

Scaled data based on original data using

LM-41-14 Approved Method for Photometric Testing Of Indoor Fluorescent Luminaires

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: HALO

Report Number: P300493

Luminaire Tested: **ML4D09_27D2WE - TIR45NFL25 - TL43R2GMWBB - TL44S2GMWBB**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P300493
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G1-1902-156-3)
Test Lab: INNOVATION CENTER(G1)
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: HALO
Catalog Number: ML4D09_27D2WE - TIR45NFL25 - TL43R2GMWBB - TL44S2GMWBB
Description: ML4 2700K, 900LM DIM-TO-WARM, 25 DEG NFL OPTIC, WITH ROUND/SQUARE
DIFFUSED CLEAR LENS, MATTE WHITE FLANGE, BLACK LENS FRAME
Light Source: (1) HIGH LUMEN LED 90CRI / 2700K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 491.0 lumens
Efficiency: N/A
Efficacy: 43.8 lumens/watt
Spacing Criteria (0/90/45): 0.45 / 0.45 / 0.46
Luminous Opening: Circular (Dia: 0.19' x H: 0')
CIE Type: Direct

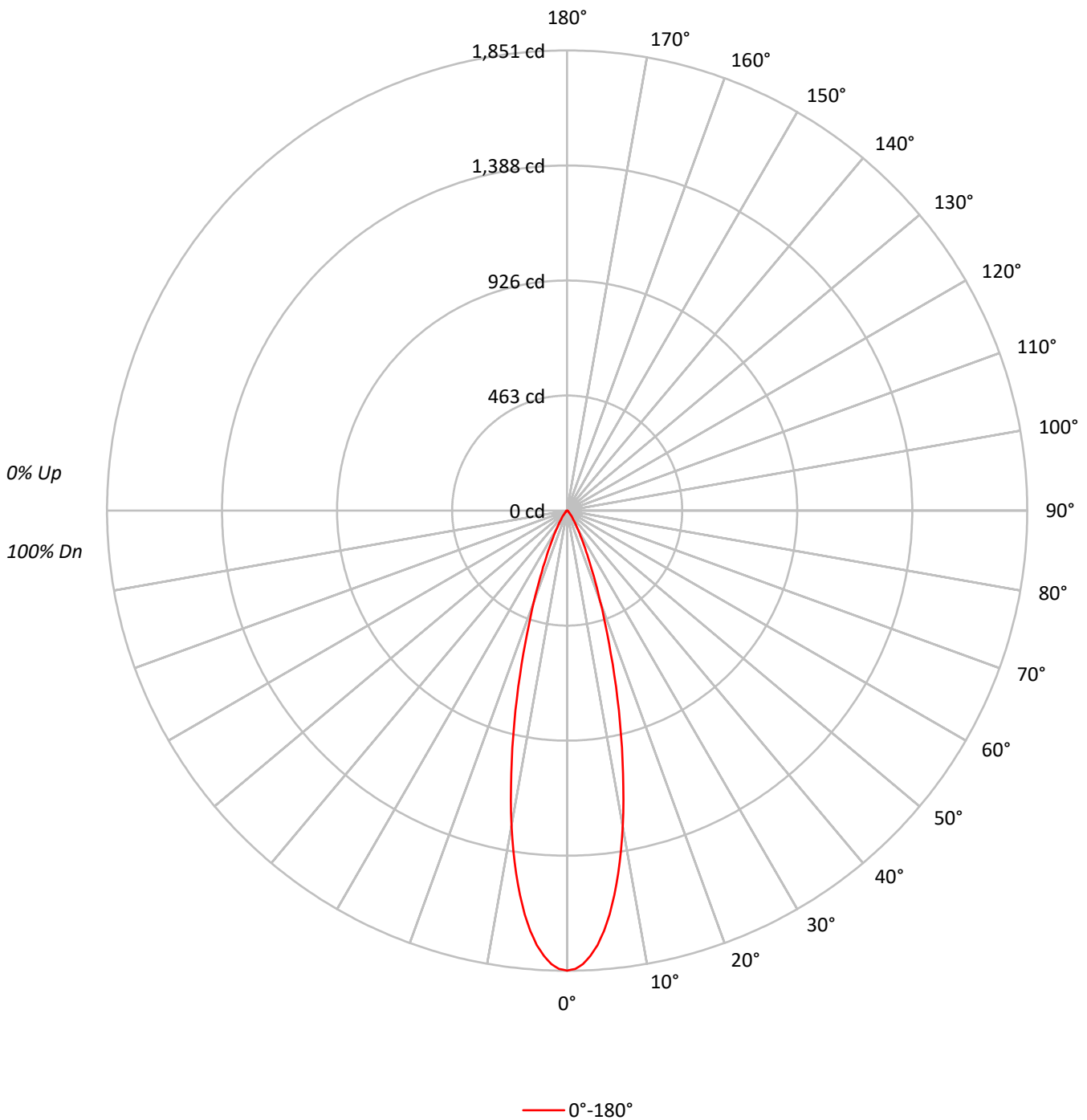
Input Watts (W): 11.2
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

| | | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|-----|-----|-----|--|-----|-----|-----|-----|
| RF | 20 | | | | 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 | 0 |
| RCR | | | | | | | | | | | | | | | | | | | | |
| 0 | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | | 106 | 106 | 106 | | 102 | 102 | 102 | 100 |
| 1 | 115 | 113 | 111 | 109 | 112 | 110 | 109 | 107 | 106 | 105 | 104 | | 103 | 102 | 101 | | 99 | 99 | 98 | 96 |
| 2 | 111 | 107 | 104 | 101 | 109 | 105 | 102 | 100 | 102 | 100 | 98 | | 99 | 97 | 96 | | 97 | 95 | 94 | 92 |
| 3 | 107 | 102 | 98 | 95 | 105 | 101 | 97 | 94 | 98 | 95 | 93 | | 96 | 93 | 91 | | 94 | 92 | 90 | 89 |
| 4 | 103 | 97 | 93 | 90 | 102 | 96 | 93 | 90 | 94 | 91 | 89 | | 93 | 90 | 88 | | 91 | 88 | 87 | 85 |
| 5 | 100 | 93 | 89 | 86 | 98 | 93 | 89 | 85 | 91 | 87 | 85 | | 89 | 86 | 84 | | 88 | 85 | 83 | 82 |
| 6 | 97 | 90 | 85 | 82 | 95 | 89 | 85 | 82 | 88 | 84 | 81 | | 87 | 83 | 81 | | 85 | 83 | 80 | 79 |
| 7 | 94 | 87 | 82 | 79 | 92 | 86 | 82 | 79 | 85 | 81 | 78 | | 84 | 81 | 78 | | 83 | 80 | 78 | 77 |
| 8 | 91 | 84 | 79 | 76 | 90 | 83 | 79 | 76 | 82 | 78 | 76 | | 81 | 78 | 75 | | 80 | 77 | 75 | 74 |
| 9 | 88 | 81 | 77 | 74 | 87 | 80 | 76 | 73 | 80 | 76 | 73 | | 79 | 75 | 73 | | 78 | 75 | 73 | 72 |
| 10 | 85 | 78 | 74 | 71 | 85 | 78 | 74 | 71 | 77 | 74 | 71 | | 77 | 73 | 71 | | 76 | 73 | 71 | 70 |

AVERAGE LUMINANCE (cd/sqm):

| | |
|-----|--------|
| | 0° |
| 0° | 721424 |
| 5° | 664307 |
| 10° | 509731 |
| 15° | 315522 |
| 20° | 161750 |
| 25° | 77854 |
| 30° | 37812 |
| 35° | 19036 |
| 40° | 10687 |
| 45° | 6064 |
| 50° | 3639 |
| 55° | 2039 |
| 60° | 1559 |
| 65° | 922 |
| 70° | 1140 |
| 75° | 0 |
| 80° | 0 |
| 85° | 0 |



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 148.8 | 30.3 |
| 10°-20° | 213.2 | 43.4 |
| 20°-30° | 88.5 | 18.0 |
| 30°-40° | 27.4 | 5.6 |
| 40°-50° | 9.0 | 1.8 |
| 50°-60° | 2.9 | 0.6 |
| 60°-70° | 1.1 | 0.2 |
| 70°-80° | 0.1 | 0.0 |
| 80°-90° | 0.0 | 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° | 450.4 | 91.7 |
| 0°-40° | 477.8 | 97.3 |
| 0°-60° | 489.8 | 99.7 |
| 0°-90° | 491.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 491.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | Flux |
|-----|------|------|
| 0° | 1851 | |
| 5° | 1698 | 149 |
| 15° | 782 | 213 |
| 25° | 181 | 88 |
| 35° | 40 | 27 |
| 45° | 11 | 9 |
| 55° | 3 | 3 |
| 65° | 1 | 1 |
| 75° | 0 | 0 |
| 85° | 0 | 0 |
| 90° | 0 | |



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CANDELA DISTRIBUTION (FULL):

| 0° | |
|-------|--------|
| 0° | 1850.6 |
| 1° | 1843.6 |
| 2° | 1825.6 |
| 3° | 1793.6 |
| 4° | 1751.6 |
| 5° | 1697.6 |
| 6° | 1632.7 |
| 7° | 1558.7 |
| 8° | 1474.7 |
| 9° | 1384.7 |
| 10° | 1287.7 |
| 11° | 1186.7 |
| 12° | 1081.8 |
| 13° | 978.8 |
| 14° | 878.8 |
| 15° | 781.8 |
| 16° | 688.9 |
| 17° | 600.9 |
| 18° | 523.9 |
| 19° | 452.9 |
| 20° | 389.9 |
| 21° | 335.9 |
| 22° | 287.9 |
| 23° | 245.9 |
| 24° | 210.0 |
| 25° | 181.0 |
| 27.5° | 122.0 |
| 30° | 84.0 |
| 32.5° | 58.0 |
| 35° | 40.0 |
| 37.5° | 29.0 |
| 40° | 21.0 |
| 42.5° | 15.0 |
| 45° | 11.0 |
| 47.5° | 8.0 |
| 50° | 6.0 |
| 52.5° | 4.0 |
| 55° | 3.0 |
| 57.5° | 2.0 |
| 60° | 2.0 |
| 62.5° | 1.0 |
| 65° | 1.0 |
| 67.5° | 1.0 |
| 70° | 1.0 |
| 72.5° | 0.0 |



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CANDELA DISTRIBUTION (continued):

| | 0° |
|-------|-----|
| 75° | 0.0 |
| 77.5° | 0.0 |
| 80° | 0.0 |
| 82.5° | 0.0 |
| 85° | 0.0 |
| 87.5° | 0.0 |
| 90° | 0.0 |

(END OF REPORT)