

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: P300491

Luminaire Tested: **ML4D09_27D2WE - TIR45NFL25 - TL43R2G0RBBB - TL44S2G0RBBB**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P300491
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G1-1902-156-1)
Test Lab: INNOVATION CENTER(G1)
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: HALO
Catalog Number: ML4D09_27D2WE - TIR45NFL25 - TL43R2G0RBBB - TL44S2G0RBBB
Description: ML4 2700K, 900LM DIM-TO-WARM, 25 DEG NFL OPTIC, WITH ROUND/SQUARE
DIFFUSED CLEAR LENS, OIL RUBBED BRONZE 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: 483.0 lumens
Efficiency: N/A
Efficacy: 43.1 lumens/watt
Spacing Criteria (0/90/45): 0.46 / 0.46 / 0.47
Luminous Opening: Circular (Dia: 0.19' x H: 0')
CIE Type: Direct

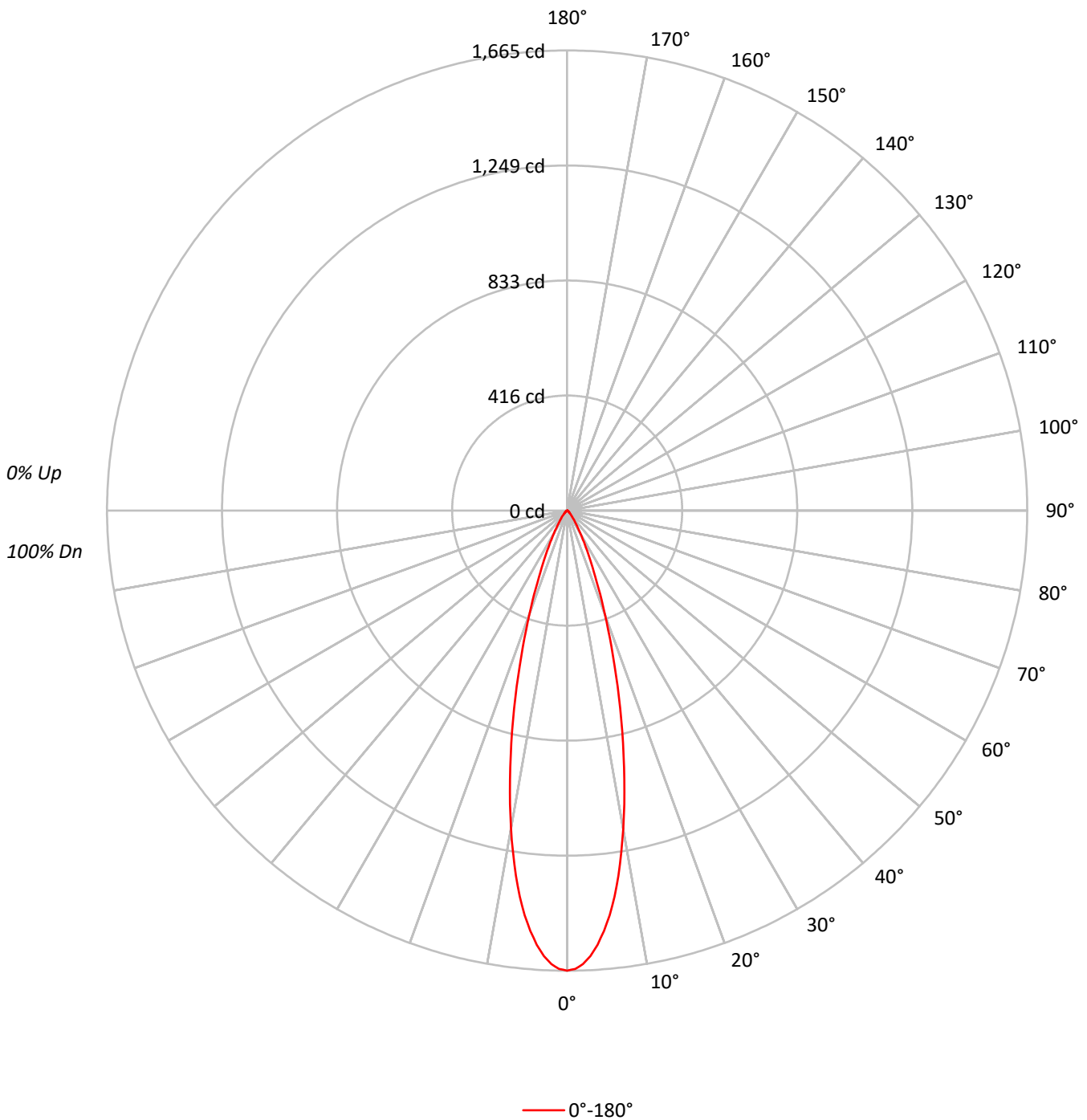
Input Watts (W): 11.2
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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 | 112 | 110 | 108 | 112 | 110 | 108 | 107 | 106 | 105 | 103 | 102 | 101 | 100 | 99 | 98 | 97 | 96 |
| 2 | 110 | 106 | 103 | 100 | 108 | 105 | 102 | 99 | 101 | 99 | 97 | 99 | 97 | 95 | 96 | 94 | 93 | 91 |
| 3 | 106 | 101 | 97 | 94 | 104 | 100 | 96 | 93 | 97 | 94 | 92 | 95 | 92 | 90 | 93 | 91 | 89 | 88 |
| 4 | 102 | 96 | 92 | 89 | 101 | 95 | 91 | 88 | 93 | 90 | 87 | 91 | 88 | 86 | 90 | 87 | 85 | 84 |
| 5 | 99 | 92 | 88 | 84 | 97 | 91 | 87 | 84 | 90 | 86 | 83 | 88 | 85 | 82 | 87 | 84 | 82 | 81 |
| 6 | 95 | 88 | 84 | 80 | 94 | 88 | 83 | 80 | 86 | 82 | 80 | 85 | 82 | 79 | 84 | 81 | 79 | 77 |
| 7 | 92 | 85 | 80 | 77 | 91 | 84 | 80 | 77 | 83 | 79 | 76 | 82 | 79 | 76 | 81 | 78 | 76 | 75 |
| 8 | 89 | 82 | 77 | 74 | 88 | 81 | 77 | 74 | 80 | 76 | 74 | 79 | 76 | 73 | 79 | 75 | 73 | 72 |
| 9 | 86 | 79 | 74 | 71 | 85 | 79 | 74 | 71 | 78 | 74 | 71 | 77 | 73 | 71 | 76 | 73 | 71 | 70 |
| 10 | 84 | 76 | 72 | 69 | 83 | 76 | 72 | 69 | 75 | 71 | 69 | 75 | 71 | 68 | 74 | 71 | 68 | 67 |

AVERAGE LUMINANCE (cd/sqm):

| | |
|-----|--------|
| | 0° |
| 0° | 648993 |
| 5° | 597470 |
| 10° | 462705 |
| 15° | 299015 |
| 20° | 165111 |
| 25° | 84306 |
| 30° | 43213 |
| 35° | 22843 |
| 40° | 13231 |
| 45° | 7718 |
| 50° | 4852 |
| 55° | 3398 |
| 60° | 2339 |
| 65° | 1845 |
| 70° | 1140 |
| 75° | 1506 |
| 80° | 0 |
| 85° | 0 |



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 134.3 | 27.8 |
| 10°-20° | 202.2 | 41.9 |
| 20°-30° | 95.0 | 19.7 |
| 30°-40° | 32.5 | 6.7 |
| 40°-50° | 11.6 | 2.4 |
| 50°-60° | 4.6 | 0.9 |
| 60°-70° | 2.2 | 0.5 |
| 70°-80° | 0.7 | 0.1 |
| 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° | 431.5 | 89.3 |
| 0°-40° | 463.9 | 96.1 |
| 0°-60° | 480.1 | 99.4 |
| 0°-90° | 483.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 483.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | Flux |
|-----|------|------|
| 0° | 1665 | |
| 5° | 1527 | 134 |
| 15° | 741 | 202 |
| 25° | 196 | 95 |
| 35° | 48 | 32 |
| 45° | 14 | 12 |
| 55° | 5 | 5 |
| 65° | 2 | 2 |
| 75° | 1 | 1 |
| 85° | 0 | 0 |
| 90° | 0 | |



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CANDELA DISTRIBUTION (FULL):

| 0° | |
|-------|--------|
| 0° | 1664.8 |
| 1° | 1658.8 |
| 2° | 1641.8 |
| 3° | 1613.8 |
| 4° | 1574.8 |
| 5° | 1526.8 |
| 6° | 1471.8 |
| 7° | 1406.8 |
| 8° | 1333.9 |
| 9° | 1252.9 |
| 10° | 1168.9 |
| 11° | 1082.9 |
| 12° | 994.9 |
| 13° | 907.9 |
| 14° | 822.9 |
| 15° | 740.9 |
| 16° | 661.9 |
| 17° | 586.9 |
| 18° | 517.9 |
| 19° | 455.9 |
| 20° | 398.0 |
| 21° | 348.0 |
| 22° | 302.0 |
| 23° | 261.0 |
| 24° | 227.0 |
| 25° | 196.0 |
| 27.5° | 137.0 |
| 30° | 96.0 |
| 32.5° | 68.0 |
| 35° | 48.0 |
| 37.5° | 35.0 |
| 40° | 26.0 |
| 42.5° | 19.0 |
| 45° | 14.0 |
| 47.5° | 11.0 |
| 50° | 8.0 |
| 52.5° | 6.0 |
| 55° | 5.0 |
| 57.5° | 4.0 |
| 60° | 3.0 |
| 62.5° | 3.0 |
| 65° | 2.0 |
| 67.5° | 2.0 |
| 70° | 1.0 |
| 72.5° | 1.0 |



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CANDELA DISTRIBUTION (continued):

| | 0° |
|-------|-----|
| 75° | 1.0 |
| 77.5° | 0.0 |
| 80° | 0.0 |
| 82.5° | 0.0 |
| 85° | 0.0 |
| 87.5° | 0.0 |
| 90° | 0.0 |

(END OF REPORT)