H.E. WILLIAMS, INC.

**IES INDOOR REPORT**
**PHOTOMETRIC FILENAME : PT-24-L90-930-RA-DIM-UNV_.IES**

**DESCRIPTION INFORMATION (From Photometric File)**

IESNA:LM-63-2002
[TEST] GEN FROM BALLABS TEST NO. 19235.0
[TESTLAB] BUILDING ACOUSTICS & LIGHTING LABORATORIES, INC
[ISSUEDATE] 2023-06-27
[MANUFAC] WILLIAMS INDOOR
[OTHER] H.E. WILLIAMS, INC - CARTHAGE, MO
[LUMINAIRE] 2x4' RECESSED LED LUMINAIRE
[MORE] WHITE REFLECTOR w/RIBBED FROSTED ACRYLIC CENTER DIFFUSER
[MORE] 0-10V DRIVER
[LUMCAT] PT-24-L90-930-RA-DIM-UNV
[LAMPCAT] 22 INCH HLM LED ARRAYS
[_SEARCH_SOURCETYPE] LED
[_SEARCH_APPLICATION] Indoor, Architectural, Office, Direct
[_SEARCH_MOUNTING] Recessed

**CHARACTERISTICS**

| | |
|---|---|
| Lumens Per Lamp | N.A. (absolute) |
| Total Lamp Lumens | N.A. (absolute) |
| Luminaire Lumens | 7520 |
| Total Luminaire Efficiency | N.A. |
| Luminaire Efficacy Rating (LER) | 113 |
| Total Luminaire Watts | 66.6 |
| Ballast Factor | 1.00 |
| CIE Type | Direct |
| Spacing Criterion (0-180) | 1.14 |
| Spacing Criterion (90-270) | 1.18 |
| Spacing Criterion (Diagonal) | 1.28 |
| Basic Luminous Shape | Rectangular |
| Luminous Length (0-180) | 3.92 ft |
| Luminous Width (90-270) | 1.92 ft |
| Luminous Height | 0.00 ft |

**LUMINANCE DATA (cd/sq.m)**

| Angle In Degrees | Average 0-Deg | Average 45-Deg | Average 90-Deg |
|---|---|---|---|
| 45 | 3225 | 3403 | 3577 |
| 55 | 2891 | 3164 | 3417 |
| 65 | 2541 | 3010 | 3421 |
| 75 | 1966 | 3020 | 3738 |
| 85 | 1187 | 3962 | 4540 |

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**CANDELA TABULATION**

| | 0.0 | 22.5 | 45.0 | 67.5 | 90.0 |
|---|---|---|---|---|---|
| **0** | 2876.911 | 2876.911 | 2876.911 | 2876.911 | 2876.911 |
| **5** | 2832.982 | 2829.077 | 2829.077 | 2819.315 | 2814.434 |
| **10** | 2824.196 | 2824.196 | 2829.077 | 2832.982 | 2832.982 |
| **15** | 2750.003 | 2753.908 | 2758.789 | 2765.623 | 2770.504 |
| **20** | 2568.427 | 2578.189 | 2589.904 | 2605.523 | 2610.404 |
| **25** | 2422.971 | 2431.756 | 2455.186 | 2475.686 | 2485.448 |
| **30** | 2123.272 | 2057.865 | 2325.349 | 2248.228 | 2236.513 |
| **35** | 1958.291 | 1976.839 | 2020.769 | 2057.865 | 2072.509 |
| **40** | 1742.547 | 1765.977 | 1814.787 | 1863.598 | 1882.146 |
| **45** | 1592.210 | 1612.710 | 1680.069 | 1742.547 | 1765.977 |
| **50** | 1383.299 | 1415.515 | 1489.707 | 1555.114 | 1577.567 |
| **55** | 1157.793 | 1192.937 | 1267.130 | 1341.322 | 1368.656 |
| **60** | 944.002 | 981.098 | 1065.053 | 1141.198 | 1169.508 |
| **65** | 749.735 | 798.545 | 888.357 | 977.193 | 1009.408 |
| **70** | 552.539 | 610.136 | 716.543 | 810.260 | 842.475 |
| **75** | 355.343 | 426.607 | 545.705 | 640.398 | 675.542 |
| **80** | 195.243 | 287.984 | 424.654 | 517.395 | 545.705 |
| **85** | 72.240 | 164.981 | 241.126 | 271.388 | 276.269 |
| **90** | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

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## ZONAL LUMEN SUMMARY

| Zone | Lumens | %Lamp | %Fixt |
|---|---|---|---|
| 0-20 | 1042.88 | N.A. | 13.90 |
| 0-30 | 2161.35 | N.A. | 28.70 |
| 0-40 | 3422.18 | N.A. | 45.50 |
| 0-60 | 5844.34 | N.A. | 77.70 |
| 0-80 | 7295.1 | N.A. | 97.00 |
| 0-90 | 7519.99 | N.A. | 100.00 |
| 10-90 | 7249.56 | N.A. | 96.40 |
| 20-40 | 2379.31 | N.A. | 31.60 |
| 20-50 | 3665.31 | N.A. | 48.70 |
| 40-70 | 3299.21 | N.A. | 43.90 |
| 60-80 | 1450.76 | N.A. | 19.30 |
| 70-80 | 573.71 | N.A. | 7.60 |
| 80-90 | 224.89 | N.A. | 3.00 |
| 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 | 7519.99 | N.A. | 100.00 |

Total Luminaire Efficiency = N.A.%

## ZONAL LUMEN SUMMARY

| Zone | Lumens |
|---|---|
| 0-10 | 270.43 |
| 10-20 | 772.45 |
| 20-30 | 1118.48 |
| 30-40 | 1260.83 |
| 40-50 | 1286.01 |
| 50-60 | 1136.16 |
| 60-70 | 877.05 |
| 70-80 | 573.71 |
| 80-90 | 224.89 |
| 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 | 108 | 103 | 99 | 95 | 106 | 101 | 97 | 93 | 97 | 93 | 90 | 93 | 90 | 88 | 89 | 87 | 85 | 83 |
| 2 | 98 | 90 | 83 | 77 | 96 | 88 | 82 | 76 | 85 | 79 | 74 | 81 | 77 | 73 | 78 | 74 | 71 | 69 |
| 3 | 90 | 79 | 71 | 64 | 87 | 78 | 70 | 64 | 75 | 68 | 63 | 72 | 66 | 61 | 69 | 64 | 60 | 58 |
| 4 | 82 | 70 | 61 | 55 | 80 | 69 | 61 | 54 | 66 | 59 | 53 | 64 | 58 | 53 | 62 | 56 | 52 | 50 |
| 5 | 76 | 63 | 54 | 47 | 74 | 62 | 53 | 47 | 60 | 52 | 46 | 58 | 51 | 46 | 56 | 50 | 45 | 43 |
| 6 | 70 | 57 | 48 | 41 | 68 | 56 | 47 | 41 | 54 | 46 | 41 | 52 | 46 | 40 | 51 | 45 | 40 | 38 |
| 7 | 65 | 52 | 43 | 37 | 63 | 51 | 42 | 37 | 49 | 42 | 36 | 48 | 41 | 36 | 46 | 40 | 36 | 34 |
| 8 | 61 | 47 | 39 | 33 | 59 | 46 | 38 | 33 | 45 | 38 | 32 | 44 | 37 | 32 | 43 | 37 | 32 | 30 |
| 9 | 57 | 43 | 35 | 30 | 55 | 43 | 35 | 30 | 42 | 34 | 29 | 41 | 34 | 29 | 40 | 33 | 29 | 27 |
| 10 | 53 | 40 | 32 | 27 | 52 | 40 | 32 | 27 | 39 | 32 | 27 | 38 | 31 | 27 | 37 | 31 | 27 | 25 |

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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 | 15.3 | 17.0 | 15.7 | 17.3 | 17.6 | 16.4 | 18.0 | 16.7 | 18.3 | 18.6 |
| | 3H | 17.0 | 18.5 | 17.4 | 18.8 | 19.2 | 18.5 | 20.0 | 18.9 | 20.4 | 20.7 |
| | 4H | 17.6 | 19.0 | 18.0 | 19.3 | 19.7 | 19.5 | 20.9 | 19.9 | 21.3 | 21.7 |
| | 6H | 17.9 | 19.3 | 18.4 | 19.6 | 20.0 | 20.6 | 21.9 | 21.0 | 22.2 | 22.6 |
| | 8H | 18.1 | 19.3 | 18.5 | 19.7 | 20.1 | 21.0 | 22.2 | 21.4 | 22.6 | 23.0 |
| | 12H | 18.1 | 19.3 | 18.6 | 19.7 | 20.1 | 21.3 | 22.5 | 21.8 | 22.9 | 23.3 |
| 4H | 2H | 16.1 | 17.5 | 16.5 | 17.9 | 18.3 | 16.9 | 18.3 | 17.3 | 18.7 | 19.0 |
| | 3H | 18.0 | 19.2 | 18.5 | 19.6 | 20.0 | 19.4 | 20.6 | 19.8 | 21.0 | 21.3 |
| | 4H | 18.7 | 19.8 | 19.2 | 20.2 | 20.7 | 20.5 | 21.6 | 21.0 | 22.0 | 22.5 |
| | 6H | 19.3 | 20.2 | 19.7 | 20.7 | 21.1 | 21.8 | 22.7 | 22.2 | 23.2 | 23.6 |
| | 8H | 19.4 | 20.3 | 19.9 | 20.8 | 21.2 | 22.3 | 23.2 | 22.8 | 23.6 | 24.1 |
| | 12H | 19.6 | 20.4 | 20.1 | 20.8 | 21.3 | 22.7 | 23.5 | 23.2 | 24.0 | 24.5 |
| 8H | 4H | 19.3 | 20.2 | 19.8 | 20.7 | 21.1 | 20.9 | 21.8 | 21.3 | 22.2 | 22.7 |
| | 6H | 20.1 | 20.8 | 20.6 | 21.3 | 21.8 | 22.3 | 23.1 | 22.8 | 23.6 | 24.0 |
| | 8H | 20.4 | 21.0 | 20.9 | 21.5 | 22.0 | 23.0 | 23.7 | 23.5 | 24.2 | 24.6 |
| | 12H | 20.6 | 21.2 | 21.1 | 21.7 | 22.2 | 23.6 | 24.1 | 24.1 | 24.6 | 25.2 |
| 12H | 4H | 19.5 | 20.3 | 20.0 | 20.8 | 21.2 | 20.9 | 21.7 | 21.4 | 22.2 | 22.7 |
| | 6H | 20.3 | 21.0 | 20.9 | 21.5 | 22.0 | 22.4 | 23.1 | 23.0 | 23.6 | 24.1 |
| | 8H | 20.7 | 21.3 | 21.2 | 21.8 | 22.4 | 23.2 | 23.7 | 23.7 | 24.2 | 24.8 |

Maximum UGR = 25.2

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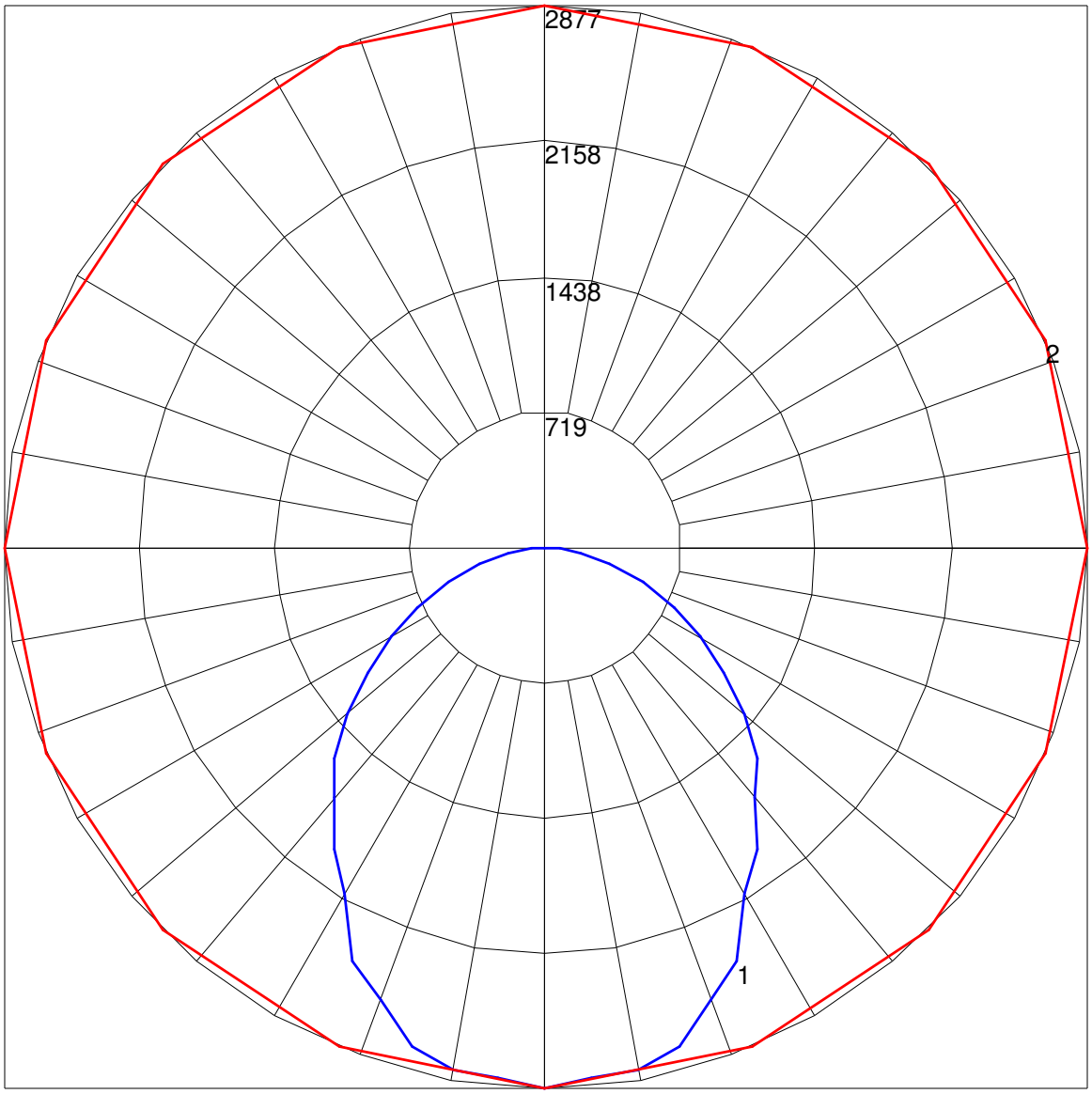
**POLAR GRAPH**




Maximum Candela = 2876.911  Located At Horizontal Angle = 0, Vertical Angle = 0
# 1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)
# 2 - Horizontal Cone Through Vertical Angle (0) (Through Max. Cd.)

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