H.E. WILLIAMS, INC.

**IES INDOOR REPORT**
**PHOTOMETRIC FILENAME : PT-24-L90-935-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-L90-935-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 | 7611 |
| Total Luminaire Efficiency | N.A. |
| Luminaire Efficacy Rating (LER) | 114 |
| 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 | 3264 | 3444 | 3620 |
| 55 | 2926 | 3202 | 3459 |
| 65 | 2571 | 3047 | 3462 |
| 75 | 1990 | 3056 | 3783 |
| 85 | 1201 | 4010 | 4594 |

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**CANDELA TABULATION**

| | 0.0 | 22.5 | 45.0 | 67.5 | 90.0 |
|---|---|---|---|---|---|
| **0** | 2911.573 | 2911.573 | 2911.573 | 2911.573 | 2911.573 |
| **5** | 2867.114 | 2863.162 | 2863.162 | 2853.282 | 2848.343 |
| **10** | 2858.222 | 2858.222 | 2863.162 | 2867.114 | 2867.114 |
| **15** | 2783.136 | 2787.088 | 2792.028 | 2798.944 | 2803.884 |
| **20** | 2599.372 | 2609.252 | 2621.107 | 2636.915 | 2641.855 |
| **25** | 2452.163 | 2461.055 | 2484.766 | 2505.514 | 2515.394 |
| **30** | 2148.854 | 2082.659 | 2353.365 | 2275.315 | 2263.459 |
| **35** | 1981.885 | 2000.657 | 2045.116 | 2082.659 | 2097.479 |
| **40** | 1763.542 | 1787.253 | 1836.652 | 1886.051 | 1904.823 |
| **45** | 1611.393 | 1632.141 | 1700.311 | 1763.542 | 1787.253 |
| **50** | 1399.966 | 1432.569 | 1507.655 | 1573.850 | 1596.574 |
| **55** | 1171.743 | 1207.310 | 1282.396 | 1357.483 | 1385.146 |
| **60** | 955.375 | 992.919 | 1077.885 | 1154.947 | 1183.598 |
| **65** | 758.768 | 808.167 | 899.061 | 988.967 | 1021.570 |
| **70** | 559.196 | 617.487 | 725.176 | 820.022 | 852.626 |
| **75** | 359.624 | 431.747 | 552.280 | 648.114 | 683.681 |
| **80** | 197.596 | 291.454 | 429.771 | 523.629 | 552.280 |
| **85** | 73.110 | 166.968 | 244.031 | 274.658 | 279.598 |
| **90** | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

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## ZONAL LUMEN SUMMARY

| Zone | Lumens | %Lamp | %Fixt |
|---|---|---|---|
| 0-20 | 1055.44 | N.A. | 13.90 |
| 0-30 | 2187.39 | N.A. | 28.70 |
| 0-40 | 3463.41 | N.A. | 45.50 |
| 0-60 | 5914.76 | N.A. | 77.70 |
| 0-80 | 7383.00 | N.A. | 97.00 |
| 0-90 | 7610.59 | N.A. | 100.00 |
| 10-90 | 7336.91 | N.A. | 96.40 |
| 20-40 | 2407.97 | N.A. | 31.60 |
| 20-50 | 3709.47 | N.A. | 48.70 |
| 40-70 | 3338.96 | N.A. | 43.90 |
| 60-80 | 1468.24 | N.A. | 19.30 |
| 70-80 | 580.62 | N.A. | 7.60 |
| 80-90 | 227.60 | 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 | 7610.59 | N.A. | 100.00 |

Total Luminaire Efficiency = N.A.%

## ZONAL LUMEN SUMMARY

| Zone | Lumens |
|---|---|
| 0-10 | 273.69 |
| 10-20 | 781.75 |
| 20-30 | 1131.95 |
| 30-40 | 1276.02 |
| 40-50 | 1301.5 |
| 50-60 | 1149.84 |
| 60-70 | 887.62 |
| 70-80 | 580.62 |
| 80-90 | 227.60 |
| 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 | 15.5 | 17.1 | 15.8 | 17.4 | 17.7 | 16.5 | 18.1 | 16.8 | 18.4 | 18.7 |
| | 3H | 17.1 | 18.6 | 17.5 | 18.9 | 19.3 | 18.6 | 20.1 | 19.0 | 20.5 | 20.8 |
| | 4H | 17.7 | 19.1 | 18.1 | 19.4 | 19.8 | 19.6 | 21.0 | 20.0 | 21.4 | 21.8 |
| | 6H | 18.0 | 19.4 | 18.5 | 19.7 | 20.1 | 20.7 | 22.0 | 21.1 | 22.3 | 22.7 |
| | 8H | 18.2 | 19.4 | 18.6 | 19.8 | 20.2 | 21.1 | 22.3 | 21.5 | 22.7 | 23.1 |
| | 12H | 18.2 | 19.4 | 18.7 | 19.8 | 20.2 | 21.4 | 22.6 | 21.9 | 23.0 | 23.4 |
| 4H | 2H | 16.2 | 17.6 | 16.6 | 18.0 | 18.4 | 17.0 | 18.4 | 17.4 | 18.8 | 19.1 |
| | 3H | 18.1 | 19.3 | 18.6 | 19.7 | 20.1 | 19.5 | 20.7 | 19.9 | 21.1 | 21.5 |
| | 4H | 18.8 | 19.9 | 19.3 | 20.3 | 20.8 | 20.6 | 21.7 | 21.1 | 22.1 | 22.6 |
| | 6H | 19.4 | 20.3 | 19.8 | 20.8 | 21.2 | 21.9 | 22.8 | 22.3 | 23.3 | 23.7 |
| | 8H | 19.5 | 20.4 | 20.0 | 20.9 | 21.3 | 22.4 | 23.3 | 22.9 | 23.7 | 24.2 |
| | 12H | 19.7 | 20.5 | 20.2 | 20.9 | 21.4 | 22.8 | 23.6 | 23.3 | 24.1 | 24.6 |
| 8H | 4H | 19.4 | 20.3 | 19.9 | 20.8 | 21.2 | 21.0 | 21.9 | 21.4 | 22.3 | 22.8 |
| | 6H | 20.2 | 20.9 | 20.7 | 21.4 | 21.9 | 22.4 | 23.2 | 22.9 | 23.7 | 24.1 |
| | 8H | 20.5 | 21.1 | 21.0 | 21.6 | 22.1 | 23.1 | 23.8 | 23.6 | 24.3 | 24.7 |
| | 12H | 20.7 | 21.3 | 21.2 | 21.8 | 22.3 | 23.7 | 24.2 | 24.2 | 24.7 | 25.3 |
| 12H | 4H | 19.6 | 20.4 | 20.1 | 20.9 | 21.3 | 21.0 | 21.8 | 21.5 | 22.3 | 22.8 |
| | 6H | 20.4 | 21.1 | 21.0 | 21.6 | 22.1 | 22.5 | 23.2 | 23.1 | 23.7 | 24.2 |
| | 8H | 20.8 | 21.4 | 21.3 | 21.9 | 22.5 | 23.3 | 23.8 | 23.8 | 24.3 | 24.9 |

Maximum UGR = 25.3

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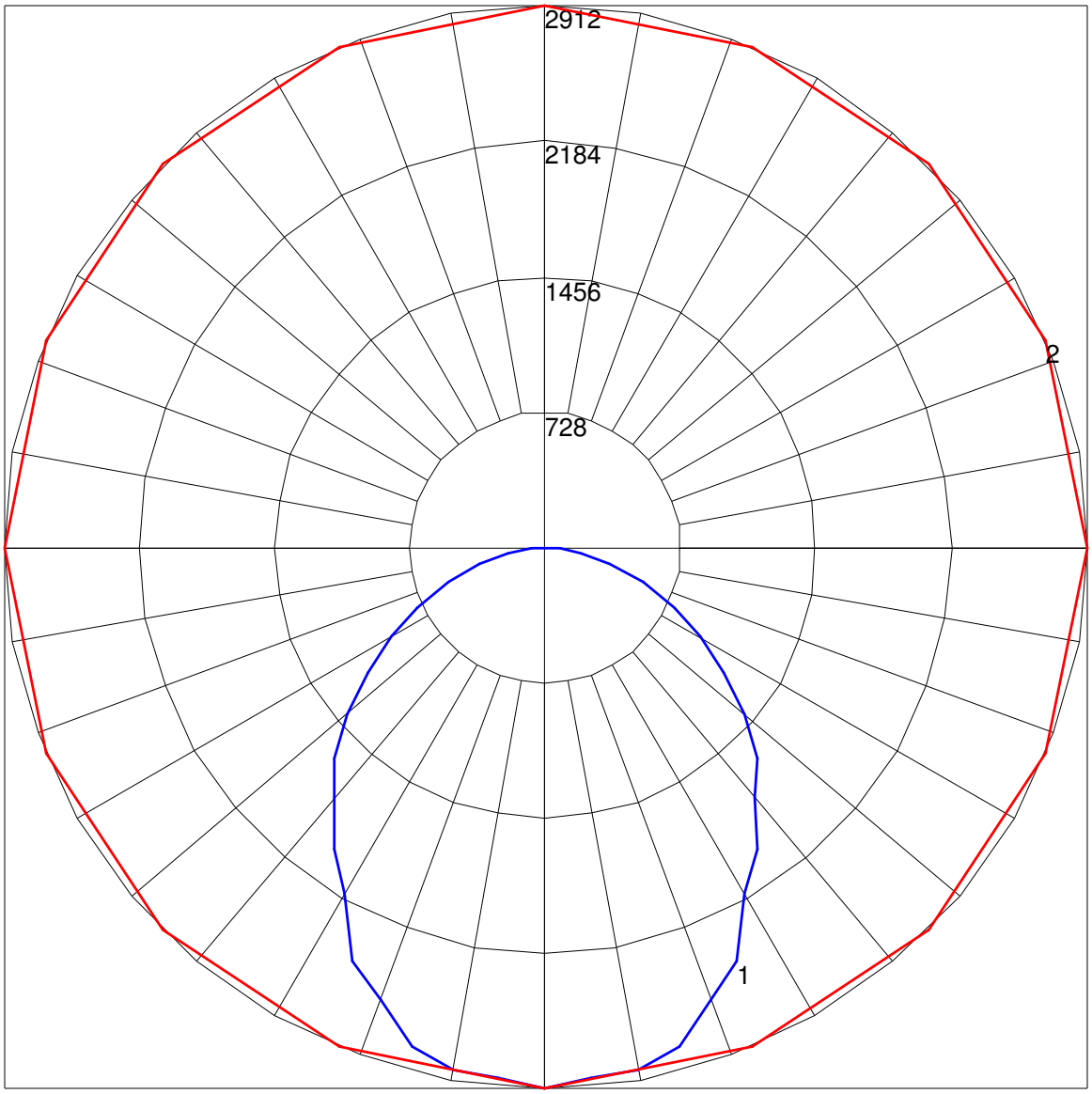
**POLAR GRAPH**




Maximum Candela = 2911.573  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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