

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: P837229

Luminaire Tested: HCSQ405D010-HM40525940-41SQH

Issue Date: 5/17/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P837229  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2309-165-2)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 5/17/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO COMMERCIAL  
Catalog Number: HCSQ405D010-HM40525940-41SQH  
Description: HALO COMMERCIAL 4" SQUARE, NEW CONSTRUCTION FRAME, HAZE TRIM  
Light Source: (1) HIGH LUMEN LED 90CRI / 4000K CCT  
Ballast/Driver: -

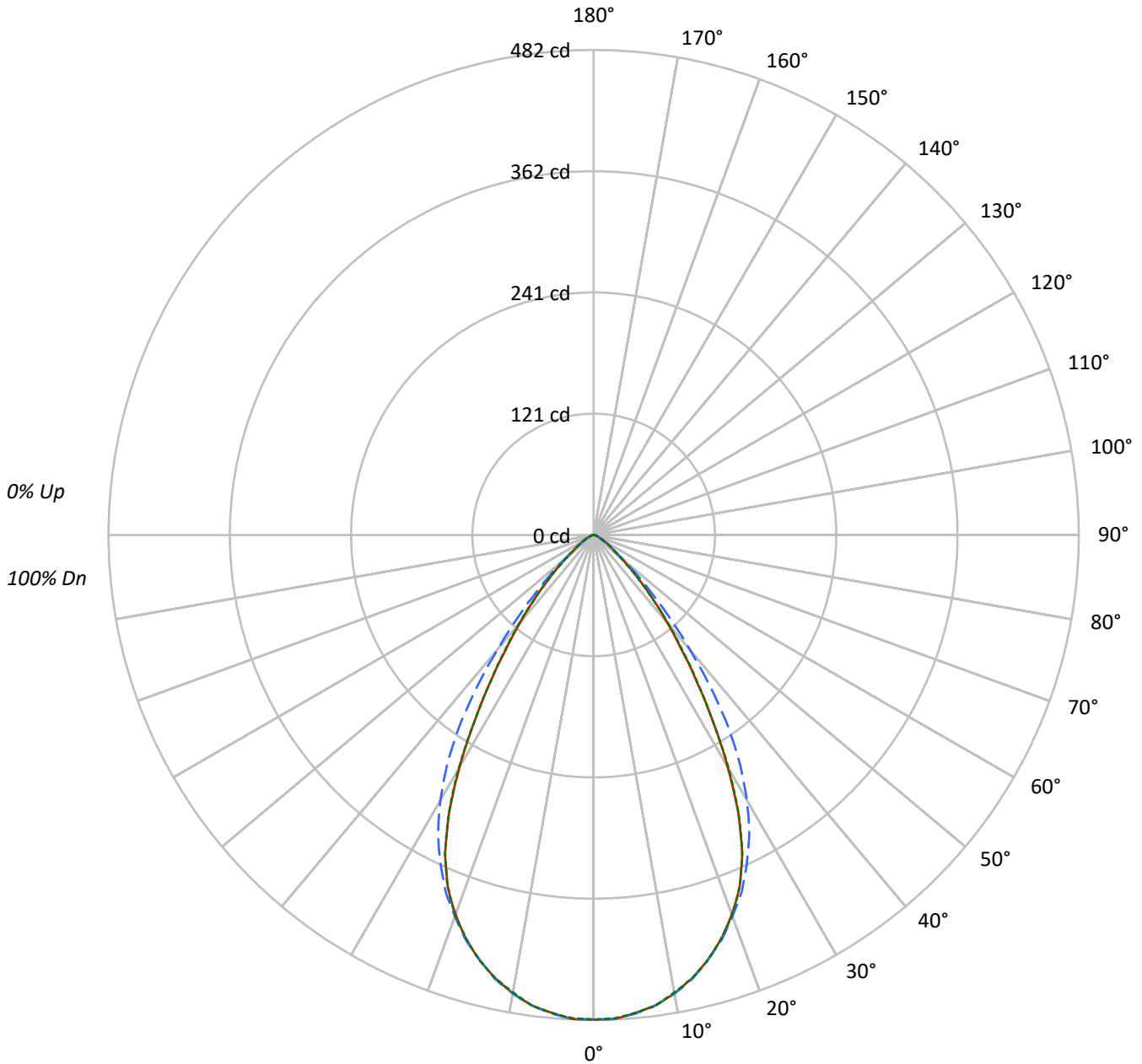
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 541.4 lumens  
Efficiency: N/A  
Efficacy: 90.2 lumens/watt  
Spacing Criteria (0/90/45): 0.98 / 0.98 / 1.01  
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
CIE Type: Direct

Input Watts (W): 6  
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  |     |     |     |     |     |     |     |     | 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   | 113 | 110 | 107 | 105 | 110 | 108 | 105 | 103 | 104 | 102 | 100 | 100 | 98  | 97  | 96  | 95  | 94  | 92  |    |    |   | 92  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 2   | 107 | 101 | 97  | 93  | 104 | 100 | 95  | 92  | 96  | 93  | 90  | 93  | 90  | 88  | 90  | 88  | 86  | 85  |    |    |   | 85  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 3   | 101 | 93  | 88  | 84  | 98  | 92  | 87  | 83  | 89  | 85  | 82  | 87  | 83  | 80  | 85  | 82  | 79  | 77  |    |    |   | 77  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 4   | 95  | 87  | 80  | 76  | 93  | 85  | 80  | 75  | 83  | 78  | 74  | 81  | 77  | 74  | 79  | 76  | 73  | 71  |    |    |   | 71  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 5   | 89  | 80  | 74  | 69  | 88  | 79  | 73  | 69  | 77  | 72  | 68  | 76  | 71  | 68  | 74  | 70  | 67  | 65  |    |    |   | 65  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 6   | 84  | 75  | 68  | 63  | 83  | 74  | 68  | 63  | 72  | 67  | 63  | 71  | 66  | 62  | 69  | 65  | 62  | 60  |    |    |   | 60  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 7   | 80  | 70  | 63  | 59  | 78  | 69  | 63  | 58  | 68  | 62  | 58  | 66  | 61  | 58  | 65  | 61  | 57  | 56  |    |    |   | 56  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 8   | 75  | 65  | 59  | 54  | 74  | 65  | 58  | 54  | 63  | 58  | 54  | 62  | 57  | 54  | 61  | 57  | 53  | 52  |    |    |   | 52  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 9   | 72  | 61  | 55  | 50  | 70  | 61  | 54  | 50  | 60  | 54  | 50  | 59  | 54  | 50  | 58  | 53  | 50  | 48  |    |    |   | 48  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 10  | 68  | 57  | 51  | 47  | 67  | 57  | 51  | 47  | 56  | 51  | 47  | 55  | 50  | 47  | 54  | 50  | 46  | 45  |    |    |   | 45  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |

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

|     | 0°    | 45°   | 90°   |
|-----|-------|-------|-------|
| 0°  | 46655 | 46655 | 46655 |
| 5°  | 46376 | 46435 | 46376 |
| 10° | 45506 | 45535 | 45417 |
| 15° | 43888 | 43858 | 43918 |
| 20° | 41371 | 41588 | 41464 |
| 25° | 37337 | 38480 | 37337 |
| 30° | 29822 | 34040 | 30046 |
| 35° | 21287 | 27543 | 21323 |
| 40° | 14366 | 18742 | 14594 |
| 45° | 9124  | 11084 | 9165  |
| 50° | 5200  | 5923  | 5019  |
| 55° | 3412  | 2871  | 3361  |
| 60° | 2364  | 1666  | 2306  |
| 65° | 1628  | 1238  | 1628  |
| 70° | 1190  | 935   | 1190  |
| 75° | 786   | 786   | 786   |
| 80° | 502   | 669   | 669   |
| 85° | 667   | 667   | 667   |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 45°  
 Vertical Angle: 45°  
 Luminance: 11084 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 45.1   | 8.3       |
| 10°-20°   | 122.7  | 22.7      |
| 20°-30°   | 160.6  | 29.7      |
| 30°-40°   | 126.3  | 23.3      |
| 40°-50°   | 59.0   | 10.9      |
| 50°-60°   | 18.3   | 3.4       |
| 60°-70°   | 6.5    | 1.2       |
| 70°-80°   | 2.3    | 0.4       |
| 80°-90°   | 0.6    | 0.1       |
| 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°    | 328.5  | 60.7      |
| 0°-40°    | 454.7  | 84.0      |
| 0°-60°    | 532.0  | 98.2      |
| 0°-90°    | 541.4  | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 541.4  | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°  | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|-----|-------|-----|-------|-----|------|
| 0°  | 482 | 482   | 482 | 482   | 482 |      |
| 5°  | 477 | 477   | 478 | 478   | 477 | 45   |
| 15° | 438 | 438   | 437 | 438   | 438 | 123  |
| 25° | 349 | 354   | 360 | 354   | 349 | 157  |
| 35° | 180 | 196   | 233 | 199   | 180 | 113  |
| 45° | 67  | 75    | 81  | 73    | 67  | 53   |
| 55° | 20  | 19    | 17  | 19    | 20  | 19   |
| 65° | 7   | 6     | 5   | 6     | 7   | 7    |
| 75° | 2   | 2     | 2   | 2     | 2   | 2    |
| 85° | 1   | 1     | 1   | 1     | 1   | 1    |
| 90° | 0   | 0     | 0   | 0     | 0   |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|-------|-------|-------|-------|-------|-------|
| 0°    | 481.6 | 481.6 | 481.6 | 481.6 | 481.6 |
| 2.5°  | 481.6 | 481.1 | 481.4 | 480.8 | 480.8 |
| 5°    | 476.9 | 477.2 | 477.5 | 478.1 | 476.9 |
| 7.5°  | 471.5 | 472.1 | 471.8 | 471.8 | 471.8 |
| 10°   | 462.6 | 462.9 | 462.9 | 462.9 | 461.7 |
| 12.5° | 451.3 | 451.9 | 452.2 | 451.3 | 451.3 |
| 15°   | 437.6 | 437.6 | 437.3 | 437.6 | 437.9 |
| 17.5° | 421.3 | 422.2 | 422.2 | 421.3 | 421.0 |
| 20°   | 401.3 | 402.8 | 403.4 | 402.2 | 402.2 |
| 22.5° | 379.0 | 380.5 | 384.1 | 381.1 | 378.7 |
| 25°   | 349.3 | 354.0 | 360.0 | 354.3 | 349.3 |
| 27.5° | 310.9 | 321.3 | 335.0 | 323.1 | 311.8 |
| 30°   | 266.6 | 283.5 | 304.3 | 284.4 | 268.6 |
| 32.5° | 221.3 | 240.4 | 271.0 | 241.9 | 221.3 |
| 35°   | 180.0 | 196.3 | 232.9 | 198.7 | 180.3 |
| 37.5° | 143.1 | 158.9 | 191.0 | 160.6 | 145.2 |
| 40°   | 113.6 | 126.4 | 148.2 | 126.1 | 115.4 |
| 42.5° | 88.7  | 97.9  | 112.2 | 97.6  | 88.4  |
| 45°   | 66.6  | 74.7  | 80.9  | 73.2  | 66.9  |
| 47.5° | 49.1  | 54.4  | 58.0  | 53.5  | 47.9  |
| 50°   | 34.5  | 38.4  | 39.3  | 37.5  | 33.3  |
| 52.5° | 25.9  | 25.9  | 26.2  | 25.6  | 25.3  |
| 55°   | 20.2  | 19.0  | 17.0  | 18.7  | 19.9  |
| 57.5° | 15.8  | 14.6  | 11.9  | 14.0  | 15.5  |
| 60°   | 12.2  | 11.0  | 8.6   | 10.7  | 11.9  |
| 62.5° | 9.5   | 8.3   | 6.8   | 8.3   | 9.2   |
| 65°   | 7.1   | 6.5   | 5.4   | 6.2   | 7.1   |
| 67.5° | 5.4   | 4.8   | 4.2   | 4.8   | 5.4   |
| 70°   | 4.2   | 3.9   | 3.3   | 3.6   | 4.2   |
| 72.5° | 3.0   | 2.7   | 2.7   | 2.7   | 3.0   |
| 75°   | 2.1   | 2.1   | 2.1   | 2.1   | 2.1   |
| 77.5° | 1.5   | 1.5   | 1.5   | 1.5   | 1.5   |
| 80°   | 0.9   | 0.9   | 1.2   | 1.2   | 1.2   |
| 82.5° | 0.6   | 0.6   | 0.9   | 0.9   | 0.9   |
| 85°   | 0.6   | 0.6   | 0.6   | 0.6   | 0.6   |
| 87.5° | 0.3   | 0.3   | 0.3   | 0.6   | 0.6   |
| 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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Signify Classified - Internal  
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Scaled Data Report







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

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Scaled Data Report



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