



IES INDOOR REPORT

PHOTOMETRIC FILENAME : 4PS-L20-835-DIM-UNV-LW-OF-WH_.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002

[TEST] GEN FROM BALLABS TEST NO. 20339.0

[TESTLAB] BUILDING ACOUSTICS & LIGHTING LABORATORIES, INC

[ISSUEDATE] 12-DEC-2019

[MANUFAC] WILLIAMS INDOOR

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

[LUMINAIRE] 4" TALL HEATSINK 4"SQ FORMED HOUSING DOWNLIGHT

[MORE] 4" CAST SHALLOW WHITE FLUSH TRIM w/SOLITE LENS

[LUMCAT] 4PS-L20-835-DIM-UNV-LW-OF-WH

[_SEARCH_SOURCETYPE] LED

[_SEARCH_APPLICATION] Indoor, Classroom, Commercial, Office, Direct, Downlight

[_SEARCH_MOUNTING] Recessed

CHARACTERISTICS

| | |
|---------------------------------|-----------------|
| Lumens Per Lamp | N.A. (absolute) |
| Total Lamp Lumens | N.A. (absolute) |
| Luminaire Lumens | 2058 |
| Total Luminaire Efficiency | N.A. |
| Luminaire Efficacy Rating (LER) | 88 |
| Total Luminaire Watts | 23.5 |
| Ballast Factor | 1.00 |
| CIE Type | Direct |
| Spacing Criterion (0-180) | 1.20 |
| Spacing Criterion (90-270) | 1.18 |
| Spacing Criterion (Diagonal) | 1.24 |
| Basic Luminous Shape | Rectangular |
| Luminous Length (0-180) | 0.33 ft |
| Luminous Width (90-270) | 0.33 ft |
| Luminous Height | 0.00 ft |

LUMINANCE DATA (cd/sq.m)

| Angle In Degrees | Average 0-Deg | Average 45-Deg | Average 90-Deg |
|---------------------|------------------|-------------------|-------------------|
| 45 | 45739 | 70494 | 44162 |
| 55 | 32294 | 36267 | 31026 |
| 65 | 23865 | 23521 | 23291 |
| 75 | 16487 | 16299 | 16299 |
| 85 | 7233 | 6676 | 5564 |

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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 | 1158.0 | 1158.0 | 1158.0 | 1158.0 | 1158.0 |
| 5 | 1157.5 | 1153.5 | 1151.5 | 1151.0 | 1151.0 |
| 10 | 1144.0 | 1137.5 | 1136.5 | 1132.5 | 1131.0 |
| 15 | 1116.0 | 1108.5 | 1110.5 | 1107.0 | 1107.0 |
| 20 | 1087.5 | 1080.0 | 1076.0 | 1079.5 | 1081.5 |
| 25 | 1043.5 | 1042.0 | 1046.0 | 1041.0 | 1032.5 |
| 30 | 937.0 | 962.5 | 989.0 | 955.5 | 910.5 |
| 35 | 741.5 | 815.5 | 882.0 | 804.5 | 720.5 |
| 40 | 521.5 | 581.5 | 716.0 | 592.5 | 490.0 |
| 45 | 333.5 | 378.0 | 514.0 | 381.0 | 322.0 |
| 50 | 245.5 | 262.5 | 327.5 | 265.0 | 239.0 |
| 55 | 191.0 | 195.5 | 214.5 | 199.5 | 183.5 |
| 60 | 140.0 | 144.0 | 148.0 | 144.0 | 140.5 |
| 65 | 104.0 | 102.0 | 102.5 | 105.5 | 101.5 |
| 70 | 71.0 | 71.0 | 68.0 | 71.5 | 69.5 |
| 75 | 44.0 | 44.5 | 43.5 | 43.0 | 43.5 |
| 80 | 23.5 | 23.5 | 23.0 | 21.5 | 23.0 |
| 85 | 6.5 | 5.0 | 6.0 | 5.0 | 5.0 |
| 90 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

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ZONAL LUMEN SUMMARY

| Zone | Lumens | %Lamp | %Fixt |
|---------|---------|-------|--------|
| 0-20 | 423.12 | N.A. | 20.60 |
| 0-30 | 898.68 | N.A. | 43.70 |
| 0-40 | 1393.51 | N.A. | 67.70 |
| 0-60 | 1897.09 | N.A. | 92.20 |
| 0-80 | 2048.66 | N.A. | 99.60 |
| 0-90 | 2057.82 | N.A. | 100.00 |
| 10-90 | 1948.33 | N.A. | 94.70 |
| 20-40 | 970.39 | N.A. | 47.20 |
| 20-50 | 1291.68 | N.A. | 62.80 |
| 40-70 | 607.59 | N.A. | 29.50 |
| 60-80 | 151.57 | N.A. | 7.40 |
| 70-80 | 47.56 | N.A. | 2.30 |
| 80-90 | 9.17 | N.A. | 0.40 |
| 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 | 2057.82 | N.A. | 100.00 |

Total Luminaire Efficiency = N.A. %

ZONAL LUMEN SUMMARY

| Zone | Lumens |
|---------|--------|
| 0-10 | 109.49 |
| 10-20 | 313.63 |
| 20-30 | 475.56 |
| 30-40 | 494.83 |
| 40-50 | 321.29 |
| 50-60 | 182.30 |
| 60-70 | 104.01 |
| 70-80 | 47.56 |
| 80-90 | 9.17 |
| 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 | 155 | 155 | 155 | 155 | 151 | 151 | 151 | 151 | 145 | 145 | 145 | 138 | 138 | 138 | 133 | 133 | 133 | 130 |
| 1 | 145 | 140 | 136 | 132 | 142 | 137 | 133 | 130 | 132 | 129 | 126 | 127 | 124 | 122 | 122 | 120 | 119 | 116 |
| 2 | 135 | 126 | 119 | 114 | 132 | 124 | 118 | 112 | 120 | 114 | 110 | 116 | 111 | 107 | 112 | 108 | 105 | 103 |
| 3 | 125 | 114 | 106 | 99 | 122 | 112 | 105 | 98 | 109 | 102 | 96 | 105 | 100 | 95 | 102 | 97 | 93 | 91 |
| 4 | 117 | 104 | 94 | 87 | 114 | 102 | 93 | 87 | 99 | 92 | 86 | 96 | 90 | 85 | 94 | 88 | 83 | 81 |
| 5 | 109 | 95 | 85 | 78 | 106 | 93 | 84 | 77 | 91 | 83 | 77 | 88 | 81 | 76 | 86 | 80 | 75 | 73 |
| 6 | 102 | 87 | 77 | 70 | 99 | 86 | 76 | 70 | 83 | 75 | 69 | 81 | 74 | 68 | 80 | 73 | 68 | 66 |
| 7 | 95 | 80 | 70 | 63 | 93 | 79 | 70 | 63 | 77 | 69 | 63 | 75 | 68 | 62 | 74 | 67 | 62 | 59 |
| 8 | 89 | 74 | 64 | 57 | 87 | 73 | 64 | 57 | 71 | 63 | 57 | 70 | 62 | 57 | 68 | 62 | 56 | 54 |
| 9 | 84 | 68 | 59 | 53 | 82 | 68 | 59 | 52 | 66 | 58 | 52 | 65 | 57 | 52 | 64 | 57 | 52 | 50 |
| 10 | 79 | 64 | 54 | 48 | 77 | 63 | 54 | 48 | 62 | 54 | 48 | 61 | 53 | 48 | 60 | 53 | 48 | 46 |

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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 | 21.1 | 22.4 | 21.4 | 22.7 | 23.0 |
| | 3H | 22.2 | 23.4 | 22.6 | 23.7 | 24.1 |
| | 4H | 22.5 | 23.6 | 22.9 | 24.0 | 24.4 |
| | 6H | 22.7 | 23.8 | 23.1 | 24.1 | 24.5 |
| | 8H | 22.8 | 23.7 | 23.2 | 24.1 | 24.5 |
| | 12H | 22.8 | 23.7 | 23.2 | 24.1 | 24.5 |

UGR Viewed Endwise

| | | | | |
|------|------|------|------|------|
| 21.1 | 22.4 | 21.5 | 22.7 | 23.1 |
| 22.2 | 23.4 | 22.6 | 23.7 | 24.1 |
| 22.5 | 23.6 | 22.9 | 24.0 | 24.4 |
| 22.7 | 23.7 | 23.1 | 24.1 | 24.5 |
| 22.7 | 23.7 | 23.2 | 24.1 | 24.5 |
| 22.8 | 23.7 | 23.2 | 24.1 | 24.5 |

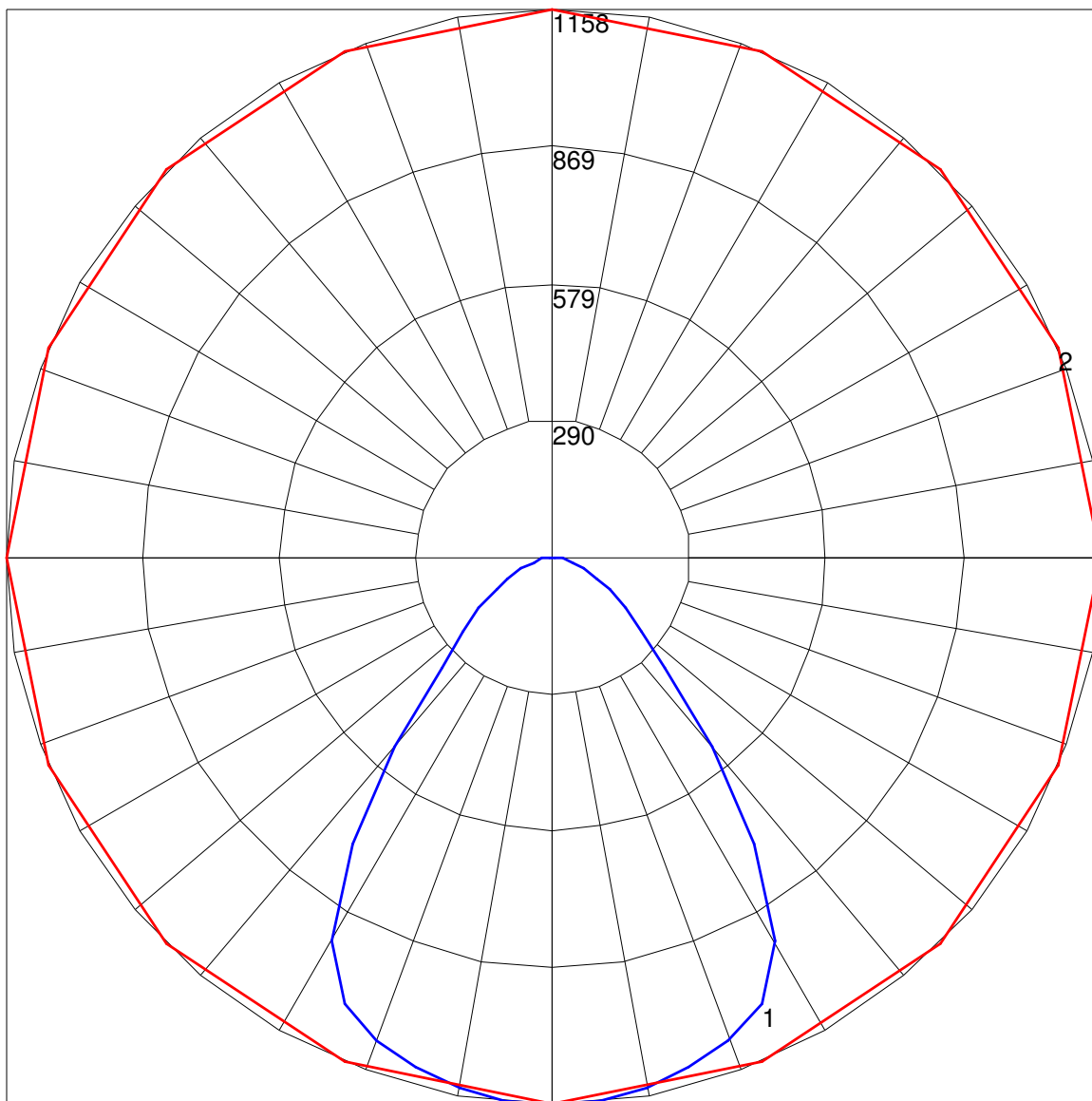
| | | | | | | | | | | | |
|----|-----|------|------|------|------|------|------|------|------|------|------|
| 4H | 2H | 21.4 | 22.5 | 21.8 | 22.9 | 23.3 | 21.5 | 22.6 | 21.9 | 22.9 | 23.3 |
| | 3H | 22.7 | 23.6 | 23.1 | 24.0 | 24.4 | 22.7 | 23.6 | 23.2 | 24.1 | 24.5 |
| | 4H | 23.2 | 24.0 | 23.6 | 24.4 | 24.8 | 23.2 | 24.0 | 23.6 | 24.4 | 24.8 |
| | 6H | 23.5 | 24.2 | 23.9 | 24.6 | 25.1 | 23.4 | 24.1 | 23.9 | 24.6 | 25.0 |
| | 8H | 23.5 | 24.2 | 24.0 | 24.6 | 25.1 | 23.5 | 24.1 | 23.9 | 24.6 | 25.1 |
| | 12H | 23.5 | 24.1 | 24.0 | 24.6 | 25.1 | 23.5 | 24.1 | 24.0 | 24.5 | 25.0 |

| | | | | | | | | | | | |
|----|-----|------|------|------|------|------|------|------|------|------|------|
| 8H | 4H | 23.3 | 23.9 | 23.7 | 24.4 | 24.9 | 23.3 | 23.9 | 23.7 | 24.4 | 24.8 |
| | 6H | 23.7 | 24.2 | 24.2 | 24.7 | 25.2 | 23.6 | 24.1 | 24.1 | 24.6 | 25.1 |
| | 8H | 23.7 | 24.2 | 24.3 | 24.7 | 25.2 | 23.7 | 24.2 | 24.2 | 24.7 | 25.2 |
| | 12H | 23.8 | 24.2 | 24.3 | 24.7 | 25.3 | 23.7 | 24.1 | 24.2 | 24.6 | 25.2 |

| | | | | | | | | | | | |
|-----|----|------|------|------|------|------|------|------|------|------|------|
| 12H | 4H | 23.3 | 23.8 | 23.8 | 24.3 | 24.8 | 23.3 | 23.8 | 23.8 | 24.3 | 24.8 |
| | 6H | 23.7 | 24.1 | 24.2 | 24.6 | 25.1 | 23.6 | 24.1 | 24.1 | 24.6 | 25.1 |
| | 8H | 23.8 | 24.2 | 24.3 | 24.7 | 25.3 | 23.7 | 24.1 | 24.2 | 24.6 | 25.2 |

Maximum UGR = 25.3

POLAR GRAPH



Maximum Candela = 1158 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.)