



IES INDOOR REPORT

PHOTOMETRIC FILENAME : PANEL2X2-34Y-D10 - PROPRATED FROM ITL80210.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
 [TEST]SCALED FROM ITL80210
 [TESTLAB]SCALED PHOTOMETRY
 [ISSUE DATE]12/17/13
 [MANUFAC]RAB LIGHTING, INC.
 [LUMCAT]PANEL2X2-34Y/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),
 [MORE]VERTICAL BASE-UP POSITION.
 [OTHER]TOTAL INPUT WATTS = 36.0 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]3288

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	3288
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	91
Total Luminaire Watts	36
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	3432	3437	3437
55	3209	3220	3215
65	2937	2937	2929
75	2480	2467	2492
85	1495	1533	1495

IES INDOOR REPORT**PHOTOMETRIC FILENAME : PANEL2X2-34Y-D10 - PROPRTATED FROM ITL80210.IES****CANDELA TABULATION**

	<u>0.0</u>	<u>22.5</u>	<u>45.0</u>	<u>67.5</u>	<u>90.0</u>
0.0	1235.968	1235.968	1235.968	1235.968	1235.968
2.5	1233.920	1234.944	1235.968	1234.944	1233.920
5.0	1229.824	1230.848	1230.848	1230.848	1229.824
7.5	1221.632	1222.656	1222.656	1222.656	1221.632
10.0	1210.368	1210.368	1211.392	1210.368	1210.368
12.5	1195.008	1196.032	1197.056	1196.032	1196.032
15.0	1177.600	1178.624	1178.624	1178.624	1178.624
17.5	1156.096	1157.120	1158.144	1157.120	1157.120
20.0	1131.520	1132.544	1132.544	1132.544	1132.544
22.5	1104.896	1105.920	1105.920	1105.920	1105.920
25.0	1074.176	1075.200	1075.200	1075.200	1075.200
27.5	1041.408	1043.456	1043.456	1043.456	1042.432
30.0	1007.616	1008.640	1007.616	1008.640	1008.640
32.5	970.752	971.776	970.752	971.776	971.776
35.0	931.840	933.888	932.864	934.912	932.864
37.5	891.904	892.928	893.952	894.976	892.928
40.0	849.920	850.944	850.944	851.968	850.944
42.5	806.912	807.936	807.936	809.984	807.936
45.0	762.880	763.904	763.904	764.928	763.904
47.5	718.848	718.848	718.848	720.896	718.848
50.0	672.768	672.768	673.792	675.840	673.792
52.5	625.664	626.688	626.688	628.736	626.688
55.0	578.560	579.584	580.608	581.632	579.584
57.5	531.456	532.480	532.480	534.528	534.528
60.0	486.400	484.352	485.376	487.424	487.424
62.5	438.272	436.224	437.248	439.296	438.272
65.0	390.144	389.120	390.144	392.192	389.120
67.5	343.040	342.016	342.016	344.064	342.016
70.0	294.912	293.888	294.912	295.936	295.936
72.5	247.808	246.784	247.808	248.832	248.832
75.0	201.728	200.704	200.704	202.752	202.752
77.5	156.672	156.672	157.696	157.696	157.696
80.0	113.664	113.664	114.688	114.688	114.688
82.5	74.752	74.752	75.776	75.776	75.776
85.0	40.960	40.960	41.984	40.960	40.960
87.5	15.360	15.360	15.360	15.360	14.336
90.0	0.000	0.000	0.000	0.000	0.000

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Zone	Lumens	%Lamp	%Fixt
0-20	449.02	N.A.	13.70
0-30	944.24	N.A.	28.70
0-40	1527.83	N.A.	46.50
0-60	2636.11	N.A.	80.20
0-80	3236.26	N.A.	98.40
0-90	3287.66	N.A.	100.00
10-90	3170.83	N.A.	96.40
20-40	1078.81	N.A.	32.80
20-50	1668.27	N.A.	50.70
40-70	1494.5	N.A.	45.50
60-80	600.15	N.A.	18.30
70-80	213.93	N.A.	6.50
80-90	51.39	N.A.	1.60
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	3287.66	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	116.83
10-20	332.19
20-30	495.23
30-40	583.59
40-50	589.45
50-60	518.83
60-70	386.22
70-80	213.93
80-90	51.39
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

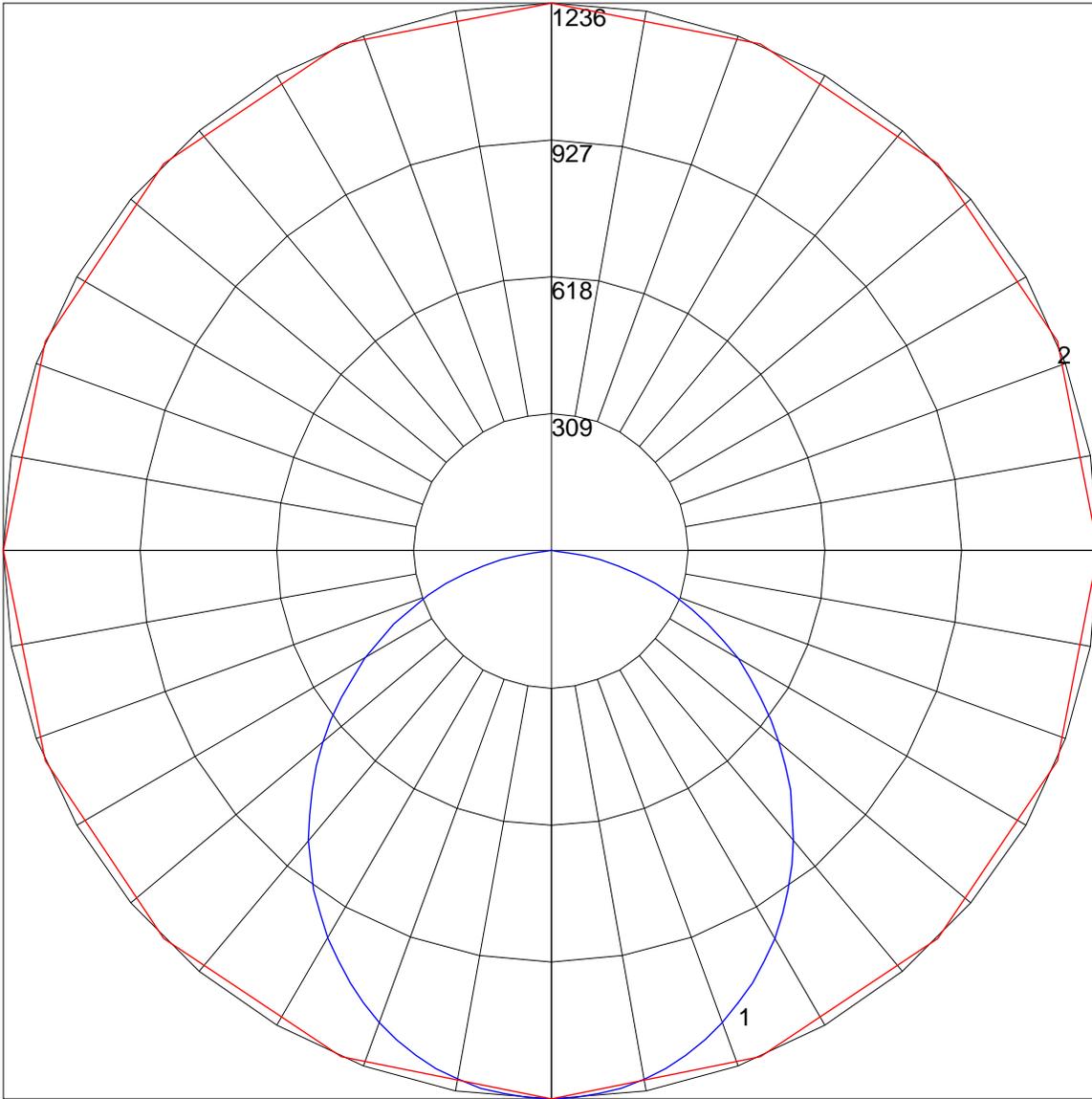
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	80	76	82	78	74	79	76	73	70
3	91	80	72	66	88	79	71	65	76	69	64	73	67	63	70	66	62	60
4	83	71	62	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	58	52	47	57	51	46	44
6	71	57	49	42	69	56	48	42	55	47	42	53	46	41	51	45	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	59	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	29	28
10	54	40	33	27	52	40	32	27	39	32	27	38	31	27	37	31	27	25

POLAR GRAPH



Maximum Candela = 1235.968 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: ITL80213
DATE: 12/27/13
PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: PANEL2X2-34Y

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.

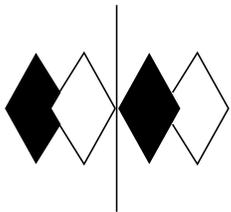
PROCEDURE: The test sample was provided by the customer and had an unknown number of operating hours. The test sample was mounted inside the integrating sphere and allowed to stabilize. After stabilization occurred, measurements were taken. In order to measure mean performance, multiple data sets were 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

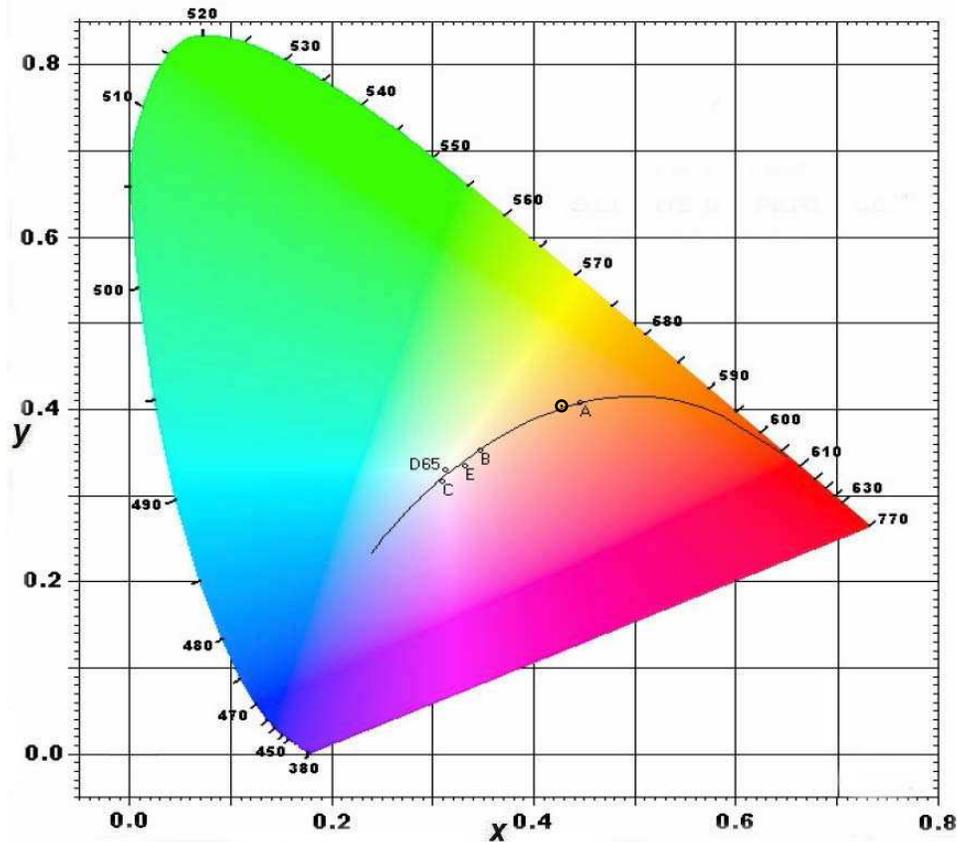


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CIE Chromaticity Diagram





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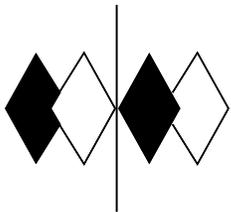
RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4274
Chromaticity Ordinate y	0.4036
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2446
Chromaticity Ordinate v'	0.5198
Correlated Color Temp CCT (K)	3163
ANSI C78.377-2008 Duv	0.001
Total Radiant Flux (milliWatts)	10353 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.293
Input Power (Watts)	34.9
Input Power Factor (%)	99.3
Input Current THD (%)	6.3
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)	0.134
Input Power (Watts)	35.4
Input Power Factor (%)	95.4
Input Current THD (%)	9.2
Input Voltage THD (%)	0.2

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	83
R1 Light greyish red	81
R2 Dark greyish yellow	87
R3 Strong yellowish green	93
R4 Moderate yellowish green	83
R5 Light bluish green	81
R6 Light blue	83
R7 Light violet	88
R8 Light reddish purple	68
R9 Strong red	23
R10 Strong yellow	70
R11 Strong green	81
R12 Strong blue	64
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	0.331	515	29.311	650	42.848
385	0.353	520	31.770	655	39.834
390	0.395	525	33.866	660	36.810
395	0.469	530	35.820	665	33.786
400	0.572	535	37.682	670	30.853
405	0.801	540	39.543	675	28.042
410	1.208	545	41.502	680	25.340
415	1.887	550	43.530	685	22.815
420	3.277	555	45.596	690	20.459
425	5.708	560	47.680	695	18.318
430	9.484	565	49.643	700	16.333
435	15.221	570	51.605	705	14.495
440	25.138	575	53.405	710	12.825
445	36.062	580	55.043	715	11.346
450	35.230	585	56.465	720	9.982
455	25.303	590	57.647	725	8.771
460	18.525	595	58.482	730	7.707
465	14.480	600	58.989	735	6.756
470	11.243	605	59.141	740	5.923
475	9.727	610	58.823	745	5.182
480	9.797	615	58.038	750	4.550
485	10.905	620	56.840	755	3.994
490	13.116	625	55.244	760	3.504
495	16.294	630	53.387	765	3.076
500	19.811	635	51.105	770	2.702
505	23.289	640	48.547	775	2.368
510	26.473	645	45.756	780	2.083

