

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: P886997

Luminaire Tested: ML412LSFL9FS1E-TIR4D25NFL-TL4RDMW-1200LM-3500K

Issue Date: 7/18/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P886997  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2402-314-36)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 7/18/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO  
Catalog Number: ML412LSFL9FS1E-TIR4D25NFL-TL4RDMW-1200LM-3500K  
Description: 4IN ROUND ML FLEX, SELECTABLE CCT, WITH 25D TIR, MATTE WHITE TRIM  
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 3500K CCT  
Ballast/Driver: -

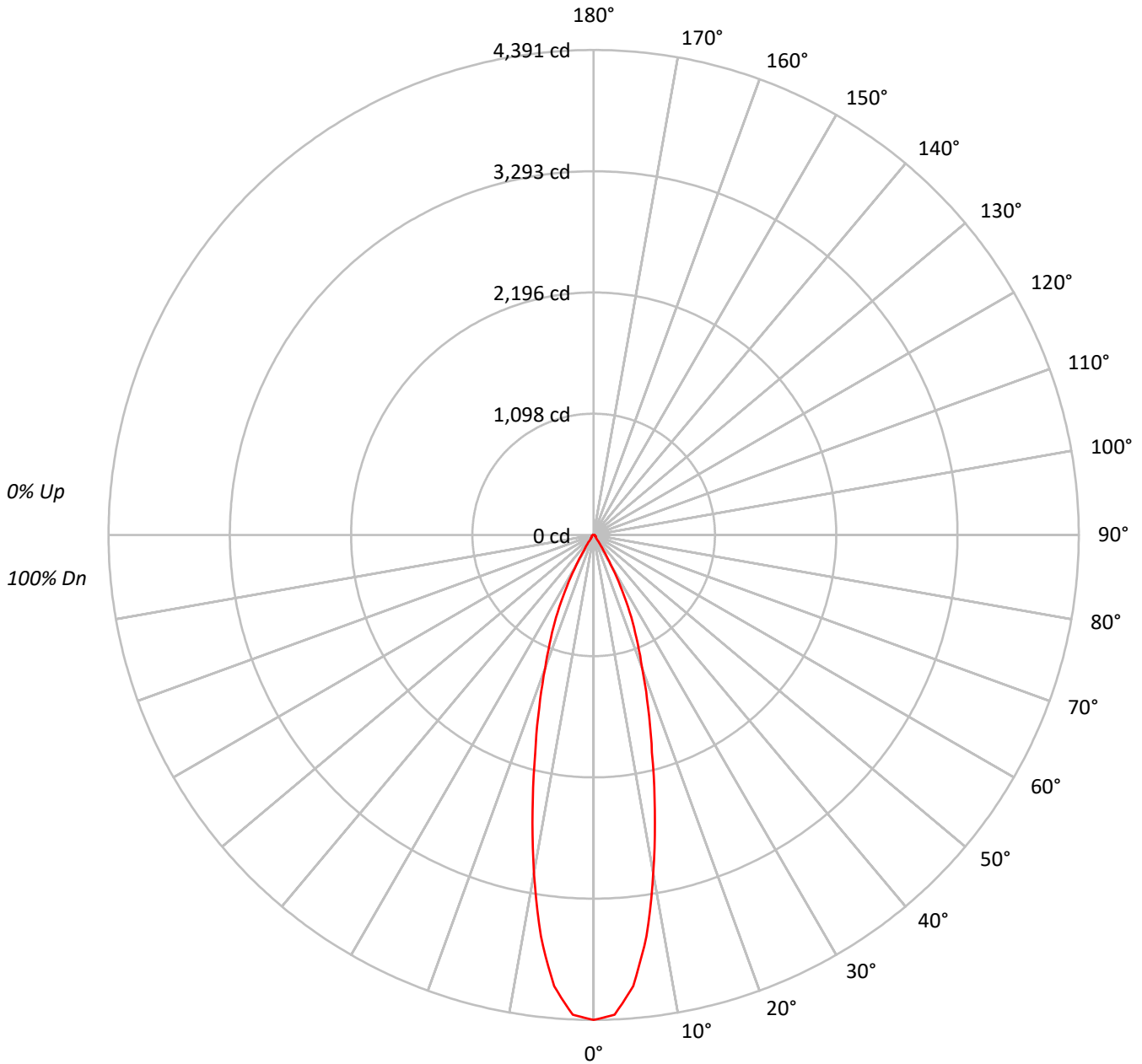
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1414.8 lumens  
Efficiency: N/A  
Efficacy: 80.4 lumens/watt  
Spacing Criteria (0/90/45): 0.47 / 0.47 / 0.51  
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  |     |     |     |     |     |     |     |     | 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 | 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 | 112 | 110 | 108 | 112 | 110 | 108 | 106 | 106 | 104 | 103 | 102 | 101 | 100 | 99  | 98  | 97  | 95  |    |    |    |    |    |    |    |    |    |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 2   | 110 | 105 | 102 | 99  | 108 | 104 | 101 | 98  | 101 | 98  | 96  | 98  | 96  | 94  | 95  | 93  | 92  | 90  |    |    |    |    |    |    |    |    |    |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 3   | 105 | 100 | 96  | 92  | 104 | 99  | 95  | 92  | 96  | 93  | 90  | 94  | 91  | 89  | 92  | 89  | 88  | 86  |    |    |    |    |    |    |    |    |    |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 4   | 101 | 95  | 91  | 87  | 100 | 94  | 90  | 87  | 92  | 88  | 86  | 90  | 87  | 85  | 88  | 86  | 84  | 82  |    |    |    |    |    |    |    |    |    |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 5   | 98  | 91  | 86  | 83  | 96  | 90  | 86  | 82  | 88  | 84  | 82  | 87  | 83  | 81  | 85  | 82  | 80  | 79  |    |    |    |    |    |    |    |    |    |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 6   | 94  | 87  | 82  | 79  | 93  | 86  | 82  | 78  | 85  | 81  | 78  | 84  | 80  | 77  | 82  | 79  | 77  | 76  |    |    |    |    |    |    |    |    |    |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 7   | 91  | 84  | 79  | 75  | 90  | 83  | 78  | 75  | 82  | 78  | 75  | 81  | 77  | 74  | 80  | 76  | 74  | 73  |    |    |    |    |    |    |    |    |    |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 8   | 88  | 80  | 76  | 72  | 87  | 80  | 75  | 72  | 79  | 75  | 72  | 78  | 74  | 72  | 77  | 74  | 71  | 70  |    |    |    |    |    |    |    |    |    |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 9   | 85  | 77  | 73  | 69  | 84  | 77  | 72  | 69  | 76  | 72  | 69  | 75  | 72  | 69  | 75  | 71  | 69  | 68  |    |    |    |    |    |    |    |    |    |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 10  | 82  | 75  | 70  | 67  | 82  | 74  | 70  | 67  | 74  | 70  | 67  | 73  | 69  | 67  | 72  | 69  | 66  | 65  |    |    |    |    |    |    |    |    |    |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |

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

|     |        |
|-----|--------|
|     | 0°     |
| 0°  | 541611 |
| 5°  | 507773 |
| 10° | 389435 |
| 15° | 260476 |
| 20° | 168369 |
| 25° | 105216 |
| 30° | 43896  |
| 35° | 12844  |
| 40° | 5330   |
| 45° | 4466   |
| 50° | 4509   |
| 55° | 4580   |
| 60° | 4465   |
| 65° | 4670   |
| 70° | 4616   |
| 75° | 4575   |
| 80° | 4546   |
| 85° | 4529   |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 87.5°  
 Luminance: 5938 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 359.0  | 25.4      |
| 10°-20°   | 570.8  | 40.3      |
| 20°-30°   | 345.6  | 24.4      |
| 30°-40°   | 70.1   | 5.0       |
| 40°-50°   | 20.5   | 1.4       |
| 50°-60°   | 19.0   | 1.3       |
| 60°-70°   | 15.7   | 1.1       |
| 70°-80°   | 10.4   | 0.7       |
| 80°-90°   | 3.8    | 0.3       |
| 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°    | 1275.4 | 90.1      |
| 0°-40°    | 1345.5 | 95.1      |
| 0°-60°    | 1385.0 | 97.9      |
| 0°-90°    | 1414.8 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 1414.8 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | Flux |
|-----|------|------|
| 0°  | 4391 |      |
| 5°  | 4101 | 359  |
| 15° | 2040 | 571  |
| 25° | 773  | 346  |
| 35° | 85   | 70   |
| 45° | 26   | 20   |
| 55° | 21   | 19   |
| 65° | 16   | 16   |
| 75° | 10   | 10   |
| 85° | 3    | 4    |
| 90° | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

| 0°    |        |
|-------|--------|
| 0°    | 4391.0 |
| 2.5°  | 4348.3 |
| 5°    | 4101.0 |
| 7.5°  | 3664.8 |
| 10°   | 3109.3 |
| 12.5° | 2554.8 |
| 15°   | 2039.8 |
| 17.5° | 1636.8 |
| 20°   | 1282.7 |
| 22.5° | 1009.8 |
| 25°   | 773.1  |
| 27.5° | 522.5  |
| 30°   | 308.2  |
| 32.5° | 167.4  |
| 35°   | 85.3   |
| 37.5° | 43.7   |
| 40°   | 33.1   |
| 42.5° | 28.8   |
| 45°   | 25.6   |
| 47.5° | 23.5   |
| 50°   | 23.5   |
| 52.5° | 22.4   |
| 55°   | 21.3   |
| 57.5° | 20.3   |
| 60°   | 18.1   |
| 62.5° | 17.1   |
| 65°   | 16.0   |
| 67.5° | 14.9   |
| 70°   | 12.8   |
| 72.5° | 11.7   |
| 75°   | 9.6    |
| 77.5° | 8.5    |
| 80°   | 6.4    |
| 82.5° | 5.3    |
| 85°   | 3.2    |
| 87.5° | 2.1    |
| 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

Signify Classified - Internal  
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Scaled Data Report





Signify Classified - Internal  
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Scaled Data Report



— 0°-180°

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