

REPORT NUMBER: ITL84302

PAGE: 1 OF 6

ISSUE DATE: 03/17/15

PREPARED FOR: RAB LIGHTING, INC.

CATALOG NUMBER: VANLED52N (SURFACE MOUNT - DROP LENS)

LUMINAIRE: CAST METAL HOUSING, EXTRUDED FINNED METAL HEAT SINK, 1 WHITE CIRCUIT BOARD WITH 121 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: ONE HUNDRED TWENTY-ONE WHITE LIGHT EMITTING DIODES (LEDS), VERTICAL BASE-UP POSITION.

INPUT ELECTRICAL: 277.0 VOLTS, 51.5 WATTS, 0.194 AMPS

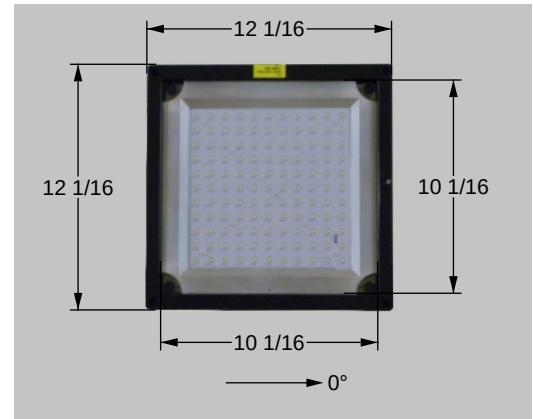
MOUNTING: SURFACE

LED DRIVER: RAB LIGHTING RD-052-A1400-R

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	1938	1938	1938	1938	1938	184
5	1932	1932	1932	1931	1931	529
15	1877	1874	1875	1876	1877	806
25	1749	1749	1752	1750	1745	965
35	1545	1546	1545	1544	1541	970
45	1258	1259	1260	1256	1251	834
55	937	936	922	933	944	607
65	598	607	623	616	611	340
75	306	317	326	325	317	106
85	83	87	89	89	85	
90	34	36	36	34	31	
95	31	31	31	31	32	33
105	19	15	13	17	21	17
115	4	2	0	3	4	3
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

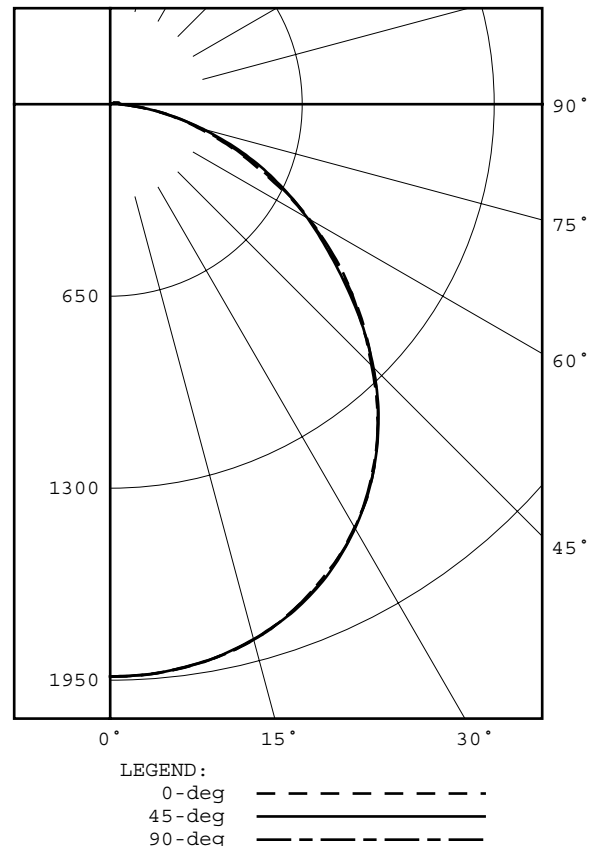
ZONE	LUMENS	%FIXT
0- 30	1519	28.2
0- 40	2484	46.0
0- 60	4288	79.5
0- 90	5342	99.0
90-120	53	1.0
90-130	54	1.0
90-150	54	1.0
90-180	54	1.0
0-180	5395	100.0

EFFICACY = 104.8 lm/W

CIE TYPE - DIRECT

PLANE : 0-DEG 90-DEG

SPACING CRITERIA : 1.27 1.27



Checked B. HYRE
Approved R. BEATTIE
Lighting Engineer



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

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PAGE: 2 OF 6

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	26200.	26143.	26054.
55	23470.	22780.	23645.
65	19531.	19765.	19956.
75	15013.	15085.	15553.
85	8713.	8059.	8922.



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PAGE: 3 OF 6

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CANDELA DISTRIBUTION LATERAL ANGLE

	0.0	22.5	45.0	67.5	90.0
0.0	1938	1938	1938	1938	1938
5.0	1932	1932	1932	1931	1931
10.0	1912	1911	1911	1912	1912
15.0	1877	1874	1875	1876	1877
20.0	1820	1821	1824	1822	1820
25.0	1749	1749	1752	1750	1745
30.0	1654	1658	1658	1657	1656
35.0	1545	1546	1545	1544	1541
40.0	1410	1414	1413	1411	1408
45.0	1258	1259	1260	1256	1251
50.0	1103	1096	1091	1093	1096
55.0	937	936	922	933	944
60.0	773	768	771	774	779
65.0	598	607	623	616	611
70.0	446	453	475	460	455
75.0	306	317	326	325	317
80.0	187	193	194	199	194
85.0	83	87	89	89	85
90.0	34	36	36	34	31
95.0	31	31	31	31	32
100.0	27	24	24	26	29
105.0	19	15	13	17	21
110.0	10	8	4	8	11
115.0	4	2	0	3	4
120.0	1	0	0	0	1
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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PAGE: 4 OF 6

5-DEGREE
ZONAL LUMEN SUMMARY

0- 5	46
5- 10	137
10- 15	225
15- 20	305
20- 25	375
25- 30	431
30- 35	472
35- 40	493
40- 45	494
45- 50	475
50- 55	441
55- 60	394
60- 65	337
65- 70	271
70- 75	203
75- 80	137
80- 85	75
85- 90	31
90- 95	18
95-100	16
100-105	11
105-110	6
110-115	2
115-120	1
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	184
0- 20	713
0- 30	1519
0- 40	2484
0- 50	3454
0- 60	4288
0- 70	4896
0- 80	5236
0- 90	5342
0-100	5375
0-110	5392
0-120	5395
0-130	5395
0-140	5395
0-150	5395
0-160	5395
0-170	5395
0-180	5395



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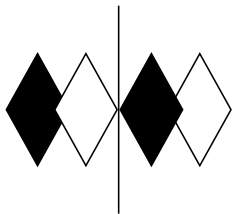
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	89	87	85	83
2	99	91	84	78	96	89	83	77	85	80	75	82	77	74	79	75	72	70
3	90	80	72	65	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	64	58	53	62	57	53	50
5	76	63	55	48	74	62	54	48	60	53	47	58	52	46	56	50	46	44
6	70	57	48	42	68	56	48	42	54	47	41	53	46	41	51	45	40	38
7	65	52	43	37	64	51	43	37	49	42	37	48	41	36	46	40	36	34
8	61	47	39	33	59	47	39	33	45	38	33	44	37	32	43	37	32	30
9	57	44	35	30	55	43	35	30	42	35	30	41	34	29	39	33	29	27
10	53	40	32	27	52	40	32	27	39	32	27	38	31	27	37	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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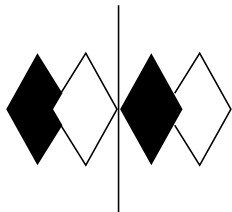
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PAGE: 6 OF 6

ADDRESS: 170 LUDLOW AVE.
NORTHVALE, NJ 07647

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REPORT NUMBER: ITL84326
DATE: 03/25/15
Page 1 of 4

PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: VANLED52N (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 121 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: ONE HUNDRED TWENTY-ONE WHITE LIGHT EMITTING DIODES (LEDs), VERTICAL BASE-UP POSITION.

DRIVER: RAB LIGHTING RD-052-A1400-R

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 (CRI_a, 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.

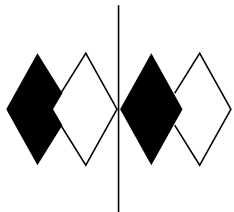
PROCEDURE: The test sample was provided by the customer and had an unknown number of burn hours. The test sample was mounted inside the integrating sphere and allowed to stabilize. After stabilization occurred, measurements were taken. In order to measure mean performance, multiple data sets were recorded 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	<u>N THOMAS</u>
Approved	<u>P O'CONNOR</u> Sphere Lab Supervisor



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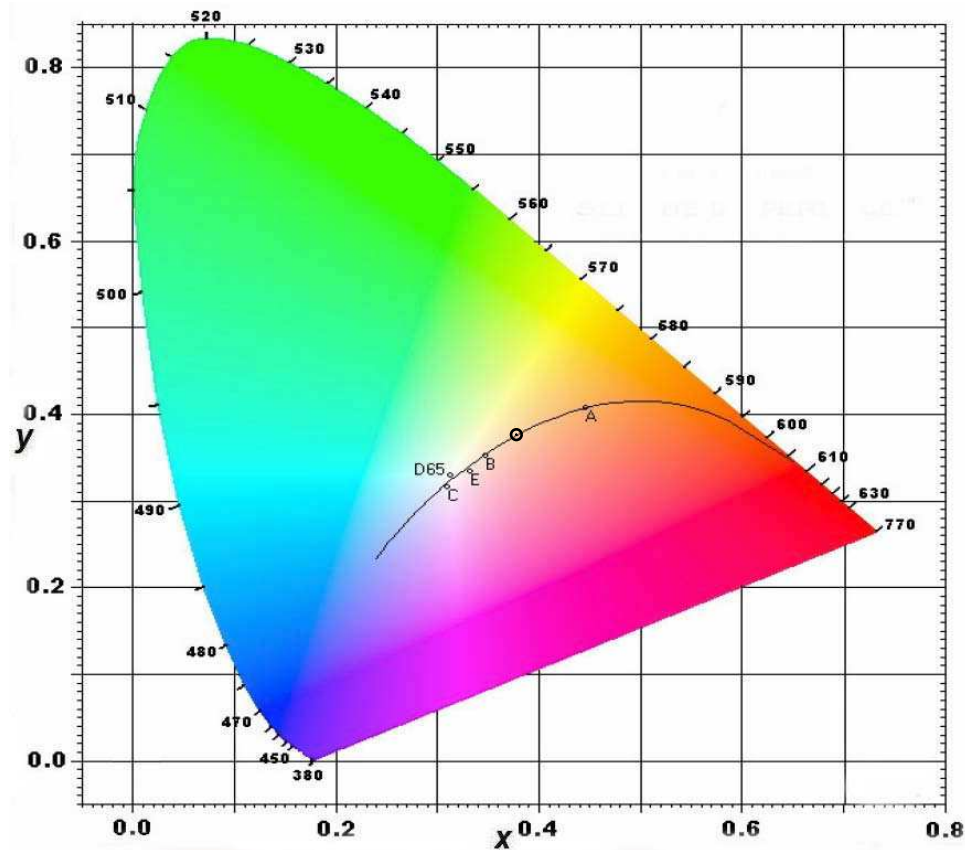
NVLAP
NVLAP LAB CODE: 200925-0

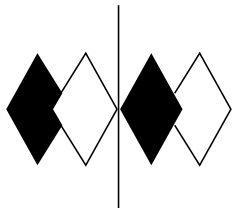
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Page 4 of 4

CIE Chromaticity Diagram





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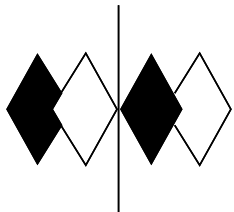
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Page 2 of 4

RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3776
Chromaticity Ordinate y	0.3761
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2235
Chromaticity Ordinate v'	0.5009
Correlated Color Temp CCT (K)	4074
Color Rendering Index (CRIa)	74
Color Rendering Index 1 (Light greyish red)	72
Color Rendering Index 2 (Dark greyish yellow)	81
Color Rendering Index 3 (Strong yellowish green)	86
Color Rendering Index 4 (Moderate yellowish green)	72
Color Rendering Index 5 (Light bluish green)	71
Color Rendering Index 6 (Light blue)	72
Color Rendering Index 7 (Light violet)	84
Color Rendering Index 8 (Light reddish purple)	57
Color Rendering Index 9 (Strong red)	-17
Color Rendering Index 10 (Strong yellow)	53
Color Rendering Index 11 (Strong green)	66
Color Rendering Index 12 (Strong blue)	41
Color Rendering Index 13 (Light yellowish pink (skin))	73
Color Rendering Index 14 (Moderate olive green (leaf))	92
ANSI C78.377-2008 Duv	0.001
Scotopic / Photopic Lumen Ratio	1.604
Total Radiant Flux (milliWatts)	15928 *
ELECTRICAL FOR SPECTRORADIOMETRIC TEST	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.194
Input Power (Watts)	51.4
Input Power Factor (%)	95.6
Input Current THD (%)	6.7
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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Page 3 of 4

RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.351	515	48.740	650	42.917
385	0.380	520	57.167	655	38.500
390	0.415	525	64.193	660	34.435
395	0.480	530	69.710	665	30.647
400	0.650	535	73.966	670	27.164
405	1.020	540	77.410	675	23.931
410	1.809	545	80.347	680	21.066
415	3.436	550	83.046	685	18.473
420	6.424	555	85.461	690	16.150
425	11.618	560	87.747	695	14.129
430	20.150	565	89.901	700	12.350
435	32.535	570	91.636	705	10.760
440	48.492	575	92.803	710	9.390
445	70.958	580	93.553	715	8.194
450	97.487	585	93.657	720	7.167
455	103.839	590	93.063	725	6.246
460	78.842	595	91.668	730	5.411
465	52.909	600	89.548	735	4.706
470	37.730	605	86.552	740	4.101
475	26.459	610	82.838	745	3.582
480	18.978	615	78.378	750	3.131
485	15.878	620	73.312	755	2.744
490	15.664	625	68.032	760	2.397
495	17.877	630	62.714	765	2.093
500	22.891	635	57.520	770	1.826
505	30.444	640	52.453	775	1.604
510	39.425	645	47.593	780	1.406

