

Scaled data based on original data using  
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

Brand: HALO COMMERCIAL

Report Number: P837562

Luminaire Tested: HCSQ445D010-HM44560830-41SQMW

Issue Date: 5/17/2024

**Test Information**

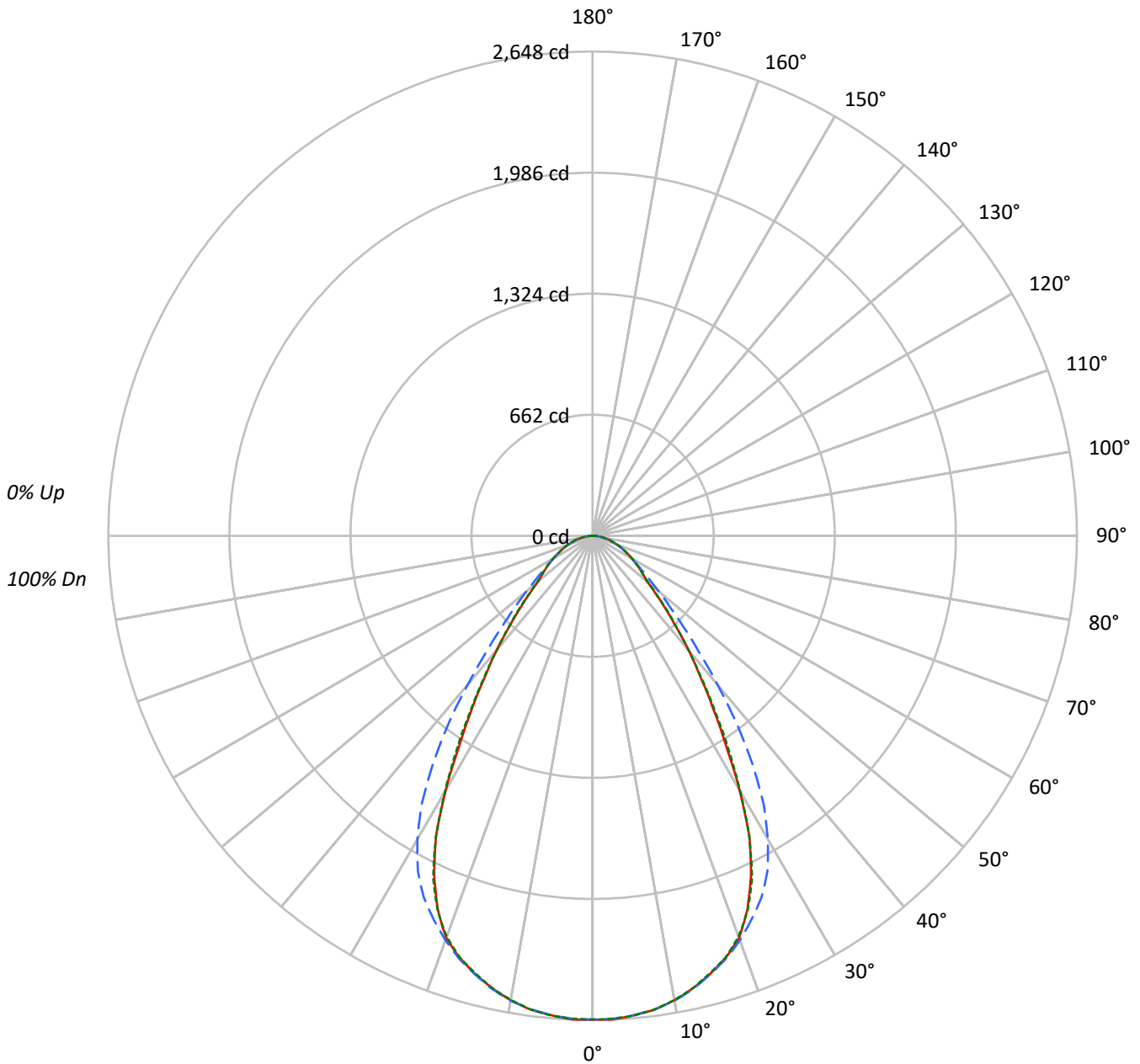
Test Method: LM-79-2019  
Report Number: P837562  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2309-165-3)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 5/17/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO COMMERCIAL  
Catalog Number: HCSQ445D010-HM44560830-41SQMW  
Description: HALO COMMERCIAL 4" SQUARE, NEW CONSTRUCTION FRAME, MATTE WHITE TRIM  
Light Source: (1) HIGH LUMEN LED 80CRI / 3000K CCT  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 3839.4 lumens  
Efficiency: N/A  
Efficacy: 83.6 lumens/watt  
Spacing Criteria (0/90/45): 1.03 / 1.03 / 1.07  
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 45.9  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): 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: 24 FT

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### Luminous Intensity Polar Plot





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

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |  |  |  |  |   |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|--|--|--|--|---|
| RF  | 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 |    |    |    |  |  |  |  |   |
| 1   | 111 | 108 | 105 | 102 | 109 | 106 | 103 | 100 | 101 | 99  | 97  | 98  | 96  | 94  | 94  | 93  | 91  | 89  |    |    |    |  |  |  |  |   |
| 2   | 104 | 98  | 92  | 88  | 102 | 96  | 91  | 87  | 92  | 88  | 85  | 89  | 86  | 83  | 86  | 84  | 81  | 79  |    |    |    |  |  |  |  |   |
| 3   | 97  | 89  | 82  | 77  | 95  | 87  | 81  | 76  | 84  | 79  | 75  | 82  | 78  | 74  | 79  | 76  | 73  | 71  |    |    |    |  |  |  |  |   |
| 4   | 91  | 81  | 74  | 69  | 89  | 80  | 73  | 68  | 77  | 72  | 67  | 75  | 70  | 66  | 73  | 69  | 66  | 64  |    |    |    |  |  |  |  |   |
| 5   | 85  | 74  | 67  | 62  | 83  | 73  | 66  | 61  | 71  | 65  | 61  | 70  | 64  | 60  | 68  | 63  | 60  | 58  |    |    |    |  |  |  |  |   |
| 6   | 79  | 69  | 61  | 56  | 78  | 68  | 61  | 56  | 66  | 60  | 55  | 64  | 59  | 55  | 63  | 58  | 54  | 53  |    |    |    |  |  |  |  |   |
| 7   | 75  | 63  | 56  | 51  | 73  | 63  | 56  | 51  | 61  | 55  | 50  | 60  | 54  | 50  | 59  | 54  | 50  | 48  |    |    |    |  |  |  |  |   |
| 8   | 70  | 59  | 52  | 47  | 69  | 58  | 51  | 47  | 57  | 51  | 46  | 56  | 50  | 46  | 55  | 50  | 46  | 44  |    |    |    |  |  |  |  |   |
| 9   | 66  | 55  | 48  | 43  | 65  | 54  | 48  | 43  | 53  | 47  | 43  | 52  | 47  | 43  | 51  | 46  | 43  | 41  |    |    |    |  |  |  |  |   |
| 10  | 63  | 51  | 45  | 40  | 62  | 51  | 44  | 40  | 50  | 44  | 40  | 49  | 44  | 40  | 48  | 43  | 40  | 38  |    |    |    |  |  |  |  |   |

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

|     | 0°     | 45°    | 90°    |
|-----|--------|--------|--------|
| 0°  | 256303 | 256303 | 256303 |
| 5°  | 255882 | 255882 | 256077 |
| 10° | 253784 | 253981 | 253578 |
| 15° | 248847 | 249057 | 248435 |
| 20° | 241381 | 242660 | 240536 |
| 25° | 219071 | 233352 | 220611 |
| 30° | 179830 | 214317 | 180512 |
| 35° | 135175 | 179902 | 137114 |
| 40° | 102953 | 134138 | 102687 |
| 45° | 76886  | 95189  | 78297  |
| 50° | 58551  | 70955  | 59787  |
| 55° | 52780  | 55550  | 52780  |
| 60° | 48186  | 47798  | 47798  |
| 65° | 43828  | 43828  | 43828  |
| 70° | 40759  | 40164  | 40164  |
| 75° | 37692  | 36943  | 37692  |
| 80° | 34421  | 33250  | 34421  |
| 85° | 29678  | 29678  | 29678  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 45°  
 Vertical Angle: 45°  
 Luminance: 95189 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 249.5  | 6.5       |
| 10°-20°   | 698.5  | 18.2      |
| 20°-30°   | 960.7  | 25.0      |
| 30°-40°   | 817.8  | 21.3      |
| 40°-50°   | 494.0  | 12.9      |
| 50°-60°   | 291.1  | 7.6       |
| 60°-70°   | 191.0  | 5.0       |
| 70°-80°   | 105.9  | 2.8       |
| 80°-90°   | 31.0   | 0.8       |
| 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°    | 1908.7 | 49.7      |
| 0°-40°    | 2726.5 | 71.0      |
| 0°-60°    | 3511.6 | 91.5      |
| 0°-90°    | 3839.4 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 3839.4 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 2646 | 2646  | 2646 | 2646  | 2646 |      |
| 5°  | 2631 | 2633  | 2631 | 2629  | 2633 | 250  |
| 15° | 2481 | 2487  | 2483 | 2481  | 2477 | 698  |
| 25° | 2050 | 2113  | 2183 | 2117  | 2064 | 926  |
| 35° | 1143 | 1258  | 1521 | 1293  | 1159 | 724  |
| 45° | 561  | 621   | 695  | 627   | 572  | 441  |
| 55° | 312  | 319   | 329  | 319   | 312  | 281  |
| 65° | 191  | 193   | 191  | 191   | 191  | 191  |
| 75° | 101  | 101   | 99   | 99    | 101  | 107  |
| 85° | 27   | 27    | 27   | 27    | 27   | 31   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 2645.7 | 2645.7 | 2645.7 | 2645.7 | 2645.7 |
| 2.5°  | 2647.7 | 2641.6 | 2643.6 | 2641.6 | 2643.6 |
| 5°    | 2631.3 | 2633.3 | 2631.3 | 2629.2 | 2633.3 |
| 7.5°  | 2612.8 | 2610.7 | 2610.7 | 2608.7 | 2612.8 |
| 10°   | 2579.9 | 2575.8 | 2581.9 | 2577.8 | 2577.8 |
| 12.5° | 2534.7 | 2540.8 | 2538.8 | 2538.8 | 2534.7 |
| 15°   | 2481.2 | 2487.4 | 2483.3 | 2481.2 | 2477.1 |
| 17.5° | 2419.5 | 2423.7 | 2425.7 | 2417.5 | 2417.5 |
| 20°   | 2341.4 | 2349.7 | 2353.8 | 2339.4 | 2333.2 |
| 22.5° | 2211.9 | 2248.9 | 2271.5 | 2246.9 | 2216.0 |
| 25°   | 2049.5 | 2113.3 | 2183.1 | 2117.4 | 2063.9 |
| 27.5° | 1854.2 | 1944.7 | 2070.1 | 1959.1 | 1854.2 |
| 30°   | 1607.6 | 1741.2 | 1915.9 | 1755.6 | 1613.7 |
| 32.5° | 1352.6 | 1494.5 | 1739.1 | 1519.2 | 1381.4 |
| 35°   | 1143.0 | 1258.1 | 1521.2 | 1293.0 | 1159.4 |
| 37.5° | 962.1  | 1060.7 | 1293.0 | 1083.3 | 972.3  |
| 40°   | 814.1  | 892.2  | 1060.7 | 902.4  | 812.0  |
| 42.5° | 672.2  | 746.2  | 859.3  | 756.5  | 680.4  |
| 45°   | 561.2  | 620.8  | 694.8  | 627.0  | 571.5  |
| 47.5° | 466.6  | 516.0  | 569.4  | 516.0  | 472.8  |
| 50°   | 388.5  | 427.6  | 470.8  | 427.6  | 396.7  |
| 52.5° | 347.4  | 359.7  | 388.5  | 361.8  | 347.4  |
| 55°   | 312.5  | 318.6  | 328.9  | 318.6  | 312.5  |
| 57.5° | 279.6  | 283.7  | 281.6  | 281.6  | 279.6  |
| 60°   | 248.7  | 250.8  | 246.7  | 248.7  | 246.7  |
| 62.5° | 220.0  | 220.0  | 215.8  | 220.0  | 217.9  |
| 65°   | 191.2  | 193.2  | 191.2  | 191.2  | 191.2  |
| 67.5° | 166.5  | 166.5  | 164.5  | 166.5  | 166.5  |
| 70°   | 143.9  | 143.9  | 141.8  | 143.9  | 141.8  |
| 72.5° | 121.3  | 121.3  | 119.2  | 119.2  | 119.2  |
| 75°   | 100.7  | 100.7  | 98.7   | 98.7   | 100.7  |
| 77.5° | 80.2   | 80.2   | 78.1   | 80.2   | 80.2   |
| 80°   | 61.7   | 61.7   | 59.6   | 61.7   | 61.7   |
| 82.5° | 43.2   | 43.2   | 43.2   | 45.2   | 45.2   |
| 85°   | 26.7   | 26.7   | 26.7   | 26.7   | 26.7   |
| 87.5° | 12.3   | 12.3   | 12.3   | 12.3   | 14.4   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

Signify Classified - Internal  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269

Scaled Data Report



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Scaled Data Report







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

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