

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269



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: METALUX

Report Number: P1436268

Luminaire Tested: EHBR1-12-UNV-M-L840-UPL15

Issue Date: 3/25/2026

Test Information

Test Method: LM-79-2019
Report Number: P1436268
REPORT IS A COMBINATION OF REPORTS P1436052 AND P1431635
Test Lab: INNOVATION CENTER
Issue Date: 3/25/2026
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: METALUX
Catalog Number: EHBR1-12-UNV-M-L840-UPL15
Description: Elevate Round Highbay at, 12000 lumens, 4000K 80CRI LEDs with M lens
Light Source: -
Ballast/Driver: -

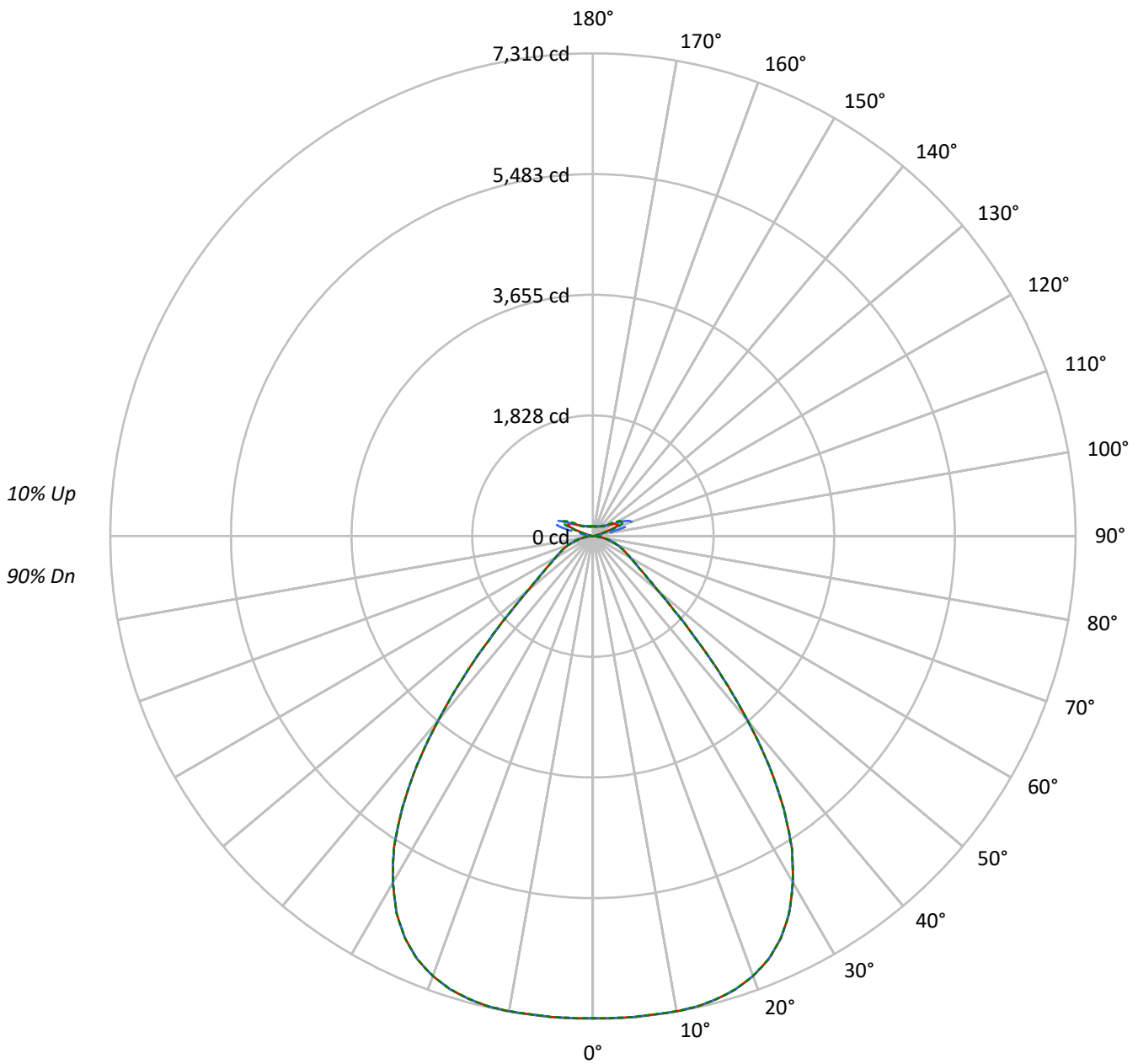
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 13806.7 lumens
Efficiency: N/A
Efficacy: 186.6 lumens/watt
Spacing Criteria (0/90/45): 1.21 / 1.21 / 1.15
Luminous Opening: Vertical Cylinder (Dia: 1.71' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 74
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

TEST NUMBER: P1436268
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Luminous Intensity Polar Plot



— 0°-180° - - 45°-225° - - - 90°-270°



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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 | 50 | 30 | 10 | 0 |
| RCR | | | | | | | | | | | | | | | | | | | | | |
| 0 | 117 | 117 | 117 | 117 | 113 | 113 | 113 | 113 | 105 | 105 | 105 | 99 | 99 | 99 | 92 | 92 | 92 | 92 | 92 | 92 | 90 |
| 1 | 109 | 105 | 102 | 99 | 105 | 102 | 99 | 97 | 96 | 94 | 92 | 91 | 89 | 87 | 85 | 84 | 83 | 85 | 84 | 83 | 80 |
| 2 | 101 | 95 | 90 | 85 | 98 | 92 | 88 | 84 | 87 | 84 | 80 | 83 | 80 | 77 | 78 | 76 | 74 | 78 | 76 | 74 | 71 |
| 3 | 94 | 86 | 80 | 75 | 91 | 84 | 78 | 73 | 80 | 75 | 71 | 76 | 72 | 68 | 72 | 69 | 66 | 72 | 69 | 66 | 64 |
| 4 | 88 | 78 | 71 | 66 | 85 | 77 | 70 | 65 | 73 | 67 | 63 | 70 | 65 | 61 | 66 | 63 | 59 | 66 | 63 | 59 | 57 |
| 5 | 82 | 72 | 64 | 59 | 80 | 70 | 63 | 58 | 67 | 61 | 57 | 64 | 59 | 55 | 61 | 57 | 54 | 61 | 57 | 54 | 52 |
| 6 | 77 | 66 | 58 | 53 | 74 | 64 | 57 | 52 | 62 | 56 | 51 | 59 | 54 | 50 | 57 | 52 | 49 | 57 | 52 | 49 | 47 |
| 7 | 72 | 61 | 53 | 48 | 70 | 59 | 52 | 48 | 57 | 51 | 47 | 55 | 50 | 46 | 53 | 48 | 45 | 53 | 48 | 45 | 43 |
| 8 | 67 | 56 | 49 | 44 | 66 | 55 | 48 | 43 | 53 | 47 | 43 | 51 | 46 | 42 | 49 | 44 | 41 | 49 | 44 | 41 | 39 |
| 9 | 63 | 52 | 45 | 40 | 62 | 51 | 44 | 40 | 49 | 43 | 39 | 47 | 42 | 38 | 46 | 41 | 38 | 46 | 41 | 38 | 36 |
| 10 | 60 | 48 | 41 | 37 | 58 | 48 | 41 | 37 | 46 | 40 | 36 | 44 | 39 | 35 | 43 | 38 | 35 | 43 | 38 | 35 | 33 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|-------|-------|-------|
| 0° | 34294 | 34294 | 34294 |
| 5° | 34235 | 34235 | 34235 |
| 10° | 34396 | 34396 | 34396 |
| 15° | 34593 | 34593 | 34593 |
| 20° | 34489 | 34489 | 34489 |
| 25° | 33683 | 33683 | 33683 |
| 30° | 31496 | 31496 | 31496 |
| 35° | 27431 | 27431 | 27431 |
| 40° | 21022 | 21022 | 21022 |
| 45° | 13733 | 13733 | 13733 |
| 50° | 8658 | 8658 | 8658 |
| 55° | 6454 | 6454 | 6454 |
| 60° | 5434 | 5434 | 5434 |
| 65° | 4941 | 4941 | 4941 |
| 70° | 4501 | 4501 | 4501 |
| 75° | 3853 | 3853 | 3853 |
| 80° | 2967 | 2967 | 2967 |
| 85° | 1557 | 1557 | 1557 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 13733 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 697.5 | 5.1 |
| 10°-20° | 2048.2 | 14.8 |
| 20°-30° | 3073.3 | 22.3 |
| 30°-40° | 3092.1 | 22.4 |
| 40°-50° | 1770.0 | 12.8 |
| 50°-60° | 809.6 | 5.9 |
| 60°-70° | 513.6 | 3.7 |
| 70°-80° | 288.1 | 2.1 |
| 80°-90° | 70.2 | 0.5 |
| 90°-100° | 41.2 | 0.3 |
| 100°-110° | 258.0 | 1.9 |
| 110°-120° | 461.3 | 3.3 |
| 120°-130° | 270.7 | 2.0 |
| 130°-140° | 166.0 | 1.2 |
| 140°-150° | 115.2 | 0.8 |
| 150°-160° | 74.8 | 0.5 |
| 160°-170° | 42.6 | 0.3 |
| 170°-180° | 14.1 | 0.1 |
| 0°-30° | 5819.0 | 42.1 |
| 0°-40° | 8911.1 | 64.5 |
| 0°-60° | 11490.7 | 83.2 |
| 0°-90° | 12362.7 | 89.5 |
| 90°-120° | 760.5 | 5.5 |
| 90°-150° | 1312.4 | 9.5 |
| 90°-180° | 1444.0 | 10.5 |
| 0°-180° | 13806.7 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 7303 | 7303 | 7303 | 7303 | 7303 | |
| 5° | 7310 | 7310 | 7310 | 7310 | 7310 | 697 |
| 15° | 7258 | 7258 | 7258 | 7258 | 7258 | 2048 |
| 25° | 6726 | 6726 | 6726 | 6726 | 6726 | 3073 |
| 35° | 5034 | 5034 | 5034 | 5034 | 5034 | 3092 |
| 45° | 2222 | 2222 | 2222 | 2222 | 2222 | 1770 |
| 55° | 872 | 872 | 872 | 872 | 872 | 810 |
| 65° | 516 | 516 | 516 | 516 | 516 | 514 |
| 75° | 271 | 271 | 271 | 271 | 271 | 288 |
| 85° | 54 | 54 | 54 | 54 | 54 | 66 |
| 90° | 11 | 17 | 30 | 19 | 11 | 7 |
| 95° | 18 | 31 | 67 | 33 | 21 | 18 |
| 105° | 90 | 178 | 454 | 196 | 119 | 121 |
| 115° | 415 | 436 | 536 | 514 | 511 | 382 |
| 125° | 299 | 279 | 287 | 291 | 326 | 273 |
| 135° | 218 | 212 | 219 | 206 | 205 | 171 |
| 145° | 179 | 177 | 188 | 185 | 184 | 114 |
| 155° | 157 | 155 | 163 | 163 | 163 | 73 |
| 165° | 147 | 147 | 151 | 151 | 150 | 42 |
| 175° | 146 | 146 | 148 | 148 | 148 | 14 |
| 180° | 147 | 147 | 147 | 147 | 147 | |



TEST NUMBER: P1436268

CATALOG NUMBER: EHBR1-12-UNV-M-L840-UPL15

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 7302.6 | 7302.6 | 7302.6 | 7302.6 | 7302.6 |
| 2.5° | 7306.2 | 7306.2 | 7306.2 | 7306.2 | 7306.2 |
| 5° | 7309.7 | 7309.7 | 7309.7 | 7309.7 | 7309.7 |
| 7.5° | 7304.7 | 7304.7 | 7304.7 | 7304.7 | 7304.7 |
| 10° | 7307.8 | 7307.8 | 7307.8 | 7307.8 | 7307.8 |
| 12.5° | 7295.3 | 7295.3 | 7295.3 | 7295.3 | 7295.3 |
| 15° | 7257.5 | 7257.5 | 7257.5 | 7257.5 | 7257.5 |
| 17.5° | 7195.0 | 7195.0 | 7195.0 | 7195.0 | 7195.0 |
| 20° | 7088.4 | 7088.4 | 7088.4 | 7088.4 | 7088.4 |
| 22.5° | 6942.0 | 6942.0 | 6942.0 | 6942.0 | 6942.0 |
| 25° | 6726.5 | 6726.5 | 6726.5 | 6726.5 | 6726.5 |
| 27.5° | 6436.7 | 6436.7 | 6436.7 | 6436.7 | 6436.7 |
| 30° | 6058.3 | 6058.3 | 6058.3 | 6058.3 | 6058.3 |
| 32.5° | 5610.3 | 5610.3 | 5610.3 | 5610.3 | 5610.3 |
| 35° | 5034.5 | 5034.5 | 5034.5 | 5034.5 | 5034.5 |
| 37.5° | 4382.1 | 4382.1 | 4382.1 | 4382.1 | 4382.1 |
| 40° | 3643.7 | 3643.7 | 3643.7 | 3643.7 | 3643.7 |
| 42.5° | 2911.7 | 2911.7 | 2911.7 | 2911.7 | 2911.7 |
| 45° | 2222.0 | 2222.0 | 2222.0 | 2222.0 | 2222.0 |
| 47.5° | 1672.6 | 1672.6 | 1672.6 | 1672.6 | 1672.6 |
| 50° | 1290.3 | 1290.3 | 1290.3 | 1290.3 | 1290.3 |
| 52.5° | 1042.5 | 1042.5 | 1042.5 | 1042.5 | 1042.5 |
| 55° | 872.2 | 872.2 | 872.2 | 872.2 | 872.2 |
| 57.5° | 746.8 | 746.8 | 746.8 | 746.8 | 746.8 |
| 60° | 653.2 | 653.2 | 653.2 | 653.2 | 653.2 |
| 62.5° | 580.9 | 580.9 | 580.9 | 580.9 | 580.9 |
| 65° | 515.7 | 515.7 | 515.7 | 515.7 | 515.7 |
| 67.5° | 455.7 | 455.7 | 455.7 | 455.7 | 455.7 |
| 70° | 394.9 | 394.9 | 394.9 | 394.9 | 394.9 |
| 72.5° | 333.7 | 333.7 | 333.7 | 333.7 | 333.7 |
| 75° | 271.4 | 271.4 | 271.4 | 271.4 | 271.4 |
| 77.5° | 212.3 | 212.3 | 212.3 | 212.3 | 212.3 |
| 80° | 156.1 | 156.1 | 156.1 | 156.1 | 156.1 |
| 82.5° | 101.8 | 101.8 | 101.8 | 101.8 | 101.8 |
| 85° | 53.5 | 53.5 | 53.5 | 53.5 | 53.5 |
| 87.5° | 15.3 | 15.3 | 15.3 | 15.3 | 15.3 |
| 90° | 10.7 | 17.4 | 29.8 | 19.0 | 10.7 |
| 92.5° | 15.7 | 26.5 | 47.9 | 24.8 | 14.1 |
| 95° | 18.2 | 30.6 | 67.0 | 33.1 | 20.7 |
| 97.5° | 23.1 | 33.9 | 76.9 | 40.5 | 32.2 |
| 100° | 30.6 | 39.7 | 119.9 | 49.6 | 43.0 |
| 102.5° | 52.1 | 84.3 | 254.6 | 93.4 | 65.3 |
| 105° | 90.1 | 177.7 | 453.8 | 195.9 | 119.0 |
| 107.5° | 156.2 | 318.2 | 598.5 | 347.2 | 225.7 |
| 110° | 291.8 | 422.4 | 627.4 | 476.9 | 361.2 |



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CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 394.3 | 453.8 | 600.9 | 526.5 | 470.3 |
| 115° | 415.0 | 436.4 | 536.5 | 514.1 | 510.8 |
| 117.5° | 400.9 | 398.4 | 455.5 | 462.1 | 493.5 |
| 120° | 371.1 | 354.6 | 380.2 | 403.4 | 445.5 |
| 122.5° | 333.9 | 314.1 | 325.7 | 343.0 | 385.2 |
| 125° | 299.2 | 279.4 | 286.8 | 291.0 | 326.5 |
| 127.5° | 268.6 | 255.4 | 259.6 | 254.6 | 276.9 |
| 130° | 248.0 | 236.4 | 242.2 | 230.6 | 241.4 |
| 132.5° | 230.6 | 223.2 | 229.8 | 215.7 | 219.0 |
| 135° | 218.2 | 211.6 | 219.0 | 205.8 | 205.0 |
| 137.5° | 207.5 | 201.7 | 209.1 | 199.2 | 196.7 |
| 140° | 197.6 | 192.6 | 200.9 | 193.4 | 191.8 |
| 142.5° | 186.8 | 183.5 | 193.4 | 188.5 | 186.8 |
| 145° | 179.4 | 176.9 | 187.6 | 185.2 | 184.3 |
| 147.5° | 172.8 | 171.1 | 181.0 | 180.2 | 180.2 |
| 150° | 167.0 | 165.3 | 175.2 | 174.4 | 175.2 |
| 152.5° | 161.2 | 159.5 | 168.6 | 167.8 | 168.6 |
| 155° | 157.1 | 155.4 | 162.8 | 162.8 | 162.8 |
| 157.5° | 153.7 | 152.9 | 158.7 | 158.7 | 158.7 |
| 160° | 151.3 | 150.4 | 155.4 | 155.4 | 154.6 |
| 162.5° | 148.8 | 148.0 | 153.7 | 152.9 | 152.9 |
| 165° | 147.1 | 147.1 | 151.3 | 151.3 | 150.4 |
| 167.5° | 147.1 | 146.3 | 150.4 | 150.4 | 149.6 |
| 170° | 146.3 | 146.3 | 149.6 | 148.8 | 148.0 |
| 172.5° | 146.3 | 146.3 | 149.6 | 148.8 | 148.0 |
| 175° | 145.5 | 145.5 | 148.0 | 148.0 | 148.0 |
| 177.5° | 146.3 | 146.3 | 148.0 | 148.0 | 147.1 |
| 180° | 147.1 | 147.1 | 147.1 | 147.1 | 147.1 |



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CIE UGR TABLE:

| Reflectances: | | | | | | | | | | | |
|-----------------|------|------------------|-------|-------|-------|-------|----------------|-------|-------|-------|-------|
| Ceiling | | 0.7 | 0.7 | 0.5 | 0.5 | 0.3 | 0.7 | 0.7 | 0.5 | 0.5 | 0.3 |
| Wall | | 0.5 | 0.3 | 0.5 | 0.3 | 0.3 | 0.5 | 0.3 | 0.5 | 0.3 | 0.3 |
| Reference plane | | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| Room dimensions | | Viewed crosswise | | | | | Viewed endwise | | | | |
| X=2H | Y=2H | 14.33 | 15.44 | 14.87 | 15.96 | 16.54 | 14.33 | 15.44 | 14.87 | 15.96 | 16.54 |
| | 3H | 15.82 | 16.80 | 16.37 | 17.34 | 17.95 | 15.82 | 16.80 | 16.37 | 17.34 | 17.95 |
| | 4H | 16.34 | 17.26 | 16.91 | 17.81 | 18.44 | 16.34 | 17.26 | 16.91 | 17.81 | 18.44 |
| | 6H | 16.66 | 17.50 | 17.25 | 18.07 | 18.71 | 16.66 | 17.50 | 17.25 | 18.07 | 18.71 |
| | 8H | 16.73 | 17.53 | 17.33 | 18.11 | 18.76 | 16.73 | 17.53 | 17.33 | 18.11 | 18.76 |
| | 12H | 16.74 | 17.50 | 17.34 | 18.08 | 18.75 | 16.74 | 17.50 | 17.34 | 18.08 | 18.75 |
| 4H | 2H | 14.77 | 15.69 | 15.35 | 16.24 | 16.87 | 14.77 | 15.69 | 15.35 | 16.24 | 16.87 |
| | 3H | 16.46 | 17.22 | 17.05 | 17.81 | 18.46 | 16.46 | 17.22 | 17.05 | 17.81 | 18.46 |
| | 4H | 17.09 | 17.77 | 17.70 | 18.37 | 19.05 | 17.09 | 17.77 | 17.70 | 18.37 | 19.05 |
| | 6H | 17.51 | 18.10 | 18.14 | 18.72 | 19.42 | 17.51 | 18.10 | 18.14 | 18.72 | 19.42 |
| | 8H | 17.60 | 18.15 | 18.24 | 18.78 | 19.48 | 17.60 | 18.15 | 18.24 | 18.78 | 19.48 |
| | 12H | 17.63 | 18.12 | 18.28 | 18.77 | 19.48 | 17.63 | 18.12 | 18.28 | 18.77 | 19.48 |
| 8H | 4H | 17.26 | 17.81 | 17.90 | 18.43 | 19.14 | 17.26 | 17.81 | 17.90 | 18.43 | 19.14 |
| | 6H | 17.77 | 18.22 | 18.44 | 18.89 | 19.60 | 17.77 | 18.22 | 18.44 | 18.89 | 19.60 |
| | 8H | 17.91 | 18.31 | 18.59 | 18.99 | 19.71 | 17.91 | 18.31 | 18.59 | 18.99 | 19.71 |
| | 12H | 17.98 | 18.33 | 18.65 | 18.99 | 19.78 | 17.98 | 18.33 | 18.65 | 18.99 | 19.78 |
| 12H | 4H | 17.25 | 17.73 | 17.90 | 18.39 | 19.10 | 17.25 | 17.73 | 17.90 | 18.39 | 19.10 |
| | 6H | 17.78 | 18.17 | 18.46 | 18.85 | 19.58 | 17.78 | 18.17 | 18.46 | 18.85 | 19.58 |
| | 8H | 17.94 | 18.29 | 18.62 | 18.96 | 19.75 | 17.94 | 18.29 | 18.62 | 18.96 | 19.75 |

LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-
State Lighting Products

Report Prepared for

Cooper Lighting Solutions

Metalux

Report Number: SP1-2506-472-1

Test Date: 07/30/2025

Luminaire Tested: EHBR-60-L840-N

Data in this report applies to families of products including EHBR-60-L840-N

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2506-472-1
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 08/05/2025
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: Metalux
 Catalog Number: **EHBR-60-L840-N**
 Description: Elevate Round Highbay at, 60000 lumens, 4000K 80CRI LEDs with N lens

Spectral Parameters

CCT (K): 3898
 CIE u': 0.2263
 CIE v': 0.5052
 Duv: 0.0013
 CIE x: 0.3861
 CIE y: 0.3831
 CIE z: 0.2308
 Peak Wavelength (nm): 630
 Dominant Wavelength (nm): 578
 Purity: 30.85729
 Rf: 80.7
 Rg: 102.1

| | | | |
|-----------|------|------|------|
| CRI (Ra): | 82.1 | | |
| R1: | 84.4 | R9: | 38.5 |
| R2: | 83.5 | R10: | 58.9 |
| R3: | 80.8 | R11: | 83.6 |
| R4: | 83.9 | R12: | 54.2 |
| R5: | 82.1 | R13: | 82.8 |
| R6: | 77.3 | R14: | 88.2 |
| R7: | 86.4 | R15: | 81.2 |
| R8: | 78.3 | | |



Test Conditions

Stabilization Time: 42M
 Operation Time: 1H 42M
 Sphere Temperature (°C): 25.0

REPORT NUMBER: SP1-2506-472-1

| Measurement and Test Equipment | | | |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | 76INCH SPHERE IN0058 | 6/16/2025 | 12/16/2025 |
| Power Meter | XITRON INXT2011004 | 1/21/2025 | 1/21/2026 |
| AC Power Source | CHROMA 61603 IN0063 | 10/22/2024 | 10/22/2025 |
| DC Power Source | AGILENT E3634A IN0208 | 10/22/2024 | 10/22/2025 |
| Sphere Thermometer | ONSET IN0085 | 10/22/2024 | 10/22/2025 |
| Room Thermometer | ONSET IN0046 | 10/22/2024 | 10/22/2025 |

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CIE 1931 Chromaticity Diagram



CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 4000K 4-step quadrangle

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Photopic Flux vs. Wavelength



Photopic Lumens: NR

| λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360 | 0 | NR | 490 | 60 | NR | 620 | 277 | NR | 750 | 6 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 87 | NR | 625 | 278 | NR | 755 | 5 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 124 | NR | 630 | 1000 | NR | 760 | 4 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 168 | NR | 635 | 623 | NR | 765 | 4 | NR | 895 | 0 | NR |
| 380 | 1 | NR | 510 | 209 | NR | 640 | 162 | NR | 770 | 3 | NR | 900 | 0 | NR |
| 385 | 1 | NR | 515 | 246 | NR | 645 | 158 | NR | 775 | 3 | NR | 905 | 0 | NR |
| 390 | 2 | NR | 520 | 273 | NR | 650 | 134 | NR | 780 | 2 | NR | 910 | 0 | NR |
| 395 | 4 | NR | 525 | 292 | NR | 655 | 109 | NR | 785 | 2 | NR | 915 | 0 | NR |
| 400 | 5 | NR | 530 | 305 | NR | 660 | 91 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 313 | NR | 665 | 75 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 11 | NR | 540 | 319 | NR | 670 | 70 | NR | 800 | 1 | NR | 930 | 0 | NR |
| 415 | 21 | NR | 545 | 323 | NR | 675 | 56 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 42 | NR | 550 | 326 | NR | 680 | 47 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 76 | NR | 555 | 330 | NR | 685 | 41 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 125 | NR | 560 | 333 | NR | 690 | 35 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 193 | NR | 565 | 336 | NR | 695 | 30 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 302 | NR | 570 | 336 | NR | 700 | 26 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 432 | NR | 575 | 335 | NR | 705 | 22 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 380 | NR | 580 | 332 | NR | 710 | 19 | NR | 840 | 0 | NR | 970 | 0 | NR |
| 455 | 213 | NR | 585 | 326 | NR | 715 | 16 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 147 | NR | 590 | 319 | NR | 720 | 14 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 104 | NR | 595 | 307 | NR | 725 | 12 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 65 | NR | 600 | 299 | NR | 730 | 10 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 50 | NR | 605 | 291 | NR | 735 | 9 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 46 | NR | 610 | 317 | NR | 740 | 8 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 47 | NR | 615 | 336 | NR | 745 | 7 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2506-472-1

Scotopic Flux vs. Wavelength



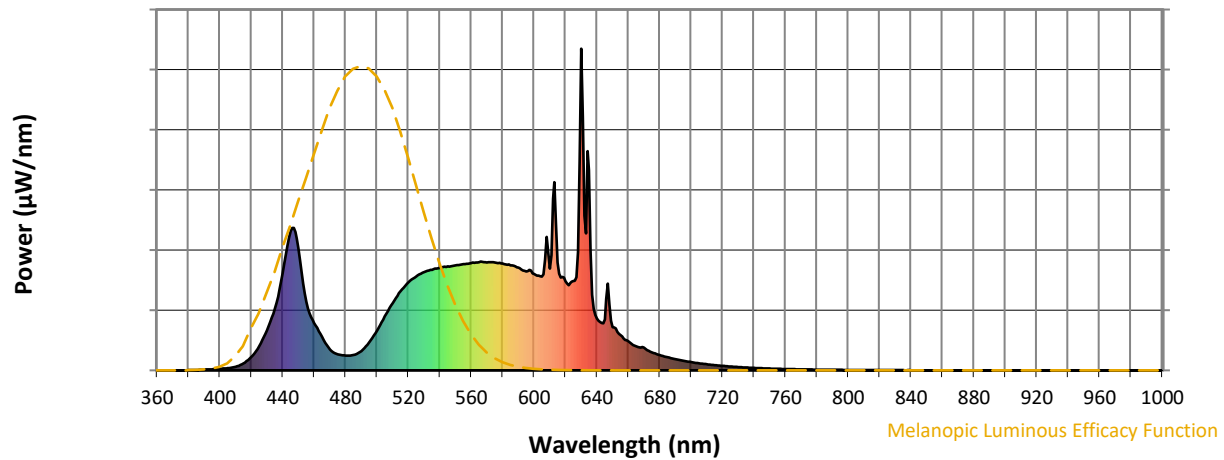
Scotopic Lumens: NR

S/P: 1.55

| λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360 | 0 | NR | 490 | 60 | NR | 620 | 277 | NR | 750 | 6 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 87 | NR | 625 | 278 | NR | 755 | 5 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 124 | NR | 630 | 1000 | NR | 760 | 4 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 168 | NR | 635 | 623 | NR | 765 | 4 | NR | 895 | 0 | NR |
| 380 | 1 | NR | 510 | 209 | NR | 640 | 162 | NR | 770 | 3 | NR | 900 | 0 | NR |
| 385 | 1 | NR | 515 | 246 | NR | 645 | 158 | NR | 775 | 3 | NR | 905 | 0 | NR |
| 390 | 2 | NR | 520 | 273 | NR | 650 | 134 | NR | 780 | 2 | NR | 910 | 0 | NR |
| 395 | 4 | NR | 525 | 292 | NR | 655 | 109 | NR | 785 | 2 | NR | 915 | 0 | NR |
| 400 | 5 | NR | 530 | 305 | NR | 660 | 91 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 313 | NR | 665 | 75 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 11 | NR | 540 | 319 | NR | 670 | 70 | NR | 800 | 1 | NR | 930 | 0 | NR |
| 415 | 21 | NR | 545 | 323 | NR | 675 | 56 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 42 | NR | 550 | 326 | NR | 680 | 47 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 76 | NR | 555 | 330 | NR | 685 | 41 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 125 | NR | 560 | 333 | NR | 690 | 35 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 193 | NR | 565 | 336 | NR | 695 | 30 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 302 | NR | 570 | 336 | NR | 700 | 26 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 432 | NR | 575 | 335 | NR | 705 | 22 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 380 | NR | 580 | 332 | NR | 710 | 19 | NR | 840 | 0 | NR | 970 | 0 | NR |
| 455 | 213 | NR | 585 | 326 | NR | 715 | 16 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 147 | NR | 590 | 319 | NR | 720 | 14 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 104 | NR | 595 | 307 | NR | 725 | 12 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 65 | NR | 600 | 299 | NR | 730 | 10 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 50 | NR | 605 | 291 | NR | 735 | 9 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 46 | NR | 610 | 317 | NR | 740 | 8 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 47 | NR | 615 | 336 | NR | 745 | 7 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2506-472-1

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.99

| λ (nm) | Power $\text{W}^{\wedge}/\text{nm}$ | Lumens (ϕ/nm) | λ (nm) | Power $\text{W}^{\wedge}/\text{nm}$ | Lumens (ϕ/nm) | λ (nm) | Power $\text{W}^{\wedge}/\text{nm}$ | Lumens (ϕ/nm) | λ (nm) | Power $\text{W}^{\wedge}/\text{nm}$ | Lumens (ϕ/nm) | λ (nm) | Power $\text{W}^{\wedge}/\text{nm}$ | Lumens (ϕ/nm) |
|-------------------|--|--------------------------------|-------------------|--|--------------------------------|-------------------|--|--------------------------------|-------------------|--|--------------------------------|-------------------|--|--------------------------------|
| 360 | 0 | NR | 490 | 60 | NR | 620 | 277 | NR | 750 | 6 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 87 | NR | 625 | 278 | NR | 755 | 5 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 124 | NR | 630 | 1000 | NR | 760 | 4 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 168 | NR | 635 | 623 | NR | 765 | 4 | NR | 895 | 0 | NR |
| 380 | 1 | NR | 510 | 209 | NR | 640 | 162 | NR | 770 | 3 | NR | 900 | 0 | NR |
| 385 | 1 | NR | 515 | 246 | NR | 645 | 158 | NR | 775 | 3 | NR | 905 | 0 | NR |
| 390 | 2 | NR | 520 | 273 | NR | 650 | 134 | NR | 780 | 2 | NR | 910 | 0 | NR |
| 395 | 4 | NR | 525 | 292 | NR | 655 | 109 | NR | 785 | 2 | NR | 915 | 0 | NR |
| 400 | 5 | NR | 530 | 305 | NR | 660 | 91 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 313 | NR | 665 | 75 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 11 | NR | 540 | 319 | NR | 670 | 70 | NR | 800 | 1 | NR | 930 | 0 | NR |
| 415 | 21 | NR | 545 | 323 | NR | 675 | 56 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 42 | NR | 550 | 326 | NR | 680 | 47 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 76 | NR | 555 | 330 | NR | 685 | 41 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 125 | NR | 560 | 333 | NR | 690 | 35 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 193 | NR | 565 | 336 | NR | 695 | 30 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 302 | NR | 570 | 336 | NR | 700 | 26 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 432 | NR | 575 | 335 | NR | 705 | 22 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 380 | NR | 580 | 332 | NR | 710 | 19 | NR | 840 | 0 | NR | 970 | 0 | NR |
| 455 | 213 | NR | 585 | 326 | NR | 715 | 16 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 147 | NR | 590 | 319 | NR | 720 | 14 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 104 | NR | 595 | 307 | NR | 725 | 12 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 65 | NR | 600 | 299 | NR | 730 | 10 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 50 | NR | 605 | 291 | NR | 735 | 9 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 46 | NR | 610 | 317 | NR | 740 | 8 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 47 | NR | 615 | 336 | NR | 745 | 7 | NR | 875 | 0 | NR | | | |

Summary

$R_f = 80.7$
 $R_g = 102.1$
 CIE $R_a = 82.1$
 $R_9 = 38.5$



Color Vector Graphics

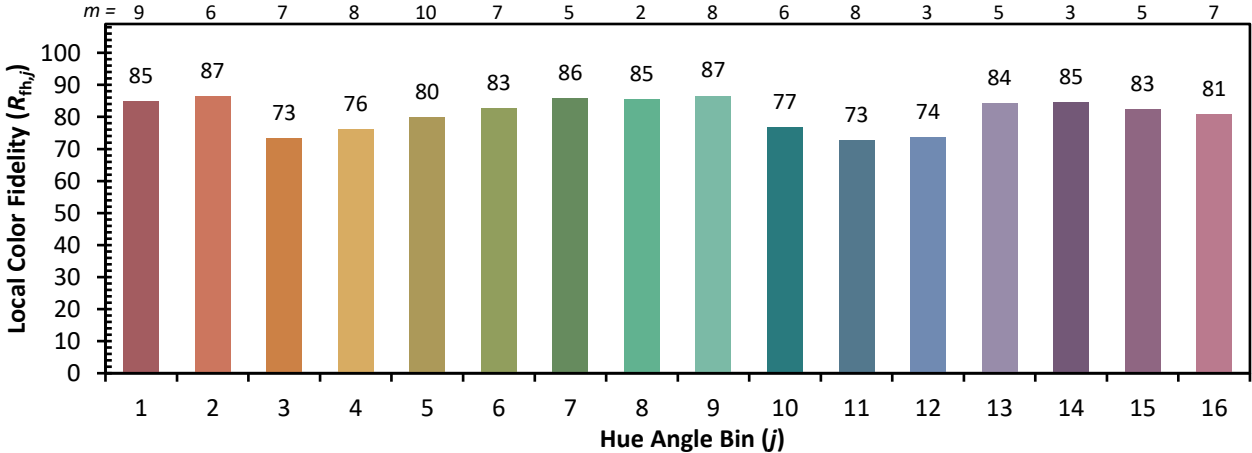


Individual Sample Fidelity Index ($R_{f,i}$)

| | | | |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 69 | CES51 = 90 | CES76 = 58 |
| CES02 = 61 | CES27 = 89 | CES52 = 90 | CES77 = 76 |
| CES03 = 31 | CES28 = 83 | CES53 = 80 | CES78 = 60 |
| CES04 = 69 | CES29 = 66 | CES54 = 91 | CES79 = 85 |
| CES05 = 48 | CES30 = 76 | CES55 = 89 | CES80 = 79 |
| CES06 = 50 | CES31 = 69 | CES56 = 79 | CES81 = 81 |
| CES07 = 41 | CES32 = 62 | CES57 = 77 | CES82 = 91 |
| CES08 = 40 | CES33 = 74 | CES58 = 79 | CES83 = 88 |
| CES09 = 29 | CES34 = 72 | CES59 = 93 | CES84 = 89 |
| CES10 = 74 | CES35 = 84 | CES60 = 95 | CES85 = 84 |
| CES11 = 57 | CES36 = 98 | CES61 = 92 | CES86 = 82 |
| CES12 = 63 | CES37 = 77 | CES62 = 89 | CES87 = 81 |
| CES13 = 43 | CES38 = 83 | CES63 = 80 | CES88 = 86 |
| CES14 = 74 | CES39 = 94 | CES64 = 80 | CES89 = 79 |
| CES15 = 71 | CES40 = 88 | CES65 = 77 | CES90 = 85 |
| CES16 = 47 | CES41 = 89 | CES66 = 74 | CES91 = 83 |
| CES17 = 49 | CES42 = 74 | CES67 = 72 | CES92 = 77 |
| CES18 = 56 | CES43 = 73 | CES68 = 78 | CES93 = 86 |
| CES19 = 71 | CES44 = 98 | CES69 = 83 | CES94 = 69 |
| CES20 = 65 | CES45 = 82 | CES70 = 69 | CES95 = 80 |
| CES21 = 86 | CES46 = 82 | CES71 = 64 | CES96 = 86 |
| CES22 = 78 | CES47 = 80 | CES72 = 88 | CES97 = 83 |
| CES23 = 91 | CES48 = 79 | CES73 = 60 | CES98 = 81 |
| CES24 = 90 | CES49 = 80 | CES74 = 98 | CES99 = 83 |
| CES25 = 71 | CES50 = 89 | CES75 = 62 | |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)