

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: P837391

Luminaire Tested: HCSQ420D010-HM40525940-41SQMB

Issue Date: 5/17/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P837391  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2309-165-4)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 5/17/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO COMMERCIAL  
Catalog Number: HCSQ420D010-HM40525940-41SQMB  
Description: HALO COMMERCIAL 4" SQUARE, NEW CONSTRUCTION FRAME, MATTE BLACK TRIM  
Light Source: (1) HIGH LUMEN LED 90CRI / 4000K CCT  
Ballast/Driver: -

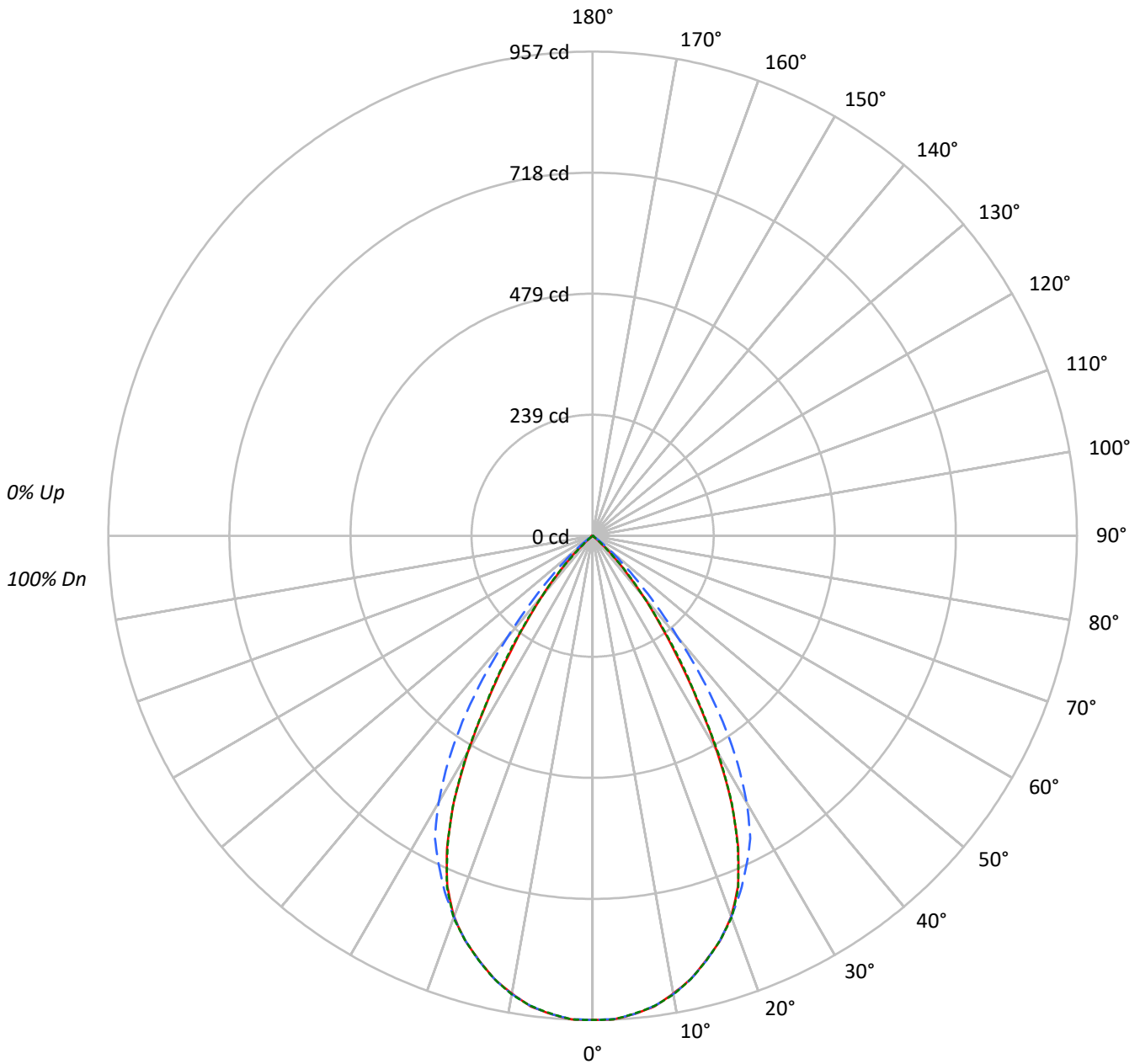
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 955.9 lumens  
Efficiency: N/A  
Efficacy: 47.8 lumens/watt  
Spacing Criteria (0/90/45): 0.96 / 0.96 / 0.99  
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
CIE Type: Direct

Input Watts (W): 20  
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 |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 1   | 113 | 111 | 108 | 106 | 111 | 108 | 106 | 104 | 104 | 103 | 101 | 101 | 99  | 98  | 97  | 96  | 95  | 93  |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 2   | 108 | 103 | 99  | 95  | 105 | 101 | 97  | 94  | 98  | 95  | 92  | 95  | 92  | 90  | 92  | 90  | 88  | 87  |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 3   | 102 | 96  | 91  | 87  | 100 | 94  | 90  | 86  | 92  | 88  | 84  | 89  | 86  | 83  | 87  | 84  | 82  | 80  |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 4   | 97  | 89  | 83  | 79  | 95  | 88  | 83  | 79  | 86  | 81  | 78  | 84  | 80  | 77  | 82  | 79  | 76  | 74  |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 5   | 92  | 83  | 77  | 73  | 90  | 82  | 77  | 73  | 80  | 76  | 72  | 79  | 75  | 71  | 77  | 74  | 71  | 69  |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 6   | 87  | 78  | 72  | 67  | 85  | 77  | 71  | 67  | 76  | 70  | 67  | 74  | 70  | 66  | 73  | 69  | 66  | 64  |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 7   | 82  | 73  | 67  | 63  | 81  | 72  | 66  | 62  | 71  | 66  | 62  | 70  | 65  | 62  | 69  | 65  | 61  | 60  |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 8   | 78  | 69  | 62  | 58  | 77  | 68  | 62  | 58  | 67  | 62  | 58  | 66  | 61  | 58  | 65  | 61  | 57  | 56  |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 9   | 74  | 65  | 58  | 54  | 73  | 64  | 58  | 54  | 63  | 58  | 54  | 62  | 57  | 54  | 61  | 57  | 54  | 52  |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 10  | 71  | 61  | 55  | 51  | 70  | 60  | 55  | 51  | 60  | 54  | 51  | 59  | 54  | 51  | 58  | 54  | 50  | 49  |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |

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

|     | 0°    | 45°   | 90°   |
|-----|-------|-------|-------|
| 0°  | 92700 | 92700 | 92700 |
| 5°  | 92276 | 92276 | 92189 |
| 10° | 90372 | 90461 | 90549 |
| 15° | 87064 | 87154 | 87154 |
| 20° | 82546 | 82629 | 82814 |
| 25° | 72771 | 76854 | 72493 |
| 30° | 54913 | 68113 | 55405 |
| 35° | 34426 | 53017 | 35585 |
| 40° | 19425 | 33007 | 19425 |
| 45° | 8152  | 16660 | 8028  |
| 50° | 663   | 6420  | 799   |
| 55° | 304   | 1351  | 304   |
| 60° | 349   | 174   | 349   |
| 65° | 206   | 206   | 206   |
| 70° | 255   | 255   | 255   |
| 75° | 337   | 337   | 337   |
| 80° | 0     | 502   | 502   |
| 85° | 0     | 1000  | 1000  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 45°  
 Vertical Angle: 45°  
 Luminance: 16660 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 89.7   | 9.4       |
| 10°-20°   | 244.0  | 25.5      |
| 20°-30°   | 316.5  | 33.1      |
| 30°-40°   | 225.0  | 23.5      |
| 40°-50°   | 73.0   | 7.6       |
| 50°-60°   | 5.3    | 0.6       |
| 60°-70°   | 0.9    | 0.1       |
| 70°-80°   | 0.9    | 0.1       |
| 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°    | 650.2  | 68.0      |
| 0°-40°    | 875.2  | 91.6      |
| 0°-60°    | 953.4  | 99.7      |
| 0°-90°    | 955.9  | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 955.9  | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°  | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|-----|-------|-----|-------|-----|------|
| 0°  | 957 | 957   | 957 | 957   | 957 |      |
| 5°  | 949 | 950   | 949 | 949   | 948 | 90   |
| 15° | 868 | 871   | 869 | 871   | 869 | 244  |
| 25° | 681 | 699   | 719 | 702   | 678 | 305  |
| 35° | 291 | 344   | 448 | 348   | 301 | 186  |
| 45° | 60  | 84    | 122 | 86    | 59  | 49   |
| 55° | 2   | 2     | 8   | 2     | 2   | 2    |
| 65° | 1   | 1     | 1   | 1     | 1   | 1    |
| 75° | 1   | 1     | 1   | 1     | 1   | 1    |
| 85° | 0   | 0     | 1   | 1     | 1   | 0    |
| 90° | 0   | 0     | 0   | 0     | 0   |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|-------|-------|-------|-------|-------|-------|
| 0°    | 956.9 | 956.9 | 956.9 | 956.9 | 956.9 |
| 2.5°  | 956.9 | 956.9 | 956.0 | 956.0 | 956.9 |
| 5°    | 948.9 | 949.8 | 948.9 | 948.9 | 948.0 |
| 7.5°  | 938.2 | 938.2 | 937.4 | 937.4 | 937.4 |
| 10°   | 918.7 | 919.6 | 919.6 | 919.6 | 920.5 |
| 12.5° | 897.4 | 897.4 | 897.4 | 897.4 | 897.4 |
| 15°   | 868.1 | 870.8 | 869.0 | 870.8 | 869.0 |
| 17.5° | 838.8 | 838.8 | 837.9 | 839.7 | 837.9 |
| 20°   | 800.7 | 800.7 | 801.5 | 803.3 | 803.3 |
| 22.5° | 750.1 | 758.9 | 762.5 | 760.7 | 751.8 |
| 25°   | 680.8 | 698.6 | 719.0 | 702.1 | 678.2 |
| 27.5° | 593.8 | 627.6 | 674.6 | 632.9 | 595.6 |
| 30°   | 490.9 | 541.5 | 608.9 | 543.2 | 495.3 |
| 32.5° | 384.4 | 442.9 | 532.6 | 447.4 | 387.9 |
| 35°   | 291.1 | 344.4 | 448.3 | 348.0 | 300.9 |
| 37.5° | 214.8 | 263.6 | 355.9 | 265.4 | 221.0 |
| 40°   | 153.6 | 189.1 | 261.0 | 192.6 | 153.6 |
| 42.5° | 98.5  | 134.0 | 183.7 | 134.9 | 103.0 |
| 45°   | 59.5  | 84.3  | 121.6 | 86.1  | 58.6  |
| 47.5° | 26.6  | 47.9  | 75.5  | 49.7  | 26.6  |
| 50°   | 4.4   | 19.5  | 42.6  | 20.4  | 5.3   |
| 52.5° | 2.7   | 3.6   | 20.4  | 3.6   | 2.7   |
| 55°   | 1.8   | 1.8   | 8.0   | 1.8   | 1.8   |
| 57.5° | 1.8   | 1.8   | 1.8   | 1.8   | 1.8   |
| 60°   | 1.8   | 0.9   | 0.9   | 0.9   | 1.8   |
| 62.5° | 0.9   | 0.9   | 0.9   | 0.9   | 0.9   |
| 65°   | 0.9   | 0.9   | 0.9   | 0.9   | 0.9   |
| 67.5° | 0.9   | 0.9   | 0.9   | 0.9   | 0.9   |
| 70°   | 0.9   | 0.9   | 0.9   | 0.9   | 0.9   |
| 72.5° | 0.9   | 0.9   | 0.9   | 0.9   | 0.9   |
| 75°   | 0.9   | 0.9   | 0.9   | 0.9   | 0.9   |
| 77.5° | 0.9   | 0.9   | 0.9   | 0.9   | 0.9   |
| 80°   | 0.0   | 0.9   | 0.9   | 0.9   | 0.9   |
| 82.5° | 0.0   | 0.9   | 0.9   | 0.9   | 0.9   |
| 85°   | 0.0   | 0.0   | 0.9   | 0.9   | 0.9   |
| 87.5° | 0.0   | 0.0   | 0.9   | 0.9   | 0.9   |
| 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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Scaled Data Report



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