

Scaled data based on original data using
LM-46-04 Photometric Testing of Indoor Luminaires Using High Intensity Discharge or
Incandescent Filament Lamps (Reaffirmed 2012)

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: HALO

Report Number: H32012

Luminaire Tested: **M200-23P**

Issue Date: 3/3/2020



Test Information

Test Method: LM-46-04
Report Number: H32012
Test Lab:
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: HALO
Catalog Number: M200-23P
Description: HALO 13" SQ. RECESSED HID
SPECULAR REFLECTOR FRESNEL LENS
Light Source: M100/C/U/MED 100 WATTS 8000 LUMENS
ED-17 COATED
Ballast/Driver: -

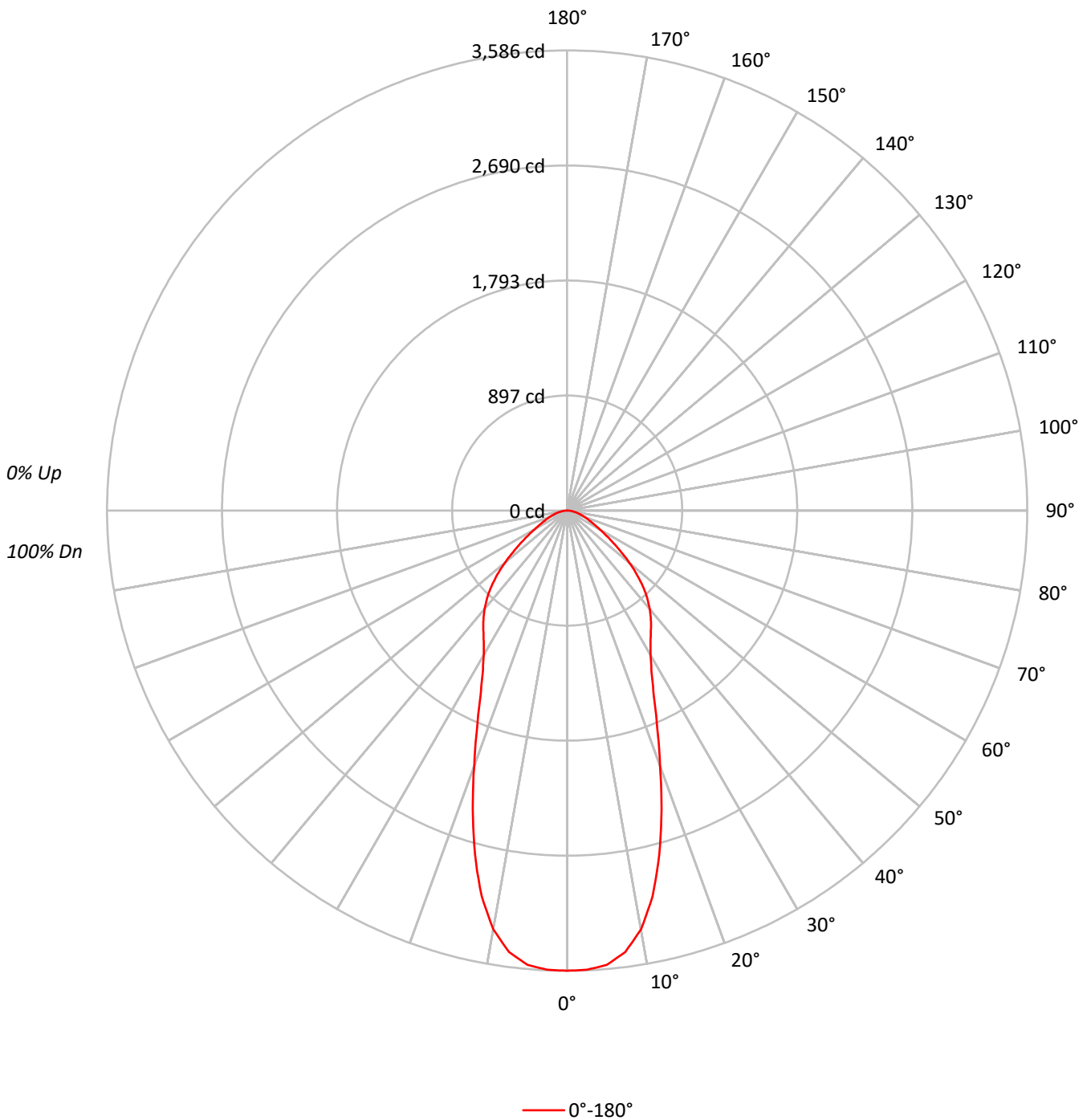
Summary

Lumens per Lamp: 8000 (1 lamp)
Luminaire Lumens: 3933.2 lumens
Efficiency: 49.2%
Efficacy: 34.2 lumens/watt
Spacing Criteria (0/90/45): 0.72 / 0.72 / 0.79
Luminous Opening: Rectangular (W 0.72' x L: 0.72' x H: 0')
CIE Type: Direct

Input Watts (W): 115
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 | 59 | 59 | 59 | 59 | 57 | 57 | 57 | 57 | 55 | 55 | 55 | 52 | 52 | 52 | 50 | 50 | 50 | 49 |
| 1 | 55 | 53 | 51 | 50 | 53 | 52 | 50 | 49 | 50 | 49 | 48 | 48 | 47 | 46 | 46 | 45 | 45 | 44 |
| 2 | 51 | 48 | 45 | 43 | 50 | 47 | 44 | 42 | 45 | 43 | 41 | 44 | 42 | 41 | 42 | 41 | 40 | 39 |
| 3 | 47 | 43 | 40 | 38 | 46 | 43 | 40 | 37 | 41 | 39 | 37 | 40 | 38 | 36 | 39 | 37 | 35 | 35 |
| 4 | 44 | 40 | 36 | 33 | 43 | 39 | 36 | 33 | 38 | 35 | 33 | 37 | 34 | 32 | 36 | 34 | 32 | 31 |
| 5 | 41 | 36 | 33 | 30 | 40 | 36 | 32 | 30 | 35 | 32 | 29 | 34 | 31 | 29 | 33 | 31 | 29 | 28 |
| 6 | 39 | 33 | 30 | 27 | 38 | 33 | 29 | 27 | 32 | 29 | 27 | 31 | 29 | 27 | 31 | 28 | 26 | 25 |
| 7 | 36 | 31 | 27 | 25 | 36 | 31 | 27 | 25 | 30 | 27 | 24 | 29 | 26 | 24 | 29 | 26 | 24 | 23 |
| 8 | 34 | 29 | 25 | 23 | 34 | 28 | 25 | 23 | 28 | 25 | 23 | 27 | 24 | 22 | 27 | 24 | 22 | 21 |
| 9 | 32 | 27 | 23 | 21 | 32 | 27 | 23 | 21 | 26 | 23 | 21 | 26 | 23 | 21 | 25 | 23 | 21 | 20 |
| 10 | 31 | 25 | 22 | 20 | 30 | 25 | 22 | 19 | 24 | 21 | 19 | 24 | 21 | 19 | 24 | 21 | 19 | 19 |

AVERAGE LUMINANCE (cd/sqm):

| | |
|-----|-------|
| | 0° |
| 0° | 74459 |
| 5° | 74055 |
| 10° | 69851 |
| 15° | 59673 |
| 20° | 46800 |
| 25° | 36588 |
| 30° | 31145 |
| 35° | 28846 |
| 40° | 27132 |
| 45° | 24490 |
| 50° | 20480 |
| 55° | 15928 |
| 60° | 12251 |
| 65° | 10023 |
| 70° | 8621 |
| 75° | 7782 |
| 80° | 7055 |
| 85° | 6194 |



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ZONAL LUMENS:

| Zone | Lumens | % Fixture | % Lamp |
|-----------|--------|-----------|--------|
| 0°-10° | 331.6 | 8.4 | 4.1 |
| 10°-20° | 762.8 | 19.4 | 9.5 |
| 20°-30° | 748.1 | 19.0 | 9.4 |
| 30°-40° | 714.0 | 18.2 | 8.9 |
| 40°-50° | 637.0 | 16.2 | 8.0 |
| 50°-60° | 400.0 | 10.2 | 5.0 |
| 60°-70° | 206.4 | 5.2 | 2.6 |
| 70°-80° | 103.5 | 2.6 | 1.3 |
| 80°-90° | 29.8 | 0.8 | 0.4 |
| 90°-100° | 0.0 | 0.0 | 0.0 |
| 100°-110° | 0.0 | 0.0 | 0.0 |
| 110°-120° | 0.0 | 0.0 | 0.0 |
| 120°-130° | 0.0 | 0.0 | 0.0 |
| 130°-140° | 0.0 | 0.0 | 0.0 |
| 140°-150° | 0.0 | 0.0 | 0.0 |
| 150°-160° | 0.0 | 0.0 | 0.0 |
| 160°-170° | 0.0 | 0.0 | 0.0 |
| 170°-180° | 0.0 | 0.0 | 0.0 |
| 0°-30° | 1842.5 | 46.8 | 23.0 |
| 0°-40° | 2556.5 | 65.0 | 32.0 |
| 0°-60° | 3593.5 | 91.4 | 44.9 |
| 0°-90° | 3933.2 | 100.0 | 49.2 |
| 90°-120° | 0.0 | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 | 0.0 |
| 0°-180° | 3933.2 | 100.0 | 49.2 |

CANDELA DISTRIBUTION:

| | 0° | Flux |
|------|------|------|
| 0° | 3586 | |
| 5° | 3553 | 332 |
| 15° | 2776 | 763 |
| 25° | 1597 | 748 |
| 35° | 1138 | 714 |
| 45° | 834 | 637 |
| 55° | 440 | 400 |
| 65° | 204 | 206 |
| 75° | 97 | 103 |
| 85° | 26 | 28 |
| 90° | 0 | 2 |
| 95° | 0 | 0 |
| 105° | 0 | 0 |
| 115° | 0 | 0 |
| 125° | 0 | 0 |
| 135° | 0 | 0 |
| 145° | 0 | 0 |
| 155° | 0 | 0 |
| 165° | 0 | 0 |
| 175° | 0 | 0 |
| 180° | 0 | 0 |



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CANDELA DISTRIBUTION (FULL):

| 0° | |
|--------|------|
| 0° | 3586 |
| 2.5° | 3581 |
| 5° | 3553 |
| 7.5° | 3469 |
| 10° | 3313 |
| 12.5° | 3078 |
| 15° | 2776 |
| 17.5° | 2444 |
| 20° | 2118 |
| 22.5° | 1832 |
| 25° | 1597 |
| 27.5° | 1423 |
| 30° | 1299 |
| 32.5° | 1209 |
| 35° | 1138 |
| 37.5° | 1072 |
| 40° | 1001 |
| 42.5° | 923 |
| 45° | 834 |
| 47.5° | 736 |
| 50° | 634 |
| 52.5° | 532 |
| 55° | 440 |
| 57.5° | 360 |
| 60° | 295 |
| 62.5° | 243 |
| 65° | 204 |
| 67.5° | 170 |
| 70° | 142 |
| 72.5° | 118 |
| 75° | 97 |
| 77.5° | 77 |
| 80° | 59 |
| 82.5° | 42 |
| 85° | 26 |
| 87.5° | 12 |
| 90° | 0 |
| 92.5° | 0 |
| 95° | 0 |
| 97.5° | 0 |
| 100° | 0 |
| 102.5° | 0 |
| 105° | 0 |
| 107.5° | 0 |
| 110° | 0 |



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CANDELA DISTRIBUTION (continued):

| | 0° |
|--------|----|
| 112.5° | 0 |
| 115° | 0 |
| 117.5° | 0 |
| 120° | 0 |
| 122.5° | 0 |
| 125° | 0 |
| 127.5° | 0 |
| 130° | 0 |
| 132.5° | 0 |
| 135° | 0 |
| 137.5° | 0 |
| 140° | 0 |
| 142.5° | 0 |
| 145° | 0 |
| 147.5° | 0 |
| 150° | 0 |
| 152.5° | 0 |
| 155° | 0 |
| 157.5° | 0 |
| 160° | 0 |
| 162.5° | 0 |
| 165° | 0 |
| 167.5° | 0 |
| 170° | 0 |
| 172.5° | 0 |
| 175° | 0 |
| 177.5° | 0 |
| 180° | 0 |

(END OF REPORT)