN FLECO  
TXF131A232MV UL E43814 HOUSING.

LAMPS: ONE HUNDRED AND TWENTY LIGHT EMITTING DIODES (LEDS), VERTICAL  
BASE-UP POSITION.

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

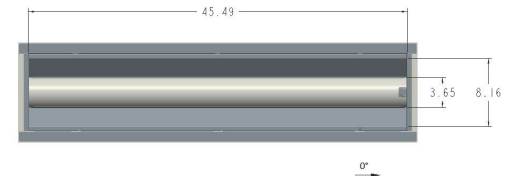
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DATE SAMPLE TESTED: 05/10/17

### CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0	
0	1284	1284	1284	1284	1284	
5	1260	1267	1285	1291	1289	122
15	1207	1215	1239	1250	1254	348
25	1105	1117	1151	1170	1179	528
35	961	979	1025	1055	1068	637
45	788	815	868	903	916	663
55	607	638	682	722	741	608
65	414	448	495	552	575	493
75	230	256	330	374	388	333
85	67	98	117	112	112	114
90	4	2	2	1	2	

### FLUX



### ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	998	25.9
0- 40	1635	42.5
0- 60	2905	75.5
0- 90	3846	100.0
90-180	0	0.0
0-180	3846	100.0

TOTAL INPUT WATTS = 29.4

EFFICACY = 130.8 Lm/W

CIE TYPE - DIRECT

PLANE : 0-DEG 90-DEG

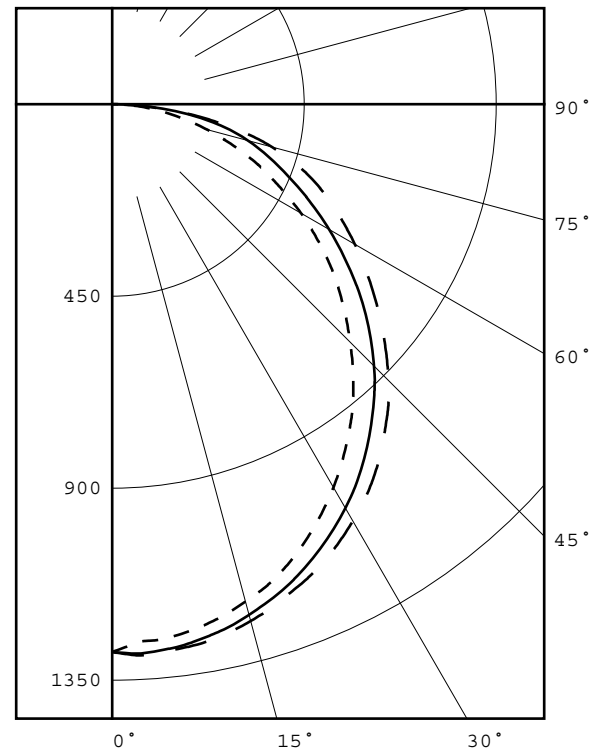
SPACING CRITERIA : 1.2 1.3

PLANE : 0-DEG 90-DEG

LUMINOUS LENGTH : 45.490 8.160

### LUMINANCE DATA IN CANDELA/SQ METER

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 45-DEG	AVERAGE 90-DEG
45	4652.	5124.	5407.
55	4417.	4963.	5393.
65	4089.	4889.	5679.
75	3709.	5322.	6258.
85	3209.	5603.	5364.



#### LEGEND:

0-deg: - - - - -  
45-deg: \_\_\_\_\_  
90-deg: - - - - -

Checked P. ALBERS

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 = 29.366 W AT 277.0 VAC.

LED DRIVER: RDF25U7-32

TEST PROCEDURE: IESNA LM-79-08

LM-80 DATA AVAILABLE FROM MANUFACTURER FOR SOLID STATE SOURCE

AMBIENT: 24.9

ACCREDITED LABORATORY CODE 201058-0

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PLANE : 0-DEG 90-DEG  
BEAM ANGLE (50%) : 105.9 X 121.3 DEGREES  
FIELD ANGLE (10%) : 161.9 X 168.9 DEGREES

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### CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0
0.0	1284	1284	1284	1284	1284
2.5	1264	1271	1289	1293	1293
5.0	1260	1267	1285	1291	1289
7.5	1252	1260	1279	1285	1285
10.0	1240	1248	1268	1276	1279
12.5	1225	1233	1256	1265	1268
15.0	1207	1215	1239	1250	1254
17.5	1188	1196	1221	1233	1238
20.0	1164	1173	1201	1215	1219
22.5	1136	1146	1177	1193	1201
25.0	1105	1117	1151	1170	1179
27.5	1072	1086	1123	1145	1155
30.0	1037	1052	1093	1118	1128
32.5	1000	1016	1061	1088	1100
35.0	961	979	1025	1055	1068
37.5	922	939	988	1019	1033
40.0	879	898	949	982	995
42.5	835	858	910	943	958
45.0	788	815	868	903	916
47.5	744	772	823	857	872
50.0	699	729	778	813	828
52.5	655	684	731	768	784
55.0	607	638	682	722	741
57.5	559	591	634	679	698
60.0	511	545	588	636	657
62.5	461	496	539	593	615
65.0	414	448	495	552	575
67.5	370	399	450	510	534
70.0	322	352	408	469	491
72.5	275	302	371	423	442
75.0	230	256	330	374	388
77.5	186	215	286	317	328
80.0	144	177	235	254	257
82.5	105	141	179	186	188
85.0	67	98	117	112	112
87.5	33	51	48	38	38
90.0	4	2	2	1	2

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## ZONAL LUMEN SUMMARY

0- 5	31.
5- 10	91.
10- 15	148.
15- 20	200.
20- 25	245.
25- 30	282.
30- 35	310.
35- 40	327.
40- 45	334.
45- 50	329.
50- 55	315.
55- 60	293.
60- 65	263.
65- 70	229.
70- 75	190.
75- 80	143.
80- 85	88.
85- 90	26.

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## 5-DEGREE ZONAL LUMEN SUMMARY

0- 5	31
5- 10	91
10- 15	148
15- 20	200
20- 25	245
25- 30	282
30- 35	310
35- 40	327
40- 45	334
45- 50	329
50- 55	315
55- 60	293
60- 65	263
65- 70	229
70- 75	190
75- 80	143
80- 85	88
85- 90	26
90- 95	0
95-100	0
100-105	0
105-110	0
110-115	0
115-120	0
120-125	0
125-130	0
130-135	0
135-140	0
140-145	0
145-150	0
150-155	0
155-160	0
160-165	0
165-170	0
170-175	0
175-180	0

## 10-DEGREE ZONAL LUMEN SUMMARY

0- 10	122
0- 20	470
0- 30	998
0- 40	1635
0- 50	2297
0- 60	2905
0- 70	3398
0- 80	3731
0- 90	3845
0-100	3846
0-110	3846
0-120	3846
0-130	3846
0-140	3846
0-150	3846
0-160	3846
0-170	3846
0-180	3846

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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	108	103	98	94	105	100	96	92	96	93	90	92	89	87	89	86	84	82
2	98	89	82	76	95	87	80	75	83	78	73	80	75	71	77	73	70	68
3	89	78	69	63	86	76	68	62	73	66	61	70	65	60	68	63	59	56
4	81	69	60	53	79	67	59	52	65	57	52	62	56	51	60	55	50	48
5	75	61	52	45	72	60	51	45	58	50	44	56	49	44	54	48	43	41
6	69	55	46	39	67	54	46	39	52	45	39	51	44	38	49	43	38	36
7	64	50	41	35	62	49	41	35	48	40	34	46	39	34	45	39	34	32
8	59	46	37	31	58	45	37	31	44	36	31	42	35	30	41	35	30	28
9	55	42	33	28	54	41	33	28	40	33	28	39	32	27	38	32	27	25
10	52	39	31	25	51	38	30	25	37	30	25	36	30	25	35	29	25	23

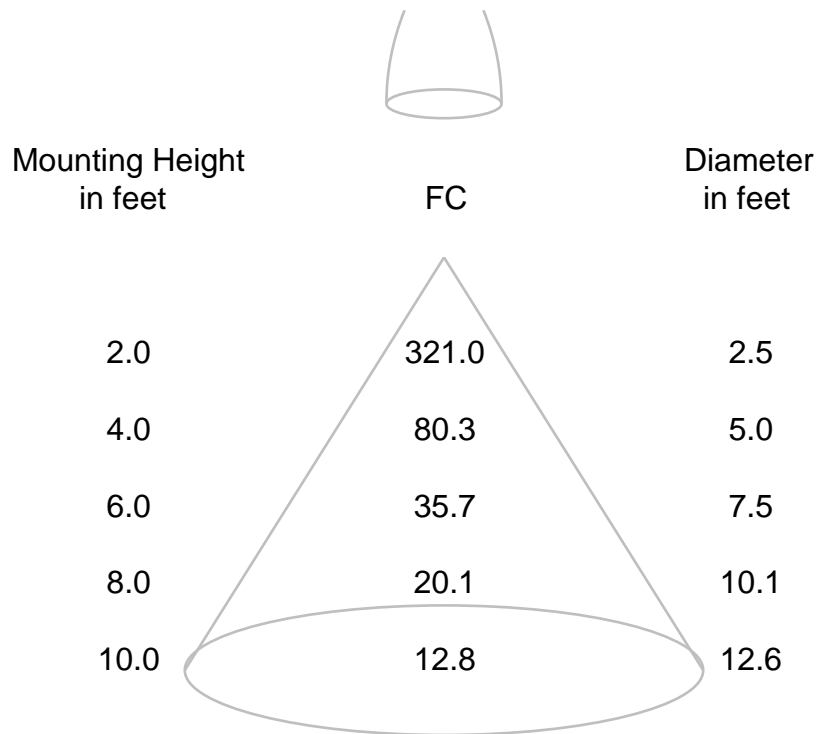
ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS LUMINAIRE SAMPLE.

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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.



REPORT NUMBER: RAB03320  
DATE: 5/12/2017  
PREPARED FOR: RAB LIGHTING INC.  
CATALOG NUMBER: RTLED1X4-29YNW/D10

ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

LUMINAIRE: WHITE PAINTED SHEET METAL HOUSING, 2 WHITE CIRCUIT BOARDS EACH WITH 60 LEDS, MATTE WHITE POLYCARBONATE LENS IN THE CENTER, ROUGH SURFACE FACING OUT. FIXTURE WAS MOUNTED IN FLECO TXF131A232MV UL E43814 HOUSING.

LAMP: ONE HUNDRED AND TWENTY LIGHT EMITTING DIODES (LEDS), VERTICAL BASE-UP POSITION.

DRIVER: RDF25U7-32

OBJECT OF TEST: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT THE RATED INPUT VOLTAGES (277.0 AND 120.0 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	05/03/18

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 (120.0 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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### RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	3846 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4061
Chromaticity Ordinate y	0.3884
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2372
Chromaticity Ordinate v'	0.5104
Correlated Color Temp CCT (K)	3463
ANSI C78.377-2008 Duv	-0.001
Total Radiant Flux (milliWatts)	11725 *
ELECTRICAL	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.115
Input Power (Watts)	29.4
Input Power Factor (%)	92.5
Input Current THD (%)	11.9
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	130.8
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.242
Input Power (Watts)	28.8
Input Power Factor (%)	99.3
Input Current THD (%)	10.9
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	84
R1 Light greyish red	83
R2 Dark greyish yellow	91
R3 Strong yellowish green	97
R4 Moderate yellowish green	84
R5 Light bluish green	84
R6 Light blue	89
R7 Light violet	85
R8 Light reddish purple	63
R9 Strong red	13
R10 Strong yellow	79
R11 Strong green	84
R12 Strong blue	73
R13 Light yellowish pink (skin)	85
R14 Moderate olive green (leaf)	98

### \*NOTE:

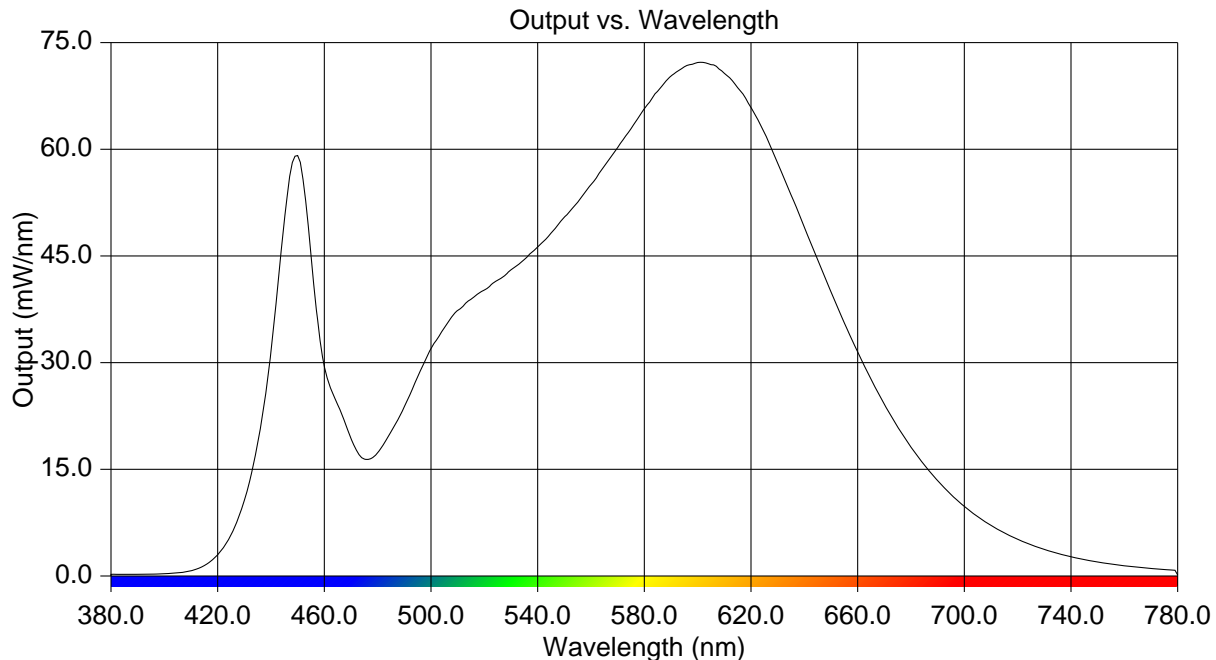
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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	0.232	515	38.898	650	39.963
385	0.234	520	40.213	655	35.587
390	0.236	525	41.578	660	31.483
395	0.257	530	43.058	665	27.693
400	0.328	535	44.506	670	24.145
405	0.432	540	46.254	675	21.009
410	0.742	545	48.212	680	18.101
415	1.468	550	50.466	685	15.630
420	2.992	555	52.551	690	13.386
425	5.765	560	55.049	695	11.462
430	10.632	565	57.646	700	9.788
435	18.596	570	60.248	705	8.344
440	31.704	575	62.895	710	7.114
445	49.811	580	65.731	715	6.039
450	59.126	585	68.229	720	5.153
455	45.122	590	70.300	725	4.392
460	29.501	595	71.608	730	3.730
465	24.093	600	72.211	735	3.173
470	19.342	605	71.906	740	2.704
475	16.444	610	70.688	745	2.298
480	17.325	615	68.669	750	1.971
485	20.278	620	65.858	755	1.681
490	23.813	625	62.351	760	1.445
495	28.013	630	58.122	765	1.229
500	32.002	635	53.602	770	1.063
505	34.923	640	49.059	775	0.905
510	37.344	645	44.418	780	0.136



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## CIE Chromaticity Diagram

