

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

Report Number: P887033

Luminaire Tested: ML412LSFL9FS1E-TIR4D40FL-TL4RDSL-1200LM-4000K

Issue Date: 7/9/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P887033  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2402-314-40)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 7/9/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO  
Catalog Number: ML412LSFL9FS1E-TIR4D40FL-TL4RDSL-1200LM-4000K  
Description: 4IN ROUND ML FLEX, SELECTABLE CCT, WITH 40D TIR, METALLIC SILVER TRIM  
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 4000K CCT  
Ballast/Driver: -

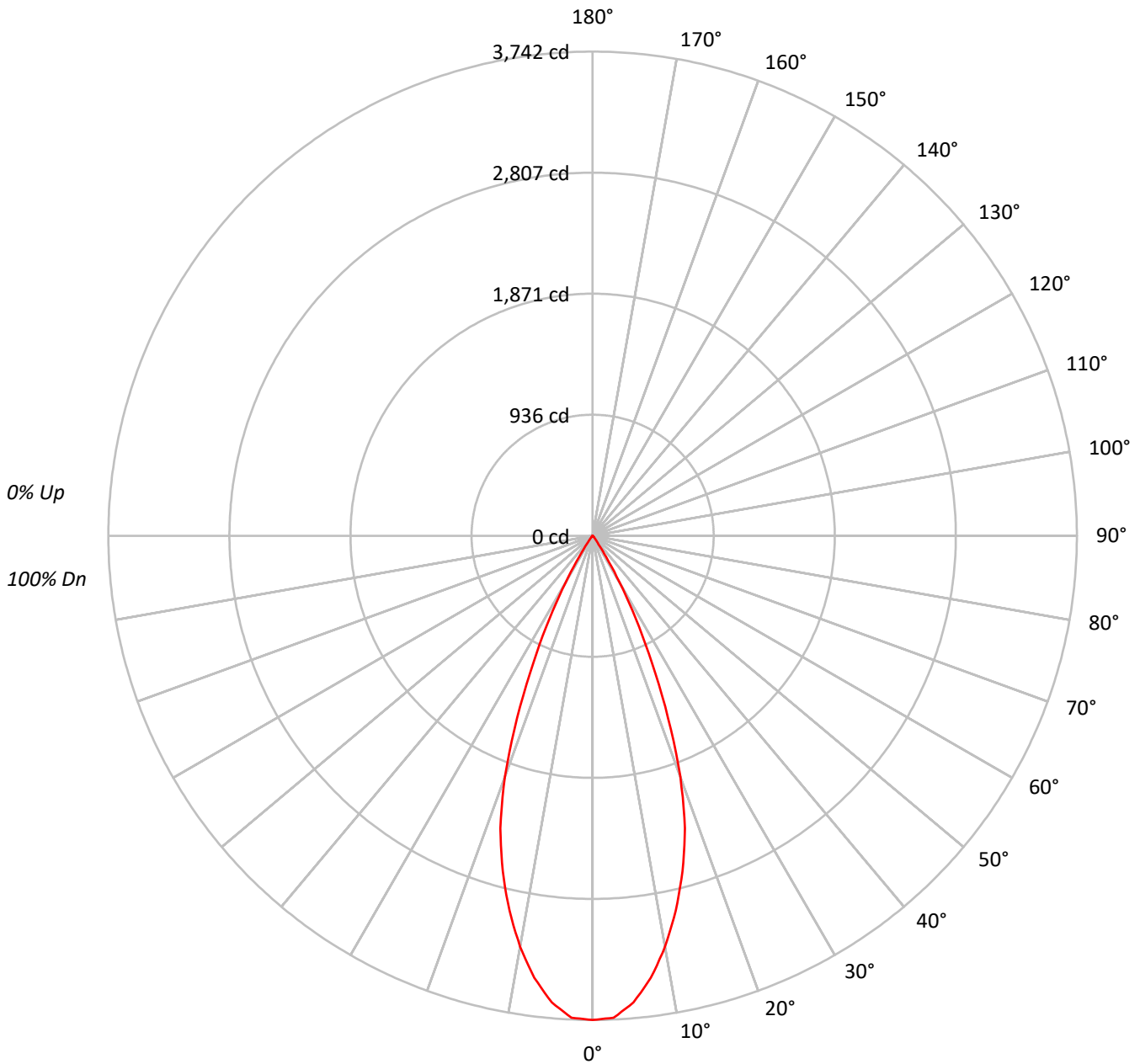
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1660.4 lumens  
Efficiency: N/A  
Efficacy: 94.3 lumens/watt  
Spacing Criteria (0/90/45): 0.67 / 0.67 / 0.63  
Luminous Opening: Circular (Dia: 0.33' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 17.6  
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: 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   | 115 | 112 | 110 | 108 | 112 | 110 | 108 | 106 | 106 | 105 | 103 | 102 | 101 | 100 | 99  | 98  | 97  | 96  |    |    |   | 96  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 2   | 110 | 106 | 103 | 100 | 108 | 104 | 101 | 99  | 101 | 99  | 97  | 98  | 96  | 95  | 96  | 94  | 93  | 91  |    |    |   | 91  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 3   | 106 | 101 | 97  | 94  | 104 | 99  | 96  | 93  | 97  | 94  | 91  | 95  | 92  | 90  | 92  | 90  | 89  | 87  |    |    |   | 87  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 4   | 102 | 96  | 92  | 88  | 100 | 95  | 91  | 88  | 93  | 89  | 87  | 91  | 88  | 86  | 89  | 87  | 85  | 83  |    |    |   | 83  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 5   | 98  | 92  | 87  | 83  | 97  | 91  | 86  | 83  | 89  | 85  | 82  | 88  | 84  | 82  | 86  | 83  | 81  | 80  |    |    |   | 80  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 6   | 95  | 88  | 83  | 79  | 93  | 87  | 82  | 79  | 85  | 82  | 79  | 84  | 81  | 78  | 83  | 80  | 78  | 76  |    |    |   | 76  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 7   | 91  | 84  | 79  | 76  | 90  | 83  | 79  | 76  | 82  | 78  | 75  | 81  | 77  | 75  | 80  | 77  | 74  | 73  |    |    |   | 73  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 8   | 88  | 81  | 76  | 72  | 87  | 80  | 75  | 72  | 79  | 75  | 72  | 78  | 74  | 72  | 77  | 74  | 71  | 70  |    |    |   | 70  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 9   | 85  | 77  | 73  | 69  | 84  | 77  | 72  | 69  | 76  | 72  | 69  | 75  | 72  | 69  | 75  | 71  | 69  | 68  |    |    |   | 68  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 10  | 82  | 74  | 70  | 67  | 81  | 74  | 70  | 67  | 73  | 69  | 66  | 73  | 69  | 66  | 72  | 69  | 66  | 65  |    |    |   | 65  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |

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

|     |        |
|-----|--------|
|     | 0°     |
| 0°  | 461559 |
| 5°  | 448266 |
| 10° | 403851 |
| 15° | 342674 |
| 20° | 259898 |
| 25° | 146930 |
| 30° | 58922  |
| 35° | 11489  |
| 40° | 3204   |
| 45° | 1343   |
| 50° | 844    |
| 55° | 710    |
| 60° | 543    |
| 65° | 642    |
| 70° | 397    |
| 75° | 524    |
| 80° | 781    |
| 85° | 0      |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 1343 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 332.7  | 20.0      |
| 10°-20°   | 735.3  | 44.3      |
| 20°-30°   | 501.4  | 30.2      |
| 30°-40°   | 77.8   | 4.7       |
| 40°-50°   | 6.9    | 0.4       |
| 50°-60°   | 3.2    | 0.2       |
| 60°-70°   | 1.8    | 0.1       |
| 70°-80°   | 1.2    | 0.1       |
| 80°-90°   | 0.1    | 0.0       |
| 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°    | 1569.4 | 94.5      |
| 0°-40°    | 1647.2 | 99.2      |
| 0°-60°    | 1657.3 | 99.8      |
| 0°-90°    | 1660.4 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 1660.4 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | Flux |
|-----|------|------|
| 0°  | 3742 |      |
| 5°  | 3620 | 333  |
| 15° | 2684 | 735  |
| 25° | 1080 | 501  |
| 35° | 76   | 78   |
| 45° | 8    | 7    |
| 55° | 3    | 3    |
| 65° | 2    | 2    |
| 75° | 1    | 1    |
| 85° | 0    | 0    |
| 90° | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     |
|-------|--------|
| 0°    | 3742.0 |
| 2.5°  | 3727.7 |
| 5°    | 3620.4 |
| 7.5°  | 3445.6 |
| 10°   | 3224.4 |
| 12.5° | 2967.7 |
| 15°   | 2683.5 |
| 17.5° | 2371.5 |
| 20°   | 1980.0 |
| 22.5° | 1523.1 |
| 25°   | 1079.6 |
| 27.5° | 719.0  |
| 30°   | 413.7  |
| 32.5° | 191.4  |
| 35°   | 76.3   |
| 37.5° | 38.7   |
| 40°   | 19.9   |
| 42.5° | 11.1   |
| 45°   | 7.7    |
| 47.5° | 5.5    |
| 50°   | 4.4    |
| 52.5° | 4.4    |
| 55°   | 3.3    |
| 57.5° | 3.3    |
| 60°   | 2.2    |
| 62.5° | 2.2    |
| 65°   | 2.2    |
| 67.5° | 1.1    |
| 70°   | 1.1    |
| 72.5° | 1.1    |
| 75°   | 1.1    |
| 77.5° | 1.1    |
| 80°   | 1.1    |
| 82.5° | 0.0    |
| 85°   | 0.0    |
| 87.5° | 0.0    |
| 90°   | 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

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— 0°-180°

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