



IES INDOOR REPORT

PHOTOMETRIC FILENAME : WMA-3-L60-835-AF-DIM-UNV_.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002

[TEST] GEN from BALLABS TEST NO. 17320.0

[TESTLAB] BUILDING ACOUSTICS & LIGHTING LABORATORIES, INC

[ISSUEDATE] 13-NOV-2019

[MANUFAC] WILLIAMS INDOOR

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

[LUMINAIRE] 3' DIRECT/INDIRECT WALL MOUNT LUMINAIRE

[MORE] WHITE REFLECTOR w/FROSTED ACRYLIC LENS ON TOP & BOTTOM

[LUMCAT] WMA-3-L60-835-AF-DIM-UNV

CHARACTERISTICS

| | |
|---------------------------------|---------------------|
| Lumens Per Lamp | N.A. (absolute) |
| Total Lamp Lumens | N.A. (absolute) |
| Luminaire Lumens | 6092 |
| Total Luminaire Efficiency | N.A. |
| Luminaire Efficacy Rating (LER) | 131 |
| Total Luminaire Watts | 46.5 |
| Ballast Factor | 1.00 |
| CIE Type | General Diffuse |
| Spacing Criterion (0-180) | N.A. |
| Spacing Criterion (90-270) | N.A. |
| Spacing Criterion (Diagonal) | N.A. |
| Basic Luminous Shape | Rectangular w/Sides |
| Luminous Length (0-180) | 0.28 ft |
| Luminous Width (90-270) | 2.98 ft |
| Luminous Height | 0.46 ft |



LUMINANCE DATA (cd/sq.m)

| Angle In Degrees | Average 0-Deg | Average 45-Deg | Average 90-Deg |
|---------------------|------------------|-------------------|-------------------|
| 45 | 8546 | 8165 | 9291 |
| 55 | 6995 | 6550 | 7752 |
| 65 | 5655 | 5211 | 6316 |
| 75 | 4475 | 3696 | 4357 |
| 85 | 4610 | 3532 | 1692 |

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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 | 1091.189 | 1091.189 | 1091.189 | 1091.189 | 1091.189 | 1091.189 | 1091.189 | 1091.189 | 1091.189 |
| 5 | 1191.073 | 1177.881 | 1153.381 | 1119.458 | 1084.593 | 1064.804 | 1033.708 | 1011.093 | 1000.728 |
| 10 | 1257.034 | 1234.419 | 1188.246 | 1122.285 | 1048.785 | 996.016 | 936.651 | 898.016 | 883.882 |
| 15 | 1294.727 | 1270.227 | 1206.150 | 1113.804 | 1012.978 | 931.939 | 853.728 | 802.844 | 783.997 |
| 20 | 1371.053 | 1328.650 | 1237.246 | 1106.266 | 962.093 | 843.363 | 742.536 | 675.632 | 653.959 |
| 25 | 1335.246 | 1294.727 | 1191.073 | 1046.900 | 890.478 | 761.382 | 652.075 | 586.114 | 559.729 |
| 30 | 1333.361 | 1283.419 | 1163.746 | 994.131 | 811.324 | 662.440 | 540.883 | 472.095 | 446.652 |
| 35 | 1319.227 | 1267.400 | 1131.708 | 947.958 | 753.844 | 599.306 | 476.806 | 402.364 | 378.806 |
| 40 | 1260.804 | 1205.208 | 1059.150 | 864.093 | 659.613 | 500.364 | 378.806 | 309.076 | 285.518 |
| 45 | 1228.765 | 1165.631 | 1007.324 | 792.478 | 579.517 | 416.499 | 299.653 | 234.634 | 212.961 |
| 50 | 1127.939 | 1066.689 | 907.439 | 702.959 | 497.537 | 341.114 | 230.865 | 169.615 | 152.653 |
| 55 | 1033.708 | 972.458 | 813.209 | 612.498 | 414.614 | 265.730 | 164.903 | 111.192 | 94.230 |
| 60 | 918.747 | 861.266 | 717.094 | 527.691 | 341.114 | 203.538 | 114.961 | 65.961 | 51.827 |
| 65 | 832.997 | 774.574 | 631.344 | 445.710 | 271.384 | 145.115 | 63.134 | 25.442 | 16.961 |
| 70 | 719.921 | 667.152 | 532.402 | 363.730 | 202.596 | 89.519 | 21.673 | 4.712 | 4.712 |
| 75 | 636.998 | 572.921 | 423.095 | 274.211 | 135.692 | 42.404 | 4.712 | 8.481 | 8.481 |
| 80 | 620.979 | 553.133 | 385.403 | 202.596 | 80.096 | 4.712 | 8.481 | 8.481 | 11.308 |
| 85 | 613.440 | 542.767 | 368.441 | 159.249 | 31.096 | 4.712 | 16.019 | 27.327 | 31.096 |
| 90 | 559.729 | 497.537 | 337.345 | 144.173 | 0.000 | 16.019 | 29.211 | 39.577 | 43.346 |
| 95 | 609.671 | 544.652 | 371.268 | 159.249 | 32.981 | 5.654 | 22.615 | 32.981 | 36.750 |
| 100 | 617.210 | 553.133 | 387.287 | 203.538 | 82.923 | 4.712 | 8.481 | 12.250 | 15.077 |
| 105 | 633.229 | 572.921 | 428.749 | 276.095 | 137.576 | 35.808 | 4.712 | 8.481 | 8.481 |
| 110 | 718.978 | 670.921 | 538.998 | 364.672 | 202.596 | 81.038 | 16.961 | 4.712 | 7.538 |
| 115 | 827.344 | 777.401 | 635.113 | 450.422 | 272.326 | 138.519 | 60.307 | 20.731 | 15.077 |
| 120 | 911.209 | 859.382 | 718.978 | 530.518 | 342.999 | 200.711 | 110.250 | 63.134 | 49.942 |
| 125 | 1025.227 | 969.632 | 818.863 | 617.210 | 422.152 | 265.730 | 167.730 | 111.192 | 94.230 |
| 130 | 1112.862 | 1061.035 | 907.439 | 705.786 | 504.133 | 341.114 | 230.865 | 169.615 | 152.653 |
| 135 | 1212.746 | 1159.977 | 1007.324 | 795.305 | 584.229 | 416.499 | 299.653 | 232.749 | 212.961 |
| 140 | 1250.438 | 1202.381 | 1061.977 | 867.863 | 669.036 | 503.191 | 381.633 | 311.903 | 289.288 |
| 145 | 1307.919 | 1260.804 | 1131.708 | 949.843 | 767.036 | 602.133 | 479.633 | 406.133 | 381.633 |
| 150 | 1319.227 | 1278.707 | 1163.746 | 996.958 | 821.690 | 666.209 | 546.537 | 475.864 | 450.422 |
| 155 | 1324.880 | 1290.015 | 1189.188 | 1048.785 | 901.786 | 761.382 | 654.902 | 587.056 | 562.556 |
| 160 | 1355.034 | 1322.996 | 1233.477 | 1106.266 | 973.401 | 846.190 | 743.478 | 682.229 | 658.671 |
| 165 | 1290.957 | 1270.227 | 1207.092 | 1116.631 | 1028.054 | 932.882 | 855.613 | 805.670 | 787.767 |
| 170 | 1246.669 | 1230.650 | 1185.419 | 1122.285 | 1064.804 | 996.016 | 938.535 | 901.786 | 887.651 |
| 175 | 1189.188 | 1180.708 | 1155.266 | 1126.054 | 1102.496 | 1069.516 | 1039.362 | 1016.747 | 1007.324 |
| 180 | 1094.016 | 1094.016 | 1094.016 | 1094.016 | 1094.016 | 1094.016 | 1094.016 | 1094.016 | 1094.016 |

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ZONAL LUMEN SUMMARY

| Zone | Lumens | %Lamp | %Fixt |
|---------|---------|-------|--------|
| 0-20 | 393.46 | N.A. | 6.50 |
| 0-30 | 818.21 | N.A. | 13.40 |
| 0-40 | 1316.01 | N.A. | 21.60 |
| 0-60 | 2256.07 | N.A. | 37.00 |
| 0-80 | 2843.91 | N.A. | 46.70 |
| 0-90 | 3043.96 | N.A. | 50.00 |
| 10-90 | 2940.78 | N.A. | 48.30 |
| 20-40 | 922.55 | N.A. | 15.10 |
| 20-50 | 1423.21 | N.A. | 23.40 |
| 40-70 | 1284.45 | N.A. | 21.10 |
| 60-80 | 587.83 | N.A. | 9.60 |
| 70-80 | 243.44 | N.A. | 4.00 |
| 80-90 | 200.06 | N.A. | 3.30 |
| 90-110 | 445.58 | N.A. | 7.30 |
| 90-120 | 789.27 | N.A. | 13.00 |
| 90-130 | 1229.04 | N.A. | 20.20 |
| 90-150 | 2228.67 | N.A. | 36.60 |
| 90-180 | 3048.37 | N.A. | 50.00 |
| 110-180 | 2602.8 | N.A. | 42.70 |
| 0-180 | 6092.33 | N.A. | 100.00 |

Total Luminaire Efficiency = N.A. %

ZONAL LUMEN SUMMARY

| Zone | Lumens |
|---------|--------|
| 0-10 | 103.18 |
| 10-20 | 290.28 |
| 20-30 | 424.75 |
| 30-40 | 497.80 |
| 40-50 | 500.66 |
| 50-60 | 439.40 |
| 60-70 | 344.39 |
| 70-80 | 243.44 |
| 80-90 | 200.06 |
| 90-100 | 201.79 |
| 100-110 | 243.79 |
| 110-120 | 343.70 |
| 120-130 | 439.77 |
| 130-140 | 500.60 |
| 140-150 | 499.03 |
| 150-160 | 425.29 |
| 160-170 | 290.87 |
| 170-180 | 103.55 |

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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 | 209 | 209 | 209 | 209 | 193 | 193 | 193 | 193 | 162 | 162 | 162 | 135 | 135 | 135 | 109 | 109 | 109 | 97 |
| 1 | 189 | 179 | 171 | 163 | 173 | 165 | 158 | 152 | 139 | 134 | 129 | 115 | 112 | 108 | 93 | 91 | 88 | 78 |
| 2 | 171 | 156 | 143 | 133 | 157 | 144 | 133 | 123 | 121 | 113 | 106 | 101 | 95 | 89 | 82 | 77 | 73 | 64 |
| 3 | 156 | 137 | 122 | 110 | 143 | 126 | 113 | 103 | 107 | 97 | 89 | 89 | 81 | 75 | 72 | 67 | 62 | 54 |
| 4 | 143 | 121 | 105 | 93 | 131 | 112 | 98 | 87 | 95 | 84 | 75 | 79 | 71 | 64 | 64 | 58 | 53 | 46 |
| 5 | 131 | 108 | 91 | 79 | 120 | 100 | 85 | 75 | 85 | 74 | 65 | 71 | 62 | 56 | 58 | 52 | 46 | 40 |
| 6 | 121 | 97 | 80 | 69 | 111 | 90 | 75 | 65 | 76 | 65 | 57 | 64 | 55 | 49 | 53 | 46 | 41 | 35 |
| 7 | 111 | 87 | 71 | 60 | 102 | 81 | 67 | 57 | 69 | 58 | 50 | 58 | 50 | 43 | 48 | 41 | 36 | 31 |
| 8 | 103 | 79 | 64 | 53 | 95 | 74 | 60 | 50 | 63 | 52 | 44 | 53 | 45 | 38 | 44 | 37 | 33 | 28 |
| 9 | 96 | 72 | 57 | 47 | 89 | 67 | 54 | 45 | 58 | 47 | 40 | 49 | 41 | 34 | 41 | 34 | 29 | 25 |
| 10 | 90 | 66 | 52 | 43 | 83 | 62 | 49 | 40 | 53 | 43 | 36 | 45 | 37 | 31 | 38 | 31 | 27 | 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

| | | | | | | | | | | | |
|------|------|------|------|------|------|------|-----|------|------|------|------|
| X=2H | Y=2H | 13.6 | 14.5 | 14.6 | 15.5 | 16.8 | 8.1 | 9.0 | 9.1 | 10.0 | 11.3 |
| | 3H | 15.5 | 16.3 | 16.5 | 17.3 | 18.6 | 9.2 | 10.0 | 10.2 | 11.0 | 12.3 |
| | 4H | 16.3 | 17.1 | 17.3 | 18.1 | 19.4 | 9.5 | 10.3 | 10.5 | 11.3 | 12.6 |
| | 6H | 17.2 | 17.9 | 18.2 | 18.9 | 20.2 | 9.7 | 10.4 | 10.7 | 11.4 | 12.7 |
| | 8H | 17.6 | 18.3 | 18.6 | 19.3 | 20.6 | 9.7 | 10.3 | 10.7 | 11.4 | 12.7 |
| | 12H | 18.1 | 18.8 | 19.1 | 19.8 | 21.1 | 9.7 | 10.3 | 10.7 | 11.3 | 12.6 |

UGR Viewed Endwise

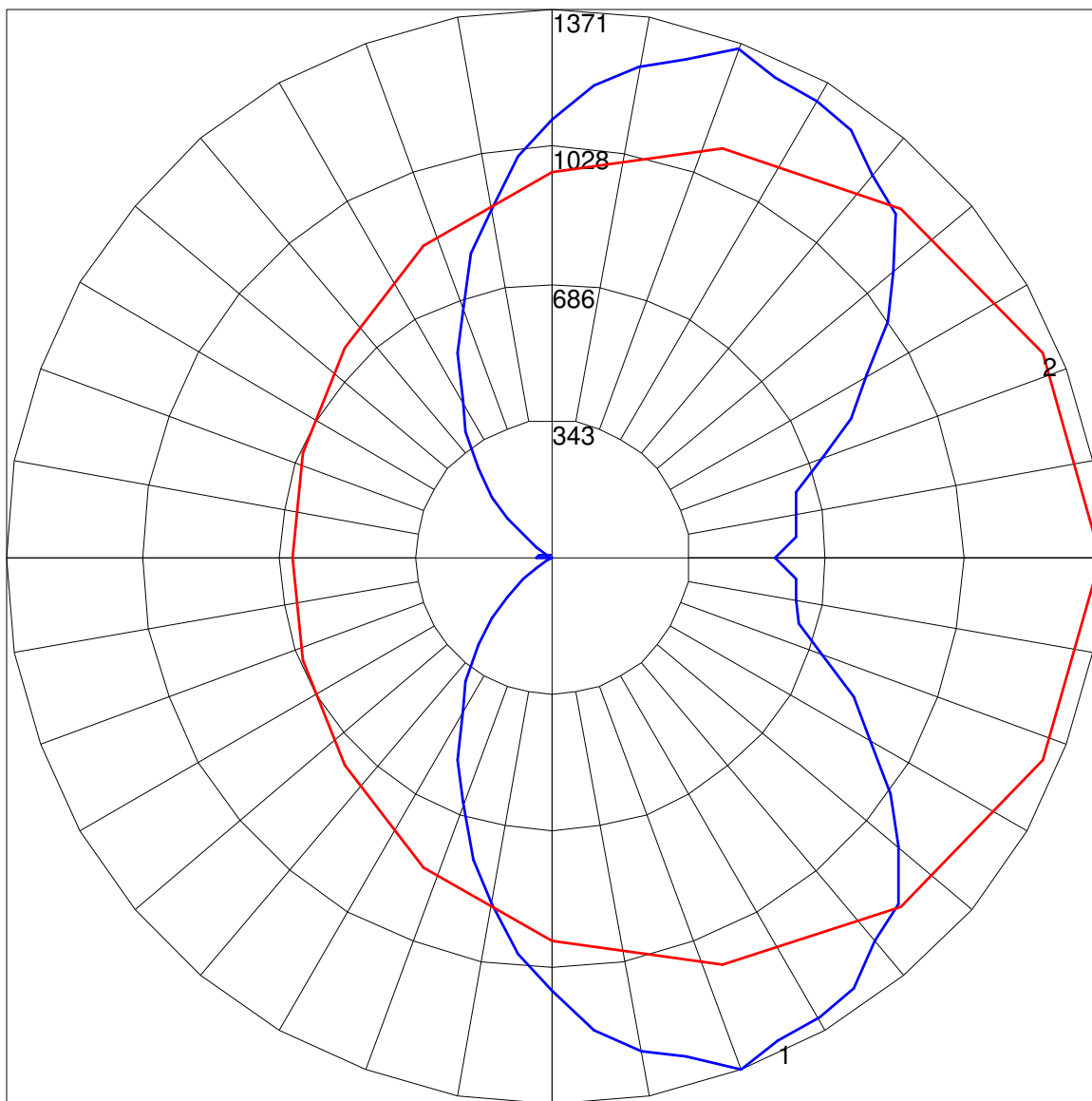
| | | | | | | | | | | | |
|----|-----|------|------|------|------|------|------|------|------|------|------|
| 4H | 2H | 14.0 | 14.8 | 15.0 | 15.8 | 17.1 | 9.3 | 10.1 | 10.3 | 11.1 | 12.4 |
| | 3H | 16.1 | 16.8 | 17.1 | 17.8 | 19.1 | 10.6 | 11.3 | 11.6 | 12.3 | 13.6 |
| | 4H | 17.1 | 17.7 | 18.1 | 18.7 | 20.1 | 11.0 | 11.6 | 12.0 | 12.6 | 14.0 |
| | 6H | 18.2 | 18.7 | 19.2 | 19.7 | 21.1 | 11.3 | 11.8 | 12.3 | 12.8 | 14.1 |
| | 8H | 18.8 | 19.3 | 19.8 | 20.3 | 21.6 | 11.3 | 11.8 | 12.3 | 12.8 | 14.2 |
| | 12H | 19.4 | 19.8 | 20.4 | 20.8 | 22.2 | 11.3 | 11.7 | 12.3 | 12.8 | 14.1 |

| | | | | | | | | | | | |
|----|-----|------|------|------|------|------|------|------|------|------|------|
| 8H | 4H | 17.3 | 17.8 | 18.3 | 18.8 | 20.2 | 11.9 | 12.4 | 12.9 | 13.4 | 14.7 |
| | 6H | 18.6 | 19.0 | 19.7 | 20.1 | 21.4 | 12.3 | 12.7 | 13.4 | 13.8 | 15.1 |
| | 8H | 19.4 | 19.7 | 20.4 | 20.8 | 22.1 | 12.5 | 12.8 | 13.5 | 13.9 | 15.2 |
| | 12H | 20.2 | 20.5 | 21.2 | 21.5 | 22.9 | 12.5 | 12.8 | 13.6 | 13.9 | 15.3 |

| | | | | | | | | | | | |
|-----|----|------|------|------|------|------|------|------|------|------|------|
| 12H | 4H | 17.3 | 17.7 | 18.3 | 18.8 | 20.1 | 12.2 | 12.6 | 13.2 | 13.7 | 15.0 |
| | 6H | 18.7 | 19.0 | 19.7 | 20.1 | 21.5 | 12.8 | 13.1 | 13.8 | 14.2 | 15.6 |
| | 8H | 19.5 | 19.8 | 20.5 | 20.8 | 22.3 | 13.0 | 13.3 | 14.0 | 14.4 | 15.8 |

Maximum UGR = 22.9

POLAR GRAPH



Maximum Candela = 1371.053 Located At Horizontal Angle = 0, Vertical Angle = 20
1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (20) (Through Max. Cd.)