



IES INDOOR REPORT

PHOTOMETRIC FILENAME : MX4UD-8-L8-835U-L12-835D-AF-DIM-UNV_.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
 [TEST] GEN FROM BALLABS TEST NO. 20657.0
 [TESTLAB] BUILDING ACOUSTICS & LIGHTING LABORATORIES, INC
 [ISSUEDATE] 30-JUN2020
 [MANUFAC] WILLIAMS INDOOR
 [OTHER] H.E. WILLIAMS, INC - CARTHAGE, MO 64836
 [LUMINAIRE] 8' INDIRECT SUSPENDED LUMINAIRE
 [MORE] WITH FROSTED ACRYLIC LENS
 [LUMCAT] MX4U-8-00-L8-835-A-DIM-UNV
 [LAMPCAT] HLM 80 CRI, 3500K CCT
 [SEARCH_SOURCETYPE] LED
 [SEARCH_APPLICATION] Indoor, Architectural, Classroom, Indirect
 [SEARCH_MOUNTING] Suspended

CHARACTERISTICS

| | |
|---------------------------------|-----------------|
| Lumens Per Lamp | N.A. (absolute) |
| Total Lamp Lumens | N.A. (absolute) |
| Luminaire Lumens | 16463 |
| Total Luminaire Efficiency | N.A. |
| Luminaire Efficacy Rating (LER) | 132 |
| Total Luminaire Watts | 124.9 |
| 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) | 8.00 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 | 13862 | 13442 | 13232 |
| 55 | 12731 | 12213 | 11868 |
| 65 | 10835 | 10660 | 10308 |
| 75 | 8225 | 8607 | 8129 |
| 85 | 3976 | 5112 | 4828 |

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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 | 3929.155 | 3929.155 | 3929.155 | 3929.155 | 3929.155 |
| 5 | 3946.722 | 3905.732 | 3888.165 | 3876.454 | 3876.454 |
| 10 | 3876.454 | 3835.464 | 3817.897 | 3806.186 | 3794.474 |
| 15 | 3741.773 | 3712.495 | 3683.216 | 3671.505 | 3653.938 |
| 20 | 3583.670 | 3542.680 | 3519.258 | 3484.124 | 3472.412 |
| 25 | 3378.722 | 3331.876 | 3308.454 | 3267.464 | 3261.608 |
| 30 | 3173.773 | 3121.072 | 3074.227 | 3062.515 | 3033.237 |
| 35 | 2886.845 | 2851.711 | 2810.722 | 2769.732 | 2769.732 |
| 40 | 2617.484 | 2582.350 | 2529.649 | 2517.938 | 2476.948 |
| 45 | 2318.845 | 2283.711 | 2248.577 | 2213.443 | 2213.443 |
| 50 | 2037.773 | 1990.928 | 1961.649 | 1938.227 | 1908.948 |
| 55 | 1727.423 | 1686.433 | 1657.155 | 1627.876 | 1610.309 |
| 60 | 1405.361 | 1381.938 | 1364.371 | 1340.948 | 1323.381 |
| 65 | 1083.299 | 1077.443 | 1065.732 | 1036.454 | 1030.598 |
| 70 | 802.227 | 796.371 | 778.804 | 767.093 | 755.381 |
| 75 | 503.588 | 521.155 | 527.010 | 509.443 | 497.732 |
| 80 | 257.649 | 269.361 | 269.361 | 275.216 | 281.072 |
| 85 | 81.979 | 87.835 | 105.402 | 93.691 | 99.546 |
| 90 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 95 | 122.270 | 119.825 | 124.716 | 122.270 | 129.606 |
| 100 | 259.213 | 261.658 | 246.986 | 259.213 | 256.767 |
| 105 | 437.727 | 435.282 | 435.282 | 427.945 | 420.609 |
| 110 | 626.023 | 616.241 | 608.905 | 604.014 | 591.787 |
| 115 | 828.991 | 816.764 | 802.092 | 777.638 | 777.638 |
| 120 | 1029.514 | 1007.506 | 985.497 | 973.270 | 961.043 |
| 125 | 1212.919 | 1208.029 | 1183.575 | 1159.121 | 1146.894 |
| 130 | 1403.661 | 1401.215 | 1376.761 | 1354.753 | 1347.417 |
| 135 | 1584.620 | 1589.511 | 1562.612 | 1533.267 | 1523.485 |
| 140 | 1777.807 | 1768.026 | 1750.908 | 1709.336 | 1709.336 |
| 145 | 1951.431 | 1939.204 | 1912.304 | 1902.523 | 1880.514 |
| 150 | 2095.710 | 2110.382 | 2083.483 | 2061.474 | 2051.692 |
| 155 | 2237.543 | 2249.770 | 2230.207 | 2203.307 | 2200.862 |
| 160 | 2362.258 | 2372.040 | 2352.477 | 2340.250 | 2328.023 |
| 165 | 2455.184 | 2467.411 | 2450.293 | 2438.066 | 2430.730 |
| 170 | 2521.209 | 2533.436 | 2518.764 | 2511.428 | 2511.428 |
| 175 | 2555.445 | 2570.117 | 2557.890 | 2550.554 | 2540.773 |
| 180 | 2565.227 | 2565.227 | 2565.227 | 2565.227 | 2565.227 |

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ZONAL LUMEN SUMMARY

| Zone | Lumens | %Lamp | %Fixt |
|---------|----------|-------|--------|
| 0-20 | 1409.66 | N.A. | 8.60 |
| 0-30 | 2935.11 | N.A. | 17.80 |
| 0-40 | 4698.91 | N.A. | 28.50 |
| 0-60 | 7926.87 | N.A. | 48.20 |
| 0-80 | 9530.02 | N.A. | 57.90 |
| 0-90 | 9655.12 | N.A. | 58.60 |
| 10-90 | 9285.44 | N.A. | 56.40 |
| 20-40 | 3289.25 | N.A. | 20.00 |
| 20-50 | 5030.01 | N.A. | 30.60 |
| 40-70 | 4282.52 | N.A. | 26.00 |
| 60-80 | 1603.15 | N.A. | 9.70 |
| 70-80 | 548.60 | N.A. | 3.30 |
| 80-90 | 125.10 | N.A. | 0.80 |
| 90-110 | 593.30 | N.A. | 3.60 |
| 90-120 | 1385.42 | N.A. | 8.40 |
| 90-130 | 2444.28 | N.A. | 14.80 |
| 90-150 | 4848.99 | N.A. | 29.50 |
| 90-180 | 6807.71 | N.A. | 41.40 |
| 110-180 | 6214.42 | N.A. | 37.70 |
| 0-180 | 16462.83 | N.A. | 100.00 |

Total Luminaire Efficiency = N.A. %

ZONAL LUMEN SUMMARY

| Zone | Lumens |
|---------|---------|
| 0-10 | 369.68 |
| 10-20 | 1039.97 |
| 20-30 | 1525.46 |
| 30-40 | 1763.79 |
| 40-50 | 1740.76 |
| 50-60 | 1487.2 |
| 60-70 | 1054.56 |
| 70-80 | 548.60 |
| 80-90 | 125.10 |
| 90-100 | 136.89 |
| 100-110 | 456.41 |
| 110-120 | 792.12 |
| 120-130 | 1058.86 |
| 130-140 | 1204.99 |
| 140-150 | 1199.71 |
| 150-160 | 1025.32 |
| 160-170 | 690.56 |
| 170-180 | 242.84 |

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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 | 109 | 109 | 109 | 109 | 102 | 102 | 102 | 102 | 88 | 88 | 88 | 76 | 76 | 76 | 64 | 64 | 64 | 59 |
| 1 | 100 | 96 | 92 | 88 | 93 | 89 | 86 | 83 | 78 | 75 | 73 | 67 | 65 | 63 | 57 | 56 | 55 | 50 |
| 2 | 91 | 84 | 78 | 72 | 85 | 78 | 73 | 68 | 68 | 64 | 61 | 59 | 56 | 53 | 50 | 48 | 46 | 42 |
| 3 | 83 | 74 | 66 | 61 | 77 | 69 | 63 | 57 | 60 | 55 | 51 | 52 | 48 | 45 | 45 | 42 | 39 | 36 |
| 4 | 76 | 65 | 57 | 51 | 71 | 61 | 54 | 49 | 54 | 48 | 44 | 47 | 42 | 39 | 40 | 37 | 34 | 31 |
| 5 | 70 | 58 | 50 | 44 | 65 | 55 | 48 | 42 | 48 | 42 | 38 | 42 | 37 | 34 | 36 | 33 | 30 | 27 |
| 6 | 65 | 52 | 44 | 38 | 60 | 49 | 42 | 37 | 43 | 38 | 33 | 38 | 33 | 30 | 33 | 29 | 26 | 24 |
| 7 | 60 | 47 | 39 | 34 | 56 | 45 | 37 | 32 | 39 | 34 | 29 | 35 | 30 | 26 | 30 | 26 | 23 | 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 | 22 | 19 | 24 | 20 | 17 | 15 |

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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 | 17.7 | 18.6 | 18.6 | 19.5 | 20.6 | 17.4 | 18.3 | 18.3 | 19.2 | 20.4 |
|------|------|------|------|------|------|------|------|------|------|------|------|
| | 3H | 19.2 | 20.0 | 20.1 | 21.0 | 22.1 | 18.9 | 19.8 | 19.8 | 20.7 | 21.8 |
| | 4H | 19.7 | 20.5 | 20.6 | 21.4 | 22.6 | 19.4 | 20.2 | 20.3 | 21.1 | 22.3 |
| | 6H | 20.0 | 20.7 | 20.9 | 21.6 | 22.8 | 19.8 | 20.5 | 20.7 | 21.4 | 22.6 |
| | 8H | 20.0 | 20.7 | 21.0 | 21.7 | 22.8 | 19.8 | 20.5 | 20.8 | 21.5 | 22.7 |
| | 12H | 20.0 | 20.7 | 21.0 | 21.6 | 22.8 | 19.9 | 20.5 | 20.8 | 21.5 | 22.7 |

UGR Viewed Endwise

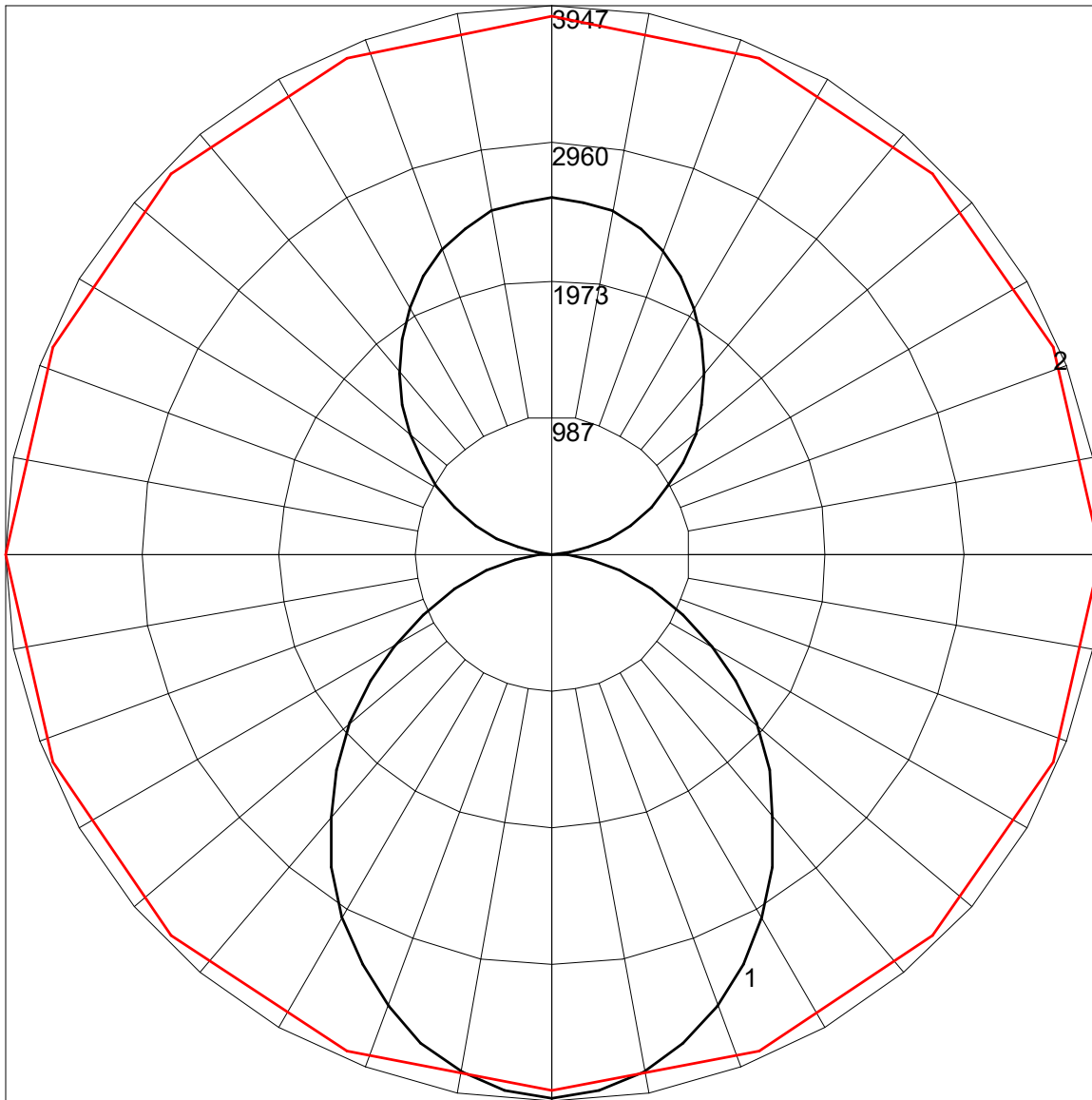
| | | | | | | | | | | | |
|----|-----|------|------|------|------|------|------|------|------|------|------|
| 4H | 2H | 18.1 | 18.9 | 19.0 | 19.8 | 21.0 | 17.9 | 18.7 | 18.8 | 19.6 | 20.8 |
| | 3H | 19.9 | 20.5 | 20.8 | 21.5 | 22.7 | 19.6 | 20.3 | 20.6 | 21.2 | 22.4 |
| | 4H | 20.5 | 21.1 | 21.4 | 22.0 | 23.2 | 20.3 | 20.9 | 21.2 | 21.8 | 23.0 |
| | 6H | 20.9 | 21.4 | 21.8 | 22.3 | 23.6 | 20.7 | 21.2 | 21.6 | 22.2 | 23.4 |
| | 8H | 20.9 | 21.4 | 21.9 | 22.4 | 23.6 | 20.8 | 21.3 | 21.8 | 22.2 | 23.5 |
| | 12H | 21.0 | 21.4 | 21.9 | 22.4 | 23.6 | 20.8 | 21.3 | 21.8 | 22.3 | 23.5 |

| | | | | | | | | | | | |
|----|-----|------|------|------|------|------|------|------|------|------|------|
| 8H | 4H | 20.7 | 21.2 | 21.6 | 22.1 | 23.3 | 20.5 | 21.0 | 21.4 | 21.9 | 23.1 |
| | 6H | 21.1 | 21.5 | 22.1 | 22.5 | 23.8 | 21.0 | 21.4 | 22.0 | 22.4 | 23.6 |
| | 8H | 21.3 | 21.6 | 22.3 | 22.6 | 23.9 | 21.2 | 21.5 | 22.2 | 22.5 | 23.8 |
| | 12H | 21.3 | 21.7 | 22.3 | 22.6 | 23.9 | 21.3 | 21.6 | 22.2 | 22.6 | 23.8 |

| | | | | | | | | | | | |
|-----|----|------|------|------|------|------|------|------|------|------|------|
| 12H | 4H | 20.6 | 21.1 | 21.6 | 22.1 | 23.3 | 20.4 | 20.9 | 21.4 | 21.9 | 23.1 |
| | 6H | 21.1 | 21.5 | 22.1 | 22.5 | 23.8 | 21.0 | 21.4 | 22.0 | 22.3 | 23.6 |
| | 8H | 21.3 | 21.6 | 22.3 | 22.6 | 23.9 | 21.2 | 21.5 | 22.2 | 22.5 | 23.8 |

Maximum UGR = 23.9

POLAR GRAPH



Maximum Candela = 3946.722 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.)