

REPORT NUMBER: ITL84291

PAGE: 1 OF 6

ISSUE DATE: 03/10/15

PREPARED FOR: RAB LIGHTING, INC.

CATALOG NUMBER: VANLED20 (SURFACE MOUNT - DROP LENS)

LUMINAIRE: CAST METAL HOUSING, EXTRUDED FINNED METAL HEAT SINK, 1 WHITE CIRCUIT BOARD WITH 48 LEDs, MOLDED PLASTIC REFLECTOR WITH SEMI-SPECULAR FINISH, CLEAR FROSTED HOLOGRAPHIC PLASTIC DROP LENS IN CAST BROWN PAINTED METAL FRAME. LENS FROSTED SIDE IN.

LAMPS: FORTY-EIGHT WHITE LIGHT EMITTING DIODES (LEDs), VERTICAL BASE-UP POSITION.

INPUT ELECTRICAL: 277.0 VOLTS, 21.7 WATTS, 0.0847 AMPS

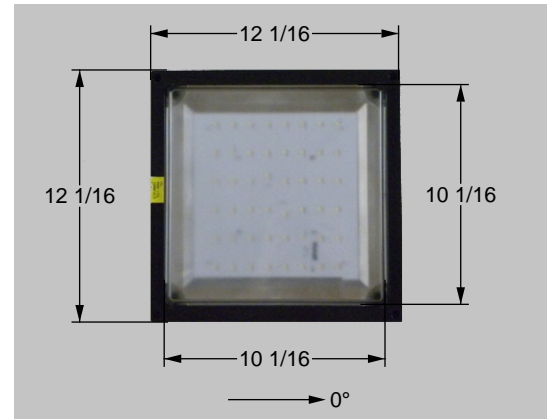
MOUNTING: SURFACE

LED DRIVER: RAB LIGHTING RD12-36-A0500

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT RATED INPUT VOLTAGE (277VAC, 60Hz) TO THE DRIVER.

TEST PROCEDURE: IESNA LM-79-08

TEST DISTANCE = 35.0 FEET



CANDELA DISTRIBUTION

FLUX

	0.0	22.5	45.0	67.5	90.0	
0	821	821	821	821	821	
5	820	820	820	821	821	78
15	800	803	801	798	800	226
25	751	755	753	751	747	347
35	675	677	675	674	671	422
45	567	567	563	564	558	434
55	418	420	416	416	426	374
65	269	269	273	271	265	267
75	134	139	138	130	129	143
85	31	33	33	34	32	41
90	10	11	11	11	10	
95	11	11	11	11	11	12
105	8	6	5	7	8	7
115	1	1	0	1	1	1
125	0	0	0	0	0	0
135	0	0	0	0	0	0
145	0	0	0	0	0	0
155	0	0	0	0	0	0
165	0	0	0	0	0	0
175	0	0	0	0	0	0
180	0	0	0	0	0	0

ZONAL LUMEN SUMMARY

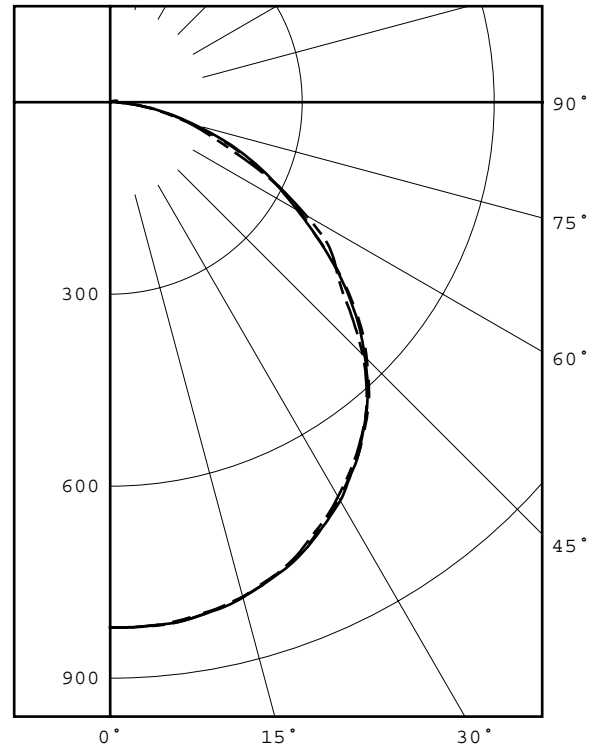
ZONE	LUMENS	%FIXT
0- 30	651	27.7
0- 40	1073	45.6
0- 60	1881	80.0
0- 90	2333	99.2
90-120	20	0.8
90-130	20	0.8
90-150	20	0.8
90-180	20	0.8
0-180	2352	100.0

EFFICACY = 108.4 lm/W

CIE TYPE - DIRECT

PLANE : 0-DEG 90-DEG

SPACING CRITERIA : 1.29 1.29



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

Checked B. HYRE
Approved R. BEATTIE
Lighting Engineer



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INDEPENDENT TESTING LABORATORIES, INC.
 4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

PHONE: (303) 442-1255 • FAX: (970) 535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

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PLANE : 0-DEG 90-DEG
 LUMINOUS LENGTH : 10.063 10.063
 HEIGHT OF SIDE : 0.625 0.625

LUMINANCE DATA IN CANDELA/SQ M

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 45-DEG	AVERAGE 90-DEG
45	11809.	11681.	11621.
55	10470.	10278.	10670.
65	8786.	8661.	8655.
75	6575.	6386.	6329.
85	3254.	2988.	3359.



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CANDELA DISTRIBUTION
 LATERAL ANGLE

	0.0	22.5	45.0	67.5	90.0
0.0	821	821	821	821	821
5.0	820	820	820	821	821
10.0	812	813	814	815	814
15.0	800	803	801	798	800
20.0	779	784	781	779	779
25.0	751	755	753	751	747
30.0	715	719	719	716	712
35.0	675	677	675	674	671
40.0	627	626	624	625	623
45.0	567	567	563	564	558
50.0	498	498	494	488	480
55.0	418	420	416	416	426
60.0	343	336	338	356	353
65.0	269	269	273	271	265
70.0	202	203	207	186	183
75.0	134	139	138	130	129
80.0	81	83	81	79	76
85.0	31	33	33	34	32
90.0	10	11	11	11	10
95.0	11	11	11	11	11
100.0	11	10	9	10	11
105.0	8	6	5	7	8
110.0	4	3	1	3	4
115.0	1	1	0	1	1
120.0	0	0	0	0	0
125.0	0	0	0	0	0
130.0	0	0	0	0	0
135.0	0	0	0	0	0
140.0	0	0	0	0	0
145.0	0	0	0	0	0
150.0	0	0	0	0	0
155.0	0	0	0	0	0
160.0	0	0	0	0	0
165.0	0	0	0	0	0
170.0	0	0	0	0	0
175.0	0	0	0	0	0
180.0	0	0	0	0	0



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5-DEGREE
 ZONAL LUMEN SUMMARY

0- 5	20
5- 10	58
10- 15	96
15- 20	130
20- 25	161
25- 30	186
30- 35	205
35- 40	217
40- 45	220
45- 50	214
50- 55	198
55- 60	176
60- 65	150
65- 70	118
70- 75	86
75- 80	57
80- 85	30
85- 90	11
90- 95	6
95-100	6
100-105	4
105-110	2
110-115	1
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	78
0- 20	304
0- 30	651
0- 40	1073
0- 50	1507
0- 60	1881
0- 70	2148
0- 80	2291
0- 90	2333
0-100	2344
0-110	2351
0-120	2352
0-130	2352
0-140	2352
0-150	2352
0-160	2352
0-170	2352
0-180	2352



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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	101	101	101	99
1	109	104	100	96	106	102	98	94	97	94	91	93	91	88	90	88	86	83
2	99	91	84	79	96	89	83	78	85	80	76	82	78	74	79	75	72	70
3	90	80	72	66	88	78	71	65	75	69	64	72	67	62	70	65	61	59
4	83	71	62	56	80	70	61	55	67	60	54	65	58	53	62	57	53	50
5	76	63	54	48	74	62	54	48	60	53	47	58	51	46	56	50	46	44
6	70	57	48	42	68	56	48	42	54	47	41	52	46	41	51	45	40	38
7	65	52	43	37	63	51	43	37	49	42	36	48	41	36	46	40	36	34
8	61	47	39	33	59	46	38	33	45	38	33	44	37	32	43	37	32	30
9	57	43	35	30	55	43	35	29	41	34	29	40	34	29	39	33	29	27
10	53	40	32	27	52	39	32	27	38	31	27	37	31	26	36	31	26	25

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 TEST SAMPLE.



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ADDRESS: 170 LUDLOW AVE.
NORTHVALE, NJ 07647

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PHONE: (303)442-1255 • FAX: (970)535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com
REPORT NUMBER: ITL84315
DATE: 03/24/15
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PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: VANLED20 (SURFACE MOUNT - DROP LENS)

ADDRESS: 170 LUDLOW AVE.
NORTHVALE, NJ 07647

LUMINAIRE: CAST METAL HOUSING, EXTRUDED FINNED METAL HEAT SINK, 1 WHITE CIRCUIT BOARD WITH 48 LEDS, MOLDED PLASTIC REFLECTOR WITH SEMI-SPECULAR FINISH, CLEAR FROSTED HOLOGRAPHIC PLASTIC DROP LENS IN CAST BROWN PAINTED METAL FRAME. LENS FROSTED SIDE IN.

LAMP: FORTY-EIGHT WHITE LIGHT EMITTING DIODES (LEDS), VERTICAL BASE-UP POSITION.

DRIVER: RAB LIGHTING RD12-36-A0500

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT RATED INPUT VOLTAGE (277VAC, 60Hz) TO THE DRIVER.

INSTRUMENTS: Associated Power Technologies APT5040 AC Power Source Calibration Due: N/A
Yokogawa WT210 Digital Power Meter #6 11/30/15
Ocean Optics QE65000 Spectroradiometer 07/14/15
ITL 2.0m Diameter Integrating Sphere S20-2, 4PI Geometry 07/14/15

OBJECT OF TEST: Measure the 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, Scotopic / Photopic Ratio, and electrical data including ANSI C82.77-2002 Power Factor (PF) and Total Harmonic Distortion (THD) to the test sample. Report Off-State Power.

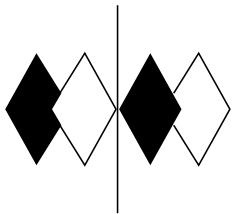
PROCEDURE: The test sample was provided by the customer and had an unknown number of burn hours. The test sample was mounted inside the integrating sphere and allowed to stabilize. After stabilization occurred, measurements were taken. In order to measure mean performance, multiple data sets were recorded and averaged. Readings were taken with the test sample operating at 277VAC input in a 25 +/-1 degree Celsius free air ambient and in accordance with IESNA LM-79-08. 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)

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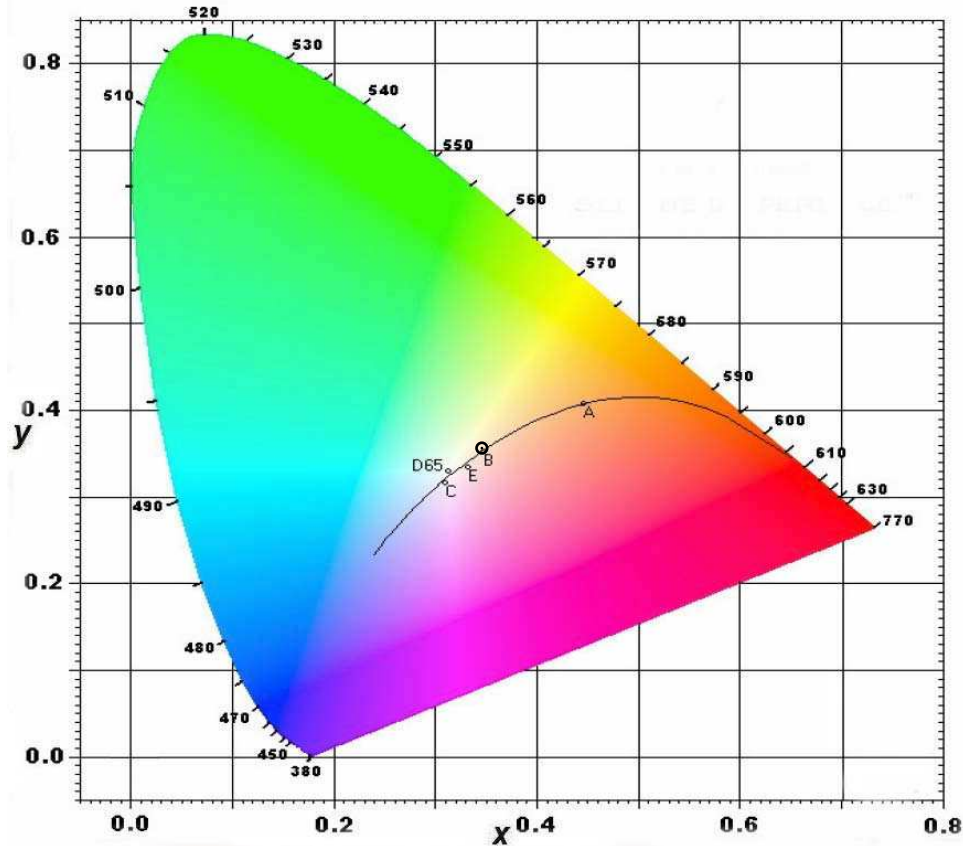
Checked N THOMAS
Approved P O'CONNOR
Sphere Lab Supervisor

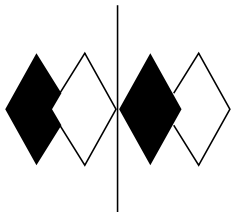


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CIE Chromaticity Diagram





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NVLAP LAB CODE: 200925-0

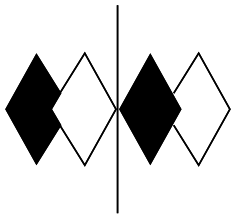
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RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3456
Chromaticity Ordinate y	0.3560
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2100
Chromaticity Ordinate v'	0.4869
Correlated Color Temp CCT (K)	4996
Color Rendering Index (CRIa)	74
Color Rendering Index 1 (Light greyish red)	72
Color Rendering Index 2 (Dark greyish yellow)	78
Color Rendering Index 3 (Strong yellowish green)	82
Color Rendering Index 4 (Moderate yellowish green)	75
Color Rendering Index 5 (Light bluish green)	72
Color Rendering Index 6 (Light blue)	70
Color Rendering Index 7 (Light violet)	83
Color Rendering Index 8 (Light reddish purple)	61
Color Rendering Index 9 (Strong red)	-19
Color Rendering Index 10 (Strong yellow)	48
Color Rendering Index 11 (Strong green)	72
Color Rendering Index 12 (Strong blue)	44
Color Rendering Index 13 (Light yellowish pink (skin))	73
Color Rendering Index 14 (Moderate olive green (leaf))	90
ANSI C78.377-2008 Duv	0.002
Scotopic / Photopic Lumen Ratio	1.816
Total Radiant Flux (milliWatts)	7108 *
ELECTRICAL FOR SPECTRORADIOMETRIC TEST	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.085
Input Power (Watts)	21.6
Input Power Factor (%)	91.7
Input Current THD (%)	20.1
Input Voltage THD (%)	0.1
Off-State Power (Watts)	0.0

*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	0.194	515	27.195	650	15.386
385	0.215	520	30.150	655	13.692
390	0.254	525	32.336	660	12.142
395	0.327	530	33.908	665	10.737
400	0.482	535	34.998	670	9.448
405	0.825	540	35.837	675	8.270
410	1.555	545	36.559	680	7.231
415	3.032	550	37.173	685	6.301
420	5.772	555	37.653	690	5.474
425	10.589	560	38.060	695	4.764
430	18.018	565	38.417	700	4.138
435	27.815	570	38.581	705	3.588
440	40.603	575	38.525	710	3.113
445	55.108	580	38.307	715	2.700
450	57.647	585	37.842	720	2.344
455	42.692	590	37.137	725	2.035
460	27.651	595	36.133	730	1.759
465	19.267	600	34.921	735	1.519
470	13.077	605	33.405	740	1.318
475	9.138	610	31.668	745	1.146
480	7.628	615	29.679	750	0.997
485	7.560	620	27.546	755	0.872
490	8.717	625	25.354	760	0.760
495	11.285	630	23.203	765	0.659
500	14.981	635	21.108	770	0.573
505	19.241	640	19.103	775	0.502
510	23.461	645	17.194	780	0.442

