



IES INDOOR REPORT
PHOTOMETRIC FILENAME : NW-4-L93-830-RA-DIM-UNV_.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
 [TEST] GEN FROM BALLABS TEST NO. 20990.0
 [TESTLAB] BUILDING ACOUSTICS & LIGHTING LABORATORIES, INC
 [ISSUEDATE] 2023-08-09
 [MANUFAC] WILLIAMS INDOOR
 [OTHER] H.E. WILLIAMS, INC - CARTHAGE, MO
 [LUMINAIRE] 48 INCH LINEAR LED SURFACE LUMINAIRE
 [MORE] WHITE REFLECTOR w/RADIAL RIBBED FROST ACRYLIC LENS
 [MORE] 0-10V DIMMING DRIVER
 [LUMCAT] NW-4-L93-830-RA-DIM-UNV
 [LAMPCAT] 22 INCH HLM LED ARRAYS

CHARACTERISTICS

| | |
|---------------------------------|---------------------|
| Lumens Per Lamp | N.A. (absolute) |
| Total Lamp Lumens | N.A. (absolute) |
| Luminaire Lumens | 9148 |
| Total Luminaire Efficiency | N.A. |
| Luminaire Efficacy Rating (LER) | 131 |
| Total Luminaire Watts | 70.1 |
| Ballast Factor | 1.00 |
| CIE Type | Direct |
| Spacing Criterion (0-180) | 1.20 |
| Spacing Criterion (90-270) | 1.28 |
| Spacing Criterion (Diagonal) | 1.36 |
| Basic Luminous Shape | Rectangular w/Sides |
| Luminous Length (0-180) | 3.98 ft |
| Luminous Width (90-270) | 0.38 ft |
| Luminous Height | 0.15 ft |

LUMINANCE DATA (cd/sq.m)

| Angle In Degrees | Average 0-Deg | Average 45-Deg | Average 90-Deg |
|---------------------|------------------|-------------------|-------------------|
| 45 | 16007 | 14670 | 15054 |
| 55 | 13649 | 12714 | 13386 |
| 65 | 10980 | 10531 | 11590 |
| 75 | 8517 | 8929 | 10014 |
| 85 | 3996 | 8049 | 9323 |

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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 | 2954.262 | 2954.262 | 2954.262 | 2954.262 | 2954.262 |
| 5 | 2979.032 | 2939.972 | 2932.350 | 2932.350 | 2923.776 |
| 10 | 2924.729 | 2891.385 | 2893.290 | 2900.912 | 2891.385 |
| 15 | 2826.603 | 2800.880 | 2821.839 | 2844.704 | 2841.846 |
| 20 | 2699.896 | 2689.417 | 2723.713 | 2765.631 | 2767.537 |
| 25 | 2524.603 | 2536.035 | 2597.959 | 2653.215 | 2667.505 |
| 30 | 2339.783 | 2359.789 | 2448.389 | 2519.840 | 2547.467 |
| 35 | 2109.234 | 2155.916 | 2273.095 | 2366.458 | 2398.849 |
| 40 | 1889.165 | 1939.657 | 2080.654 | 2211.171 | 2241.657 |
| 45 | 1628.131 | 1701.487 | 1872.970 | 2013.966 | 2052.074 |
| 50 | 1384.245 | 1474.749 | 1662.427 | 1817.714 | 1859.632 |
| 55 | 1143.216 | 1231.816 | 1447.122 | 1608.125 | 1657.664 |
| 60 | 914.573 | 1014.605 | 1235.626 | 1384.245 | 1440.453 |
| 65 | 694.504 | 800.252 | 1016.510 | 1206.093 | 1247.059 |
| 70 | 512.542 | 605.905 | 832.643 | 1016.510 | 1065.097 |
| 75 | 347.728 | 451.571 | 681.166 | 845.980 | 882.182 |
| 80 | 193.394 | 320.101 | 544.933 | 694.504 | 745.949 |
| 85 | 68.593 | 216.258 | 432.517 | 571.608 | 614.479 |
| 90 | 0.000 | 142.902 | 337.249 | 473.482 | 501.110 |
| 95 | 0.000 | 91.457 | 265.798 | 387.741 | 429.659 |
| 100 | 0.000 | 60.972 | 203.874 | 321.053 | 354.397 |
| 105 | 0.000 | 40.965 | 161.003 | 259.129 | 296.284 |
| 110 | 0.000 | 19.054 | 127.659 | 212.448 | 247.697 |
| 115 | 0.000 | 12.385 | 101.937 | 179.104 | 203.874 |
| 120 | 0.000 | 0.000 | 80.978 | 146.713 | 172.435 |
| 125 | 0.000 | 0.000 | 62.877 | 117.180 | 137.186 |
| 130 | 0.000 | 0.000 | 49.539 | 92.410 | 109.558 |
| 135 | 0.000 | 0.000 | 40.013 | 71.451 | 87.647 |
| 140 | 0.000 | 0.000 | 20.959 | 54.303 | 66.688 |
| 145 | 0.000 | 0.000 | 7.621 | 41.918 | 48.587 |
| 150 | 0.000 | 0.000 | 0.000 | 36.202 | 40.965 |
| 155 | 0.000 | 0.000 | 0.000 | 34.296 | 36.202 |
| 160 | 0.000 | 0.000 | 0.000 | 20.006 | 33.344 |
| 165 | 0.000 | 0.000 | 0.000 | 6.669 | 11.432 |
| 170 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 175 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 180 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

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ZONAL LUMEN SUMMARY

| Zone | Lumens | %Lamp | %Fixt |
|---------|---------|-------|--------|
| 0-20 | 1076.5 | N.A. | 11.80 |
| 0-30 | 2272.54 | N.A. | 24.80 |
| 0-40 | 3688.95 | N.A. | 40.30 |
| 0-60 | 6397.77 | N.A. | 69.90 |
| 0-80 | 8081.78 | N.A. | 88.30 |
| 0-90 | 8515.08 | N.A. | 93.10 |
| 10-90 | 8235.8 | N.A. | 90.00 |
| 20-40 | 2612.45 | N.A. | 28.60 |
| 20-50 | 4047.87 | N.A. | 44.20 |
| 40-70 | 3702.13 | N.A. | 40.50 |
| 60-80 | 1684.01 | N.A. | 18.40 |
| 70-80 | 690.70 | N.A. | 7.60 |
| 80-90 | 433.29 | N.A. | 4.70 |
| 90-110 | 428.34 | N.A. | 4.70 |
| 90-120 | 527.05 | N.A. | 5.80 |
| 90-130 | 583.77 | N.A. | 6.40 |
| 90-150 | 626.18 | N.A. | 6.80 |
| 90-180 | 633.17 | N.A. | 6.90 |
| 110-180 | 204.82 | N.A. | 2.20 |
| 0-180 | 9148.24 | N.A. | 100.00 |

Total Luminaire Efficiency = N.A. %

ZONAL LUMEN SUMMARY

| Zone | Lumens |
|---------|---------|
| 0-10 | 279.28 |
| 10-20 | 797.22 |
| 20-30 | 1196.04 |
| 30-40 | 1416.42 |
| 40-50 | 1435.42 |
| 50-60 | 1273.4 |
| 60-70 | 993.31 |
| 70-80 | 690.70 |
| 80-90 | 433.29 |
| 90-100 | 265.17 |
| 100-110 | 163.17 |
| 110-120 | 98.71 |
| 120-130 | 56.72 |
| 130-140 | 30.00 |
| 140-150 | 12.41 |
| 150-160 | 5.79 |
| 160-170 | 1.19 |
| 170-180 | 0.00 |

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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 | 117 | 117 | 117 | 117 | 114 | 114 | 114 | 114 | 107 | 107 | 107 | 101 | 101 | 101 | 96 | 96 | 96 | 93 |
| 1 | 106 | 101 | 96 | 92 | 102 | 98 | 93 | 90 | 92 | 89 | 85 | 87 | 84 | 82 | 82 | 80 | 78 | 75 |
| 2 | 96 | 87 | 80 | 74 | 93 | 85 | 78 | 73 | 80 | 75 | 70 | 76 | 71 | 67 | 72 | 68 | 65 | 62 |
| 3 | 88 | 77 | 68 | 61 | 84 | 74 | 67 | 60 | 70 | 64 | 58 | 67 | 61 | 57 | 63 | 59 | 55 | 52 |
| 4 | 80 | 68 | 59 | 52 | 77 | 66 | 58 | 51 | 63 | 55 | 50 | 59 | 53 | 48 | 57 | 51 | 47 | 45 |
| 5 | 74 | 61 | 51 | 45 | 71 | 59 | 51 | 44 | 56 | 49 | 43 | 53 | 47 | 42 | 51 | 45 | 41 | 39 |
| 6 | 68 | 55 | 46 | 39 | 66 | 53 | 45 | 39 | 51 | 43 | 38 | 48 | 42 | 37 | 46 | 40 | 36 | 34 |
| 7 | 63 | 49 | 41 | 34 | 61 | 48 | 40 | 34 | 46 | 39 | 33 | 44 | 38 | 33 | 42 | 36 | 32 | 30 |
| 8 | 59 | 45 | 37 | 31 | 57 | 44 | 36 | 30 | 42 | 35 | 30 | 40 | 34 | 29 | 39 | 33 | 29 | 27 |
| 9 | 55 | 41 | 33 | 28 | 53 | 41 | 33 | 27 | 39 | 32 | 27 | 37 | 31 | 26 | 36 | 30 | 26 | 24 |
| 10 | 51 | 38 | 30 | 25 | 50 | 37 | 30 | 25 | 36 | 29 | 24 | 35 | 28 | 24 | 33 | 28 | 24 | 22 |

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UGR TABLE - CORRECTED

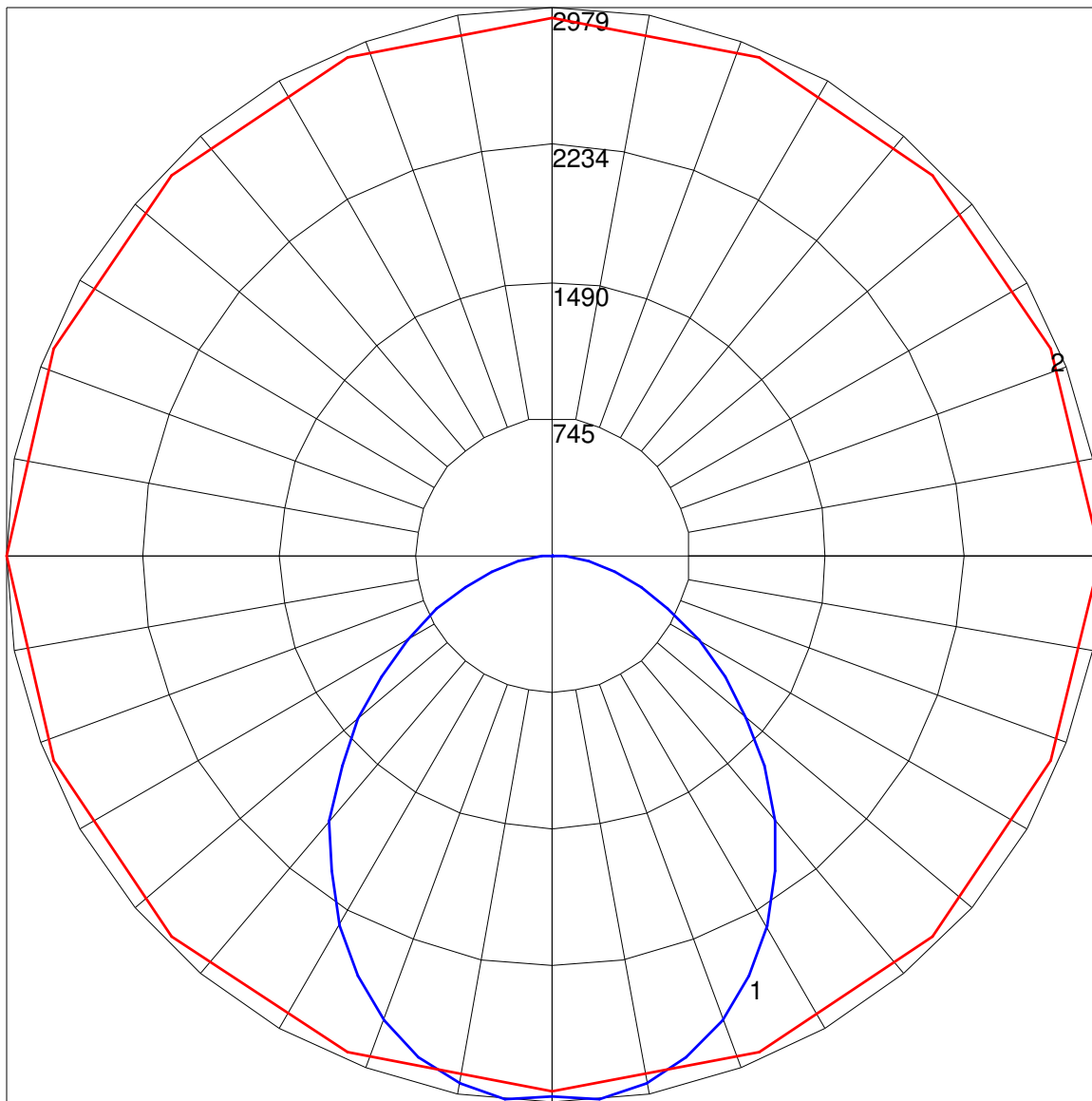
Reflectances

| | | | | | | | | | | |
|----------------|----|----|----|----|----|----|----|----|----|----|
| Ceiling Cavity | 70 | 70 | 50 | 50 | 30 | 70 | 70 | 50 | 50 | 30 |
| Walls | 50 | 30 | 50 | 30 | 30 | 50 | 30 | 50 | 30 | 30 |
| Floor Cavity | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |

| Room Size | | UGR Viewed Crosswise | | | | | UGR Viewed Endwise | | | | |
|-----------|------|----------------------|------|------|------|------|--------------------|------|------|------|------|
| X=2H | Y=2H | 18.6 | 20.1 | 19.0 | 20.5 | 21.0 | 21.6 | 23.1 | 22.1 | 23.5 | 24.0 |
| | 3H | 19.8 | 21.1 | 20.3 | 21.6 | 22.1 | 23.8 | 25.2 | 24.3 | 25.7 | 26.2 |
| | 4H | 20.2 | 21.5 | 20.7 | 21.9 | 22.5 | 24.9 | 26.2 | 25.4 | 26.7 | 27.2 |
| | 6H | 20.4 | 21.6 | 20.9 | 22.1 | 22.6 | 26.0 | 27.2 | 26.5 | 27.7 | 28.2 |
| | 8H | 20.4 | 21.6 | 21.0 | 22.1 | 22.7 | 26.6 | 27.7 | 27.1 | 28.2 | 28.8 |
| | 12H | 20.4 | 21.5 | 21.0 | 22.1 | 22.7 | 27.2 | 28.3 | 27.7 | 28.8 | 29.4 |
| 4H | 2H | 19.5 | 20.8 | 20.0 | 21.3 | 21.8 | 21.9 | 23.2 | 22.4 | 23.7 | 24.2 |
| | 3H | 21.0 | 22.1 | 21.5 | 22.6 | 23.2 | 24.4 | 25.5 | 24.9 | 26.0 | 26.6 |
| | 4H | 21.5 | 22.5 | 22.0 | 23.0 | 23.6 | 25.6 | 26.6 | 26.1 | 27.2 | 27.8 |
| | 6H | 21.8 | 22.7 | 22.3 | 23.2 | 23.9 | 26.9 | 27.8 | 27.5 | 28.4 | 29.0 |
| | 8H | 21.9 | 22.7 | 22.4 | 23.3 | 23.9 | 27.6 | 28.4 | 28.1 | 29.0 | 29.6 |
| | 12H | 21.9 | 22.7 | 22.5 | 23.3 | 23.9 | 28.3 | 29.1 | 28.9 | 29.7 | 30.3 |
| 8H | 4H | 22.2 | 23.0 | 22.8 | 23.6 | 24.2 | 25.8 | 26.6 | 26.3 | 27.2 | 27.8 |
| | 6H | 22.7 | 23.4 | 23.3 | 24.0 | 24.7 | 27.2 | 27.9 | 27.8 | 28.5 | 29.2 |
| | 8H | 22.9 | 23.5 | 23.5 | 24.1 | 24.8 | 28.0 | 28.7 | 28.6 | 29.3 | 29.9 |
| | 12H | 23.0 | 23.6 | 23.6 | 24.2 | 24.9 | 29.0 | 29.5 | 29.6 | 30.1 | 30.8 |
| 12H | 4H | 22.4 | 23.2 | 23.0 | 23.8 | 24.4 | 25.8 | 26.5 | 26.4 | 27.1 | 27.8 |
| | 6H | 23.0 | 23.7 | 23.7 | 24.3 | 24.9 | 27.3 | 27.9 | 27.9 | 28.5 | 29.2 |
| | 8H | 23.3 | 23.9 | 23.9 | 24.5 | 25.2 | 28.1 | 28.7 | 28.7 | 29.3 | 30.0 |

Maximum UGR = 30.8

POLAR GRAPH



Maximum Candela = 2979.032 Located At Horizontal Angle = 0, Vertical Angle = 5
1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (5) (Through Max. Cd.)