



IES INDOOR REPORT

PHOTOMETRIC FILENAME : 96-4-L81-840-HIAFR-DIM-UNV_.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002

[TEST] GEN FROM BALLABS TEST NO. 19227.0

[TESTLAB] BUILDING ACOUSTICS & LIGHTING LABORATORIES, INC

[ISSUEDATE] 31-MAR-2023

[MANUFAC] WILLIAMS INDOOR

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

[LUMINAIRE] 4' LED ENCLOSED & GASKETED LUMINAIRE

[MORE] WHITE REFLECTOR w/FROSTED

[MORE] LINEAR RIBBED ACRYLIC DIFFUSER

[LUMCAT] 96-4-L81-840-HIAFR-DIM-UNV

[LAMP] LED

[LAMPCAT] HLM 80 CRI 4000K CCT

CHARACTERISTICS

| | |
|---------------------------------|---------------------|
| Lumens Per Lamp | N.A. (absolute) |
| Total Lamp Lumens | N.A. (absolute) |
| Luminaire Lumens | 8121 |
| Total Luminaire Efficiency | N.A. |
| Luminaire Efficacy Rating (LER) | 125 |
| Total Luminaire Watts | 65 |
| Ballast Factor | 1.00 |
| CIE Type | Direct |
| Spacing Criterion (0-180) | 1.26 |
| Spacing Criterion (90-270) | 1.16 |
| Spacing Criterion (Diagonal) | 1.30 |
| Basic Luminous Shape | Rectangular w/Sides |
| Luminous Length (0-180) | 4.23 ft |
| Luminous Width (90-270) | 0.50 ft |
| Luminous Height | 0.18 ft |

LUMINANCE DATA (cd/sq.m)

| Angle In Degrees | Average 0-Deg | Average 45-Deg | Average 90-Deg |
|---------------------|------------------|-------------------|-------------------|
| 45 | 12238 | 9649 | 9396 |
| 55 | 10412 | 8210 | 8109 |
| 65 | 7632 | 6670 | 7200 |
| 75 | 4680 | 5624 | 6209 |
| 85 | 1724 | 4415 | 5297 |

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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 | 2868.961 | 2868.961 | 2868.961 | 2868.961 | 2868.961 |
| 5 | 2894.115 | 2857.045 | 2838.510 | 2825.271 | 2821.299 |
| 10 | 2855.721 | 2809.384 | 2780.257 | 2769.666 | 2759.074 |
| 15 | 2784.229 | 2731.272 | 2687.582 | 2662.427 | 2647.864 |
| 20 | 2680.962 | 2626.681 | 2561.809 | 2508.851 | 2507.527 |
| 25 | 2559.161 | 2500.908 | 2405.585 | 2338.064 | 2316.881 |
| 30 | 2405.585 | 2331.444 | 2203.023 | 2183.164 | 2185.812 |
| 35 | 2216.262 | 2140.798 | 2018.996 | 2078.573 | 2110.348 |
| 40 | 2000.461 | 1931.617 | 1872.040 | 1938.237 | 1964.715 |
| 45 | 1772.745 | 1707.872 | 1717.140 | 1731.703 | 1768.773 |
| 50 | 1517.226 | 1455.001 | 1510.606 | 1535.761 | 1559.592 |
| 55 | 1244.496 | 1212.722 | 1296.129 | 1346.439 | 1376.889 |
| 60 | 966.470 | 999.569 | 1077.681 | 1166.384 | 1210.074 |
| 65 | 691.093 | 789.064 | 887.034 | 1015.456 | 1052.526 |
| 70 | 472.644 | 579.882 | 733.458 | 867.175 | 889.682 |
| 75 | 275.378 | 403.799 | 585.178 | 709.628 | 733.458 |
| 80 | 129.745 | 268.758 | 438.222 | 557.375 | 579.882 |
| 85 | 43.690 | 170.787 | 317.744 | 434.250 | 458.080 |
| 90 | 18.535 | 103.267 | 231.688 | 325.687 | 349.518 |
| 95 | 14.563 | 71.492 | 185.350 | 256.843 | 279.350 |
| 100 | 13.239 | 43.690 | 152.252 | 214.477 | 226.392 |
| 105 | 10.591 | 26.479 | 115.182 | 172.111 | 184.027 |
| 110 | 6.620 | 7.944 | 80.760 | 133.717 | 146.956 |
| 115 | 3.972 | 3.972 | 52.957 | 99.295 | 115.182 |
| 120 | 0.000 | 0.000 | 26.479 | 71.492 | 86.056 |
| 125 | 0.000 | 0.000 | 7.944 | 43.690 | 56.929 |
| 130 | 0.000 | 0.000 | 0.000 | 22.507 | 31.774 |
| 135 | 0.000 | 0.000 | 0.000 | 5.296 | 11.915 |
| 140 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 145 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 150 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 155 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 160 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 165 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 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 | 1030.16 | N.A. | 12.70 |
| 0-30 | 2145.39 | N.A. | 26.40 |
| 0-40 | 3459.14 | N.A. | 42.60 |
| 0-60 | 5950.41 | N.A. | 73.30 |
| 0-80 | 7423.6 | N.A. | 91.40 |
| 0-90 | 7751.48 | N.A. | 95.40 |
| 10-90 | 7481.54 | N.A. | 92.10 |
| 20-40 | 2428.98 | N.A. | 29.90 |
| 20-50 | 3762.27 | N.A. | 46.30 |
| 40-70 | 3377.82 | N.A. | 41.60 |
| 60-80 | 1473.19 | N.A. | 18.10 |
| 70-80 | 586.64 | N.A. | 7.20 |
| 80-90 | 327.88 | N.A. | 4.00 |
| 90-110 | 293.32 | N.A. | 3.60 |
| 90-120 | 347.61 | N.A. | 4.30 |
| 90-130 | 366.82 | N.A. | 4.50 |
| 90-150 | 369.85 | N.A. | 4.60 |
| 90-180 | 369.85 | N.A. | 4.60 |
| 110-180 | 76.53 | N.A. | 0.90 |
| 0-180 | 8121.33 | N.A. | 100.00 |

Total Luminaire Efficiency = N.A. %

ZONAL LUMEN SUMMARY

| Zone | Lumens |
|---------|---------|
| 0-10 | 269.93 |
| 10-20 | 760.23 |
| 20-30 | 1115.23 |
| 30-40 | 1313.75 |
| 40-50 | 1333.29 |
| 50-60 | 1157.98 |
| 60-70 | 886.55 |
| 70-80 | 586.64 |
| 80-90 | 327.88 |
| 90-100 | 183.94 |
| 100-110 | 109.38 |
| 110-120 | 54.29 |
| 120-130 | 19.22 |
| 130-140 | 3.03 |
| 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 | 118 | 118 | 118 | 118 | 115 | 115 | 115 | 115 | 109 | 109 | 109 | 103 | 103 | 103 | 98 | 98 | 98 | 95 |
| 1 | 107 | 102 | 97 | 93 | 104 | 99 | 95 | 91 | 94 | 90 | 87 | 89 | 86 | 84 | 85 | 83 | 81 | 78 |
| 2 | 97 | 89 | 82 | 76 | 94 | 86 | 80 | 74 | 82 | 77 | 72 | 78 | 73 | 70 | 74 | 71 | 67 | 65 |
| 3 | 89 | 78 | 69 | 63 | 86 | 76 | 68 | 62 | 72 | 66 | 60 | 69 | 63 | 59 | 66 | 61 | 57 | 55 |
| 4 | 81 | 69 | 60 | 53 | 78 | 67 | 59 | 53 | 64 | 57 | 51 | 61 | 55 | 50 | 59 | 53 | 49 | 47 |
| 5 | 75 | 62 | 53 | 46 | 72 | 60 | 52 | 46 | 58 | 50 | 45 | 55 | 49 | 44 | 53 | 47 | 43 | 41 |
| 6 | 69 | 56 | 47 | 40 | 67 | 54 | 46 | 40 | 52 | 45 | 39 | 50 | 43 | 38 | 48 | 42 | 38 | 36 |
| 7 | 64 | 50 | 42 | 36 | 62 | 49 | 41 | 35 | 47 | 40 | 35 | 46 | 39 | 34 | 44 | 38 | 34 | 32 |
| 8 | 60 | 46 | 38 | 32 | 58 | 45 | 37 | 32 | 44 | 36 | 31 | 42 | 35 | 31 | 40 | 35 | 30 | 28 |
| 9 | 56 | 42 | 34 | 29 | 54 | 42 | 34 | 28 | 40 | 33 | 28 | 39 | 32 | 28 | 37 | 32 | 27 | 25 |
| 10 | 52 | 39 | 31 | 26 | 51 | 38 | 31 | 26 | 37 | 30 | 25 | 36 | 30 | 25 | 35 | 29 | 25 | 23 |

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UGR TABLE - CORRECTED

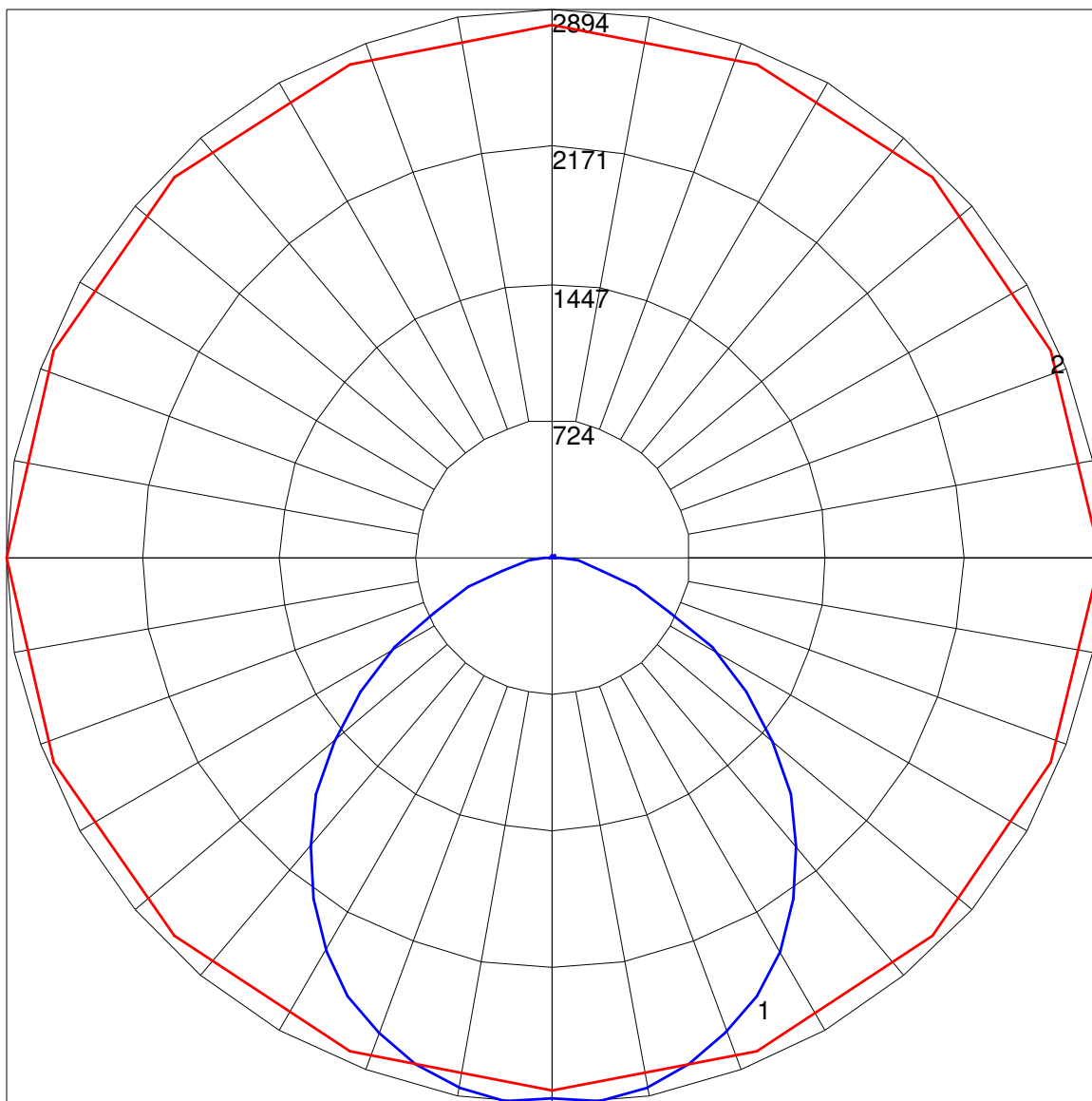
Reflectances

| | | | | | | | | | | |
|----------------|----|----|----|----|----|----|----|----|----|----|
| 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 | 18.0 | 19.5 | 18.4 | 19.9 | 20.4 | 19.7 | 21.2 | 20.1 | 21.6 | 22.1 |
| | 3H | 19.1 | 20.5 | 19.6 | 20.9 | 21.4 | 22.0 | 23.3 | 22.4 | 23.8 | 24.3 |
| | 4H | 19.4 | 20.7 | 19.9 | 21.2 | 21.7 | 23.0 | 24.3 | 23.5 | 24.8 | 25.2 |
| | 6H | 19.5 | 20.7 | 20.0 | 21.2 | 21.7 | 24.0 | 25.2 | 24.5 | 25.7 | 26.2 |
| | 8H | 19.5 | 20.7 | 20.0 | 21.2 | 21.7 | 24.5 | 25.6 | 25.0 | 26.1 | 26.6 |
| | 12H | 19.5 | 20.6 | 20.0 | 21.1 | 21.7 | 25.0 | 26.1 | 25.5 | 26.6 | 27.1 |
| 4H | 2H | 18.7 | 20.0 | 19.2 | 20.4 | 20.9 | 20.1 | 21.4 | 20.5 | 21.8 | 22.3 |
| | 3H | 20.1 | 21.2 | 20.6 | 21.7 | 22.2 | 22.6 | 23.7 | 23.1 | 24.2 | 24.7 |
| | 4H | 20.5 | 21.5 | 21.0 | 22.0 | 22.6 | 23.8 | 24.8 | 24.3 | 25.3 | 25.8 |
| | 6H | 20.7 | 21.6 | 21.3 | 22.2 | 22.7 | 25.0 | 25.8 | 25.5 | 26.4 | 26.9 |
| | 8H | 20.8 | 21.6 | 21.3 | 22.2 | 22.7 | 25.5 | 26.4 | 26.1 | 26.9 | 27.5 |
| | 12H | 20.8 | 21.6 | 21.4 | 22.1 | 22.7 | 26.2 | 26.9 | 26.7 | 27.5 | 28.1 |
| 8H | 4H | 21.1 | 21.9 | 21.6 | 22.5 | 23.1 | 24.0 | 24.8 | 24.5 | 25.3 | 25.9 |
| | 6H | 21.5 | 22.2 | 22.1 | 22.8 | 23.4 | 25.3 | 26.0 | 25.9 | 26.6 | 27.2 |
| | 8H | 21.6 | 22.3 | 22.2 | 22.8 | 23.4 | 26.0 | 26.6 | 26.6 | 27.2 | 27.8 |
| | 12H | 21.7 | 22.3 | 22.3 | 22.8 | 23.5 | 26.8 | 27.4 | 27.4 | 27.9 | 28.6 |
| 12H | 4H | 21.3 | 22.0 | 21.8 | 22.6 | 23.2 | 24.0 | 24.7 | 24.5 | 25.3 | 25.9 |
| | 6H | 21.8 | 22.4 | 22.3 | 22.9 | 23.6 | 25.3 | 26.0 | 25.9 | 26.5 | 27.2 |
| | 8H | 22.0 | 22.5 | 22.5 | 23.1 | 23.7 | 26.1 | 26.6 | 26.7 | 27.2 | 27.9 |

Maximum UGR = 28.6

POLAR GRAPH



Maximum Candela = 2894.115 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.)