



IES INDOOR REPORT

PHOTOMETRIC FILENAME : MSTG-22-L96-950-S-SYM-ASY-DIM-120_.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
 [TEST] GEN FROM BALLABS TEST NO. 19831.0
 [TESTLAB] BUILDING ACOUSTICS & LIGHTING LABORATORIES, INC
 [ISSUEDATE] 03/09/2023
 [MANUFAC] WILLIAMS INDOOR
 [OTHER] H.E. WILLIAMS, INC - CARTHAGE, MO
 [LUMINAIRE] 2x2'RECESSED SYM/ASYM LED LUMINAIRE
 [MORE] FROST ACRYLIC LED LENSES w/KSH-34 ACRYLIC LENS & CLEAR
 [MORE] ACRYLIC LENS
 [LUMCAT] MSTG-22-L96-950-S-SYM-ASY-DIM-120
 [LAMPCAT] HLM 90 CRI 5000K CCT

CHARACTERISTICS

| | |
|---------------------------------|-----------------|
| Lumens Per Lamp | N.A. (absolute) |
| Total Lamp Lumens | N.A. (absolute) |
| Luminaire Lumens | 8064 |
| Total Luminaire Efficiency | N.A. |
| Luminaire Efficacy Rating (LER) | 101 |
| Total Luminaire Watts | 80 |
| Ballast Factor | 1.00 |
| CIE Type | Direct |
| Spacing Criterion (0-180) | 1.80 |
| Spacing Criterion (90-270) | 1.22 |
| Spacing Criterion (Diagonal) | 1.40 |
| Basic Luminous Shape | Rectangular |
| Luminous Length (0-180) | 1.57 ft |
| Luminous Width (90-270) | 1.57 ft |
| Luminous Height | 0.00 ft |

LUMINANCE DATA (cd/sq.m)

| Angle In Degrees | Average 0-Deg | Average 45-Deg | Average 90-Deg |
|---------------------|------------------|-------------------|-------------------|
| 45 | 24098 | 19072 | 11254 |
| 55 | 14669 | 14932 | 7540 |
| 65 | 6874 | 7630 | 5884 |
| 75 | 3669 | 3160 | 2942 |
| 85 | 1187 | 324 | 0 |

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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> | <u>112.5</u> | <u>135.0</u> | <u>157.5</u> | <u>180.0</u> |
|-----------|------------|-------------|-------------|-------------|-------------|--------------|--------------|--------------|--------------|
| 0 | 3291.141 | 3291.141 | 3291.141 | 3291.141 | 3291.141 | 3291.141 | 3291.141 | 3291.141 | 3291.141 |
| 5 | 3462.026 | 3440.395 | 3405.785 | 3347.382 | 3292.223 | 3225.167 | 3188.395 | 3136.480 | 3126.747 |
| 10 | 3586.403 | 3549.631 | 3472.841 | 3361.442 | 3234.901 | 3133.236 | 3065.099 | 2996.961 | 2972.086 |
| 15 | 3697.802 | 3638.317 | 3508.532 | 3332.240 | 3154.867 | 3009.940 | 2903.948 | 2834.729 | 2802.283 |
| 20 | 3785.407 | 3699.965 | 3512.858 | 3252.206 | 3041.305 | 2829.322 | 2704.944 | 2598.953 | 2593.545 |
| 25 | 3879.502 | 3760.532 | 3477.167 | 3133.236 | 2885.562 | 2643.296 | 2477.820 | 2316.669 | 2318.832 |
| 30 | 3897.888 | 3772.429 | 3433.905 | 3000.206 | 2685.476 | 2447.536 | 2215.004 | 2102.523 | 2105.768 |
| 35 | 3894.644 | 3724.841 | 3375.502 | 2806.609 | 2451.863 | 2208.515 | 1964.086 | 1835.382 | 1834.300 |
| 40 | 4040.652 | 3746.472 | 3213.270 | 2579.485 | 2183.639 | 1897.030 | 1679.639 | 1553.099 | 1562.833 |
| 45 | 3920.601 | 3536.652 | 3102.953 | 2328.566 | 1831.056 | 1563.914 | 1416.824 | 1341.116 | 1369.236 |
| 50 | 3072.669 | 3044.549 | 2544.875 | 2037.631 | 1386.541 | 1285.957 | 1166.987 | 1126.970 | 1158.335 |
| 55 | 1935.966 | 2024.652 | 1970.575 | 1811.588 | 995.021 | 1005.837 | 987.451 | 936.618 | 939.863 |
| 60 | 1165.906 | 1290.283 | 1215.657 | 1227.554 | 737.614 | 748.429 | 793.854 | 709.494 | 704.086 |
| 65 | 668.395 | 766.815 | 741.940 | 719.227 | 572.137 | 555.914 | 555.914 | 482.369 | 502.918 |
| 70 | 406.661 | 427.210 | 405.579 | 379.622 | 385.030 | 346.094 | 332.034 | 340.687 | 359.073 |
| 75 | 218.472 | 262.815 | 188.189 | 171.966 | 175.210 | 151.416 | 181.700 | 215.227 | 230.369 |
| 80 | 102.747 | 104.910 | 65.974 | 58.403 | 44.343 | 38.936 | 65.974 | 85.442 | 86.524 |
| 85 | 23.794 | 18.386 | 6.489 | 5.408 | 0.000 | 0.000 | 5.408 | 16.223 | 11.897 |
| 90 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

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ZONAL LUMEN SUMMARY

| Zone | Lumens | %Lamp | %Fixt |
|---------|---------|-------|--------|
| 0-20 | 1216.5 | N.A. | 15.10 |
| 0-30 | 2588.77 | N.A. | 32.10 |
| 0-40 | 4249.35 | N.A. | 52.70 |
| 0-60 | 7183.04 | N.A. | 89.10 |
| 0-80 | 8040.16 | N.A. | 99.70 |
| 0-90 | 8063.9 | N.A. | 100.00 |
| 10-90 | 7750.79 | N.A. | 96.10 |
| 20-40 | 3032.85 | N.A. | 37.60 |
| 20-50 | 4719.19 | N.A. | 58.50 |
| 40-70 | 3570.27 | N.A. | 44.30 |
| 60-80 | 857.12 | N.A. | 10.60 |
| 70-80 | 220.54 | N.A. | 2.70 |
| 80-90 | 23.73 | N.A. | 0.30 |
| 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 | 8063.9 | N.A. | 100.00 |

Total Luminaire Efficiency = N.A. %

ZONAL LUMEN SUMMARY

| Zone | Lumens |
|---------|---------|
| 0-10 | 313.11 |
| 10-20 | 903.39 |
| 20-30 | 1372.27 |
| 30-40 | 1660.57 |
| 40-50 | 1686.34 |
| 50-60 | 1247.35 |
| 60-70 | 636.58 |
| 70-80 | 220.54 |
| 80-90 | 23.73 |
| 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 |

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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 | 111 | 107 | 103 | 100 | 108 | 104 | 101 | 98 | 100 | 97 | 95 | 96 | 94 | 92 | 93 | 91 | 89 | 87 |
| 2 | 102 | 94 | 89 | 84 | 99 | 93 | 87 | 83 | 89 | 85 | 81 | 86 | 82 | 79 | 83 | 80 | 77 | 75 |
| 3 | 93 | 84 | 77 | 71 | 91 | 82 | 76 | 70 | 80 | 74 | 69 | 77 | 72 | 68 | 74 | 70 | 67 | 65 |
| 4 | 86 | 75 | 67 | 61 | 84 | 74 | 66 | 61 | 71 | 65 | 60 | 69 | 64 | 59 | 67 | 62 | 58 | 56 |
| 5 | 79 | 67 | 59 | 53 | 77 | 66 | 59 | 53 | 64 | 57 | 52 | 62 | 56 | 52 | 61 | 55 | 51 | 49 |
| 6 | 74 | 61 | 53 | 47 | 72 | 60 | 52 | 46 | 58 | 51 | 46 | 57 | 50 | 46 | 55 | 50 | 45 | 43 |
| 7 | 68 | 55 | 47 | 41 | 67 | 55 | 47 | 41 | 53 | 46 | 41 | 52 | 45 | 41 | 50 | 45 | 40 | 39 |
| 8 | 64 | 51 | 43 | 37 | 62 | 50 | 42 | 37 | 49 | 42 | 37 | 48 | 41 | 37 | 46 | 41 | 36 | 34 |
| 9 | 59 | 47 | 39 | 33 | 58 | 46 | 38 | 33 | 45 | 38 | 33 | 44 | 38 | 33 | 43 | 37 | 33 | 31 |
| 10 | 56 | 43 | 35 | 30 | 54 | 43 | 35 | 30 | 42 | 35 | 30 | 41 | 34 | 30 | 40 | 34 | 30 | 28 |

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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 | 22.0 | 23.5 | 22.4 | 23.8 | 24.1 | 19.7 | 21.2 | 20.0 | 21.5 | 21.8 |
| | 3H | 22.5 | 23.8 | 22.9 | 24.2 | 24.5 | 20.4 | 21.8 | 20.8 | 22.1 | 22.5 |
| | 4H | 22.6 | 23.8 | 23.0 | 24.2 | 24.6 | 20.5 | 21.8 | 20.9 | 22.1 | 22.5 |
| | 6H | 22.6 | 23.8 | 23.0 | 24.1 | 24.5 | 20.5 | 21.7 | 20.9 | 22.1 | 22.5 |
| | 8H | 22.6 | 23.7 | 23.0 | 24.1 | 24.5 | 20.5 | 21.6 | 20.9 | 22.0 | 22.4 |
| | 12H | 22.6 | 23.6 | 23.0 | 24.0 | 24.4 | 20.5 | 21.5 | 20.9 | 21.9 | 22.3 |

UGR Viewed Endwise

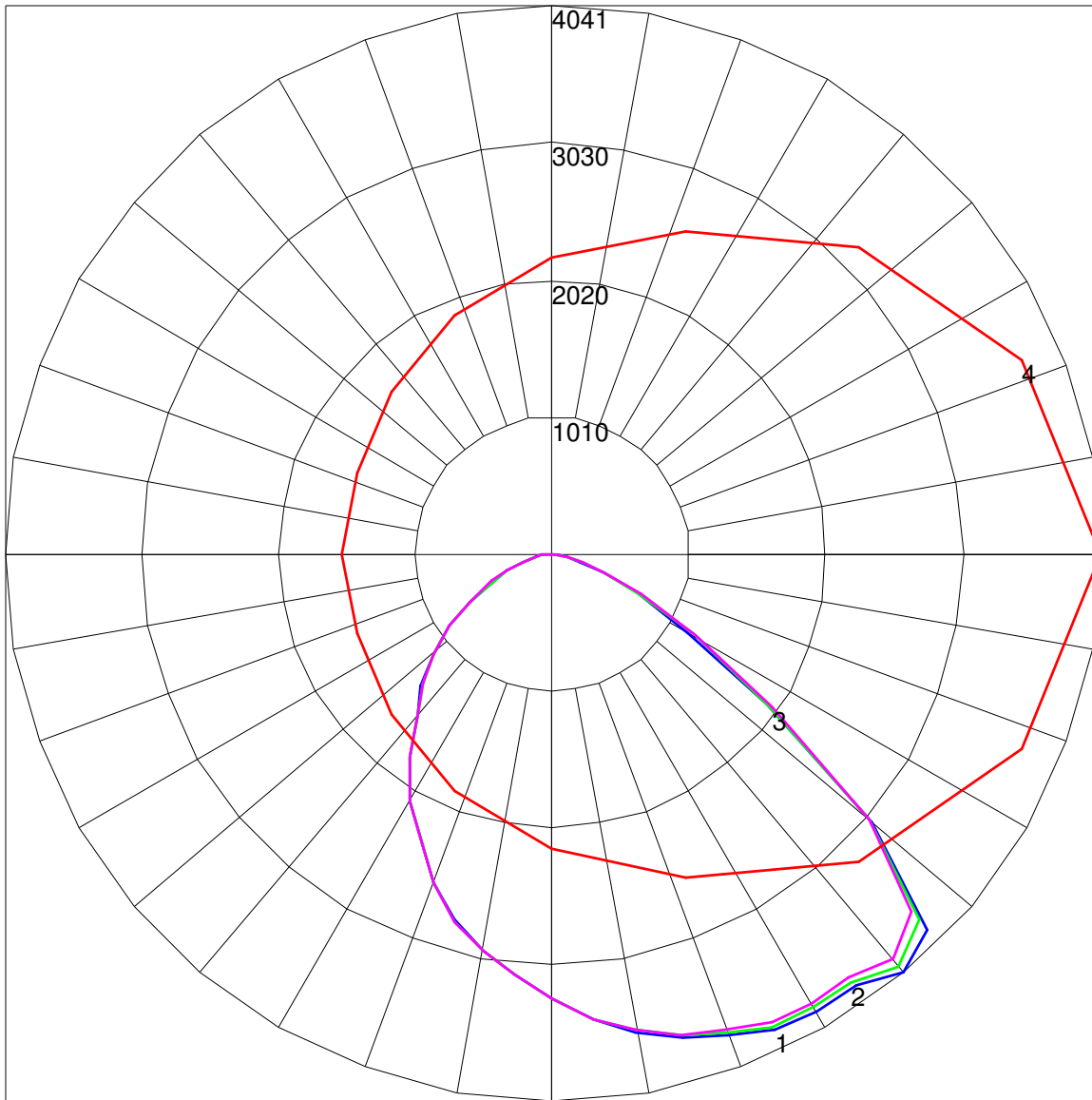
| | | | | | | | | | | | |
|----|-----|------|------|------|------|------|------|------|------|------|------|
| 4H | 2H | 22.2 | 23.4 | 22.6 | 23.8 | 24.2 | 20.0 | 21.3 | 20.4 | 21.6 | 22.0 |
| | 3H | 22.8 | 23.8 | 23.2 | 24.2 | 24.6 | 20.9 | 21.9 | 21.3 | 22.3 | 22.7 |
| | 4H | 22.9 | 23.9 | 23.4 | 24.3 | 24.7 | 21.0 | 21.9 | 21.4 | 22.3 | 22.8 |
| | 6H | 23.0 | 23.8 | 23.5 | 24.3 | 24.7 | 21.0 | 21.8 | 21.5 | 22.3 | 22.7 |
| | 8H | 23.0 | 23.8 | 23.5 | 24.2 | 24.7 | 21.0 | 21.7 | 21.5 | 22.2 | 22.7 |
| | 12H | 23.0 | 23.7 | 23.5 | 24.1 | 24.6 | 21.0 | 21.6 | 21.4 | 22.1 | 22.6 |

| | | | | | | | | | | | |
|----|-----|------|------|------|------|------|------|------|------|------|------|
| 8H | 4H | 22.9 | 23.7 | 23.4 | 24.1 | 24.6 | 21.0 | 21.8 | 21.5 | 22.2 | 22.7 |
| | 6H | 23.0 | 23.6 | 23.5 | 24.1 | 24.6 | 21.1 | 21.7 | 21.6 | 22.2 | 22.6 |
| | 8H | 23.0 | 23.6 | 23.5 | 24.1 | 24.6 | 21.0 | 21.6 | 21.5 | 22.1 | 22.6 |
| | 12H | 23.0 | 23.5 | 23.5 | 24.0 | 24.5 | 21.0 | 21.5 | 21.5 | 22.0 | 22.5 |

| | | | | | | | | | | | |
|-----|----|------|------|------|------|------|------|------|------|------|------|
| 12H | 4H | 22.9 | 23.6 | 23.4 | 24.0 | 24.5 | 21.0 | 21.7 | 21.5 | 22.2 | 22.6 |
| | 6H | 23.0 | 23.5 | 23.5 | 24.0 | 24.5 | 21.0 | 21.6 | 21.6 | 22.0 | 22.6 |
| | 8H | 23.0 | 23.5 | 23.5 | 24.0 | 24.5 | 21.0 | 21.5 | 21.5 | 22.0 | 22.5 |

Maximum UGR = 24.7

POLAR GRAPH



Maximum Candela = 4040.652 Located At Horizontal Angle = 0, Vertical Angle = 40

1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)

2 - Vertical Plane Through Horizontal Angles (5 - 185)

3 - Vertical Plane Through Horizontal Angles (10 - 190)

4 - Horizontal Cone Through Vertical Angle (40) (Through Max. Cd.)