

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: P1436367

Luminaire Tested: EHBR1-30-UNV-M-L850-UPL30

Issue Date: 3/25/2026

Test Information

Test Method: LM-79-2019
Report Number: P1436367
REPORT IS A COMBINATION OF REPORTS P1436079 AND P1431635
Test Lab: INNOVATION CENTER
Issue Date: 3/25/2026
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: METALUX
Catalog Number: EHBR1-30-UNV-M-L850-UPL30
Description: Elevate Round Highbay at, 30000 lumens, 5000K 80CRI LEDs with M lens
Light Source: -
Ballast/Driver: -

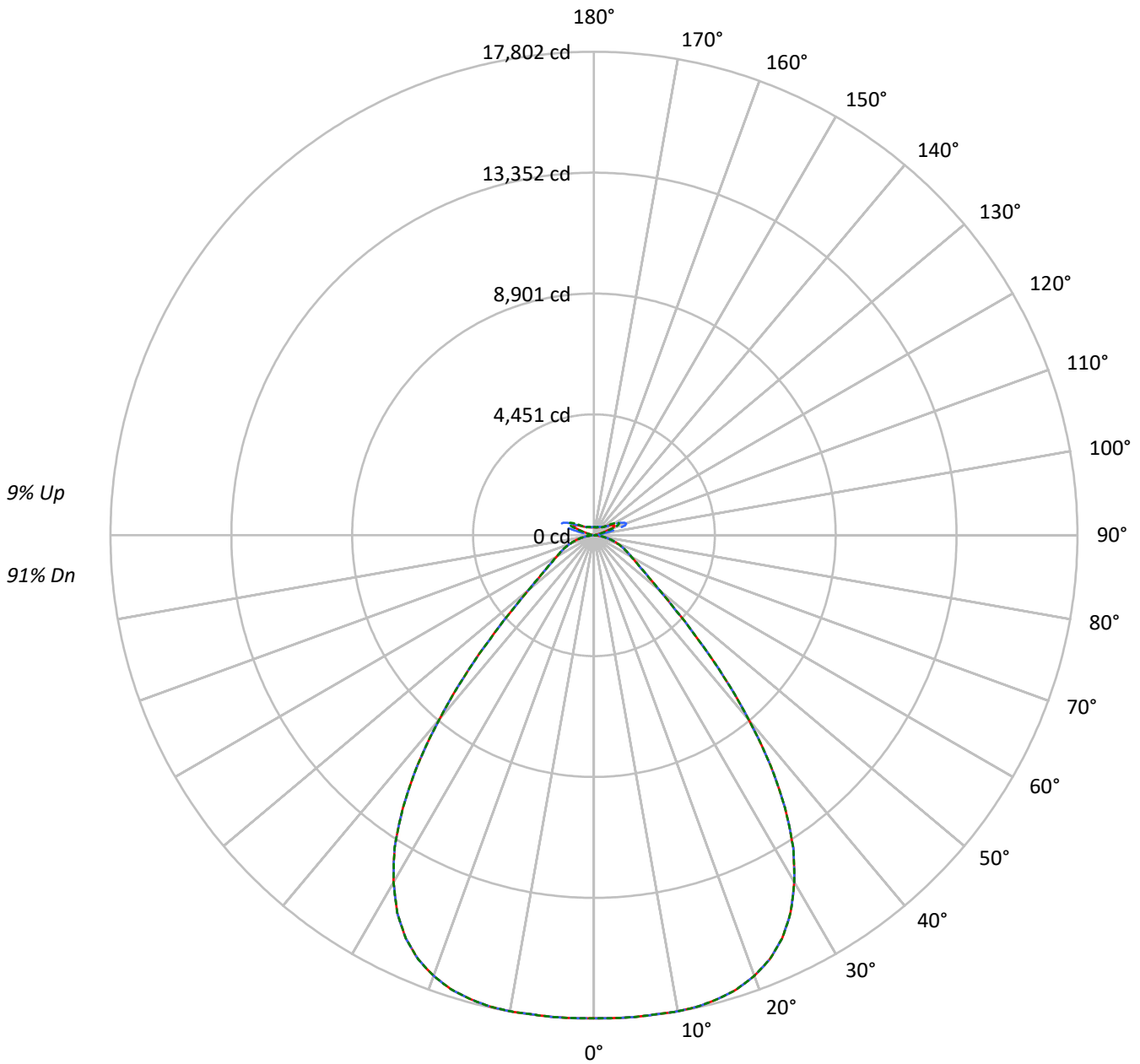
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 33014.7 lumens
Efficiency: N/A
Efficacy: 181.6 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: Direct

Input Watts (W): 181.8
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: P1436367
CATALOG NUMBER: EHBR1-30-UNV-M-L850-UPL30

Luminous Intensity Polar Plot



— 0°-180° - - 45°-225° - - - 90°-270°



TEST NUMBER: P1436367
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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 | 106 | 106 | 106 | 100 | 100 | 100 | 94 | 94 | 94 | 94 | 94 | 94 | 91 |
| 1 | 109 | 106 | 103 | 100 | 106 | 103 | 100 | 97 | 97 | 95 | 93 | 92 | 90 | 88 | 87 | 85 | 84 | 87 | 85 | 84 | 82 |
| 2 | 102 | 96 | 90 | 86 | 99 | 93 | 88 | 84 | 88 | 84 | 81 | 84 | 81 | 78 | 80 | 77 | 75 | 80 | 77 | 75 | 73 |
| 3 | 95 | 87 | 80 | 75 | 92 | 85 | 79 | 74 | 80 | 76 | 72 | 77 | 73 | 69 | 73 | 70 | 67 | 73 | 70 | 67 | 65 |
| 4 | 88 | 79 | 72 | 67 | 86 | 77 | 71 | 66 | 74 | 68 | 64 | 70 | 66 | 62 | 68 | 64 | 61 | 68 | 64 | 61 | 58 |
| 5 | 83 | 72 | 65 | 59 | 80 | 71 | 64 | 59 | 68 | 62 | 57 | 65 | 60 | 56 | 62 | 58 | 55 | 62 | 58 | 55 | 53 |
| 6 | 77 | 66 | 59 | 53 | 75 | 65 | 58 | 53 | 62 | 56 | 52 | 60 | 55 | 51 | 58 | 53 | 50 | 58 | 53 | 50 | 48 |
| 7 | 72 | 61 | 54 | 48 | 70 | 60 | 53 | 48 | 58 | 52 | 47 | 56 | 50 | 46 | 54 | 49 | 45 | 54 | 49 | 45 | 44 |
| 8 | 68 | 56 | 49 | 44 | 66 | 55 | 49 | 44 | 53 | 47 | 43 | 52 | 46 | 42 | 50 | 45 | 42 | 50 | 45 | 42 | 40 |
| 9 | 64 | 52 | 45 | 40 | 62 | 51 | 45 | 40 | 50 | 44 | 40 | 48 | 43 | 39 | 47 | 42 | 38 | 47 | 42 | 38 | 37 |
| 10 | 60 | 49 | 42 | 37 | 59 | 48 | 41 | 37 | 46 | 41 | 36 | 45 | 40 | 36 | 44 | 39 | 35 | 44 | 39 | 35 | 34 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|-------|-------|-------|
| 0° | 83521 | 83521 | 83521 |
| 5° | 83377 | 83377 | 83377 |
| 10° | 83768 | 83768 | 83768 |
| 15° | 84249 | 84249 | 84249 |
| 20° | 83995 | 83995 | 83995 |
| 25° | 82034 | 82034 | 82034 |
| 30° | 76707 | 76707 | 76707 |
| 35° | 66805 | 66805 | 66805 |
| 40° | 51198 | 51198 | 51198 |
| 45° | 33446 | 33446 | 33446 |
| 50° | 21085 | 21085 | 21085 |
| 55° | 15718 | 15718 | 15718 |
| 60° | 13233 | 13233 | 13233 |
| 65° | 12032 | 12032 | 12032 |
| 70° | 10961 | 10961 | 10961 |
| 75° | 9385 | 9385 | 9385 |
| 80° | 7225 | 7225 | 7225 |
| 85° | 3791 | 3791 | 3791 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 33446 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 1698.7 | 5.1 |
| 10°-20° | 4988.4 | 15.1 |
| 20°-30° | 7484.9 | 22.7 |
| 30°-40° | 7530.6 | 22.8 |
| 40°-50° | 4310.7 | 13.1 |
| 50°-60° | 1971.6 | 6.0 |
| 60°-70° | 1250.9 | 3.8 |
| 70°-80° | 701.7 | 2.1 |
| 80°-90° | 169.9 | 0.5 |
| 90°-100° | 82.9 | 0.3 |
| 100°-110° | 519.4 | 1.6 |
| 110°-120° | 928.9 | 2.8 |
| 120°-130° | 545.0 | 1.7 |
| 130°-140° | 334.3 | 1.0 |
| 140°-150° | 231.9 | 0.7 |
| 150°-160° | 150.7 | 0.5 |
| 160°-170° | 85.9 | 0.3 |
| 170°-180° | 28.4 | 0.1 |
| 0°-30° | 14171.9 | 42.9 |
| 0°-40° | 21702.5 | 65.7 |
| 0°-60° | 27984.8 | 84.8 |
| 0°-90° | 30107.3 | 91.2 |
| 90°-120° | 1531.2 | 4.6 |
| 90°-150° | 2642.5 | 8.0 |
| 90°-180° | 2907.0 | 8.8 |
| 0°-180° | 33014.7 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|-------|-------|-------|-------|-------|------|
| 0° | 17785 | 17785 | 17785 | 17785 | 17785 | |
| 5° | 17802 | 17802 | 17802 | 17802 | 17802 | 1699 |
| 15° | 17675 | 17675 | 17675 | 17675 | 17675 | 4988 |
| 25° | 16382 | 16382 | 16382 | 16382 | 16382 | 7485 |
| 35° | 12261 | 12261 | 12261 | 12261 | 12261 | 7531 |
| 45° | 5412 | 5412 | 5412 | 5412 | 5412 | 4311 |
| 55° | 2124 | 2124 | 2124 | 2124 | 2124 | 1972 |
| 65° | 1256 | 1256 | 1256 | 1256 | 1256 | 1251 |
| 75° | 661 | 661 | 661 | 661 | 661 | 702 |
| 85° | 130 | 130 | 130 | 130 | 130 | 159 |
| 90° | 22 | 35 | 60 | 38 | 22 | 15 |
| 95° | 37 | 62 | 135 | 67 | 42 | 35 |
| 105° | 181 | 358 | 914 | 394 | 240 | 243 |
| 115° | 835 | 879 | 1080 | 1035 | 1028 | 770 |
| 125° | 602 | 563 | 578 | 586 | 657 | 549 |
| 135° | 439 | 426 | 441 | 414 | 413 | 344 |
| 145° | 361 | 356 | 378 | 373 | 371 | 229 |
| 155° | 316 | 313 | 328 | 328 | 328 | 147 |
| 165° | 296 | 296 | 305 | 305 | 303 | 85 |
| 175° | 293 | 293 | 298 | 298 | 298 | 28 |
| 180° | 296 | 296 | 296 | 296 | 296 | |



TEST NUMBER: P1436367

CATALOG NUMBER: EHBR1-30-UNV-M-L850-UPL30

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|---------|---------|---------|---------|---------|
| 0° | 17785.1 | 17785.1 | 17785.1 | 17785.1 | 17785.1 |
| 2.5° | 17793.7 | 17793.7 | 17793.7 | 17793.7 | 17793.7 |
| 5° | 17802.4 | 17802.4 | 17802.4 | 17802.4 | 17802.4 |
| 7.5° | 17790.2 | 17790.2 | 17790.2 | 17790.2 | 17790.2 |
| 10° | 17797.7 | 17797.7 | 17797.7 | 17797.7 | 17797.7 |
| 12.5° | 17767.2 | 17767.2 | 17767.2 | 17767.2 | 17767.2 |
| 15° | 17675.1 | 17675.1 | 17675.1 | 17675.1 | 17675.1 |
| 17.5° | 17523.0 | 17523.0 | 17523.0 | 17523.0 | 17523.0 |
| 20° | 17263.5 | 17263.5 | 17263.5 | 17263.5 | 17263.5 |
| 22.5° | 16906.7 | 16906.7 | 16906.7 | 16906.7 | 16906.7 |
| 25° | 16382.1 | 16382.1 | 16382.1 | 16382.1 | 16382.1 |
| 27.5° | 15676.2 | 15676.2 | 15676.2 | 15676.2 | 15676.2 |
| 30° | 14754.6 | 14754.6 | 14754.6 | 14754.6 | 14754.6 |
| 32.5° | 13663.6 | 13663.6 | 13663.6 | 13663.6 | 13663.6 |
| 35° | 12261.1 | 12261.1 | 12261.1 | 12261.1 | 12261.1 |
| 37.5° | 10672.4 | 10672.4 | 10672.4 | 10672.4 | 10672.4 |
| 40° | 8873.9 | 8873.9 | 8873.9 | 8873.9 | 8873.9 |
| 42.5° | 7091.3 | 7091.3 | 7091.3 | 7091.3 | 7091.3 |
| 45° | 5411.5 | 5411.5 | 5411.5 | 5411.5 | 5411.5 |
| 47.5° | 4073.6 | 4073.6 | 4073.6 | 4073.6 | 4073.6 |
| 50° | 3142.4 | 3142.4 | 3142.4 | 3142.4 | 3142.4 |
| 52.5° | 2538.8 | 2538.8 | 2538.8 | 2538.8 | 2538.8 |
| 55° | 2124.1 | 2124.1 | 2124.1 | 2124.1 | 2124.1 |
| 57.5° | 1818.8 | 1818.8 | 1818.8 | 1818.8 | 1818.8 |
| 60° | 1590.8 | 1590.8 | 1590.8 | 1590.8 | 1590.8 |
| 62.5° | 1414.7 | 1414.7 | 1414.7 | 1414.7 | 1414.7 |
| 65° | 1255.9 | 1255.9 | 1255.9 | 1255.9 | 1255.9 |
| 67.5° | 1109.9 | 1109.9 | 1109.9 | 1109.9 | 1109.9 |
| 70° | 961.8 | 961.8 | 961.8 | 961.8 | 961.8 |
| 72.5° | 812.7 | 812.7 | 812.7 | 812.7 | 812.7 |
| 75° | 661.1 | 661.1 | 661.1 | 661.1 | 661.1 |
| 77.5° | 517.1 | 517.1 | 517.1 | 517.1 | 517.1 |
| 80° | 380.1 | 380.1 | 380.1 | 380.1 | 380.1 |
| 82.5° | 247.8 | 247.8 | 247.8 | 247.8 | 247.8 |
| 85° | 130.3 | 130.3 | 130.3 | 130.3 | 130.3 |
| 87.5° | 37.1 | 37.1 | 37.1 | 37.1 | 37.1 |
| 90° | 21.6 | 35.0 | 59.9 | 38.3 | 21.6 |
| 92.5° | 31.6 | 53.2 | 96.6 | 49.9 | 28.3 |
| 95° | 36.6 | 61.6 | 134.8 | 66.6 | 41.6 |
| 97.5° | 46.6 | 68.3 | 154.8 | 81.5 | 64.9 |
| 100° | 61.6 | 79.9 | 241.3 | 99.9 | 86.5 |
| 102.5° | 104.8 | 169.7 | 512.6 | 188.1 | 131.5 |
| 105° | 181.4 | 357.8 | 913.7 | 394.5 | 239.7 |
| 107.5° | 314.5 | 640.7 | 1205.0 | 699.0 | 454.3 |
| 110° | 587.5 | 850.5 | 1263.2 | 960.3 | 727.3 |



TEST NUMBER: P1436367

CATALOG NUMBER: EHBR1-30-UNV-M-L850-UPL30

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|-------|-------|--------|--------|--------|
| 112.5° | 793.9 | 913.7 | 1210.0 | 1060.2 | 947.0 |
| 115° | 835.4 | 878.7 | 1080.1 | 1035.2 | 1028.5 |
| 117.5° | 807.1 | 802.2 | 917.1 | 930.3 | 993.6 |
| 120° | 747.2 | 714.0 | 765.6 | 812.1 | 897.0 |
| 122.5° | 672.4 | 632.4 | 655.8 | 690.6 | 775.6 |
| 125° | 602.4 | 562.6 | 577.5 | 585.8 | 657.4 |
| 127.5° | 540.9 | 514.2 | 522.6 | 512.6 | 557.5 |
| 130° | 499.3 | 476.0 | 487.6 | 464.3 | 485.9 |
| 132.5° | 464.3 | 449.4 | 462.7 | 434.4 | 441.0 |
| 135° | 439.4 | 426.0 | 441.0 | 414.4 | 412.8 |
| 137.5° | 417.8 | 406.1 | 421.1 | 401.1 | 396.1 |
| 140° | 397.7 | 387.8 | 404.4 | 389.5 | 386.1 |
| 142.5° | 376.1 | 369.4 | 389.5 | 379.5 | 376.1 |
| 145° | 361.2 | 356.2 | 377.8 | 372.8 | 371.1 |
| 147.5° | 347.8 | 344.5 | 364.5 | 362.9 | 362.9 |
| 150° | 336.2 | 332.9 | 352.8 | 351.2 | 352.8 |
| 152.5° | 324.5 | 321.2 | 339.5 | 337.8 | 339.5 |
| 155° | 316.2 | 312.9 | 327.9 | 327.9 | 327.9 |
| 157.5° | 309.5 | 307.8 | 319.5 | 319.5 | 319.5 |
| 160° | 304.6 | 302.9 | 312.9 | 312.9 | 311.2 |
| 162.5° | 299.6 | 297.9 | 309.5 | 307.8 | 307.8 |
| 165° | 296.3 | 296.3 | 304.6 | 304.6 | 302.9 |
| 167.5° | 296.3 | 294.6 | 302.9 | 302.9 | 301.3 |
| 170° | 294.6 | 294.6 | 301.3 | 299.6 | 297.9 |
| 172.5° | 294.6 | 294.6 | 301.3 | 299.6 | 297.9 |
| 175° | 292.9 | 292.9 | 297.9 | 297.9 | 297.9 |
| 177.5° | 294.6 | 294.6 | 297.9 | 297.9 | 296.3 |
| 180° | 296.3 | 296.3 | 296.3 | 296.3 | 296.3 |



TEST NUMBER: P1436367
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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 | 17.56 | 18.69 | 18.07 | 19.18 | 19.71 | 17.56 | 18.69 | 18.07 | 19.18 | 19.71 |
| | 3H | 19.04 | 20.04 | 19.57 | 20.55 | 21.13 | 19.04 | 20.04 | 19.57 | 20.55 | 21.13 |
| | 4H | 19.56 | 20.50 | 20.11 | 21.02 | 21.62 | 19.56 | 20.50 | 20.11 | 21.02 | 21.62 |
| | 6H | 19.88 | 20.75 | 20.45 | 21.28 | 21.89 | 19.88 | 20.75 | 20.45 | 21.28 | 21.89 |
| | 8H | 19.95 | 20.77 | 20.53 | 21.33 | 21.94 | 19.95 | 20.77 | 20.53 | 21.33 | 21.94 |
| | 12H | 19.96 | 20.74 | 20.54 | 21.29 | 21.93 | 19.96 | 20.74 | 20.54 | 21.29 | 21.93 |
| 4H | 2H | 17.99 | 18.93 | 18.54 | 19.45 | 20.05 | 17.99 | 18.93 | 18.54 | 19.45 | 20.05 |
| | 3H | 19.68 | 20.46 | 20.25 | 21.02 | 21.63 | 19.68 | 20.46 | 20.25 | 21.02 | 21.63 |
| | 4H | 20.31 | 21.01 | 20.90 | 21.58 | 22.23 | 20.31 | 21.01 | 20.90 | 21.58 | 22.23 |
| | 6H | 20.74 | 21.33 | 21.34 | 21.94 | 22.60 | 20.74 | 21.33 | 21.34 | 21.94 | 22.60 |
| | 8H | 20.83 | 21.39 | 21.44 | 21.99 | 22.66 | 20.83 | 21.39 | 21.44 | 21.99 | 22.66 |
| | 12H | 20.86 | 21.35 | 21.49 | 21.98 | 22.66 | 20.86 | 21.35 | 21.49 | 21.98 | 22.66 |
| 8H | 4H | 20.49 | 21.05 | 21.10 | 21.65 | 22.32 | 20.49 | 21.05 | 21.10 | 21.65 | 22.32 |
| | 6H | 21.00 | 21.45 | 21.64 | 22.10 | 22.78 | 21.00 | 21.45 | 21.64 | 22.10 | 22.78 |
| | 8H | 21.14 | 21.54 | 21.80 | 22.20 | 22.89 | 21.14 | 21.54 | 21.80 | 22.20 | 22.89 |
| | 12H | 21.20 | 21.56 | 21.86 | 22.20 | 22.96 | 21.20 | 21.56 | 21.86 | 22.20 | 22.96 |
| 12H | 4H | 20.48 | 20.97 | 21.10 | 21.60 | 22.27 | 20.48 | 20.97 | 21.10 | 21.60 | 22.27 |
| | 6H | 21.00 | 21.41 | 21.66 | 22.07 | 22.76 | 21.00 | 21.41 | 21.66 | 22.07 | 22.76 |
| | 8H | 21.17 | 21.53 | 21.83 | 22.17 | 22.93 | 21.17 | 21.53 | 21.83 | 22.17 | 22.93 |

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

Report Prepared for

Cooper Lighting Solutions

Metalux

Report Number: SP1-2506-472-4

Test Date: 07/31/2025

Luminaire Tested: EHBR-60-L850-N

Data in this report applies to families of products including EHBR-60-L850-N

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2506-472-4
 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-L850-N**
 Description: Elevate Round Highbay at, 60000 lumens, 5000K 80CRI LEDs with N lens

Spectral Parameters

CCT (K): 4875
 CIE u': 0.2124
 CIE v': 0.4871
 Duv: 0.0005
 CIE x: 0.3488
 CIE y: 0.3555
 CIE z: 0.2957
 Peak Wavelength (nm): 630
 Dominant Wavelength (nm): 573
 Purity: 11.33556
 Rf: 80
 Rg: 102.3

| | | | |
|-----------|------|------|------|
| CRI (Ra): | 82.3 | | |
| R1: | 85.0 | R9: | 43.9 |
| R2: | 83.1 | R10: | 57.4 |
| R3: | 78.8 | R11: | 83.1 |
| R4: | 84.0 | R12: | 51.0 |
| R5: | 83.0 | R13: | 83.4 |
| R6: | 76.3 | R14: | 87.4 |
| R7: | 86.8 | R15: | 83.4 |
| R8: | 81.7 | | |



Test Conditions

Stabilization Time: 39M
 Operation Time: 1H 39M
 Sphere Temperature (°C): 25.0

REPORT NUMBER: SP1-2506-472-4

| 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 5000K 4-step quadrangle

REPORT NUMBER: SP1-2506-472-4

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 | 89 | NR | 620 | 280 | NR | 750 | 6 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 121 | NR | 625 | 280 | NR | 755 | 5 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 168 | NR | 630 | 1000 | NR | 760 | 5 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 224 | NR | 635 | 626 | NR | 765 | 4 | NR | 895 | 0 | NR |
| 380 | 1 | NR | 510 | 275 | NR | 640 | 163 | NR | 770 | 4 | NR | 900 | 0 | NR |
| 385 | 2 | NR | 515 | 321 | NR | 645 | 160 | NR | 775 | 3 | NR | 905 | 0 | NR |
| 390 | 3 | NR | 520 | 354 | NR | 650 | 136 | NR | 780 | 3 | NR | 910 | 0 | NR |
| 395 | 5 | NR | 525 | 375 | NR | 655 | 111 | NR | 785 | 2 | NR | 915 | 0 | NR |
| 400 | 7 | NR | 530 | 388 | NR | 660 | 93 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 10 | NR | 535 | 395 | NR | 665 | 76 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 15 | NR | 540 | 397 | NR | 670 | 72 | NR | 800 | 2 | NR | 930 | 0 | NR |
| 415 | 28 | NR | 545 | 398 | NR | 675 | 57 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 53 | NR | 550 | 396 | NR | 680 | 49 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 97 | NR | 555 | 395 | NR | 685 | 42 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 163 | NR | 560 | 392 | NR | 690 | 37 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 261 | NR | 565 | 388 | NR | 695 | 32 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 409 | NR | 570 | 381 | NR | 700 | 27 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 637 | NR | 575 | 374 | NR | 705 | 23 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 699 | NR | 580 | 365 | NR | 710 | 20 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 436 | NR | 585 | 354 | NR | 715 | 17 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 274 | NR | 590 | 342 | NR | 720 | 15 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 205 | NR | 595 | 325 | NR | 725 | 13 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 130 | NR | 600 | 313 | NR | 730 | 11 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 90 | NR | 605 | 301 | NR | 735 | 10 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 78 | NR | 610 | 323 | NR | 740 | 8 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 77 | NR | 615 | 340 | NR | 745 | 7 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2506-472-4

Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.82

| 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 | 89 | NR | 620 | 280 | NR | 750 | 6 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 121 | NR | 625 | 280 | NR | 755 | 5 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 168 | NR | 630 | 1000 | NR | 760 | 5 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 224 | NR | 635 | 626 | NR | 765 | 4 | NR | 895 | 0 | NR |
| 380 | 1 | NR | 510 | 275 | NR | 640 | 163 | NR | 770 | 4 | NR | 900 | 0 | NR |
| 385 | 2 | NR | 515 | 321 | NR | 645 | 160 | NR | 775 | 3 | NR | 905 | 0 | NR |
| 390 | 3 | NR | 520 | 354 | NR | 650 | 136 | NR | 780 | 3 | NR | 910 | 0 | NR |
| 395 | 5 | NR | 525 | 375 | NR | 655 | 111 | NR | 785 | 2 | NR | 915 | 0 | NR |
| 400 | 7 | NR | 530 | 388 | NR | 660 | 93 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 10 | NR | 535 | 395 | NR | 665 | 76 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 15 | NR | 540 | 397 | NR | 670 | 72 | NR | 800 | 2 | NR | 930 | 0 | NR |
| 415 | 28 | NR | 545 | 398 | NR | 675 | 57 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 53 | NR | 550 | 396 | NR | 680 | 49 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 97 | NR | 555 | 395 | NR | 685 | 42 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 163 | NR | 560 | 392 | NR | 690 | 37 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 261 | NR | 565 | 388 | NR | 695 | 32 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 409 | NR | 570 | 381 | NR | 700 | 27 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 637 | NR | 575 | 374 | NR | 705 | 23 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 699 | NR | 580 | 365 | NR | 710 | 20 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 436 | NR | 585 | 354 | NR | 715 | 17 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 274 | NR | 590 | 342 | NR | 720 | 15 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 205 | NR | 595 | 325 | NR | 725 | 13 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 130 | NR | 600 | 313 | NR | 730 | 11 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 90 | NR | 605 | 301 | NR | 735 | 10 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 78 | NR | 610 | 323 | NR | 740 | 8 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 77 | NR | 615 | 340 | NR | 745 | 7 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2506-472-4

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 3.71

| 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 | 89 | NR | 620 | 280 | NR | 750 | 6 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 121 | NR | 625 | 280 | NR | 755 | 5 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 168 | NR | 630 | 1000 | NR | 760 | 5 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 224 | NR | 635 | 626 | NR | 765 | 4 | NR | 895 | 0 | NR |
| 380 | 1 | NR | 510 | 275 | NR | 640 | 163 | NR | 770 | 4 | NR | 900 | 0 | NR |
| 385 | 2 | NR | 515 | 321 | NR | 645 | 160 | NR | 775 | 3 | NR | 905 | 0 | NR |
| 390 | 3 | NR | 520 | 354 | NR | 650 | 136 | NR | 780 | 3 | NR | 910 | 0 | NR |
| 395 | 5 | NR | 525 | 375 | NR | 655 | 111 | NR | 785 | 2 | NR | 915 | 0 | NR |
| 400 | 7 | NR | 530 | 388 | NR | 660 | 93 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 10 | NR | 535 | 395 | NR | 665 | 76 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 15 | NR | 540 | 397 | NR | 670 | 72 | NR | 800 | 2 | NR | 930 | 0 | NR |
| 415 | 28 | NR | 545 | 398 | NR | 675 | 57 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 53 | NR | 550 | 396 | NR | 680 | 49 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 97 | NR | 555 | 395 | NR | 685 | 42 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 163 | NR | 560 | 392 | NR | 690 | 37 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 261 | NR | 565 | 388 | NR | 695 | 32 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 409 | NR | 570 | 381 | NR | 700 | 27 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 637 | NR | 575 | 374 | NR | 705 | 23 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 699 | NR | 580 | 365 | NR | 710 | 20 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 436 | NR | 585 | 354 | NR | 715 | 17 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 274 | NR | 590 | 342 | NR | 720 | 15 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 205 | NR | 595 | 325 | NR | 725 | 13 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 130 | NR | 600 | 313 | NR | 730 | 11 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 90 | NR | 605 | 301 | NR | 735 | 10 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 78 | NR | 610 | 323 | NR | 740 | 8 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 77 | NR | 615 | 340 | NR | 745 | 7 | NR | 875 | 0 | NR | | | |

Summary

$R_f = 80$
 $R_g = 102.3$
 $CIE R_a = 82.3$
 $R_9 = 43.9$



Color Vector Graphics



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

| | | | |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 67 | CES51 = 92 | CES76 = 54 |
| CES02 = 60 | CES27 = 88 | CES52 = 91 | CES77 = 71 |
| CES03 = 31 | CES28 = 81 | CES53 = 82 | CES78 = 55 |
| CES04 = 69 | CES29 = 66 | CES54 = 92 | CES79 = 81 |
| CES05 = 47 | CES30 = 80 | CES55 = 90 | CES80 = 75 |
| CES06 = 50 | CES31 = 69 | CES56 = 81 | CES81 = 79 |
| CES07 = 40 | CES32 = 61 | CES57 = 80 | CES82 = 90 |
| CES08 = 39 | CES33 = 76 | CES58 = 81 | CES83 = 87 |
| CES09 = 29 | CES34 = 68 | CES59 = 93 | CES84 = 87 |
| CES10 = 73 | CES35 = 82 | CES60 = 94 | CES85 = 82 |
| CES11 = 56 | CES36 = 95 | CES61 = 91 | CES86 = 83 |
| CES12 = 62 | CES37 = 75 | CES62 = 89 | CES87 = 78 |
| CES13 = 42 | CES38 = 87 | CES63 = 80 | CES88 = 85 |
| CES14 = 74 | CES39 = 94 | CES64 = 79 | CES89 = 81 |
| CES15 = 71 | CES40 = 87 | CES65 = 75 | CES90 = 86 |
| CES16 = 46 | CES41 = 91 | CES66 = 72 | CES91 = 80 |
| CES17 = 48 | CES42 = 71 | CES67 = 69 | CES92 = 77 |
| CES18 = 56 | CES43 = 72 | CES68 = 75 | CES93 = 86 |
| CES19 = 70 | CES44 = 99 | CES69 = 80 | CES94 = 71 |
| CES20 = 65 | CES45 = 81 | CES70 = 66 | CES95 = 79 |
| CES21 = 85 | CES46 = 83 | CES71 = 59 | CES96 = 86 |
| CES22 = 77 | CES47 = 83 | CES72 = 87 | CES97 = 85 |
| CES23 = 91 | CES48 = 83 | CES73 = 56 | CES98 = 82 |
| CES24 = 90 | CES49 = 82 | CES74 = 95 | CES99 = 84 |
| CES25 = 71 | CES50 = 91 | CES75 = 58 | |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)