



IES INDOOR REPORT

PHOTOMETRIC FILENAME : MX4UD-L8-935U-L12-935D-AF-DIM-UNV_.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
 [TEST] GEN FROM BALLABS TEST NO. 20195.0
 [TESTLAB] BUILDING ACOUSTICS & LIGHTING LABORATORIES, INC
 [ISSUEDATE] 7 JAN, 2021
 [MANUFAC] WILLIAMS INDOOR
 [OTHER] H.E. WILLIAMS, INC - CARTHAGE, MO 64836
 [LUMINAIRE] 4' DIRECT/INDIRECT SUSPENDED LUMINAIRE
 [MORE] WITH FROSTED ACRYLIC LENSES
 [LUMCAT] MX4UD-4-L8/935U/L12/935D-AF-DIM-UNV
 [LAMPCAT] HLM 90 CRI, 3500K CCT
 [SEARCH_SOURCETYPE] LED
 [SEARCH_APPLICATION] Indoor, Architectural, Classroom, Direct
 [SEARCH_MOUNTING] Suspended

CHARACTERISTICS

| | |
|---------------------------------|-----------------|
| Lumens Per Lamp | N.A. (absolute) |
| Total Lamp Lumens | N.A. (absolute) |
| Luminaire Lumens | 6589 |
| Total Luminaire Efficiency | N.A. |
| Luminaire Efficacy Rating (LER) | 93 |
| Total Luminaire Watts | 71.2 |
| 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 | 11400 | 10886 | 10479 |
| 55 | 10504 | 10014 | 9393 |
| 65 | 9293 | 8742 | 8369 |
| 75 | 7150 | 6859 | 6806 |
| 85 | 3303 | 4090 | 3775 |

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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 | 1561.365 | 1561.365 | 1561.365 | 1561.365 | 1561.365 |
| 5 | 1593.482 | 1558.895 | 1549.013 | 1540.777 | 1532.542 |
| 10 | 1572.071 | 1535.013 | 1523.484 | 1511.131 | 1502.073 |
| 15 | 1539.954 | 1498.779 | 1477.368 | 1457.603 | 1451.839 |
| 20 | 1472.427 | 1431.251 | 1419.722 | 1385.959 | 1380.194 |
| 25 | 1377.724 | 1345.607 | 1334.078 | 1308.549 | 1302.785 |
| 30 | 1283.020 | 1254.198 | 1239.375 | 1221.258 | 1212.199 |
| 35 | 1194.082 | 1160.318 | 1136.437 | 1125.731 | 1115.849 |
| 40 | 1095.261 | 1068.909 | 1034.322 | 1017.852 | 1004.676 |
| 45 | 968.442 | 950.325 | 924.796 | 909.149 | 890.209 |
| 50 | 851.504 | 821.034 | 816.093 | 787.271 | 771.624 |
| 55 | 723.861 | 705.744 | 690.097 | 665.392 | 647.275 |
| 60 | 606.100 | 579.747 | 570.689 | 548.454 | 532.808 |
| 65 | 471.868 | 457.869 | 443.869 | 429.870 | 424.928 |
| 70 | 346.696 | 334.343 | 325.284 | 312.108 | 317.873 |
| 75 | 222.346 | 223.170 | 213.288 | 213.288 | 211.641 |
| 80 | 109.526 | 116.114 | 112.820 | 119.408 | 111.173 |
| 85 | 34.587 | 41.175 | 42.822 | 50.234 | 39.528 |
| 90 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 95 | 47.360 | 46.413 | 48.307 | 47.360 | 50.202 |
| 100 | 100.403 | 101.350 | 95.667 | 100.403 | 99.456 |
| 105 | 169.548 | 168.601 | 168.601 | 165.760 | 162.918 |
| 110 | 242.483 | 238.694 | 235.852 | 233.958 | 229.222 |
| 115 | 321.100 | 316.364 | 310.681 | 301.209 | 301.209 |
| 120 | 398.770 | 390.246 | 381.721 | 376.985 | 372.249 |
| 125 | 469.810 | 467.916 | 458.444 | 448.972 | 444.236 |
| 130 | 543.692 | 542.745 | 533.273 | 524.748 | 521.906 |
| 135 | 613.784 | 615.679 | 605.260 | 593.893 | 590.104 |
| 140 | 688.613 | 684.824 | 678.194 | 662.092 | 662.092 |
| 145 | 755.864 | 751.128 | 740.709 | 736.920 | 728.395 |
| 150 | 811.749 | 817.432 | 807.013 | 798.488 | 794.699 |
| 155 | 866.686 | 871.422 | 863.845 | 853.426 | 852.478 |
| 160 | 914.993 | 918.782 | 911.205 | 906.469 | 901.733 |
| 165 | 950.987 | 955.723 | 949.093 | 944.357 | 941.515 |
| 170 | 976.561 | 981.297 | 975.614 | 972.773 | 972.773 |
| 175 | 989.822 | 995.505 | 990.769 | 987.928 | 984.139 |
| 180 | 993.611 | 993.611 | 993.611 | 993.611 | 993.611 |

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ZONAL LUMEN SUMMARY

| Zone | Lumens | %Lamp | %Fixt |
|---------|---------|-------|--------|
| 0-20 | 564.75 | N.A. | 8.60 |
| 0-30 | 1178.54 | N.A. | 17.90 |
| 0-40 | 1894.65 | N.A. | 28.80 |
| 0-60 | 3225.71 | N.A. | 49.00 |
| 0-80 | 3897.49 | N.A. | 59.20 |
| 0-90 | 3952.01 | N.A. | 60.00 |
| 10-90 | 3804.61 | N.A. | 57.70 |
| 20-40 | 1329.9 | N.A. | 20.20 |
| 20-50 | 2045.94 | N.A. | 31.10 |
| 40-70 | 1772.33 | N.A. | 26.90 |
| 60-80 | 671.78 | N.A. | 10.20 |
| 70-80 | 230.51 | N.A. | 3.50 |
| 80-90 | 54.52 | N.A. | 0.80 |
| 90-110 | 229.81 | N.A. | 3.50 |
| 90-120 | 536.63 | N.A. | 8.10 |
| 90-130 | 946.76 | N.A. | 14.40 |
| 90-150 | 1878.2 | N.A. | 28.50 |
| 90-180 | 2636.89 | N.A. | 40.00 |
| 110-180 | 2407.08 | N.A. | 36.50 |
| 0-180 | 6588.9 | N.A. | 100.00 |

Total Luminaire Efficiency = N.A. %

ZONAL LUMEN SUMMARY

| Zone | Lumens |
|---------|--------|
| 0-10 | 147.40 |
| 10-20 | 417.35 |
| 20-30 | 613.79 |
| 30-40 | 716.11 |
| 40-50 | 716.04 |
| 50-60 | 615.02 |
| 60-70 | 441.26 |
| 70-80 | 230.51 |
| 80-90 | 54.52 |
| 90-100 | 53.02 |
| 100-110 | 176.78 |
| 110-120 | 306.82 |
| 120-130 | 410.14 |
| 130-140 | 466.74 |
| 140-150 | 464.69 |
| 150-160 | 397.15 |
| 160-170 | 267.48 |
| 170-180 | 94.06 |

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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 | 110 | 110 | 110 | 110 | 102 | 102 | 102 | 102 | 89 | 89 | 89 | 77 | 77 | 77 | 65 | 65 | 65 | 60 |
| 1 | 100 | 96 | 92 | 88 | 93 | 90 | 86 | 83 | 78 | 76 | 73 | 68 | 66 | 64 | 58 | 57 | 56 | 51 |
| 2 | 91 | 84 | 78 | 73 | 85 | 79 | 73 | 69 | 69 | 65 | 61 | 60 | 57 | 54 | 51 | 49 | 47 | 43 |
| 3 | 83 | 74 | 66 | 60 | 78 | 69 | 63 | 57 | 61 | 56 | 51 | 53 | 49 | 46 | 45 | 43 | 40 | 36 |
| 4 | 76 | 65 | 57 | 51 | 71 | 61 | 54 | 49 | 54 | 48 | 44 | 47 | 43 | 39 | 41 | 37 | 35 | 31 |
| 5 | 70 | 58 | 50 | 44 | 65 | 55 | 48 | 42 | 48 | 43 | 38 | 42 | 38 | 34 | 37 | 33 | 30 | 27 |
| 6 | 65 | 52 | 44 | 38 | 60 | 49 | 42 | 37 | 44 | 38 | 33 | 38 | 34 | 30 | 33 | 30 | 27 | 24 |
| 7 | 60 | 47 | 39 | 34 | 56 | 45 | 37 | 32 | 40 | 34 | 29 | 35 | 30 | 26 | 30 | 27 | 24 | 21 |
| 8 | 56 | 43 | 35 | 30 | 52 | 41 | 34 | 29 | 36 | 30 | 26 | 32 | 27 | 24 | 28 | 24 | 21 | 19 |
| 9 | 52 | 39 | 32 | 27 | 48 | 37 | 30 | 26 | 33 | 27 | 23 | 29 | 25 | 21 | 26 | 22 | 19 | 17 |
| 10 | 48 | 36 | 29 | 24 | 45 | 34 | 28 | 23 | 31 | 25 | 21 | 27 | 23 | 19 | 24 | 20 | 17 | 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 | 17.3 | 18.2 | 18.1 | 19.1 | 20.2 | 16.8 | 17.8 | 17.7 | 18.6 | 19.8 |
| | 3H | 18.9 | 19.7 | 19.7 | 20.6 | 21.8 | 18.4 | 19.2 | 19.2 | 20.1 | 21.3 |
| | 4H | 19.4 | 20.2 | 20.3 | 21.1 | 22.3 | 18.9 | 19.7 | 19.8 | 20.6 | 21.8 |
| | 6H | 19.7 | 20.4 | 20.6 | 21.3 | 22.5 | 19.2 | 20.0 | 20.1 | 20.9 | 22.1 |
| | 8H | 19.7 | 20.4 | 20.6 | 21.4 | 22.5 | 19.3 | 20.0 | 20.2 | 20.9 | 22.1 |
| | 12H | 19.7 | 20.4 | 20.7 | 21.3 | 22.5 | 19.3 | 20.0 | 20.3 | 20.9 | 22.1 |

UGR Viewed Endwise

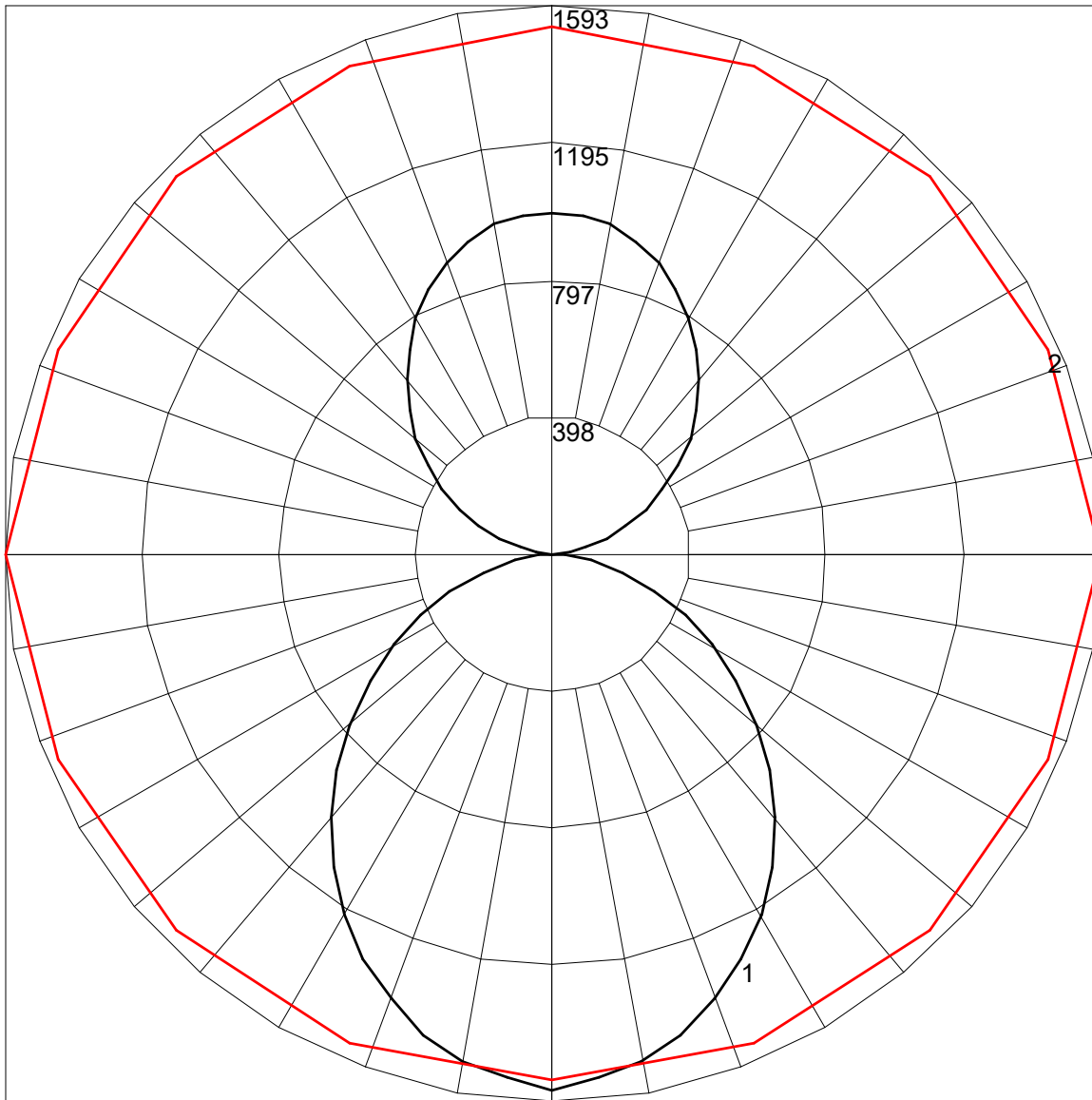
| | | | | | | | | | | | |
|----|-----|------|------|------|------|------|------|------|------|------|------|
| 4H | 2H | 17.7 | 18.5 | 18.6 | 19.4 | 20.6 | 17.4 | 18.2 | 18.3 | 19.1 | 20.2 |
| | 3H | 19.5 | 20.2 | 20.4 | 21.1 | 22.3 | 19.1 | 19.8 | 20.0 | 20.7 | 21.9 |
| | 4H | 20.2 | 20.8 | 21.1 | 21.7 | 22.9 | 19.8 | 20.4 | 20.7 | 21.3 | 22.5 |
| | 6H | 20.5 | 21.1 | 21.5 | 22.0 | 23.2 | 20.2 | 20.7 | 21.1 | 21.7 | 22.9 |
| | 8H | 20.6 | 21.1 | 21.6 | 22.1 | 23.3 | 20.3 | 20.8 | 21.3 | 21.8 | 23.0 |
| | 12H | 20.7 | 21.1 | 21.6 | 22.1 | 23.3 | 20.4 | 20.8 | 21.3 | 21.8 | 23.0 |

| | | | | | | | | | | | |
|----|-----|------|------|------|------|------|------|------|------|------|------|
| 8H | 4H | 20.3 | 20.8 | 21.3 | 21.8 | 23.0 | 20.0 | 20.5 | 20.9 | 21.4 | 22.6 |
| | 6H | 20.8 | 21.2 | 21.8 | 22.2 | 23.4 | 20.5 | 20.9 | 21.5 | 21.9 | 23.1 |
| | 8H | 21.0 | 21.3 | 21.9 | 22.3 | 23.5 | 20.7 | 21.1 | 21.7 | 22.0 | 23.3 |
| | 12H | 21.0 | 21.4 | 22.0 | 22.3 | 23.6 | 20.8 | 21.1 | 21.8 | 22.1 | 23.4 |

| | | | | | | | | | | | |
|-----|----|------|------|------|------|------|------|------|------|------|------|
| 12H | 4H | 20.3 | 20.8 | 21.3 | 21.7 | 22.9 | 20.0 | 20.4 | 20.9 | 21.4 | 22.6 |
| | 6H | 20.8 | 21.2 | 21.8 | 22.2 | 23.4 | 20.5 | 20.9 | 21.5 | 21.9 | 23.1 |
| | 8H | 21.0 | 21.3 | 22.0 | 22.3 | 23.6 | 20.7 | 21.1 | 21.7 | 22.0 | 23.3 |

Maximum UGR = 23.6

POLAR GRAPH



Maximum Candela = 1593.482 Located At Horizontal Angle = 0, Vertical Angle = 5
1 - Vertical Plane Through Horizontal Angles (90 - 270)
2 - Horizontal Cone Through Vertical Angle (5) (Through Max. Cd.)