



IES INDOOR REPORT

PHOTOMETRIC FILENAME : PANEL2X2-34N-D10 - PROPRATED FROM ITL80212.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
 [TEST]SCALED FROM ITL80212
 [TESTLAB]SCALED PHOTOMETRY
 [ISSUE DATE]12/18/13
 [MANUFAC]RAB LIGHTING, INC.
 [LUMCAT]PANEL2X2-34N/D10 (0-10V DIMMING DRIVER)
 [LUMINAIRE]FABRICATED WHITE PAINTED METAL HOUSING, 2 WHITE CIRCUIT
 [MORE]BOARDS EACH WITH 120 LEDS, FROSTED HOLOGRAPHIC PLASTIC
 [MORE]DIFFUSER. DIFFUSER FROSTED SIDE UP.
 [LAMP]TWO HUNDRED FORTY WHITE LIGHT EMITTING DIODES (LEDS), VERTICAL
 [MORE]BASE-UP POSITION.
 [OTHER]TOTAL INPUT WATTS = 35.7 AT 120.0 VOLTS
 [_ MOUNTING]RECESSED
 [_ LEDDRIVER]RAB RD-042-A0700C
 [_ NOTE]DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT RATED INPUT
 [MORE]VOLTAGE (120VAC, 60Hz) TO THE LED DRIVER.
 [OTHER]TEST PROCEDURE: IESNA LM-79-08
 [OTHER]TEST DISTANCE = 35.0 FEET
 [_ ABSOLUTE LUMENS]3430

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	3430
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	96
Total Luminaire Watts	35.7
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	1.22
Spacing Criterion (90-270)	1.22
Spacing Criterion (Diagonal)	1.34
Basic Luminous Shape	Rectangular
Luminous Length (0-180)	1.84 ft
Luminous Width (90-270)	1.84 ft
Luminous Height	0.00 ft

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LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	3599	3586	3590
55	3366	3355	3360
65	3068	3053	3045
75	2586	2573	2586
85	1477	1514	1551

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CANDELA TABULATION

	<u>0.0</u>	<u>22.5</u>	<u>45.0</u>	<u>67.5</u>	<u>90.0</u>
0.0	1291.558	1291.558	1291.558	1291.558	1291.558
2.5	1289.535	1290.546	1290.546	1289.535	1289.535
5.0	1285.489	1285.489	1286.501	1286.501	1285.489
7.5	1277.398	1277.398	1278.410	1277.398	1277.398
10.0	1265.261	1265.261	1266.273	1266.273	1265.261
12.5	1250.090	1250.090	1251.102	1251.102	1250.090
15.0	1230.874	1231.885	1231.885	1231.885	1231.885
17.5	1208.623	1209.634	1209.634	1209.634	1208.623
20.0	1183.338	1184.349	1185.361	1184.349	1183.338
22.5	1155.019	1156.030	1156.030	1156.030	1155.019
25.0	1123.665	1124.677	1124.677	1124.677	1123.665
27.5	1090.289	1090.289	1090.289	1091.301	1089.278
30.0	1053.879	1054.890	1053.879	1053.879	1053.879
32.5	1015.446	1016.457	1016.457	1015.446	1014.434
35.0	973.978	974.990	974.990	974.990	972.967
37.5	932.511	932.511	932.511	933.522	932.511
40.0	890.032	888.009	888.009	890.032	890.032
42.5	845.530	844.519	843.508	844.519	844.519
45.0	800.017	797.995	796.983	799.006	797.995
47.5	752.482	751.470	749.447	751.470	750.459
50.0	702.923	703.934	701.912	702.923	702.923
52.5	656.399	655.387	653.364	655.387	654.376
55.0	606.840	604.817	604.817	605.829	605.829
57.5	557.281	555.259	556.270	556.270	556.270
60.0	507.723	505.700	506.711	506.711	506.711
62.5	457.153	456.141	457.153	456.141	455.130
65.0	407.594	405.571	405.571	405.571	404.560
67.5	358.036	356.013	357.024	356.013	355.001
70.0	308.477	306.454	307.466	307.466	305.443
72.5	258.918	256.896	257.907	257.907	255.884
75.0	210.371	208.348	209.360	209.360	210.371
77.5	162.835	163.847	162.835	161.824	164.858
80.0	118.334	119.345	118.334	117.322	120.357
82.5	76.866	77.878	76.866	76.866	78.889
85.0	40.456	41.467	41.467	40.456	42.479
87.5	14.160	15.171	14.160	14.160	15.171
90.0	0.000	0.000	0.000	0.000	0.000

IES INDOOR REPORT**PHOTOMETRIC FILENAME : PANEL2X2-34N-D10 - PROPRATED FROM ITL80212.IES****ZONAL LUMEN SUMMARY**

Zone	Lumens	%Lamp	%Fixt
0-20	469.36	N.A.	13.70
0-30	987.14	N.A.	28.80
0-40	1596.79	N.A.	46.50
0-60	2753.73	N.A.	80.30
0-80	3377.97	N.A.	98.50
0-90	3430.29	N.A.	100.00
10-90	3308.2	N.A.	96.40
20-40	1127.43	N.A.	32.90
20-50	1743.00	N.A.	50.80
40-70	1559.01	N.A.	45.40
60-80	624.24	N.A.	18.20
70-80	222.17	N.A.	6.50
80-90	52.32	N.A.	1.50
90-110	0.00	N.A.	0.00
90-120	0.00	N.A.	0.00
90-130	0.00	N.A.	0.00
90-150	0.00	N.A.	0.00
90-180	0.00	N.A.	0.00
110-180	0.00	N.A.	0.00
0-180	3430.29	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	122.10
10-20	347.26
20-30	517.78
30-40	609.65
40-50	615.57
50-60	541.37
60-70	402.07
70-80	222.17
80-90	52.32
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

IES INDOOR REPORT

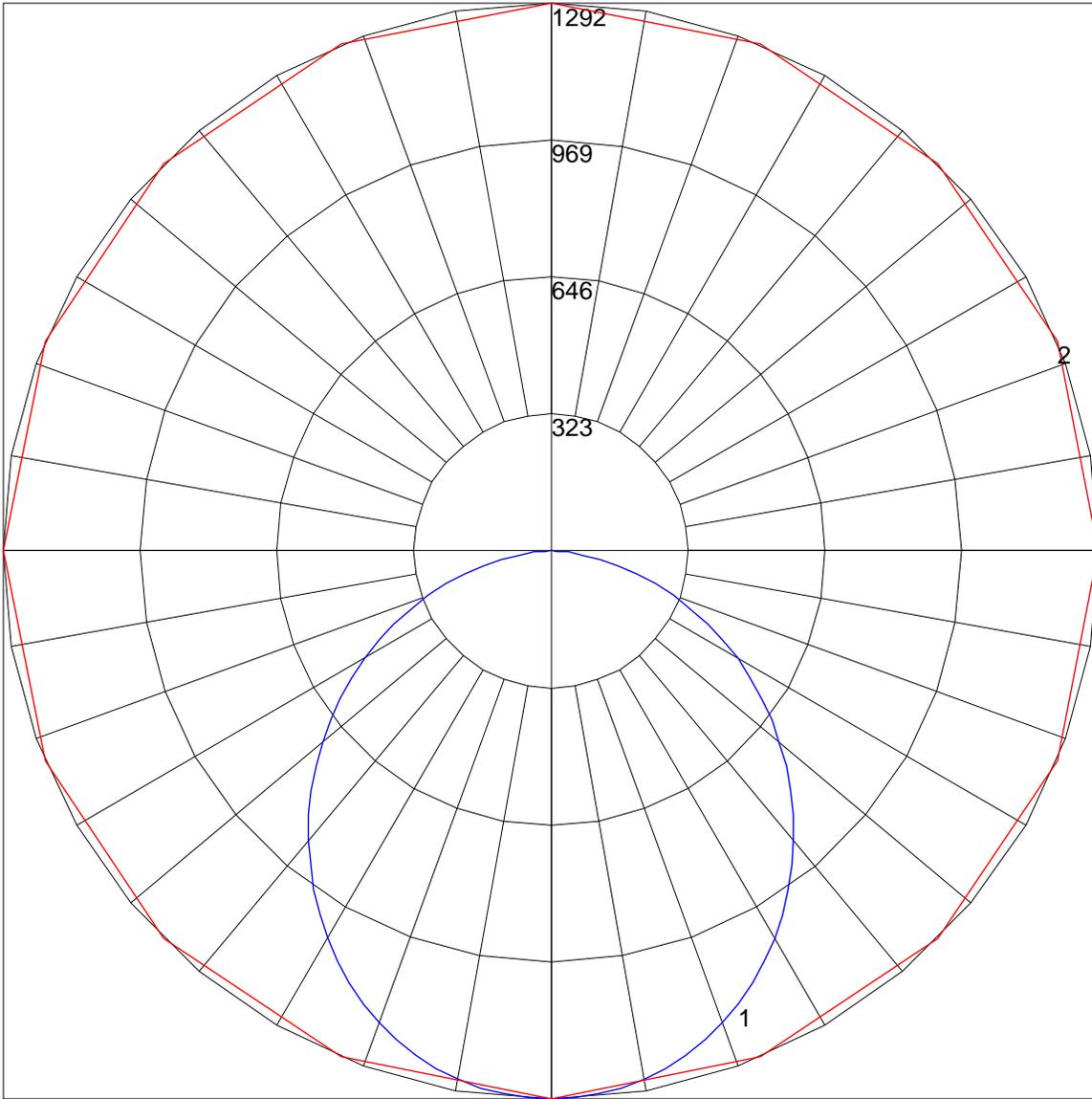
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	104	100	96	106	102	98	95	98	95	92	94	91	89	90	88	86	84
2	99	91	84	79	97	89	83	78	86	81	76	82	78	74	79	76	73	71
3	91	80	72	66	88	79	71	65	76	69	64	73	67	63	70	66	62	60
4	83	71	63	56	81	70	62	55	67	60	55	65	59	54	63	58	53	51
5	76	64	55	48	74	63	54	48	60	53	47	59	52	47	57	51	46	44
6	71	57	49	42	69	56	48	42	55	47	42	53	46	41	51	46	41	39
7	66	52	43	37	64	51	43	37	50	42	37	48	42	37	47	41	36	34
8	61	48	39	33	60	47	39	33	46	38	33	44	38	33	43	37	33	31
9	57	44	36	30	56	43	35	30	42	35	30	41	34	30	40	34	30	28
10	54	40	33	27	52	40	32	27	39	32	27	38	32	27	37	31	27	25

POLAR GRAPH



Maximum Candela = 1291.558 Located At Horizontal Angle = 0, Vertical Angle = 0
1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (0) (Through Max. Cd.)



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

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REPORT NUMBER: ITL80215
DATE: 12/27/13
PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: PANEL2X2-34N

ADDRESS: 170 LUDLOW AVE
NORTHVALE, NJ 07647

LUMINAIRE: FABRICATED WHITE PAINTED METAL HOUSING, 2 WHITE CIRCUIT BOARDS EACH WITH 120 LEDS, FROSTED HOLOGRAPHIC PLASTIC DIFFUSER. DIFFUSER FROSTED SIDE UP.

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

DRIVER: RAB RD-042-A0700N

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT RATED INPUT VOLTAGE (120.0 AND 277.0 VAC, 60Hz) TO THE LED DRIVER.

		Calibration Due:
INSTRUMENTS:	Associated Power Technologies APT5010 AC Power Source	N/A
	Yokogawa WT210 Digital Power Meter #6	10/31/14
	Ocean Optics QE65000 Spectroradiometer	10/17/14
	ITL 1.5m Diameter Integrating Sphere S15-2, 4PI Geometry	10/17/14

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, and electrical data including ANSI C82.77-2002 Power Factor (PF) and Total Harmonic Distortion (THD) to the test sample. Report Off-State Power. Measure electrical data including Total Harmonic Distortion (THD) at maximum rated voltage.

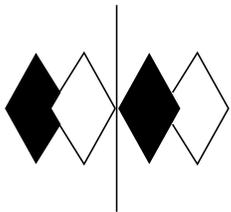
PROCEDURE: The test sample was provided by the customer and had an unknown number of operating hours. The test sample was mounted inside the integrating sphere and allowed to stabilize. After stabilization occurred, measurements were taken. In order to measure mean performance, multiple data sets were recorded and averaged. Readings were taken with the test sample operating at 120.0 VAC input. Electrical data was also recorded at maximum nominal rated input voltage (277.0 VAC). All testing performed 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)

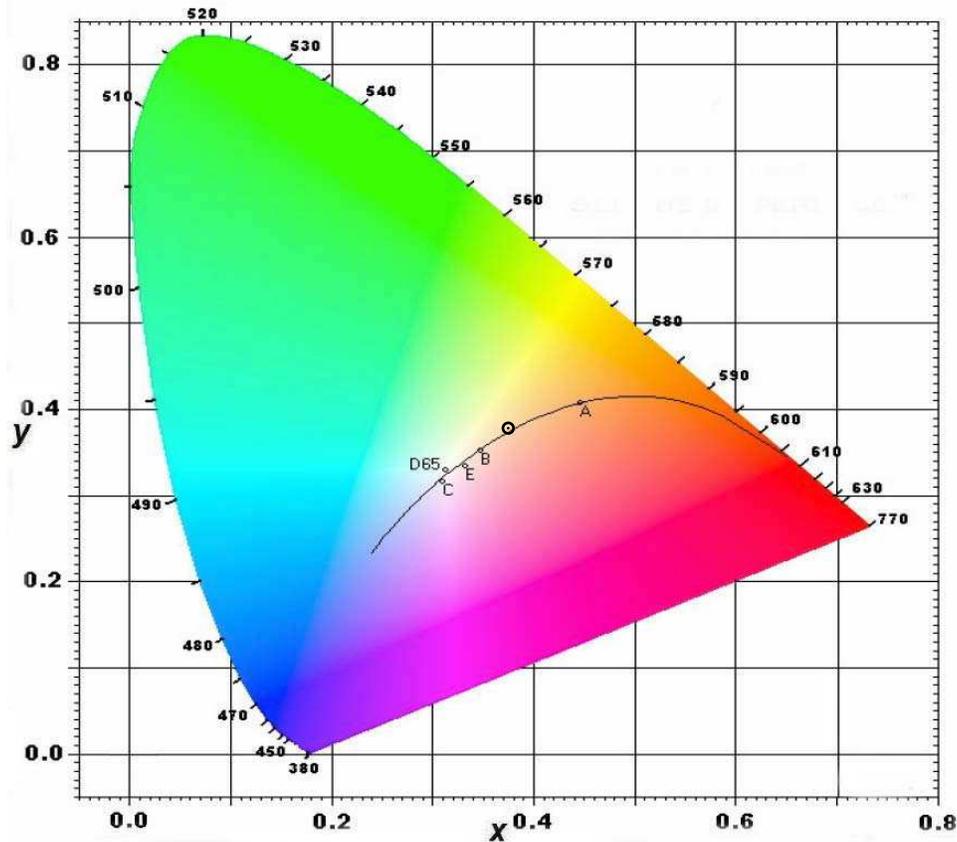
THIS ITL REPORT WITH THE USE OF THE NVLAP LOGO SHALL NOT BE USED BY THE CLIENT TO CLAIM PRODUCT CERTIFICATION, APPROVAL, OR ENDORSEMENT BY NVLAP, NIST, OR ANY AGENCY OF THE FEDERAL GOVERNMENT.

Checked	<u>N THOMAS</u>
Approved	<u>L GRABA</u> Lighting Engineer



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CIE Chromaticity Diagram





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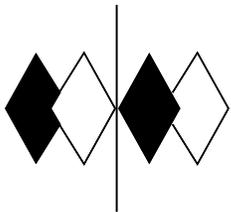
RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3746
Chromaticity Ordinate y	0.3778
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2208
Chromaticity Ordinate v'	0.5012
Correlated Color Temp CCT (K)	4170
ANSI C78.377-2008 Duv	0.002
Total Radiant Flux (milliWatts)	10832 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.293
Input Power (Watts)	34.8
Input Power Factor (%)	99.0
Input Current THD (%)	8.5
Input Voltage THD (%)	0.2
Off-State Power (Watts)	
	0.0
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.133
Input Power (Watts)	35.2
Input Power Factor (%)	95.5
Input Current THD (%)	7.5
Input Voltage THD (%)	0.2

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	83
R1 Light greyish red	81
R2 Dark greyish yellow	86
R3 Strong yellowish green	89
R4 Moderate yellowish green	83
R5 Light bluish green	81
R6 Light blue	80
R7 Light violet	89
R8 Light reddish purple	72
R9 Strong red	23
R10 Strong yellow	66
R11 Strong green	82
R12 Strong blue	60
R13 Light yellowish pink (skin)	82
R14 Moderate olive green (leaf)	94

*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	0.435	515	38.582	650	34.542
385	0.486	520	41.166	655	31.934
390	0.568	525	43.134	660	29.336
395	0.688	530	44.773	665	26.754
400	0.861	535	46.188	670	24.231
405	1.259	540	47.487	675	21.849
410	1.932	545	48.726	680	19.681
415	3.011	550	49.926	685	17.731
420	5.280	555	51.024	690	15.961
425	9.280	560	52.066	695	14.325
430	15.694	565	52.849	700	12.787
435	25.595	570	53.554	705	11.349
440	42.817	575	54.050	710	10.040
445	62.604	580	54.347	715	8.875
450	61.784	585	54.433	720	7.800
455	43.689	590	54.268	725	6.863
460	31.092	595	53.852	730	6.030
465	23.669	600	53.180	735	5.290
470	17.727	605	52.345	740	4.641
475	14.798	610	51.202	745	4.068
480	14.473	615	49.883	750	3.573
485	15.724	620	48.279	755	3.139
490	18.567	625	46.429	760	2.754
495	22.732	630	44.417	765	2.422
500	27.237	635	42.123	770	2.128
505	31.583	640	39.660	775	1.869
510	35.400	645	37.125	780	1.638

