



IES INDOOR REPORT

PHOTOMETRIC FILENAME : PANEL2X2-41N-D10 - PROPRTATED FROM ITL80218.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
 [TEST]SCALED FROM ITL80218
 [TESTLAB]SCALED PHOTOMETRY
 [ISSUE DATE]12/20/13
 [MANUFAC]RAB LIGHTING, INC.
 [LUMCAT]PANEL2X2-41N-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 = 40.9 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]3904

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	3904
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	95
Total Luminaire Watts	40.9
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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Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	4072	4091	4077
55	3802	3820	3826
65	3461	3485	3485
75	2903	2954	2941
85	1747	1747	1709

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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	1468.904	1468.904	1468.904	1468.904	1468.904
2.5	1467.863	1467.863	1468.904	1468.904	1466.823
5.0	1461.622	1462.662	1462.662	1462.662	1461.622
7.5	1452.259	1453.299	1453.299	1453.299	1452.259
10.0	1438.735	1439.775	1440.816	1439.775	1438.735
12.5	1421.050	1422.090	1423.130	1422.090	1421.050
15.0	1400.244	1401.284	1402.324	1400.244	1399.204
17.5	1375.277	1376.317	1376.317	1376.317	1376.317
20.0	1346.148	1347.189	1348.229	1347.189	1347.189
22.5	1313.899	1314.939	1315.980	1314.939	1315.980
25.0	1277.488	1278.529	1280.609	1278.529	1279.569
27.5	1238.997	1241.078	1241.078	1241.078	1241.078
30.0	1197.385	1198.426	1199.466	1198.426	1197.385
32.5	1152.652	1154.733	1155.773	1154.733	1153.693
35.0	1107.920	1107.920	1108.960	1108.960	1107.920
37.5	1060.066	1060.066	1061.106	1061.106	1060.066
40.0	1010.131	1011.172	1013.252	1011.172	1011.172
42.5	958.116	960.197	961.237	961.237	959.157
45.0	905.061	908.182	909.222	909.222	906.101
47.5	854.086	854.086	855.127	855.127	853.046
50.0	798.950	799.991	801.031	801.031	801.031
52.5	744.855	744.855	745.895	745.895	745.895
55.0	685.558	687.638	688.679	689.719	689.719
57.5	629.382	631.462	632.502	632.502	633.543
60.0	573.205	575.286	576.326	576.326	576.326
62.5	517.029	520.150	519.110	519.110	520.150
65.0	459.813	462.934	462.934	462.934	462.934
67.5	403.636	406.757	405.717	405.717	406.757
70.0	346.420	350.581	349.541	350.581	349.541
72.5	291.284	294.405	295.445	294.405	294.405
75.0	236.148	239.269	240.309	240.309	239.269
77.5	187.254	186.214	186.214	188.294	185.173
80.0	136.279	135.239	135.239	136.279	134.199
82.5	88.426	87.385	88.426	89.466	87.385
85.0	47.854	47.854	47.854	48.894	46.814
87.5	17.685	17.685	17.685	18.725	16.645
90.0	0.000	0.000	0.000	0.000	0.000

IES INDOOR REPORT**PHOTOMETRIC FILENAME : PANEL2X2-41N-D10 - PROPRATED FROM ITL80218.IES****ZONAL LUMEN SUMMARY**

Zone	Lumens	%Lamp	%Fixt
0-20	533.88	N.A.	13.70
0-30	1122.94	N.A.	28.80
0-40	1816.16	N.A.	46.50
0-60	3132.29	N.A.	80.20
0-80	3843.88	N.A.	98.50
0-90	3904.2	N.A.	100.00
10-90	3765.33	N.A.	96.40
20-40	1282.28	N.A.	32.80
20-50	1982.64	N.A.	50.80
40-70	1773.85	N.A.	45.40
60-80	711.59	N.A.	18.20
70-80	253.86	N.A.	6.50
80-90	60.33	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	3904.2	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	138.88
10-20	395.01
20-30	589.06
30-40	693.22
40-50	700.36
50-60	615.76
60-70	457.73
70-80	253.86
80-90	60.33
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

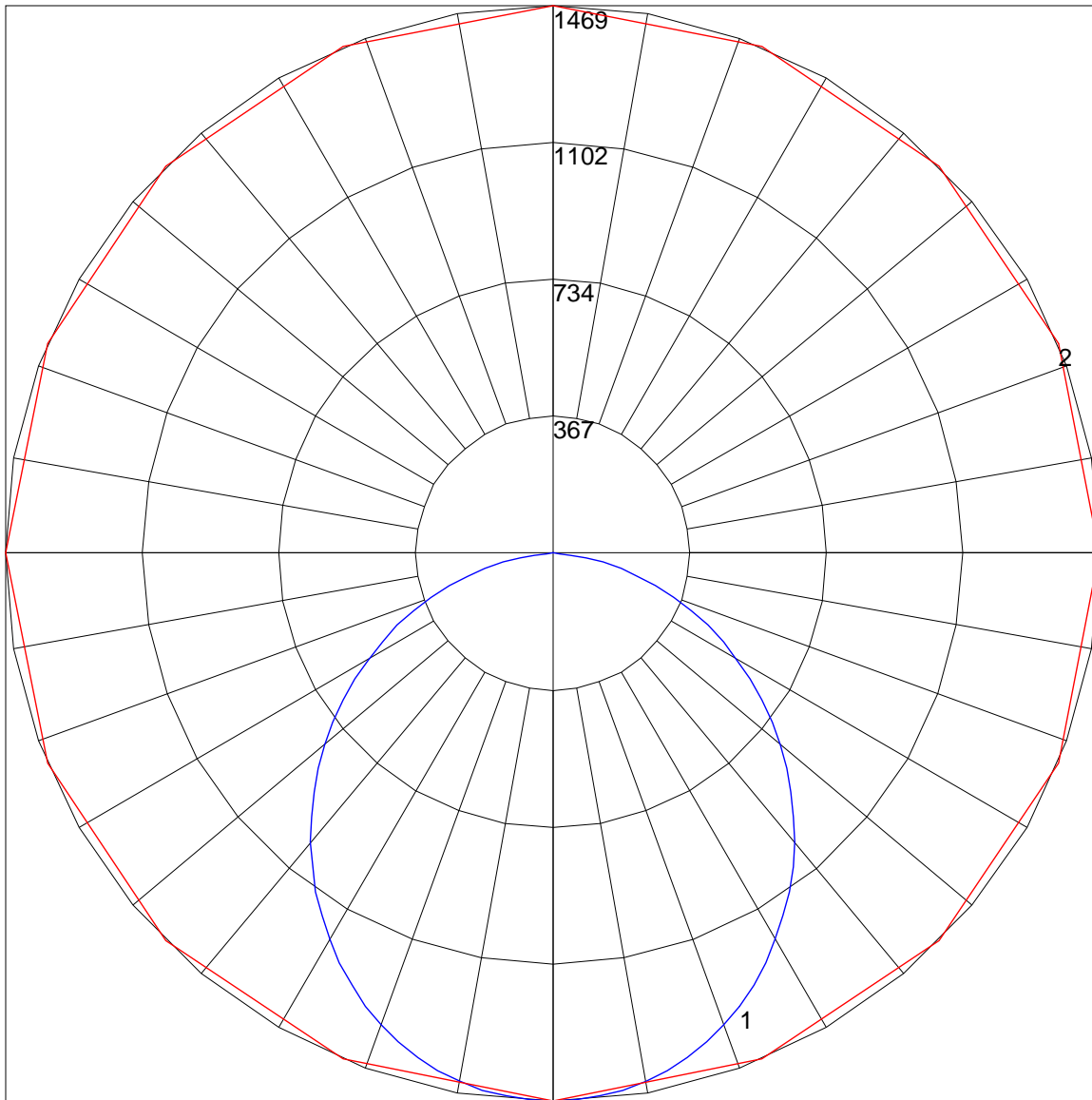
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	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 = 1468.904 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

Page 1 of 4

REPORT NUMBER: ITL80221
DATE: 12/27/13
PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: PANEL2X2-41N

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 (CRI_a,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.

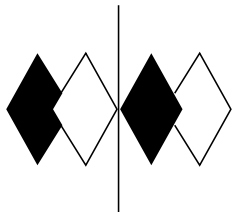
PROCEDURE: The test sample was provided by the customer and had an unknown number
of operating hours. The test sample was mounted inside the integrating
sphere and allowed to stabilize. After stabilization occurred,
measurements were taken. In order to measure mean performance, multiple
data sets were 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	<i>N THOMAS</i>
Approved	<i>L GRABA</i>
	Lighting Engineer



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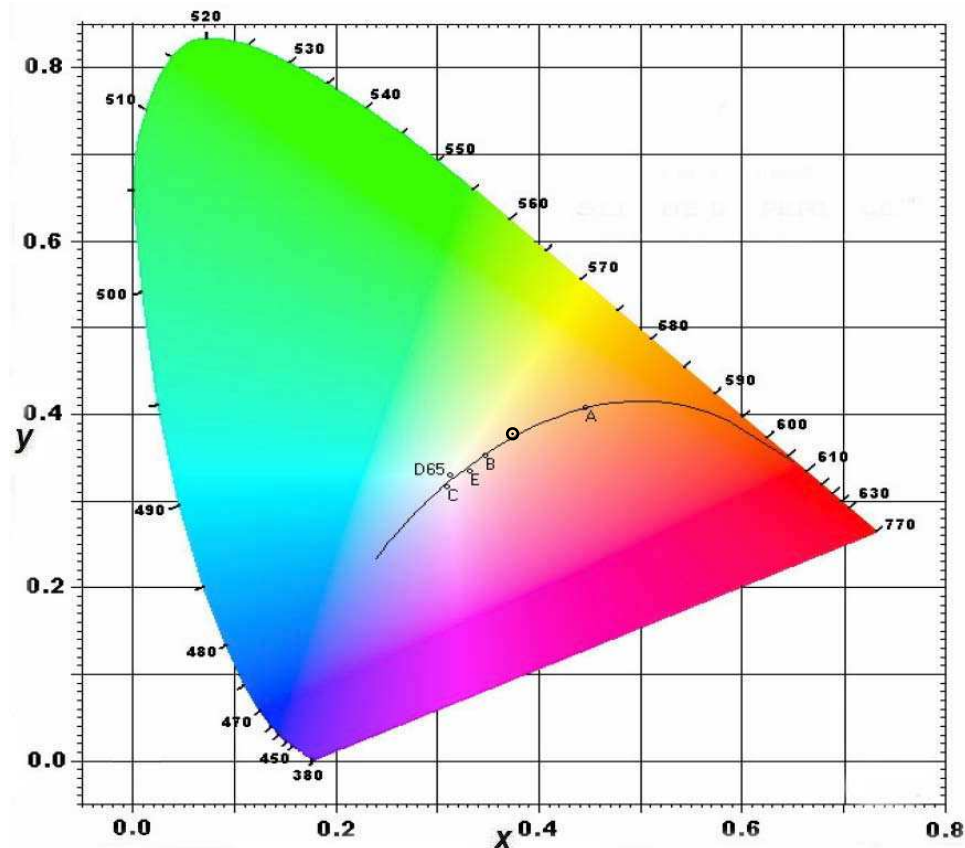
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Page 4 of 4

CIE Chromaticity Diagram



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Page 2 of 4

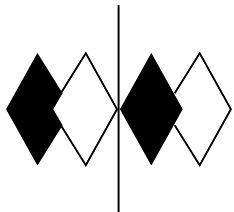
RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3739
Chromaticity Ordinate y	0.3771
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2207
Chromaticity Ordinate v'	0.5007
Correlated Color Temp CCT (K)	4184
ANSI C78.377-2008 Duv	0.002
Total Radiant Flux (milliWatts)	12000 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.331
Input Power (Watts)	39.5
Input Power Factor (%)	99.4
Input Current THD (%)	6.4
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 (%)	9.5
Input Voltage THD (%)	0.3

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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Page 3 of 4

RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.479	515	42.740	650	38.176
385	0.537	520	45.614	655	35.282
390	0.625	525	47.798	660	32.427
395	0.758	530	49.630	665	29.593
400	0.953	535	51.192	670	26.815
405	1.401	540	52.600	675	24.176
410	2.158	545	53.951	680	21.762
415	3.380	550	55.261	685	19.604
420	5.930	555	56.455	690	17.647
425	10.400	560	57.581	695	15.847
430	17.562	565	58.451	700	14.130
435	28.493	570	59.206	705	12.554
440	47.401	575	59.740	710	11.109
445	69.443	580	60.063	715	9.816
450	69.170	585	60.152	720	8.640
455	49.140	590	60.024	725	7.600
460	34.844	595	59.549	730	6.681
465	26.513	600	58.783	735	5.854
470	19.849	605	57.812	740	5.134
475	16.481	610	56.570	745	4.498
480	16.048	615	55.095	750	3.954
485	17.407	620	53.361	755	3.471
490	20.541	625	51.352	760	3.057
495	25.125	630	49.085	765	2.686
500	30.104	635	46.530	770	2.353
505	34.938	640	43.830	775	2.066
510	39.209	645	41.028	780	1.817

