



IES INDOOR REPORT

PHOTOMETRIC FILENAME : MX4UD-4-00-L8-8TWU-L8-8TWD-F-A-DIM-UNV 4000K_.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002

[TEST] GEN FROM BALLABS TEST NO. 20194.0

[TESTLAB] BUILDING ACOUSTICS & LIGHTING LABORATORIES, INC

[ISSUEDATE] 13-MAR-2020

[MANUFAC] WILLIAMS INDOOR

[OTHER] H.E. WILLIAMS, INC - CARTHAGE, MO

[LUMINAIRE] 2-72 LED TOP & 4-72 LED BTM 4' DIRECT/INDIRECT LUMINAIRE

[MORE] WHITE REFLS w/FROSTED ACRYLIC LENS TOP/BTM

[LUMCAT] MX4UD-4-L8-8TWU-L8-8TWD-F-A-DIM-UNV 4000k

CHARACTERISTICS

| | |
|---------------------------------|-----------------|
| Lumens Per Lamp | N.A. (absolute) |
| Total Lamp Lumens | N.A. (absolute) |
| Luminaire Lumens | 6668 |
| Total Luminaire Efficiency | N.A. |
| Luminaire Efficacy Rating (LER) | 124 |
| Total Luminaire Watts | 53.6 |
| Ballast Factor | 1.00 |
| CIE Type | General Diffuse |
| Spacing Criterion (0-180) | N.A. |
| Spacing Criterion (90-270) | N.A. |
| Spacing Criterion (Diagonal) | N.A. |
| Basic Luminous Shape | Rectangular |
| Luminous Length (0-180) | 4.00 ft |
| Luminous Width (90-270) | 0.32 ft |
| Luminous Height | 0.00 ft |

LUMINANCE DATA (cd/sq.m)

| Angle In Degrees | Average 0-Deg | Average 45-Deg | Average 90-Deg |
|---------------------|------------------|-------------------|-------------------|
| 45 | 9974 | 9506 | 9338 |
| 55 | 9026 | 8645 | 8511 |
| 65 | 7672 | 7644 | 7336 |
| 75 | 5921 | 6104 | 6012 |
| 85 | 2512 | 3666 | 3394 |

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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 | 1401.133 | 1401.133 | 1401.133 | 1401.133 | 1401.133 |
| 5 | 1419.616 | 1387.626 | 1385.494 | 1379.807 | 1371.276 |
| 10 | 1388.337 | 1359.191 | 1362.746 | 1351.372 | 1340.709 |
| 15 | 1344.974 | 1320.804 | 1322.226 | 1307.298 | 1296.635 |
| 20 | 1292.369 | 1273.176 | 1261.091 | 1244.030 | 1237.632 |
| 25 | 1214.884 | 1202.799 | 1187.160 | 1167.255 | 1160.147 |
| 30 | 1133.844 | 1123.181 | 1107.542 | 1079.818 | 1072.709 |
| 35 | 1048.539 | 1035.033 | 1009.441 | 984.561 | 978.874 |
| 40 | 959.680 | 939.065 | 909.208 | 890.725 | 890.014 |
| 45 | 847.362 | 829.590 | 807.553 | 791.914 | 793.336 |
| 50 | 733.622 | 719.405 | 705.187 | 685.994 | 693.102 |
| 55 | 622.015 | 611.352 | 595.713 | 589.315 | 586.471 |
| 60 | 506.142 | 499.034 | 489.081 | 487.660 | 483.394 |
| 65 | 389.559 | 388.848 | 388.137 | 383.161 | 372.498 |
| 70 | 282.217 | 283.639 | 287.904 | 285.061 | 275.819 |
| 75 | 184.116 | 184.827 | 189.803 | 191.936 | 186.960 |
| 80 | 91.703 | 100.944 | 99.522 | 105.209 | 103.077 |
| 85 | 26.302 | 37.676 | 38.387 | 36.965 | 35.544 |
| 90 | 4.976 | 9.952 | 12.085 | 9.952 | 9.952 |
| 95 | 12.796 | 21.326 | 23.459 | 22.748 | 23.459 |
| 100 | 52.605 | 72.509 | 73.220 | 64.690 | 68.244 |
| 105 | 124.403 | 135.066 | 138.620 | 120.138 | 119.427 |
| 110 | 219.660 | 216.817 | 224.636 | 196.201 | 195.490 |
| 115 | 327.002 | 317.761 | 322.737 | 275.819 | 277.241 |
| 120 | 437.899 | 435.766 | 424.392 | 380.318 | 381.029 |
| 125 | 559.458 | 550.217 | 528.180 | 496.190 | 479.129 |
| 130 | 685.994 | 663.246 | 660.402 | 627.702 | 595.002 |
| 135 | 804.710 | 779.118 | 778.407 | 749.972 | 725.803 |
| 140 | 917.028 | 892.147 | 892.858 | 867.267 | 848.784 |
| 145 | 1031.478 | 995.935 | 1001.622 | 968.922 | 960.391 |
| 150 | 1126.736 | 1094.035 | 1101.855 | 1068.444 | 1058.492 |
| 155 | 1202.799 | 1171.521 | 1183.606 | 1153.749 | 1145.218 |
| 160 | 1268.200 | 1235.499 | 1240.475 | 1220.571 | 1212.041 |
| 165 | 1322.226 | 1289.526 | 1284.550 | 1273.176 | 1263.223 |
| 170 | 1352.083 | 1320.093 | 1317.250 | 1309.430 | 1300.189 |
| 175 | 1374.120 | 1343.552 | 1342.130 | 1336.443 | 1330.757 |
| 180 | 1355.637 | 1355.637 | 1355.637 | 1355.637 | 1355.637 |

IES INDOOR REPORT**PHOTOMETRIC FILENAME : MX4UD-4-00-L8-8TWU-L8-8TWD-F-A-DIM-UNV 4000K_.IES****ZONAL LUMEN SUMMARY**

| Zone | Lumens | %Lamp | %Fixt |
|---------|---------|-------|--------|
| 0-20 | 502.91 | N.A. | 7.50 |
| 0-30 | 1049.31 | N.A. | 15.70 |
| 0-40 | 1682.08 | N.A. | 25.20 |
| 0-60 | 2845.49 | N.A. | 42.70 |
| 0-80 | 3428.99 | N.A. | 51.40 |
| 0-90 | 3478.7 | N.A. | 52.20 |
| 10-90 | 3347.12 | N.A. | 50.20 |
| 20-40 | 1179.17 | N.A. | 17.70 |
| 20-50 | 1805.98 | N.A. | 27.10 |
| 40-70 | 1546.28 | N.A. | 23.20 |
| 60-80 | 583.50 | N.A. | 8.80 |
| 70-80 | 200.63 | N.A. | 3.00 |
| 80-90 | 49.71 | N.A. | 0.70 |
| 90-110 | 174.33 | N.A. | 2.60 |
| 90-120 | 479.29 | N.A. | 7.20 |
| 90-130 | 950.34 | N.A. | 14.30 |
| 90-150 | 2161.38 | N.A. | 32.40 |
| 90-180 | 3189.13 | N.A. | 47.80 |
| 110-180 | 3014.8 | N.A. | 45.20 |
| 0-180 | 6667.84 | N.A. | 100.00 |

Total Luminaire Efficiency = N.A. %

ZONAL LUMEN SUMMARY

| Zone | Lumens |
|---------|--------|
| 0-10 | 131.59 |
| 10-20 | 371.33 |
| 20-30 | 546.40 |
| 30-40 | 632.77 |
| 40-50 | 626.81 |
| 50-60 | 536.59 |
| 60-70 | 382.87 |
| 70-80 | 200.63 |
| 80-90 | 49.71 |
| 90-100 | 32.78 |
| 100-110 | 141.55 |
| 110-120 | 304.96 |
| 120-130 | 471.05 |
| 130-140 | 592.03 |
| 140-150 | 619.00 |
| 150-160 | 538.23 |
| 160-170 | 362.04 |
| 170-180 | 127.49 |

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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 | 126 | 126 | 126 | 126 | 116 | 116 | 116 | 116 | 99 | 99 | 99 | 83 | 83 | 83 | 68 | 68 | 68 | 61 |
| 1 | 115 | 110 | 106 | 101 | 106 | 102 | 98 | 95 | 87 | 84 | 82 | 73 | 71 | 69 | 60 | 59 | 58 | 52 |
| 2 | 105 | 96 | 89 | 83 | 97 | 89 | 83 | 78 | 76 | 72 | 68 | 64 | 61 | 58 | 53 | 51 | 49 | 44 |
| 3 | 96 | 85 | 76 | 69 | 88 | 79 | 71 | 65 | 67 | 62 | 57 | 57 | 53 | 49 | 47 | 44 | 42 | 37 |
| 4 | 88 | 75 | 66 | 59 | 81 | 70 | 62 | 55 | 60 | 54 | 49 | 51 | 46 | 42 | 42 | 39 | 36 | 32 |
| 5 | 80 | 67 | 57 | 50 | 74 | 62 | 54 | 48 | 54 | 47 | 42 | 46 | 41 | 37 | 38 | 34 | 31 | 28 |
| 6 | 74 | 60 | 51 | 44 | 68 | 56 | 48 | 41 | 48 | 42 | 37 | 41 | 36 | 32 | 35 | 31 | 28 | 24 |
| 7 | 69 | 54 | 45 | 38 | 63 | 51 | 42 | 36 | 44 | 37 | 32 | 38 | 32 | 29 | 32 | 28 | 25 | 22 |
| 8 | 64 | 49 | 40 | 34 | 59 | 46 | 38 | 32 | 40 | 34 | 29 | 34 | 29 | 25 | 29 | 25 | 22 | 19 |
| 9 | 59 | 45 | 36 | 30 | 55 | 42 | 34 | 29 | 37 | 30 | 26 | 32 | 27 | 23 | 27 | 23 | 20 | 18 |
| 10 | 55 | 41 | 33 | 27 | 51 | 39 | 31 | 26 | 34 | 28 | 23 | 29 | 24 | 21 | 25 | 21 | 18 | 16 |

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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

| | | | | | | | | | | | |
|------|------|------|------|------|------|------|------|------|------|------|------|
| X=2H | Y=2H | 15.5 | 16.3 | 16.4 | 17.3 | 18.5 | 15.2 | 16.1 | 16.2 | 17.1 | 18.3 |
| | 3H | 17.0 | 17.7 | 17.9 | 18.7 | 20.0 | 16.8 | 17.5 | 17.7 | 18.5 | 19.8 |
| | 4H | 17.4 | 18.2 | 18.4 | 19.1 | 20.4 | 17.3 | 18.0 | 18.3 | 19.0 | 20.3 |
| | 6H | 17.7 | 18.4 | 18.7 | 19.4 | 20.7 | 17.6 | 18.3 | 18.6 | 19.3 | 20.6 |
| | 8H | 17.8 | 18.4 | 18.7 | 19.4 | 20.7 | 17.7 | 18.4 | 18.7 | 19.4 | 20.6 |
| | 12H | 17.8 | 18.4 | 18.8 | 19.4 | 20.7 | 17.7 | 18.4 | 18.7 | 19.3 | 20.7 |

UGR Viewed Endwise

| | | | | | | | | | | | |
|----|-----|------|------|------|------|------|------|------|------|------|------|
| 4H | 2H | 15.9 | 16.7 | 16.9 | 17.6 | 18.9 | 15.7 | 16.5 | 16.7 | 17.4 | 18.7 |
| | 3H | 17.6 | 18.2 | 18.6 | 19.2 | 20.5 | 17.5 | 18.1 | 18.5 | 19.1 | 20.4 |
| | 4H | 18.2 | 18.8 | 19.2 | 19.8 | 21.1 | 18.1 | 18.7 | 19.1 | 19.7 | 21.0 |
| | 6H | 18.6 | 19.1 | 19.6 | 20.1 | 21.4 | 18.6 | 19.1 | 19.6 | 20.1 | 21.4 |
| | 8H | 18.7 | 19.1 | 19.7 | 20.2 | 21.5 | 18.7 | 19.2 | 19.7 | 20.2 | 21.5 |
| | 12H | 18.7 | 19.1 | 19.7 | 20.1 | 21.5 | 18.8 | 19.2 | 19.8 | 20.2 | 21.5 |

| | | | | | | | | | | | |
|----|-----|------|------|------|------|------|------|------|------|------|------|
| 8H | 4H | 18.4 | 18.9 | 19.4 | 19.9 | 21.2 | 18.3 | 18.8 | 19.4 | 19.8 | 21.1 |
| | 6H | 18.9 | 19.3 | 19.9 | 20.3 | 21.6 | 18.9 | 19.3 | 19.9 | 20.3 | 21.6 |
| | 8H | 19.0 | 19.4 | 20.1 | 20.4 | 21.8 | 19.1 | 19.4 | 20.1 | 20.4 | 21.8 |
| | 12H | 19.1 | 19.4 | 20.2 | 20.4 | 21.8 | 19.2 | 19.5 | 20.2 | 20.5 | 21.9 |

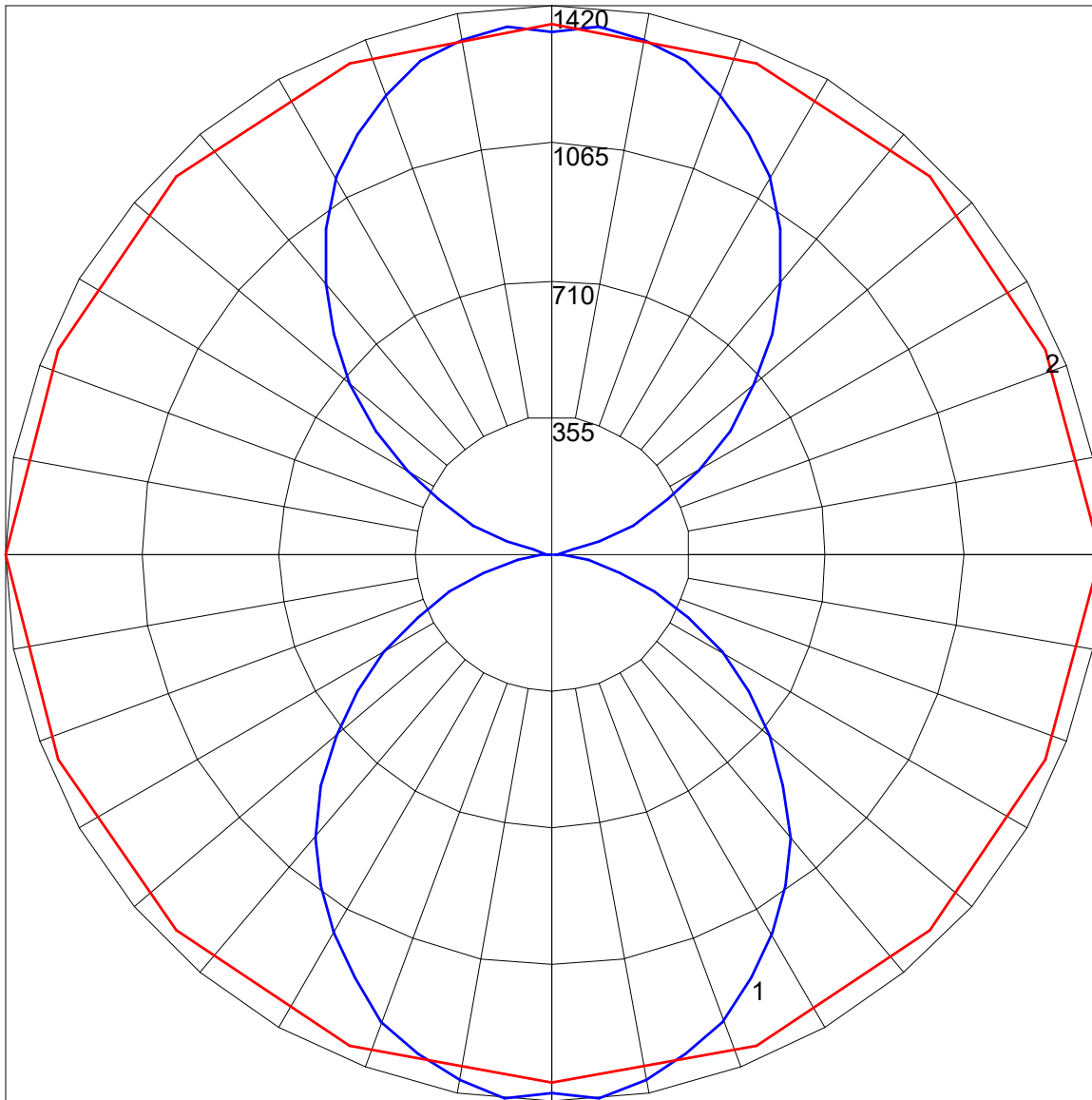
| | | | | | | | | | | | |
|-----|----|------|------|------|------|------|------|------|------|------|------|
| 12H | 4H | 18.4 | 18.8 | 19.4 | 19.8 | 21.2 | 18.3 | 18.7 | 19.3 | 19.8 | 21.1 |
| | 6H | 18.9 | 19.2 | 19.9 | 20.3 | 21.6 | 18.9 | 19.2 | 19.9 | 20.3 | 21.6 |
| | 8H | 19.1 | 19.4 | 20.1 | 20.4 | 21.8 | 19.1 | 19.4 | 20.2 | 20.4 | 21.8 |

Maximum UGR = 21.9

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POLAR GRAPH



Maximum Candela = 1419.616 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.)