

Scaled data based on original data using

LM-41-14 Approved Method for Photometric Testing Of Indoor Fluorescent Luminaires

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: HALO COMMERCIAL

Report Number: P581366

Luminaire Tested: **HC460D010-HM44560930-41RWWC**

Issue Date: 9/9/2021

**Test Information**

Test Method: LM-41-14  
Report Number: P581366  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2106-266-14)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 9/9/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: HALO COMMERCIAL  
Catalog Number: HC460D010-HM44560930-41RWWC  
Description: HALO COMMERCIAL 4" ROUND, NEW CONSTRUCTION FRAME, WITH 4" WALLWASH DISTRIBUTION, SPECULAR TRIM  
Light Source: (1) HIGH LUMEN LED 90CRI / 3000K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 4459.1 lumens  
Efficiency: N/A  
Efficacy: 81.1 lumens/watt  
Spacing Criteria (0/90/45): 1.21 / 1.15 / 1.21  
Luminous Opening: Circular (Dia: 0.33' x H: 0')  
CIE Type: Direct

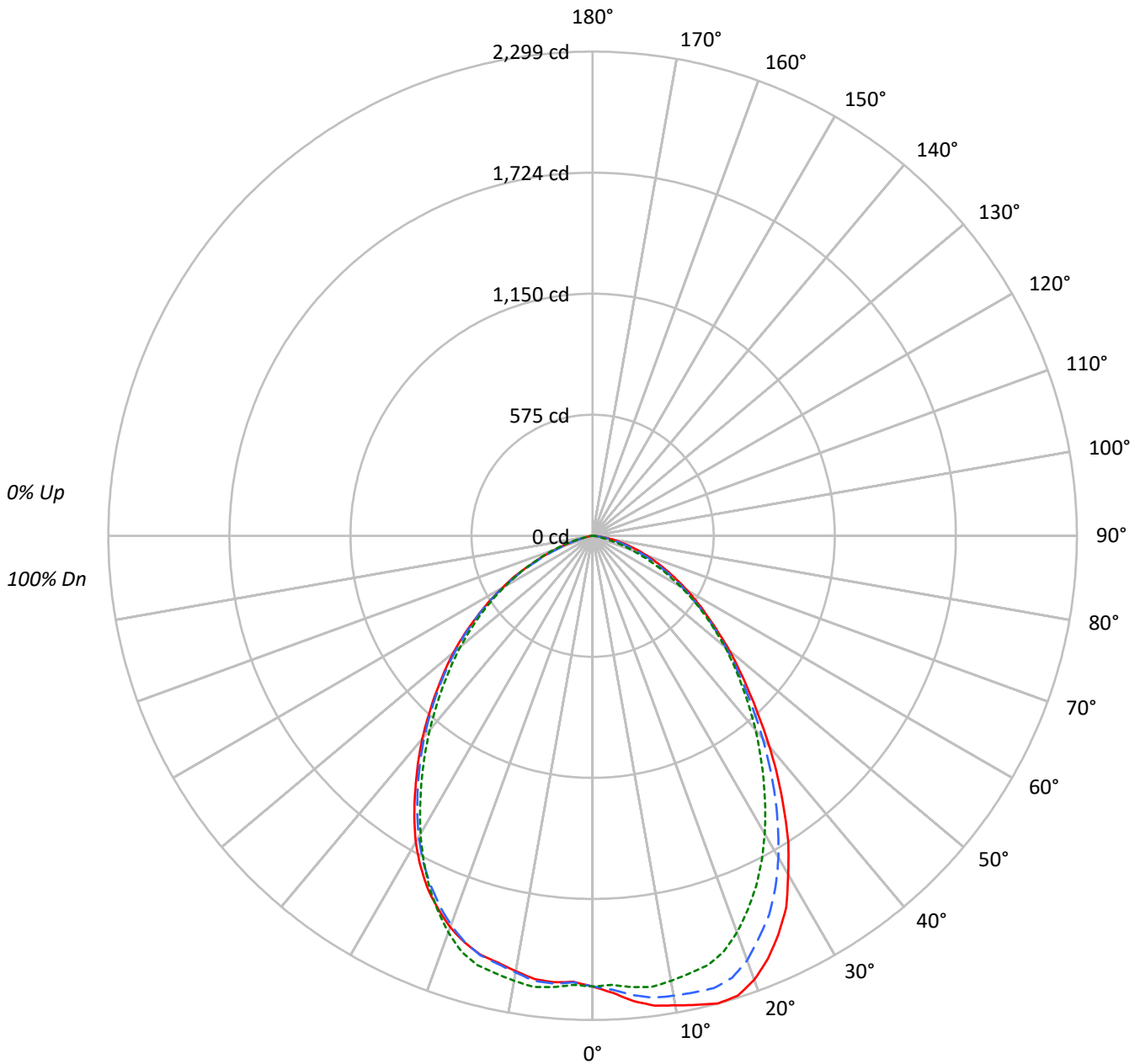
Input Watts (W): 55  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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### Luminous Intensity Polar Plot





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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |     |  |  |  |   |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|-----|--|--|--|---|
| RF  | 20  |     |     |     |     | 20  |     |     |     |     | 20  |     |     |     |     | 20  |     |     |    |    | 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  | 50  | 30 | 10 | 0  |     |  |  |  |   |
| RCR |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |     |  |  |  |   |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 100 |    |    |    | 100 |  |  |  |   |
| 1   | 111 | 107 | 103 | 100 | 108 | 105 | 102 | 99  | 101 | 98  | 96  | 97  | 95  | 93  | 93  | 92  | 90  | 88  |    |    |    | 88  |  |  |  |   |
| 2   | 102 | 95  | 90  | 85  | 100 | 94  | 88  | 84  | 90  | 86  | 82  | 87  | 83  | 80  | 84  | 81  | 78  | 76  |    |    |    | 76  |  |  |  |   |
| 3   | 95  | 85  | 78  | 73  | 92  | 84  | 77  | 72  | 81  | 75  | 71  | 78  | 74  | 70  | 76  | 72  | 69  | 67  |    |    |    | 67  |  |  |  |   |
| 4   | 87  | 77  | 69  | 63  | 85  | 76  | 68  | 63  | 73  | 67  | 62  | 71  | 66  | 61  | 69  | 64  | 60  | 58  |    |    |    | 58  |  |  |  |   |
| 5   | 81  | 70  | 61  | 56  | 79  | 68  | 61  | 55  | 66  | 60  | 55  | 65  | 59  | 54  | 63  | 58  | 54  | 52  |    |    |    | 52  |  |  |  |   |
| 6   | 75  | 63  | 55  | 49  | 74  | 62  | 55  | 49  | 61  | 54  | 49  | 59  | 53  | 48  | 58  | 52  | 48  | 46  |    |    |    | 46  |  |  |  |   |
| 7   | 70  | 58  | 50  | 44  | 69  | 57  | 49  | 44  | 56  | 49  | 44  | 54  | 48  | 44  | 53  | 47  | 43  | 41  |    |    |    | 41  |  |  |  |   |
| 8   | 66  | 53  | 45  | 40  | 64  | 53  | 45  | 40  | 51  | 44  | 40  | 50  | 44  | 39  | 49  | 43  | 39  | 37  |    |    |    | 37  |  |  |  |   |
| 9   | 62  | 49  | 42  | 36  | 60  | 49  | 41  | 36  | 47  | 41  | 36  | 46  | 40  | 36  | 45  | 40  | 36  | 34  |    |    |    | 34  |  |  |  |   |
| 10  | 58  | 46  | 38  | 33  | 57  | 45  | 38  | 33  | 44  | 38  | 33  | 43  | 37  | 33  | 42  | 37  | 33  | 31  |    |    |    | 31  |  |  |  |   |

**AVERAGE LUMINANCE (cd/sqm):**

|     | 0°     | 90°    | 180°   |
|-----|--------|--------|--------|
| 0°  | 263935 | 263935 | 263935 |
| 5°  | 274613 | 266379 | 263519 |
| 10° | 283575 | 268733 | 262934 |
| 15° | 293562 | 269555 | 262902 |
| 20° | 294538 | 263035 | 259622 |
| 25° | 284143 | 249901 | 251874 |
| 30° | 264416 | 232698 | 239278 |
| 35° | 238168 | 212931 | 220761 |
| 40° | 209981 | 193686 | 202526 |
| 45° | 183595 | 174524 | 183107 |
| 50° | 162571 | 157044 | 165353 |
| 55° | 143027 | 138684 | 144253 |
| 60° | 127687 | 118412 | 121989 |
| 65° | 112220 | 96197  | 94504  |
| 70° | 98022  | 70902  | 64626  |
| 75° | 81303  | 42748  | 34456  |
| 80° | 61585  | 16408  | 10229  |
| 85° | 28588  | 4104   | 4104   |



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 206.4  | 4.6       |
| 10°-20°   | 602.3  | 13.5      |
| 20°-30°   | 872.3  | 19.6      |
| 30°-40°   | 920.3  | 20.6      |
| 40°-50°   | 796.4  | 17.9      |
| 50°-60°   | 590.0  | 13.2      |
| 60°-70°   | 340.1  | 7.6       |
| 70°-80°   | 118.8  | 2.7       |
| 80°-90°   | 12.5   | 0.3       |
| 90°-100°  | 0.0    | 0.0       |
| 100°-110° | 0.0    | 0.0       |
| 110°-120° | 0.0    | 0.0       |
| 120°-130° | 0.0    | 0.0       |
| 130°-140° | 0.0    | 0.0       |
| 140°-150° | 0.0    | 0.0       |
| 150°-160° | 0.0    | 0.0       |
| 160°-170° | 0.0    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| 0°-30°    | 1681.0 | 37.7      |
| 0°-40°    | 2601.2 | 58.3      |
| 0°-60°    | 3987.7 | 89.4      |
| 0°-90°    | 4459.1 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 4459.1 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 45°  | 90°  | 135° | 180° | Flux |
|-----|------|------|------|------|------|------|
| 0°  | 2140 | 2140 | 2140 | 2140 | 2140 |      |
| 5°  | 2218 | 2189 | 2151 | 2134 | 2128 | 213  |
| 15° | 2299 | 2224 | 2111 | 2062 | 2059 | 647  |
| 25° | 2088 | 1984 | 1836 | 1825 | 1851 | 956  |
| 35° | 1582 | 1510 | 1414 | 1446 | 1466 | 988  |
| 45° | 1052 | 1024 | 1000 | 1038 | 1050 | 817  |
| 55° | 665  | 651  | 645  | 668  | 671  | 600  |
| 65° | 384  | 361  | 330  | 312  | 324  | 384  |
| 75° | 171  | 145  | 90   | 72   | 72   | 184  |
| 85° | 20   | 12   | 3    | 3    | 3    | 31   |
| 90° | 0    | 0    | 0    | 0    | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    | 112.5° | 135°   | 157.5° | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 2139.8 | 2139.8 | 2139.8 | 2139.8 | 2139.8 | 2139.8 | 2139.8 | 2139.8 | 2139.8 |
| 2.5°  | 2171.6 | 2165.9 | 2157.2 | 2145.6 | 2134.1 | 2125.4 | 2122.4 | 2119.6 | 2119.6 |
| 5°    | 2217.9 | 2206.4 | 2189.0 | 2165.9 | 2151.4 | 2142.7 | 2134.1 | 2128.3 | 2128.3 |
| 7.5°  | 2249.7 | 2238.2 | 2212.1 | 2180.3 | 2160.1 | 2142.7 | 2131.1 | 2122.4 | 2122.4 |
| 10°   | 2264.1 | 2249.7 | 2217.9 | 2177.4 | 2145.6 | 2122.4 | 2105.1 | 2099.3 | 2099.3 |
| 12.5° | 2281.5 | 2264.1 | 2220.8 | 2168.7 | 2128.3 | 2099.3 | 2081.9 | 2076.2 | 2076.2 |
| 15°   | 2298.9 | 2278.7 | 2223.7 | 2162.9 | 2110.9 | 2076.2 | 2061.8 | 2058.8 | 2058.8 |
| 17.5° | 2290.2 | 2264.1 | 2200.5 | 2128.3 | 2070.4 | 2035.7 | 2021.3 | 2021.3 | 2024.2 |
| 20°   | 2243.9 | 2217.9 | 2145.6 | 2064.7 | 2003.9 | 1977.9 | 1966.3 | 1972.1 | 1977.9 |
| 22.5° | 2174.6 | 2142.7 | 2064.7 | 1986.5 | 1922.9 | 1899.8 | 1899.8 | 1908.5 | 1917.1 |
| 25°   | 2087.8 | 2058.8 | 1983.7 | 1897.0 | 1836.2 | 1818.9 | 1824.7 | 1839.1 | 1850.7 |
| 27.5° | 1989.5 | 1957.6 | 1879.6 | 1798.6 | 1737.9 | 1729.2 | 1743.7 | 1764.0 | 1769.7 |
| 30°   | 1856.5 | 1830.4 | 1764.0 | 1685.8 | 1633.8 | 1630.9 | 1651.2 | 1665.6 | 1680.0 |
| 32.5° | 1729.2 | 1700.3 | 1636.7 | 1561.5 | 1523.9 | 1526.7 | 1549.9 | 1567.2 | 1575.9 |
| 35°   | 1581.7 | 1555.7 | 1509.5 | 1448.7 | 1414.1 | 1419.8 | 1445.9 | 1463.1 | 1466.1 |
| 37.5° | 1442.9 | 1425.6 | 1379.3 | 1333.1 | 1307.0 | 1318.6 | 1341.8 | 1361.9 | 1361.9 |
| 40°   | 1304.1 | 1289.6 | 1255.0 | 1217.3 | 1202.9 | 1217.3 | 1240.6 | 1257.8 | 1257.8 |
| 42.5° | 1171.1 | 1162.4 | 1133.5 | 1107.5 | 1098.8 | 1119.1 | 1139.3 | 1153.7 | 1150.9 |
| 45°   | 1052.5 | 1043.9 | 1023.7 | 1003.4 | 1000.5 | 1020.7 | 1038.1 | 1046.8 | 1049.7 |
| 47.5° | 945.6  | 939.7  | 922.5  | 907.9  | 907.9  | 928.2  | 942.7  | 951.4  | 954.3  |
| 50°   | 847.2  | 841.5  | 827.0  | 815.4  | 818.4  | 838.6  | 850.2  | 858.9  | 861.7  |
| 52.5° | 749.0  | 746.1  | 734.4  | 720.0  | 728.7  | 743.1  | 757.6  | 763.4  | 766.3  |
| 55°   | 665.1  | 665.1  | 650.6  | 639.0  | 644.9  | 659.3  | 668.0  | 670.8  | 670.8  |
| 57.5° | 589.9  | 587.0  | 569.6  | 558.1  | 561.0  | 575.4  | 581.3  | 584.1  | 584.1  |
| 60°   | 517.6  | 514.7  | 497.3  | 480.0  | 480.0  | 488.6  | 491.6  | 494.5  | 494.5  |
| 62.5° | 448.2  | 445.3  | 425.0  | 410.6  | 404.8  | 401.9  | 401.9  | 407.8  | 419.3  |
| 65°   | 384.5  | 381.7  | 361.4  | 338.3  | 329.6  | 321.0  | 312.3  | 318.1  | 323.8  |
| 67.5° | 326.8  | 321.0  | 300.7  | 280.5  | 260.2  | 245.8  | 231.4  | 240.0  | 251.5  |
| 70°   | 271.8  | 266.0  | 242.9  | 219.7  | 196.6  | 173.5  | 162.0  | 173.5  | 179.2  |
| 72.5° | 219.7  | 214.0  | 190.9  | 167.7  | 138.7  | 115.6  | 112.8  | 115.6  | 118.6  |
| 75°   | 170.6  | 167.7  | 144.6  | 118.6  | 89.7   | 72.3   | 72.3   | 72.3   | 72.3   |
| 77.5° | 127.2  | 121.5  | 98.4   | 75.2   | 52.0   | 40.5   | 37.6   | 37.6   | 37.6   |
| 80°   | 86.7   | 81.0   | 60.7   | 43.4   | 23.1   | 17.4   | 17.4   | 14.4   | 14.4   |
| 82.5° | 49.2   | 46.2   | 31.8   | 17.4   | 8.7    | 5.8    | 5.8    | 5.8    | 5.8    |
| 85°   | 20.2   | 17.4   | 11.6   | 5.8    | 2.9    | 2.9    | 2.9    | 2.9    | 2.9    |
| 87.5° | 2.9    | 2.9    | 2.9    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |



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— 0°-180°    - - 45°-225°    - - - - 90°-270°







(END OF REPORT)