



IES INDOOR REPORT

PHOTOMETRIC FILENAME : PANEL2X2-41Y-D10 - PROPRATED FROM ITL80216.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
 [TEST]SCALED FROM ITL80216
 [TESTLAB]SCALED PHOTOMETRY
 [ISSUE DATE]12/18/13
 [MANUFAC]RAB LIGHTING, INC.
 [LUMCAT]PANEL2X2-41Y/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 = 41.0 AT 120.0 VOLTS
 [_ MOUNTING]RECESSED
 [_ LEDDRIVER]RAB RD-052-A1050-C-080C
 [_ 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]3686

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	3686
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	90
Total Luminaire Watts	41
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	3851	3851	3851
55	3598	3604	3621
65	3277	3292	3308
75	2790	2778	2790
85	1634	1634	1596

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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	1388.053	1388.053	1388.053	1388.053	1388.053
2.5	1385.970	1387.012	1387.012	1385.970	1384.929
5.0	1380.764	1381.805	1381.805	1381.805	1380.764
7.5	1371.392	1372.433	1372.433	1372.433	1371.392
10.0	1357.855	1358.897	1359.938	1358.897	1358.897
12.5	1341.194	1342.236	1342.236	1342.236	1342.236
15.0	1321.410	1322.451	1322.451	1322.451	1322.451
17.5	1297.460	1298.501	1298.501	1298.501	1298.501
20.0	1270.386	1271.427	1272.469	1272.469	1271.427
22.5	1240.188	1240.188	1241.230	1242.271	1241.230
25.0	1206.867	1206.867	1207.908	1207.908	1206.867
27.5	1170.421	1169.380	1170.421	1171.463	1170.421
30.0	1130.852	1130.852	1131.893	1131.893	1130.852
32.5	1090.241	1089.200	1090.241	1091.282	1090.241
35.0	1046.507	1045.465	1045.465	1047.548	1045.465
37.5	1000.689	1000.689	1000.689	1001.731	1000.689
40.0	953.831	953.831	953.831	954.872	954.872
42.5	905.931	904.890	905.931	906.972	905.931
45.0	855.949	856.990	855.949	858.031	855.949
47.5	804.925	808.049	805.966	807.008	809.090
50.0	753.901	754.943	754.943	755.984	757.025
52.5	701.836	702.878	701.836	703.919	706.001
55.0	648.730	651.854	649.771	650.813	652.895
57.5	595.624	598.748	597.706	598.748	599.789
60.0	542.517	544.600	544.600	544.600	546.683
62.5	489.411	491.494	490.452	492.535	492.535
65.0	435.263	437.346	437.346	438.387	439.429
67.5	385.281	384.240	384.240	385.281	385.281
70.0	331.133	331.133	331.133	332.175	332.175
72.5	278.027	276.986	278.027	279.068	279.068
75.0	227.003	225.962	225.962	227.003	227.003
77.5	175.980	174.938	174.938	175.980	175.980
80.0	128.080	127.039	127.039	128.080	128.080
82.5	83.304	82.263	82.263	83.304	83.304
85.0	44.776	43.735	44.776	44.776	43.735
87.5	15.620	15.620	15.620	16.661	15.620
90.0	0.000	0.000	0.000	0.000	0.000

IES INDOOR REPORT**PHOTOMETRIC FILENAME : PANEL2X2-41Y-D10 - PROPRATED FROM ITL80216.IES****ZONAL LUMEN SUMMARY**

Zone	Lumens	%Lamp	%Fixt
0-20	503.94	N.A.	13.70
0-30	1059.84	N.A.	28.80
0-40	1714.15	N.A.	46.50
0-60	2956.9	N.A.	80.20
0-80	3630.06	N.A.	98.50
0-90	3686.3	N.A.	100.00
10-90	3555.15	N.A.	96.40
20-40	1210.21	N.A.	32.80
20-50	1871.13	N.A.	50.80
40-70	1676.12	N.A.	45.50
60-80	673.16	N.A.	18.30
70-80	239.79	N.A.	6.50
80-90	56.24	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	3686.3	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	131.15
10-20	372.79
20-30	555.90
30-40	654.31
40-50	660.92
50-60	581.83
60-70	433.37
70-80	239.79
80-90	56.24
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

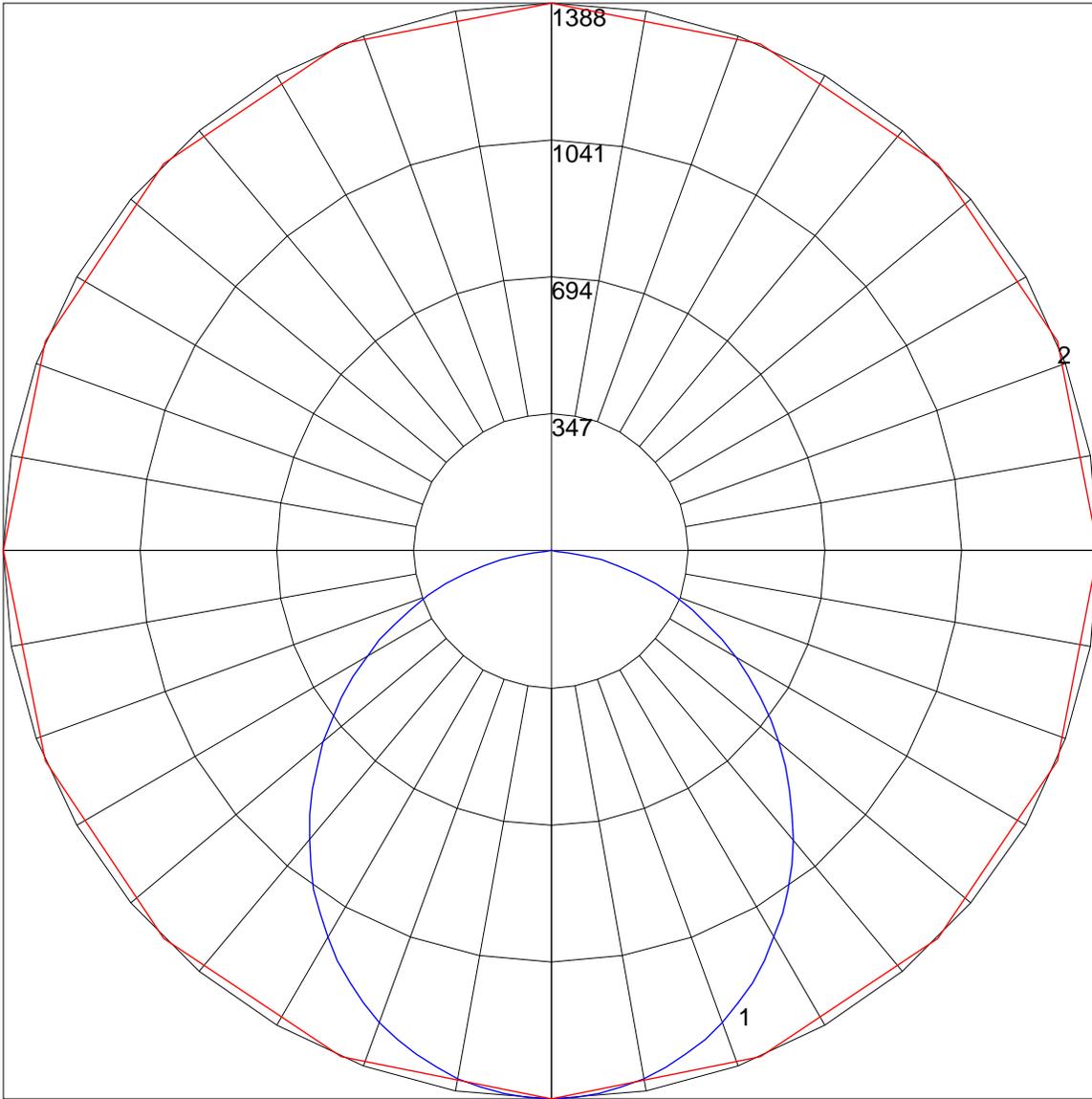
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	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	32	27	37	31	27	25

POLAR GRAPH



Maximum Candela = 1388.053 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

PHONE: (303)442-1255 • FAX: (970)535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com
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REPORT NUMBER: ITL80219
DATE: 12/27/13
PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: PANEL2X2-41Y

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-052-A1050-R-080C

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.

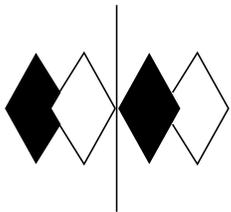
PROCEDURE: The test sample was provided by the customer and had an unknown number of operating hours. The test sample was mounted inside the integrating sphere and allowed to stabilize. After stabilization occurred, measurements were taken. In order to measure mean performance, multiple data sets were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

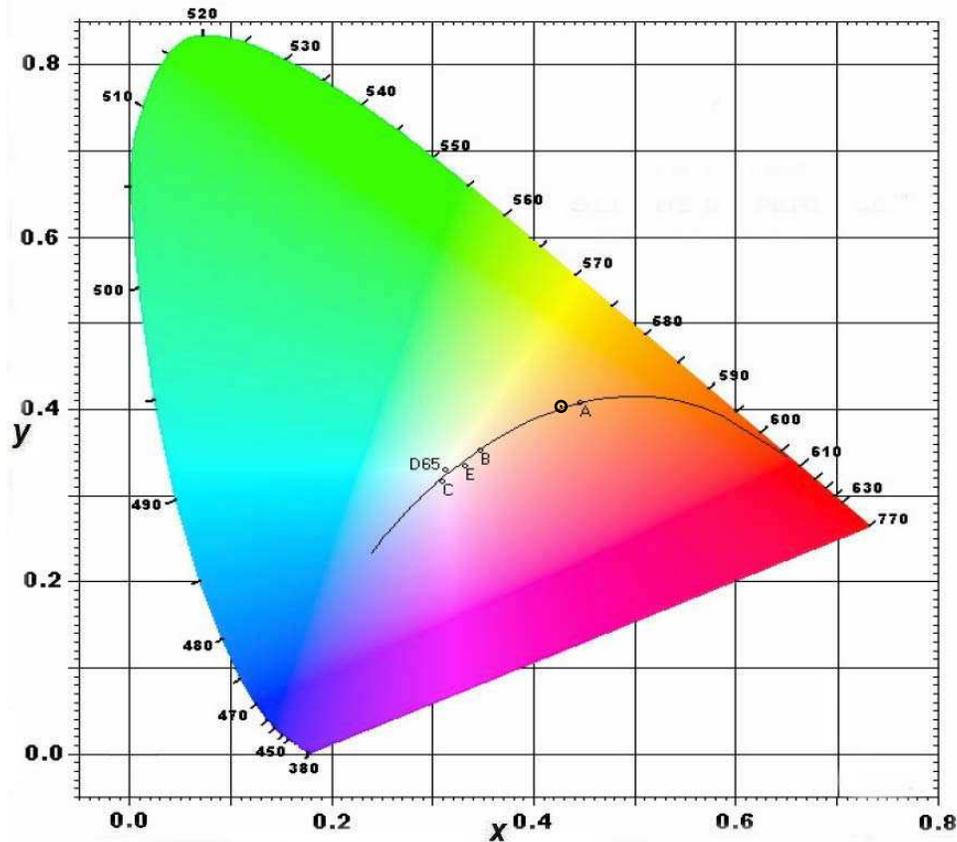
THIS ITL REPORT WITH THE USE OF THE NVLAP LOGO SHALL NOT BE USED BY THE CLIENT TO CLAIM PRODUCT CERTIFICATION, APPROVAL, OR ENDORSEMENT BY NVLAP, NIST, OR ANY AGENCY OF THE FEDERAL GOVERNMENT.

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



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CIE Chromaticity Diagram





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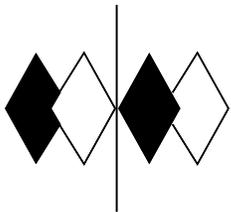
RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4269
Chromaticity Ordinate y	0.4030
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2446
Chromaticity Ordinate v'	0.5194
Correlated Color Temp CCT (K)	3166
ANSI C78.377-2008 Duv	0.001
Total Radiant Flux (milliWatts)	11428 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.330
Input Power (Watts)	39.4
Input Power Factor (%)	99.5
Input Current THD (%)	6.5
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)	0.157
Input Power (Watts)	40.3
Input Power Factor (%)	92.7
Input Current THD (%)	8.9
Input Voltage THD (%)	0.1

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	71
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	0.369	515	32.274	650	47.265
385	0.392	520	35.014	655	43.949
390	0.446	525	37.334	660	40.615
395	0.519	530	39.501	665	37.303
400	0.627	535	41.570	670	34.066
405	0.888	540	43.610	675	30.946
410	1.339	545	45.750	680	27.964
415	2.089	550	47.996	685	25.191
420	3.646	555	50.251	690	22.599
425	6.324	560	52.572	695	20.239
430	10.498	565	54.733	700	18.052
435	16.755	570	56.891	705	16.037
440	27.447	575	58.885	710	14.192
445	39.672	580	60.686	715	12.542
450	39.528	585	62.280	720	11.039
455	28.621	590	63.553	725	9.714
460	20.845	595	64.480	730	8.534
465	16.290	600	65.016	735	7.482
470	12.641	605	65.163	740	6.559
475	10.851	610	64.787	745	5.745
480	10.861	615	63.965	750	5.044
485	12.027	620	62.697	755	4.424
490	14.416	625	60.948	760	3.879
495	17.877	630	58.829	765	3.406
500	21.719	635	56.289	770	2.988
505	25.584	640	53.520	775	2.616
510	29.140	645	50.467	780	2.301

