

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: P837608

Luminaire Tested: HCSQ450D010-HM44560840-41SQC

Issue Date: 5/17/2024



Test Information

Test Method: LM-79-2019
Report Number: P837608
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2309-165-1)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 5/17/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO COMMERCIAL
Catalog Number: HCSQ450D010-HM44560840-41SQC
Description: HALO COMMERCIAL 4" SQUARE, NEW CONSTRUCTION FRAME, SPECULAR CLEAR TRIM
Light Source: (1) HIGH LUMEN LED 80CRI / 4000K CCT
Ballast/Driver: -

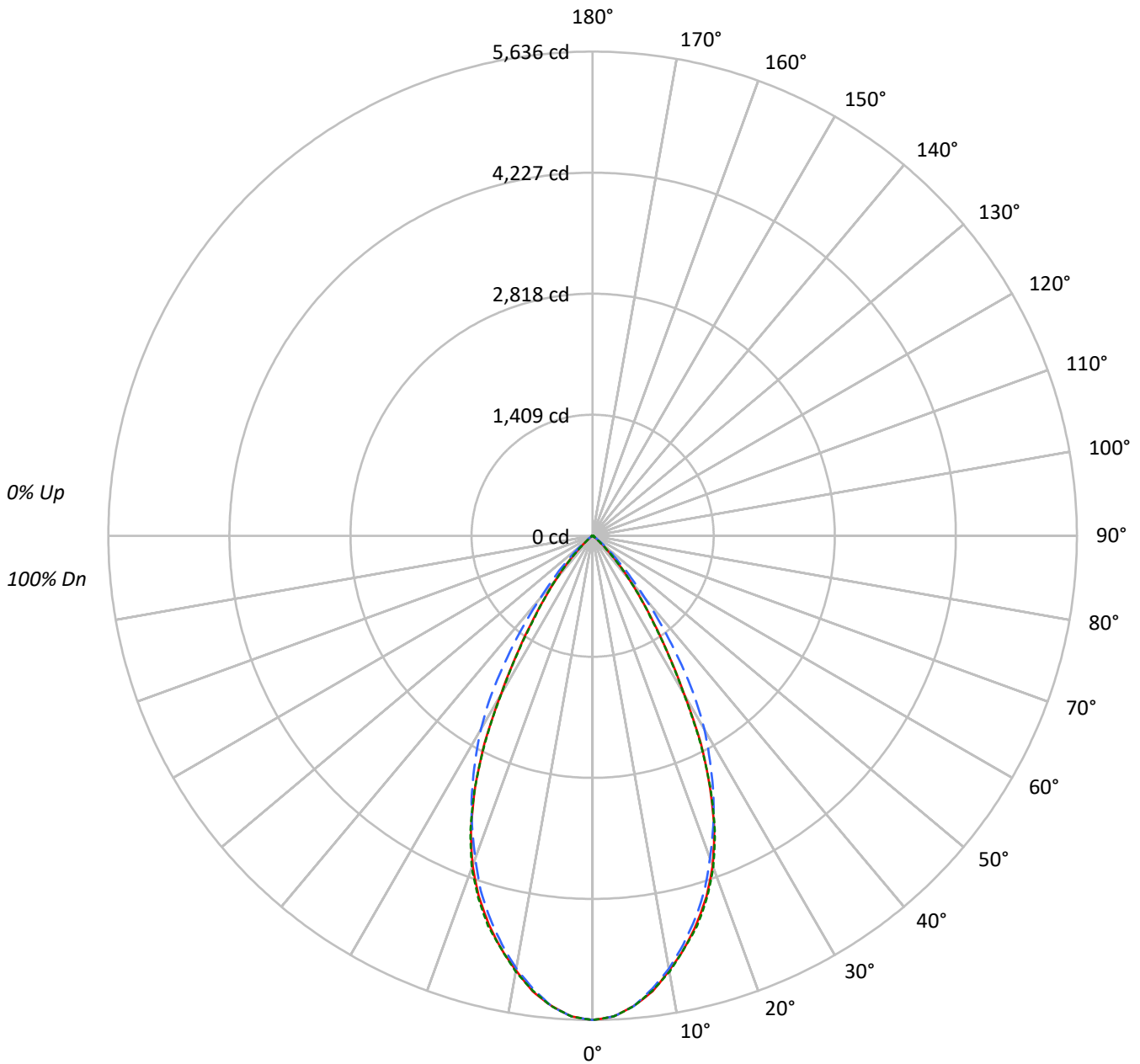
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 4554.6 lumens
Efficiency: N/A
Efficacy: 91.6 lumens/watt
Spacing Criteria (0/90/45): 0.85 / 0.85 / 0.87
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
CIE Type: Direct

Input Watts (W): 49.7
Input Voltage (V): NR
Input Current (A_{in}): 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

TEST NUMBER: P837608
CATALOG NUMBER: HCSQ450D010-HM44560840-41SQC

Luminous Intensity Polar Plot





TEST NUMBER: P837608
 CATALOG NUMBER: HCSQ450D010-HM44560840-41SQC

COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

| | | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|
| RF | 20 | | | | | 20 | | | | | 20 | | | | | 20 | | | | |
| RC | 80 | | | | | 70 | | | | | 50 | | | | | 30 | | | | |
| RW | 70 | 50 | 30 | 10 | 70 | 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 | 114 | 111 | 108 | 106 | 111 | 109 | 106 | 104 | 105 | 103 | 101 | 101 | 99 | 98 | 97 | 96 | 95 | 94 | | |
| 2 | 108 | 103 | 99 | 96 | 106 | 101 | 98 | 95 | 98 | 95 | 93 | 95 | 93 | 91 | 93 | 91 | 89 | 87 | | |
| 3 | 103 | 96 | 91 | 87 | 101 | 95 | 90 | 87 | 92 | 89 | 85 | 90 | 87 | 84 | 88 | 85 | 83 | 81 | | |
| 4 | 98 | 90 | 85 | 80 | 96 | 89 | 84 | 80 | 87 | 82 | 79 | 85 | 81 | 78 | 83 | 80 | 77 | 76 | | |
| 5 | 93 | 84 | 79 | 74 | 91 | 83 | 78 | 74 | 82 | 77 | 73 | 80 | 76 | 73 | 78 | 75 | 72 | 71 | | |
| 6 | 88 | 79 | 73 | 69 | 87 | 79 | 73 | 69 | 77 | 72 | 68 | 76 | 71 | 68 | 74 | 70 | 68 | 66 | | |
| 7 | 84 | 75 | 69 | 65 | 82 | 74 | 68 | 64 | 73 | 68 | 64 | 71 | 67 | 64 | 70 | 66 | 63 | 62 | | |
| 8 | 80 | 70 | 64 | 60 | 79 | 70 | 64 | 60 | 69 | 64 | 60 | 68 | 63 | 60 | 67 | 63 | 60 | 58 | | |
| 9 | 76 | 67 | 61 | 57 | 75 | 66 | 60 | 57 | 65 | 60 | 56 | 64 | 60 | 56 | 63 | 59 | 56 | 55 | | |
| 10 | 73 | 63 | 57 | 53 | 72 | 63 | 57 | 53 | 62 | 57 | 53 | 61 | 56 | 53 | 60 | 56 | 53 | 52 | | |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|--------|--------|--------|
| 0° | 546000 | 546000 | 546000 |
| 5° | 534286 | 534510 | 534510 |
| 10° | 505365 | 503113 | 506713 |
| 15° | 468909 | 462480 | 471426 |
| 20° | 420917 | 411484 | 423515 |
| 25° | 345715 | 355741 | 346944 |
| 30° | 238982 | 290663 | 237192 |
| 35° | 147155 | 205317 | 143642 |
| 40° | 83022 | 120050 | 82441 |
| 45° | 37922 | 60172 | 36347 |
| 50° | 9646 | 24129 | 9992 |
| 55° | 4628 | 7347 | 4256 |
| 60° | 3100 | 2654 | 3546 |
| 65° | 2613 | 2086 | 2613 |
| 70° | 1954 | 1954 | 2578 |
| 75° | 1722 | 1722 | 2583 |
| 80° | 2566 | 2566 | 2566 |
| 85° | 2556 | 5113 | 5113 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 45°
 Vertical Angle: 45°
 Luminance: 60172 cd/sqm



TEST NUMBER: P837608
 CATALOG NUMBER: HCSQ450D010-HM44560840-41SQC

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 512.7 | 11.3 |
| 10°-20° | 1294.8 | 28.4 |
| 20°-30° | 1480.2 | 32.5 |
| 30°-40° | 918.8 | 20.2 |
| 40°-50° | 289.5 | 6.4 |
| 50°-60° | 37.5 | 0.8 |
| 60°-70° | 11.1 | 0.2 |
| 70°-80° | 5.9 | 0.1 |
| 80°-90° | 4.0 | 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° | 3287.7 | 72.2 |
| 0°-40° | 4206.6 | 92.4 |
| 0°-60° | 4533.6 | 99.5 |
| 0°-90° | 4554.6 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 4554.6 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 5636 | 5636 | 5636 | 5636 | 5636 | |
| 5° | 5494 | 5490 | 5496 | 5492 | 5496 | 513 |
| 15° | 4675 | 4641 | 4611 | 4641 | 4700 | 1304 |
| 25° | 3234 | 3280 | 3328 | 3280 | 3246 | 1451 |
| 35° | 1244 | 1436 | 1736 | 1402 | 1215 | 800 |
| 45° | 277 | 332 | 439 | 334 | 265 | 233 |
| 55° | 27 | 27 | 44 | 27 | 25 | 27 |
| 65° | 11 | 11 | 9 | 11 | 11 | 11 |
| 75° | 5 | 5 | 5 | 5 | 7 | 6 |
| 85° | 2 | 5 | 5 | 5 | 5 | 3 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



TEST NUMBER: P837608

CATALOG NUMBER: HCSQ450D010-HM44560840-41SQC

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|--------|--------|--------|--------|--------|
| 0° | 5636.1 | 5636.1 | 5636.1 | 5636.1 | 5636.1 |
| 2.5° | 5601.7 | 5606.3 | 5601.7 | 5610.9 | 5601.7 |
| 5° | 5494.2 | 5489.7 | 5496.5 | 5492.0 | 5496.5 |
| 7.5° | 5347.8 | 5320.4 | 5318.1 | 5336.4 | 5338.7 |
| 10° | 5137.4 | 5130.5 | 5114.5 | 5130.5 | 5151.1 |
| 12.5° | 4922.4 | 4894.9 | 4872.1 | 4904.1 | 4922.4 |
| 15° | 4675.4 | 4641.1 | 4611.3 | 4641.1 | 4700.5 |
| 17.5° | 4403.2 | 4355.1 | 4330.0 | 4364.3 | 4421.5 |
| 20° | 4082.9 | 4032.6 | 3991.4 | 4021.2 | 4108.1 |
| 22.5° | 3698.7 | 3694.1 | 3666.6 | 3682.6 | 3714.7 |
| 25° | 3234.3 | 3280.1 | 3328.1 | 3280.1 | 3245.8 |
| 27.5° | 2724.2 | 2847.8 | 2957.6 | 2813.5 | 2703.7 |
| 30° | 2136.4 | 2324.0 | 2598.4 | 2310.2 | 2120.4 |
| 32.5° | 1651.5 | 1848.2 | 2198.2 | 1823.0 | 1637.7 |
| 35° | 1244.3 | 1436.5 | 1736.1 | 1402.2 | 1214.6 |
| 37.5° | 914.9 | 1059.0 | 1319.8 | 1049.9 | 914.9 |
| 40° | 656.5 | 750.3 | 949.3 | 748.0 | 651.9 |
| 42.5° | 455.2 | 516.9 | 663.3 | 512.4 | 441.5 |
| 45° | 276.8 | 331.7 | 439.2 | 334.0 | 265.3 |
| 47.5° | 146.4 | 210.4 | 276.8 | 201.3 | 146.4 |
| 50° | 64.0 | 112.1 | 160.1 | 109.8 | 66.3 |
| 52.5° | 34.3 | 48.0 | 86.9 | 48.0 | 34.3 |
| 55° | 27.4 | 27.4 | 43.5 | 27.4 | 25.2 |
| 57.5° | 20.6 | 20.6 | 22.9 | 20.6 | 20.6 |
| 60° | 16.0 | 16.0 | 13.7 | 16.0 | 18.3 |
| 62.5° | 13.7 | 13.7 | 11.4 | 13.7 | 13.7 |
| 65° | 11.4 | 11.4 | 9.1 | 11.4 | 11.4 |
| 67.5° | 9.1 | 9.1 | 9.1 | 9.1 | 9.1 |
| 70° | 6.9 | 6.9 | 6.9 | 9.1 | 9.1 |
| 72.5° | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 |
| 75° | 4.6 | 4.6 | 4.6 | 4.6 | 6.9 |
| 77.5° | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 |
| 80° | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 |
| 82.5° | 2.3 | 4.6 | 4.6 | 4.6 | 4.6 |
| 85° | 2.3 | 4.6 | 4.6 | 4.6 | 4.6 |
| 87.5° | 2.3 | 2.3 | 4.6 | 4.6 | 4.6 |
| 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



Report Generated By 670245859 / DESKTOP-T8S5UU9

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

Scaled Data Report





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

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

Scaled Data Report



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

Scaled Data Report



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

Scaled Data Report



(END OF REPORT)