



IES INDOOR REPORT

PHOTOMETRIC FILENAME : PANEL2X2-52Y-D10 - PROPRATED FROM ITL80222.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
 [TEST]SCALED FROM ITL80222
 [TESTLAB]SCALED PHOTOMETRY
 [ISSUE DATE]12/20/13
 [MANUFAC]RAB LIGHTING, INC.
 [LUMCAT]PANEL2X2-52Y/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 = 53.3 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]4445

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	4445
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	83
Total Luminaire Watts	53.3
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	4649	4654	4654
55	4352	4352	4352
65	3973	3965	3965
75	3343	3355	3330
85	1912	1985	1985

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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	1673.966	1673.966	1673.966	1673.966	1673.966
2.5	1671.952	1672.959	1672.959	1672.959	1671.952
5.0	1664.902	1665.909	1666.916	1665.909	1664.902
7.5	1654.830	1655.837	1655.837	1655.837	1654.830
10.0	1638.714	1639.722	1639.722	1639.722	1637.707
12.5	1618.570	1620.585	1620.585	1620.585	1618.570
15.0	1595.405	1595.405	1596.412	1595.405	1594.398
17.5	1566.196	1566.196	1566.196	1567.203	1565.189
20.0	1533.966	1533.966	1533.966	1533.966	1531.951
22.5	1496.699	1495.692	1497.706	1496.699	1494.685
25.0	1455.404	1455.404	1456.411	1456.411	1456.411
27.5	1411.087	1413.102	1412.094	1412.094	1412.094
30.0	1363.749	1365.763	1364.756	1364.756	1364.756
32.5	1313.389	1315.403	1316.410	1314.396	1315.403
35.0	1261.014	1263.029	1263.029	1262.022	1263.029
37.5	1205.618	1207.633	1208.640	1208.640	1207.633
40.0	1148.208	1151.230	1152.237	1151.230	1152.237
42.5	1093.819	1092.812	1093.819	1092.812	1093.819
45.0	1033.387	1033.387	1034.394	1033.387	1034.394
47.5	971.948	971.948	972.955	971.948	973.962
50.0	910.509	910.509	910.509	910.509	911.516
52.5	848.062	847.055	848.062	848.062	848.062
55.0	784.609	783.602	784.609	784.609	784.609
57.5	721.155	719.141	720.148	723.170	721.155
60.0	656.694	655.687	655.687	658.709	656.694
62.5	592.234	590.219	590.219	593.241	591.226
65.0	527.773	525.758	526.766	529.787	526.766
67.5	463.312	461.298	463.312	464.319	462.305
70.0	398.851	398.851	398.851	399.858	397.844
72.5	334.390	334.390	336.405	336.405	333.383
75.0	271.944	270.937	272.951	272.951	270.937
77.5	210.505	210.505	212.519	211.512	212.519
80.0	152.087	152.087	154.102	153.094	155.109
82.5	97.698	99.713	100.720	98.706	100.720
85.0	52.374	54.389	54.389	53.382	54.389
87.5	19.137	20.144	20.144	19.137	20.144
90.0	0.000	0.000	0.000	0.000	0.000

IES INDOOR REPORT**PHOTOMETRIC FILENAME : PANEL2X2-52Y-D10 - PROPRATED FROM ITL80222.IES****ZONAL LUMEN SUMMARY**

Zone	Lumens	%Lamp	%Fixt
0-20	607.98	N.A.	13.70
0-30	1278.47	N.A.	28.80
0-40	2067.95	N.A.	46.50
0-60	3566.47	N.A.	80.20
0-80	4376.97	N.A.	98.50
0-90	4444.91	N.A.	100.00
10-90	4286.71	N.A.	96.40
20-40	1459.97	N.A.	32.80
20-50	2257.13	N.A.	50.80
40-70	2020.38	N.A.	45.50
60-80	810.50	N.A.	18.20
70-80	288.64	N.A.	6.50
80-90	67.94	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	4444.91	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	158.20
10-20	449.78
20-30	670.49
30-40	789.48
40-50	797.16
50-60	701.36
60-70	521.86
70-80	288.64
80-90	67.94
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

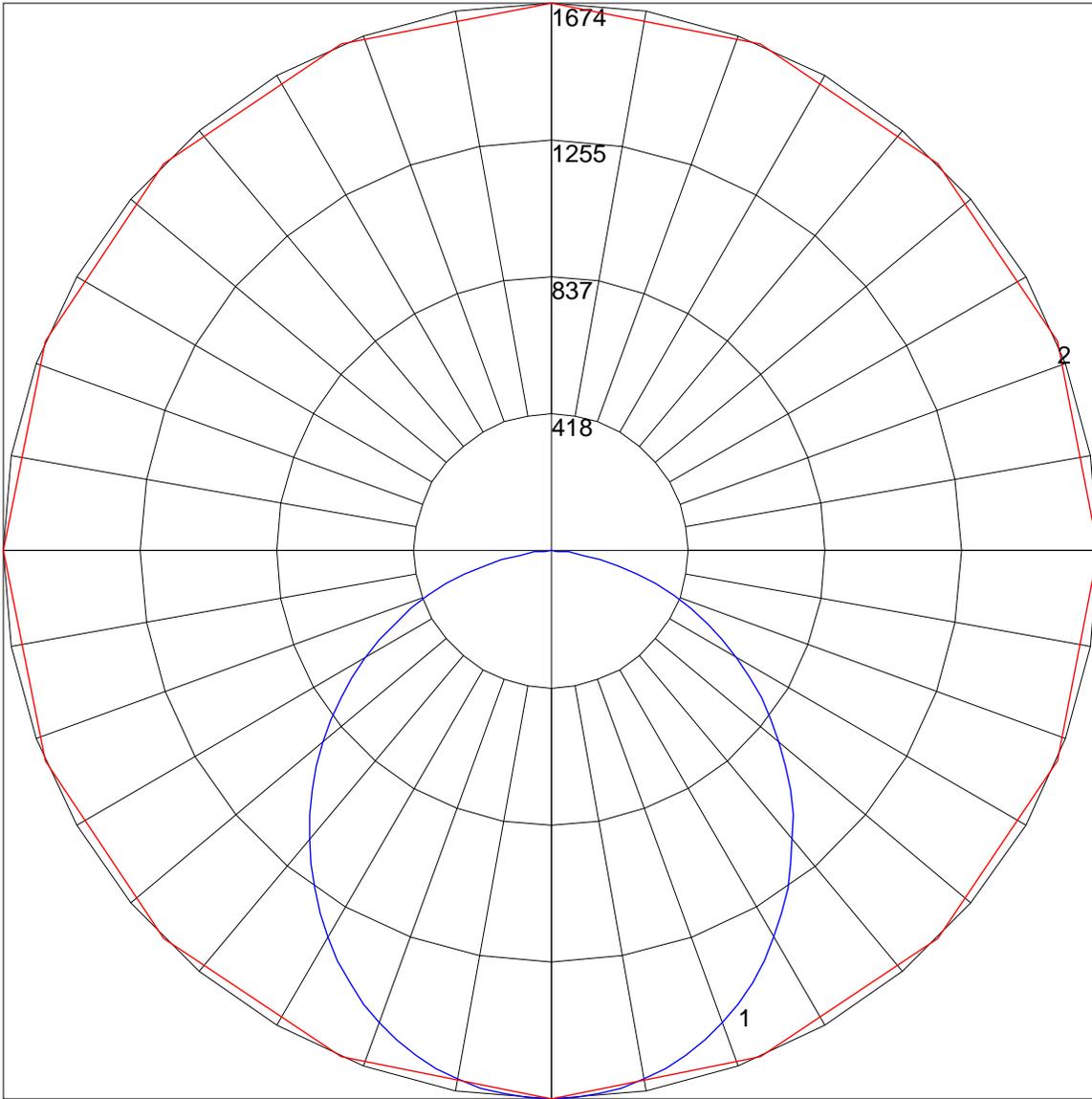
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	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 = 1673.966 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: ITL80225
DATE: 12/27/13
PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: PANEL2X2-52Y

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.

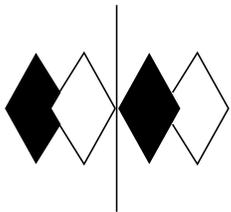
PROCEDURE: The test sample was provided by the customer and had an unknown number of operating hours. The test sample was mounted inside the integrating sphere and allowed to stabilize. After stabilization occurred, measurements were taken. In order to measure mean performance, multiple data sets were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

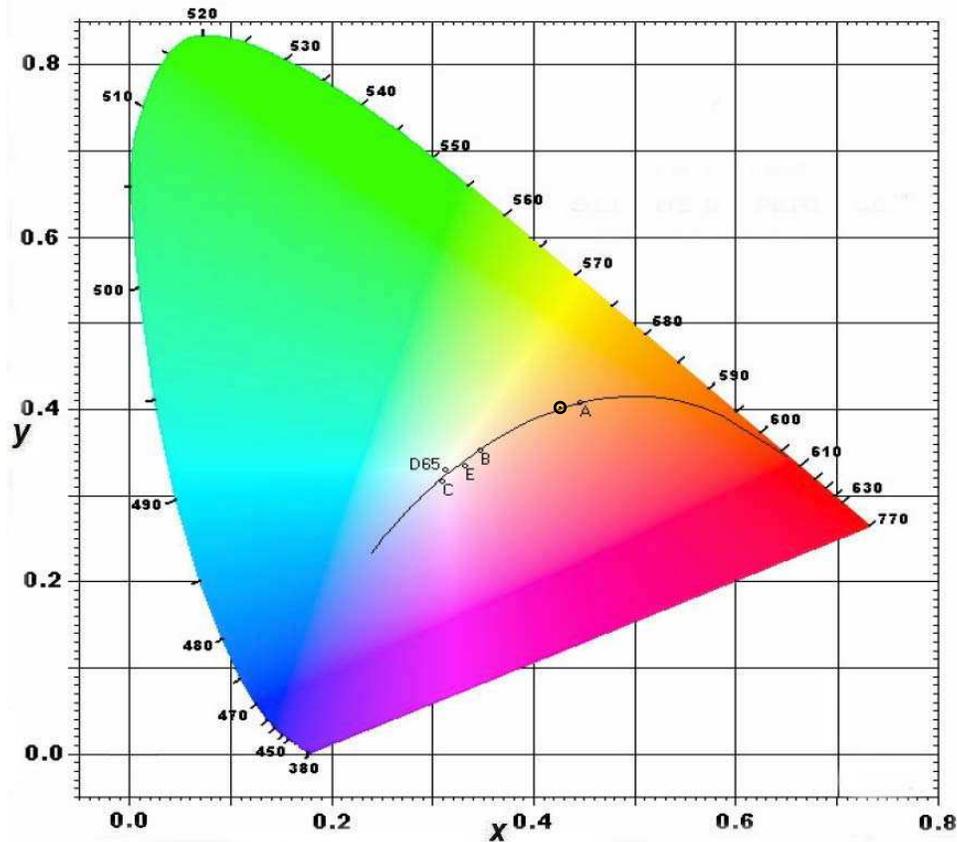
THIS ITL REPORT WITH THE USE OF THE NVLAP LOGO SHALL NOT BE USED BY THE CLIENT TO CLAIM PRODUCT CERTIFICATION, APPROVAL, OR ENDORSEMENT BY NVLAP, NIST, OR ANY AGENCY OF THE FEDERAL GOVERNMENT.

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



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CIE Chromaticity Diagram





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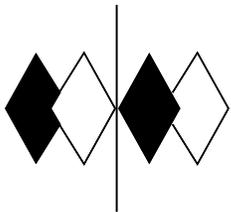
RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4260
Chromaticity Ordinate y	0.4017
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2445
Chromaticity Ordinate v'	0.5188
Correlated Color Temp CCT (K)	3173
ANSI C78.377-2008 Duv	0.001
Total Radiant Flux (milliWatts)	14280 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.444
Input Power (Watts)	52.9
Input Power Factor (%)	99.3
Input Current THD (%)	7.0
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)	0.199
Input Power (Watts)	52.8
Input Power Factor (%)	95.8
Input Current THD (%)	7.2
Input Voltage THD (%)	0.3

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	87
R8 Light reddish purple	68
R9 Strong red	23
R10 Strong yellow	71
R11 Strong green	81
R12 Strong blue	65
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	0.468	515	40.129	650	58.838
385	0.499	520	43.568	655	54.709
390	0.566	525	46.483	660	50.602
395	0.671	530	49.208	665	46.488
400	0.813	535	51.808	670	42.483
405	1.167	540	54.377	675	38.617
410	1.776	545	57.035	680	34.909
415	2.812	550	59.849	685	31.424
420	4.892	555	62.673	690	28.233
425	8.432	560	65.506	695	25.284
430	13.877	565	68.211	700	22.567
435	21.797	570	70.904	705	20.051
440	34.694	575	73.374	710	17.753
445	49.383	580	75.679	715	15.708
450	49.544	585	77.659	720	13.849
455	36.418	590	79.294	725	12.186
460	26.534	595	80.405	730	10.711
465	20.722	600	81.020	735	9.389
470	16.140	605	81.203	740	8.241
475	13.827	610	80.727	745	7.225
480	13.748	615	79.675	750	6.340
485	15.155	620	78.057	755	5.566
490	18.086	625	75.924	760	4.894
495	22.317	630	73.303	765	4.305
500	27.045	635	70.117	770	3.775
505	31.816	640	66.626	775	3.315
510	36.217	645	62.844	780	2.910

