



IES INDOOR REPORT

PHOTOMETRIC FILENAME : PANEL2X2-52YN-D10 - PROPRATED FROM ITL80223.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
 [TEST]SCALED FROM ITL80223
 [TESTLAB]SCALED PHOTOMETRY
 [ISSUE DATE]12/18/13
 [MANUFAC]RAB LIGHTING, INC.
 [LUMCAT]PANEL2X2-52YN/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 = 53.6 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]4578

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	4578
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	85
Total Luminaire Watts	53.6
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	4785	4798	4798
55	4463	4474	4474
65	4048	4048	4056
75	3392	3405	3405
85	1956	1993	1993

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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	1732.683	1732.683	1732.683	1732.683	1732.683
2.5	1729.650	1731.672	1731.672	1731.672	1730.661
5.0	1723.585	1725.606	1725.606	1724.595	1723.585
7.5	1712.465	1714.486	1715.497	1714.486	1713.476
10.0	1697.301	1698.312	1699.323	1697.301	1697.301
12.5	1676.072	1678.094	1678.094	1678.094	1677.083
15.0	1650.800	1652.822	1652.822	1652.822	1651.811
17.5	1621.484	1622.495	1623.505	1622.495	1621.484
20.0	1587.113	1589.135	1589.135	1589.135	1588.124
22.5	1549.710	1550.721	1551.732	1552.742	1551.732
25.0	1509.274	1507.252	1509.274	1509.274	1509.274
27.5	1463.783	1462.772	1463.783	1464.794	1463.783
30.0	1413.238	1413.238	1413.238	1415.260	1411.216
32.5	1361.682	1359.661	1360.671	1362.693	1359.661
35.0	1306.083	1306.083	1305.072	1306.083	1305.072
37.5	1249.472	1248.462	1247.451	1249.472	1249.472
40.0	1189.829	1188.818	1189.829	1189.829	1189.829
42.5	1129.175	1128.164	1129.175	1129.175	1129.175
45.0	1063.467	1065.489	1066.500	1065.489	1066.500
47.5	999.780	1003.824	1002.813	1001.802	1002.813
50.0	934.072	937.104	937.104	936.093	937.104
52.5	871.396	871.396	873.418	872.407	872.407
55.0	804.676	804.676	806.698	805.687	806.698
57.5	737.957	737.957	738.968	738.968	739.979
60.0	671.238	671.238	672.249	672.249	673.259
62.5	604.518	604.518	605.529	605.529	606.540
65.0	537.799	537.799	537.799	537.799	538.810
67.5	472.090	472.090	473.101	472.090	473.101
70.0	406.382	405.371	406.382	406.382	407.393
72.5	340.673	340.673	340.673	341.684	341.684
75.0	275.976	274.965	276.987	276.987	276.987
77.5	213.300	214.311	215.322	215.322	214.311
80.0	154.668	155.679	155.679	155.679	154.668
82.5	100.079	101.090	102.101	101.090	100.079
85.0	53.578	53.578	54.589	54.589	54.589
87.5	18.196	19.207	19.207	19.207	19.207
90.0	0.000	0.000	0.000	0.000	0.000

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ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	629.67	N.A.	13.80
0-30	1324.51	N.A.	28.90
0-40	2141.07	N.A.	46.80
0-60	3683.33	N.A.	80.50
0-80	4509.74	N.A.	98.50
0-90	4578.29	N.A.	100.00
10-90	4414.48	N.A.	96.40
20-40	1511.4	N.A.	33.00
20-50	2333.51	N.A.	51.00
40-70	2075.3	N.A.	45.30
60-80	826.42	N.A.	18.10
70-80	293.37	N.A.	6.40
80-90	68.55	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	4578.29	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	163.81
10-20	465.86
20-30	694.83
30-40	816.57
40-50	822.11
50-60	720.14
60-70	533.04
70-80	293.37
80-90	68.55
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

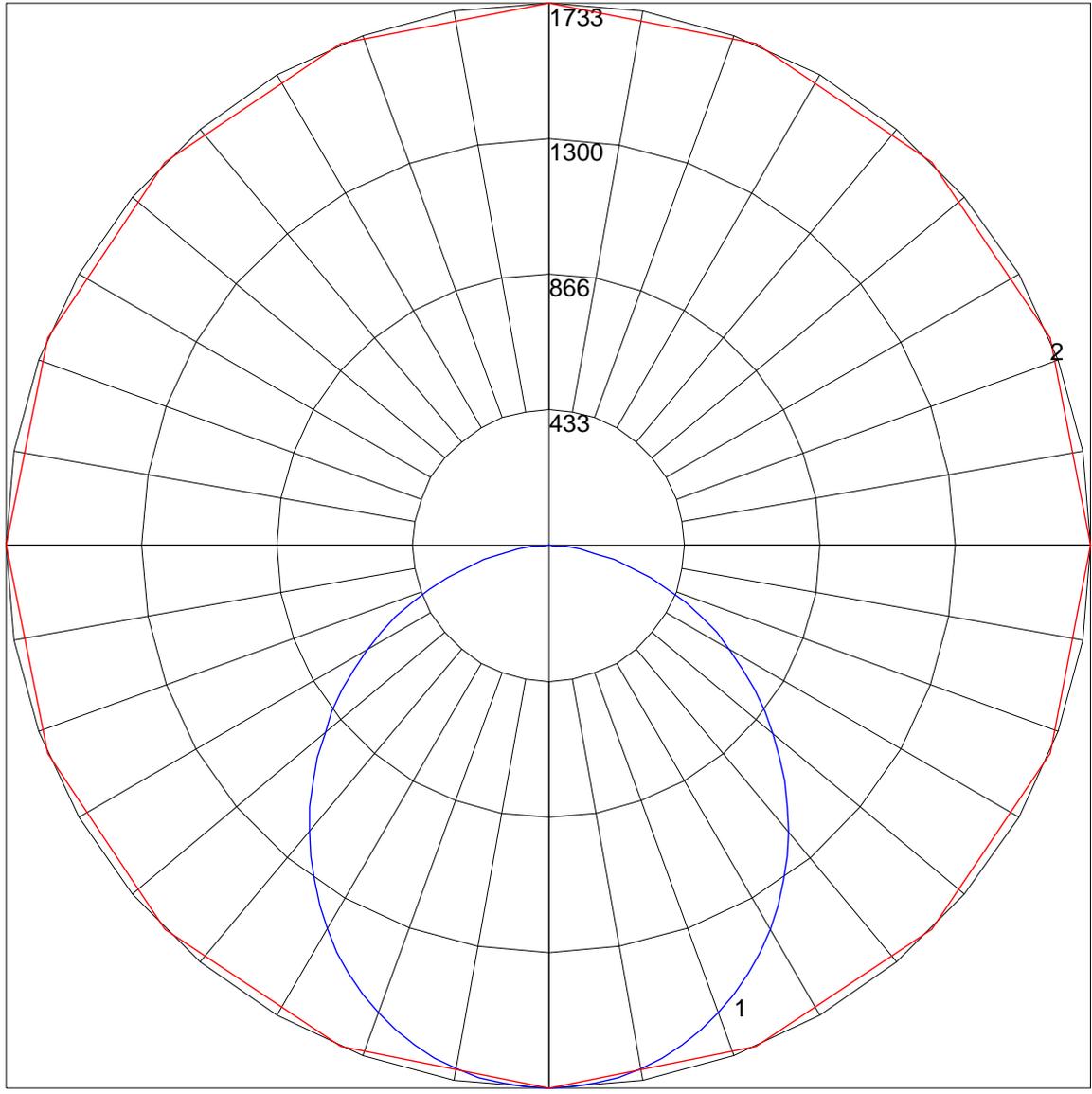
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	85	79	97	89	83	78	86	81	76	83	78	74	80	76	73	71
3	91	80	72	66	88	79	71	65	76	69	64	73	68	63	70	66	62	60
4	83	71	63	56	81	70	62	56	67	60	55	65	59	54	63	58	53	51
5	77	64	55	48	74	63	54	48	61	53	48	59	52	47	57	51	47	44
6	71	58	49	42	69	57	48	42	55	47	42	53	46	41	52	46	41	39
7	66	52	44	37	64	51	43	37	50	42	37	48	42	37	47	41	37	35
8	61	48	39	33	60	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 = 1732.683 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: ITL80226
DATE: 12/27/13
PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: PANEL2X2-52YN

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.

INSTRUMENTS: Associated Power Technologies APT5010 AC Power Source Calibration Due: 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.

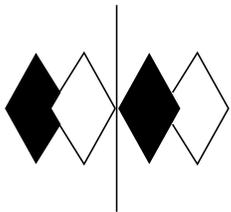
PROCEDURE: The test sample was provided by the customer and had an unknown number of operating hours. The test sample was mounted inside the integrating sphere and allowed to stabilize. After stabilization occurred, measurements were taken. In order to measure mean performance, multiple data sets were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

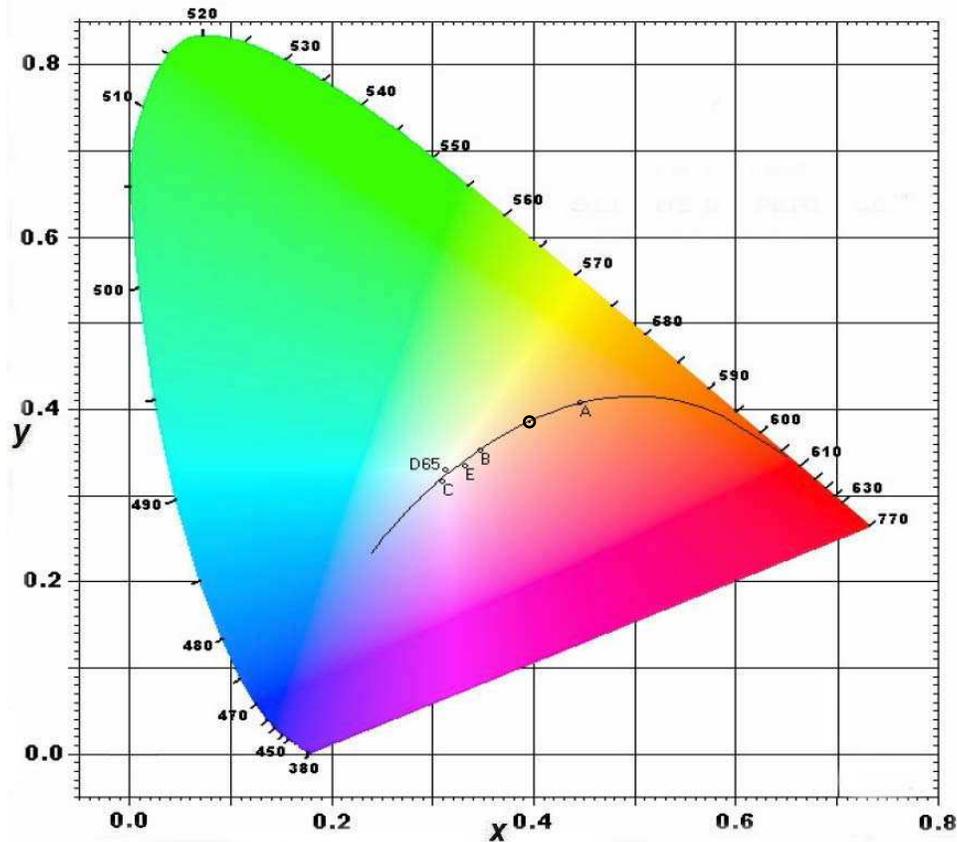
THIS ITL REPORT WITH THE USE OF THE NVLAP LOGO SHALL NOT BE USED BY THE CLIENT TO CLAIM PRODUCT CERTIFICATION, APPROVAL, OR ENDORSEMENT BY NVLAP, NIST, OR ANY AGENCY OF THE FEDERAL GOVERNMENT.

Checked N THOMAS
Approved L GRABA
Lighting Engineer



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CIE Chromaticity Diagram





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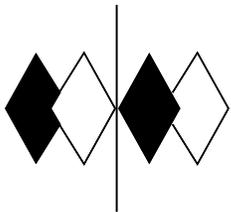
RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3956
Chromaticity Ordinate y	0.3851
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2316
Chromaticity Ordinate v'	0.5075
Correlated Color Temp CCT (K)	3678
ANSI C78.377-2008 Duv	0.000
Total Radiant Flux (milliWatts)	14675 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.446
Input Power (Watts)	53.2
Input Power Factor (%)	99.4
Input Current THD (%)	7.2
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)	53.1
Input Power Factor (%)	95.8
Input Current THD (%)	7.1
Input Voltage THD (%)	0.3

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	84
R1 Light greyish red	83
R2 Dark greyish yellow	89
R3 Strong yellowish green	92
R4 Moderate yellowish green	84
R5 Light bluish green	83
R6 Light blue	84
R7 Light violet	89
R8 Light reddish purple	72
R9 Strong red	29
R10 Strong yellow	73
R11 Strong green	82
R12 Strong blue	64
R13 Light yellowish pink (skin)	84
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	0.514	515	46.169	650	53.166
385	0.552	520	49.613	655	49.337
390	0.623	525	52.437	660	45.534
395	0.732	530	54.926	665	41.696
400	0.892	535	57.221	670	38.027
405	1.330	540	59.405	675	34.491
410	1.965	545	61.578	680	31.125
415	3.059	550	63.818	685	28.047
420	5.269	555	66.014	690	25.181
425	9.026	560	68.165	695	22.549
430	15.134	565	70.051	700	20.120
435	24.098	570	71.910	705	17.875
440	38.678	575	73.501	710	15.827
445	60.565	580	74.863	715	13.995
450	72.322	585	75.929	720	12.329
455	59.653	590	76.643	725	10.858
460	43.162	595	76.984	730	9.531
465	33.690	600	76.893	735	8.363
470	26.340	605	76.417	740	7.336
475	21.341	610	75.466	745	6.436
480	19.836	615	74.039	750	5.647
485	20.630	620	72.164	755	4.956
490	23.194	625	69.827	760	4.357
495	27.456	630	67.088	765	3.830
500	32.456	635	63.945	770	3.357
505	37.512	640	60.538	775	2.951
510	42.138	645	56.923	780	2.597

