



**IES INDOOR REPORT**

**PHOTOMETRIC FILENAME : PANEL2X2-52N-D10 - PROPRATED FROM ITL80224.IES**

**DESCRIPTION INFORMATION (From Photometric File)**

IESNA:LM-63-2002  
 [TEST]SCALED FROM ITL80224  
 [TESTLAB]SCALED PHOTOMETRY  
 [ISSUE DATE]12/19/13  
 [MANUFAC]RAB LIGHTING, INC.  
 [LUMCAT]PANEL2X2-52N/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 = 53.5 AT 120.0 VOLTS  
 [\_ MOUNTING]RECESSED  
 [\_ LEDDRIVER]RAB RD-052-A1050-C  
 [\_ 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]4708

**CHARACTERISTICS**

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	4708
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	88
Total Luminaire Watts	53.5
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	4935	4930	4921
55	4621	4610	4594
65	4212	4204	4182
75	3513	3538	3538
85	1984	2094	2057

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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>
<b>0.0</b>	1773.101	1773.101	1773.101	1773.101	1773.101
<b>2.5</b>	1770.082	1771.088	1772.094	1771.088	1770.082
<b>5.0</b>	1764.044	1765.050	1765.050	1765.050	1764.044
<b>7.5</b>	1752.975	1753.981	1754.987	1753.981	1752.975
<b>10.0</b>	1735.867	1736.874	1737.880	1736.874	1735.867
<b>12.5</b>	1715.741	1716.748	1717.754	1716.748	1715.741
<b>15.0</b>	1689.578	1691.590	1691.590	1690.584	1690.584
<b>17.5</b>	1658.382	1660.395	1660.395	1659.389	1660.395
<b>20.0</b>	1624.168	1626.181	1626.181	1625.174	1626.181
<b>22.5</b>	1584.922	1587.941	1587.941	1586.935	1586.935
<b>25.0</b>	1541.652	1543.664	1543.664	1542.658	1543.664
<b>27.5</b>	1493.349	1496.368	1497.374	1495.362	1496.368
<b>30.0</b>	1444.040	1448.066	1447.059	1445.047	1447.059
<b>32.5</b>	1390.707	1394.732	1393.725	1393.725	1393.725
<b>35.0</b>	1335.360	1339.385	1337.373	1337.373	1337.373
<b>37.5</b>	1276.995	1281.020	1280.014	1279.007	1280.014
<b>40.0</b>	1222.654	1220.642	1220.642	1218.629	1219.636
<b>42.5</b>	1160.264	1159.258	1159.258	1157.245	1157.245
<b>45.0</b>	1096.867	1095.861	1095.861	1093.848	1093.848
<b>47.5</b>	1032.464	1031.457	1030.451	1030.451	1028.439
<b>50.0</b>	967.054	966.048	965.042	965.042	963.029
<b>52.5</b>	900.638	898.626	898.626	899.632	896.613
<b>55.0</b>	833.216	831.204	831.204	832.210	828.185
<b>57.5</b>	764.788	763.782	762.775	763.782	760.763
<b>60.0</b>	696.360	695.353	695.353	696.360	692.334
<b>62.5</b>	627.931	626.925	625.919	627.931	623.906
<b>65.0</b>	559.503	558.496	558.496	559.503	555.478
<b>67.5</b>	491.074	490.068	490.068	491.074	487.049
<b>70.0</b>	423.652	421.640	421.640	422.646	418.621
<b>72.5</b>	355.224	354.218	354.218	355.224	354.218
<b>75.0</b>	285.789	286.795	287.802	288.808	287.802
<b>77.5</b>	221.386	222.392	222.392	222.392	223.399
<b>80.0</b>	160.002	161.008	161.008	161.008	162.014
<b>82.5</b>	103.649	105.661	106.668	104.655	104.655
<b>85.0</b>	54.340	57.359	57.359	55.346	56.353
<b>87.5</b>	20.126	21.132	21.132	20.126	20.126
<b>90.0</b>	0.000	0.000	0.000	0.000	0.000

**IES INDOOR REPORT****PHOTOMETRIC FILENAME : PANEL2X2-52N-D10 - PROPRATED FROM ITL80224.IES****ZONAL LUMEN SUMMARY**

Zone	Lumens	%Lamp	%Fixt
0-20	644.24	N.A.	13.70
0-30	1354.89	N.A.	28.80
0-40	2191.42	N.A.	46.50
0-60	3779.4	N.A.	80.30
0-80	4636.71	N.A.	98.50
0-90	4708.16	N.A.	100.00
10-90	4540.57	N.A.	96.40
20-40	1547.18	N.A.	32.90
20-50	2391.98	N.A.	50.80
40-70	2140.59	N.A.	45.50
60-80	857.30	N.A.	18.20
70-80	304.70	N.A.	6.50
80-90	71.45	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	4708.16	N.A.	100.00

Total Luminaire Efficiency = N.A.%

**ZONAL LUMEN SUMMARY**

Zone	Lumens
0-10	167.59
10-20	476.65
20-30	710.64
30-40	836.53
40-50	844.81
50-60	743.18
60-70	552.60
70-80	304.70
80-90	71.45
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**

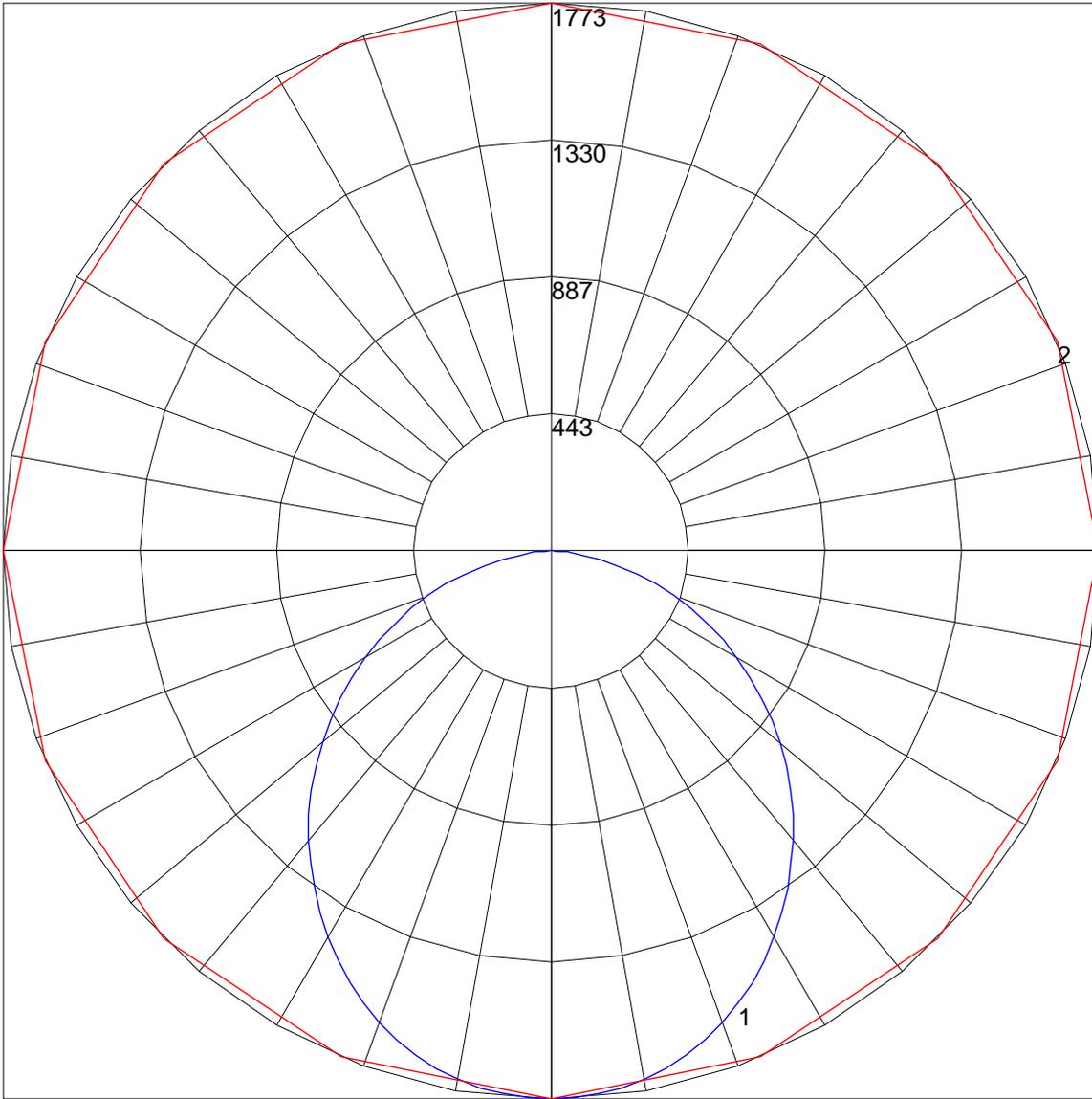
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**COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD**

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	58	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	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 = 1773.101 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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Page 1 of 4

REPORT NUMBER: ITL80227  
DATE: 12/27/13  
PREPARED FOR: RAB LIGHTING, INC.  
CATALOG NUMBER: PANEL2X2-52N

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

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.

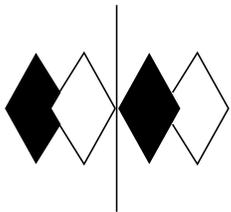
PROCEDURE: The test sample was provided by the customer and had an unknown number of operating hours. The test sample was mounted inside the integrating sphere and allowed to stabilize. After stabilization occurred, measurements were taken. In order to measure mean performance, multiple data sets were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

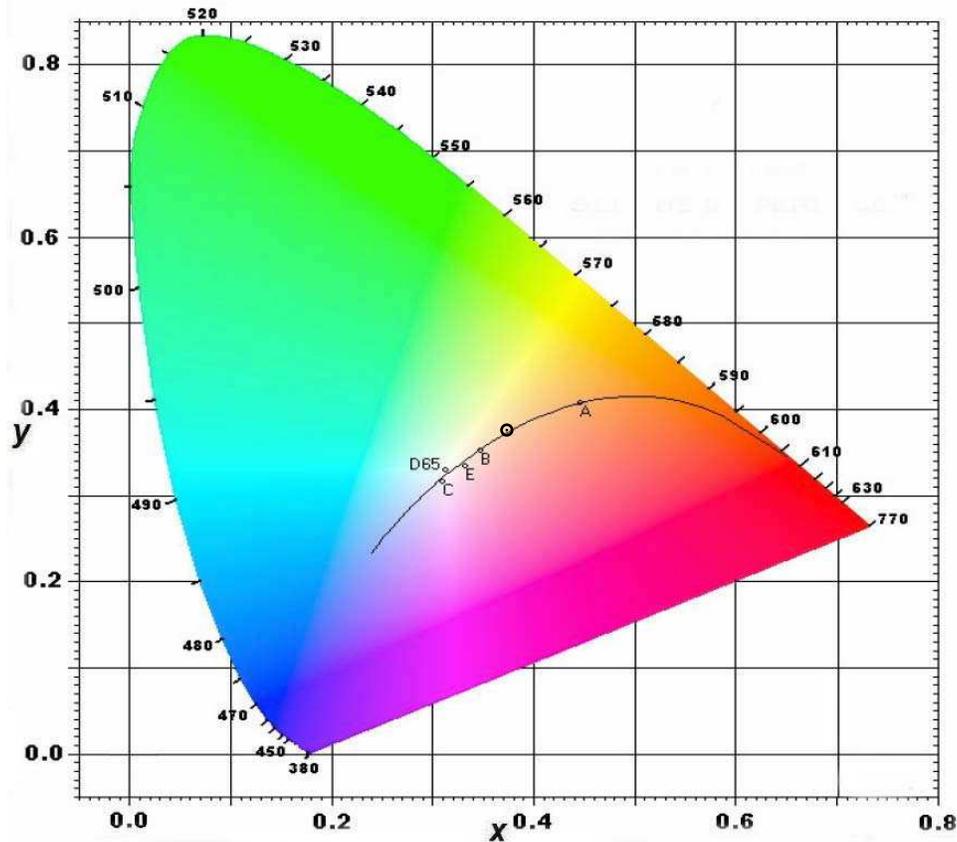
THIS ITL REPORT WITH THE USE OF THE NVLAP LOGO SHALL NOT BE USED BY THE CLIENT TO CLAIM PRODUCT CERTIFICATION, APPROVAL, OR ENDORSEMENT BY NVLAP, NIST, OR ANY AGENCY OF THE FEDERAL GOVERNMENT.

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



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## CIE Chromaticity Diagram





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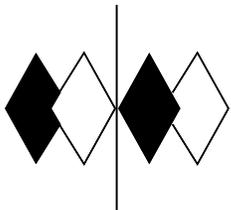
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RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3732
Chromaticity Ordinate y	0.3756
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2208
Chromaticity Ordinate v'	0.5000
Correlated Color Temp CCT (K)	4196
ANSI C78.377-2008 Duv	0.002
Total Radiant Flux (milliWatts)	15007 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.445
Input Power (Watts)	53.0
Input Power Factor (%)	99.3
Input Current THD (%)	7.1
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)	0.200
Input Power (Watts)	53.0
Input Power Factor (%)	95.7
Input Current THD (%)	7.1
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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RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.639	515	53.121	650	47.559
385	0.702	520	56.691	655	43.990
390	0.817	525	59.451	660	40.443
395	0.991	530	61.767	665	36.890
400	1.243	535	63.738	670	33.430
405	1.841	540	65.568	675	30.160
410	2.849	545	67.234	680	27.166
415	4.537	550	68.919	685	24.473
420	7.955	555	70.400	690	22.044
425	13.889	560	71.811	695	19.796
430	23.248	565	72.867	700	17.682
435	37.139	570	73.816	705	15.709
440	60.137	575	74.557	710	13.907
445	86.321	580	74.951	715	12.293
450	86.117	585	75.049	720	10.822
455	61.948	590	74.881	725	9.536
460	44.015	595	74.298	730	8.375
465	33.463	600	73.333	735	7.357
470	25.193	605	72.101	740	6.447
475	20.917	610	70.547	745	5.659
480	20.308	615	68.703	750	4.976
485	21.935	620	66.533	755	4.374
490	25.740	625	63.970	760	3.843
495	31.352	630	61.145	765	3.378
500	37.490	635	57.984	770	2.973
505	43.462	640	54.604	775	2.606
510	48.688	645	51.120	780	2.290

