

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: P1433664

Luminaire Tested: EHBR1-54-UNV-W-L935-UPL36

Issue Date: 3/20/2026

Test Information

Test Method: LM-79-2019
Report Number: P1433664
REPORT IS A COMBINATION OF REPORTS P1431889 AND P1431635
Test Lab: INNOVATION CENTER
Issue Date: 3/20/2026
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: METALUX
Catalog Number: EHBR1-54-UNV-W-L935-UPL36
Description: Elevate Round Highbay at, 53500 lumens, 3500K 90CRI LEDs with W lens
Light Source: -
Ballast/Driver: -

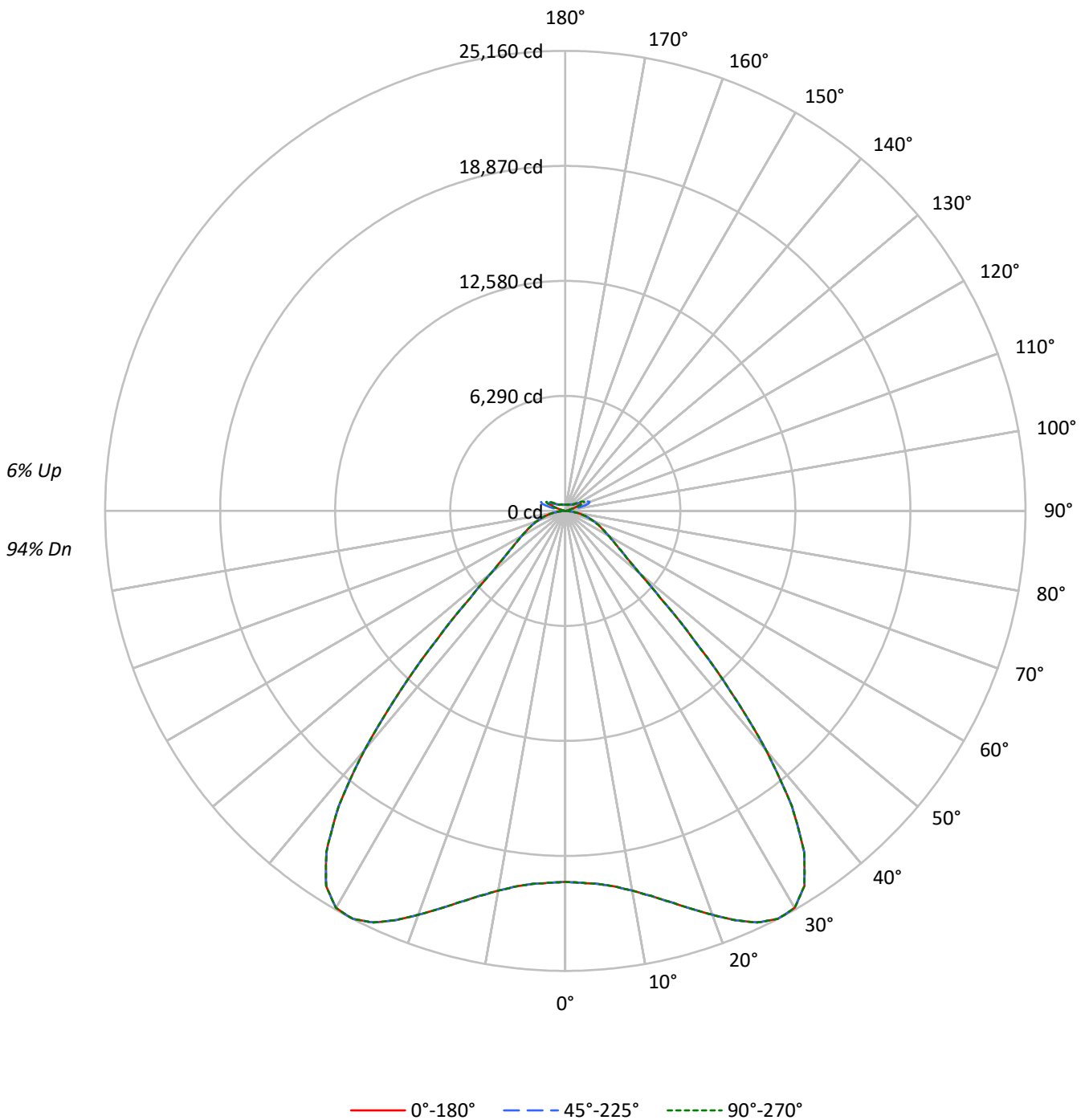
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 51767.6 lumens
Efficiency: N/A
Efficacy: 159.6 lumens/watt
Spacing Criteria (0/90/45): 1.54 / 1.54 / 1.31
Luminous Opening: Vertical Cylinder (Dia: 1.71' x H: 0.1')
CIE Type: Direct

Input Watts (W): 324.4
Input Voltage (V): NR
Input Current (A_{in}): 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: P1433664
CATALOG NUMBER: EHBR1-54-UNV-W-L935-UPL36

Luminous Intensity Polar Plot





TEST NUMBER: P1433664
 CATALOG NUMBER: EHBR1-54-UNV-W-L935-UPL36

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 | 118 | 118 | 118 | 118 | 114 | 114 | 114 | 114 | 108 | 108 | 108 | 102 | 102 | 102 | 96 | 96 | 96 | 96 | 96 | 96 | 94 |
| 1 | 110 | 106 | 103 | 100 | 106 | 103 | 100 | 97 | 98 | 95 | 93 | 93 | 91 | 89 | 88 | 87 | 86 | 86 | 86 | 86 | 83 |
| 2 | 102 | 95 | 90 | 85 | 99 | 93 | 88 | 84 | 89 | 85 | 81 | 85 | 81 | 78 | 81 | 78 | 76 | 76 | 76 | 76 | 73 |
| 3 | 95 | 86 | 79 | 74 | 92 | 84 | 78 | 73 | 80 | 75 | 71 | 77 | 73 | 69 | 74 | 70 | 67 | 67 | 67 | 67 | 65 |
| 4 | 88 | 78 | 71 | 65 | 85 | 76 | 70 | 64 | 73 | 67 | 63 | 70 | 65 | 61 | 67 | 63 | 60 | 60 | 60 | 60 | 58 |
| 5 | 82 | 71 | 63 | 58 | 79 | 69 | 62 | 57 | 67 | 61 | 56 | 64 | 59 | 55 | 62 | 57 | 54 | 54 | 54 | 54 | 52 |
| 6 | 76 | 65 | 57 | 52 | 74 | 63 | 56 | 51 | 61 | 55 | 50 | 59 | 53 | 49 | 57 | 52 | 48 | 48 | 48 | 48 | 47 |
| 7 | 71 | 59 | 52 | 46 | 69 | 58 | 51 | 46 | 56 | 50 | 45 | 54 | 49 | 45 | 53 | 48 | 44 | 44 | 44 | 44 | 42 |
| 8 | 66 | 55 | 47 | 42 | 65 | 54 | 46 | 42 | 52 | 45 | 41 | 50 | 45 | 40 | 49 | 44 | 40 | 40 | 40 | 40 | 38 |
| 9 | 62 | 50 | 43 | 38 | 61 | 50 | 43 | 38 | 48 | 42 | 37 | 47 | 41 | 37 | 45 | 40 | 36 | 36 | 36 | 36 | 35 |
| 10 | 59 | 47 | 39 | 35 | 57 | 46 | 39 | 34 | 45 | 38 | 34 | 43 | 38 | 34 | 42 | 37 | 33 | 33 | 33 | 33 | 32 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|--------|--------|--------|
| 0° | 95274 | 95274 | 95274 |
| 5° | 95907 | 95907 | 95907 |
| 10° | 99240 | 99240 | 99240 |
| 15° | 105528 | 105528 | 105528 |
| 20° | 114395 | 114395 | 114395 |
| 25° | 124358 | 124358 | 124358 |
| 30° | 130349 | 130349 | 130349 |
| 35° | 124071 | 124071 | 124071 |
| 40° | 98449 | 98449 | 98449 |
| 45° | 60851 | 60851 | 60851 |
| 50° | 35236 | 35236 | 35236 |
| 55° | 26660 | 26660 | 26660 |
| 60° | 22870 | 22870 | 22870 |
| 65° | 20656 | 20656 | 20656 |
| 70° | 19001 | 19001 | 19001 |
| 75° | 16788 | 16788 | 16788 |
| 80° | 13681 | 13681 | 13681 |
| 85° | 8065 | 8065 | 8065 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 60851 cd/sqm



TEST NUMBER: P1433664
 CATALOG NUMBER: EHBR1-54-UNV-W-L935-UPL36

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 1973.9 | 3.8 |
| 10°-20° | 6328.2 | 12.2 |
| 20°-30° | 11422.6 | 22.1 |
| 30°-40° | 13803.1 | 26.7 |
| 40°-50° | 7886.1 | 15.2 |
| 50°-60° | 3340.1 | 6.5 |
| 60°-70° | 2154.3 | 4.2 |
| 70°-80° | 1252.6 | 2.4 |
| 80°-90° | 337.4 | 0.7 |
| 90°-100° | 93.9 | 0.2 |
| 100°-110° | 580.4 | 1.1 |
| 110°-120° | 1037.1 | 2.0 |
| 120°-130° | 609.8 | 1.2 |
| 130°-140° | 377.4 | 0.7 |
| 140°-150° | 264.8 | 0.5 |
| 150°-160° | 173.3 | 0.3 |
| 160°-170° | 99.5 | 0.2 |
| 170°-180° | 33.0 | 0.1 |
| 0°-30° | 19724.7 | 38.1 |
| 0°-40° | 33527.8 | 64.8 |
| 0°-60° | 44753.9 | 86.5 |
| 0°-90° | 48498.3 | 93.7 |
| 90°-120° | 1711.4 | 3.3 |
| 90°-150° | 2963.5 | 5.7 |
| 90°-180° | 3269.0 | 6.3 |
| 0°-180° | 51767.6 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|-------|-------|-------|-------|-------|-------|
| 0° | 20288 | 20288 | 20288 | 20288 | 20288 | |
| 5° | 20478 | 20478 | 20478 | 20478 | 20478 | 1974 |
| 15° | 22139 | 22139 | 22139 | 22139 | 22139 | 6328 |
| 25° | 24834 | 24834 | 24834 | 24834 | 24834 | 11423 |
| 35° | 22772 | 22772 | 22772 | 22772 | 22772 | 13803 |
| 45° | 9845 | 9845 | 9845 | 9845 | 9845 | 7886 |
| 55° | 3603 | 3603 | 3603 | 3603 | 3603 | 3340 |
| 65° | 2156 | 2156 | 2156 | 2156 | 2156 | 2154 |
| 75° | 1183 | 1183 | 1183 | 1183 | 1183 | 1253 |
| 85° | 277 | 277 | 277 | 277 | 277 | 319 |
| 90° | 26 | 41 | 68 | 44 | 26 | 24 |
| 95° | 42 | 70 | 152 | 76 | 48 | 41 |
| 105° | 204 | 400 | 1019 | 441 | 268 | 272 |
| 115° | 933 | 981 | 1206 | 1156 | 1148 | 860 |
| 125° | 674 | 630 | 647 | 656 | 736 | 614 |
| 135° | 496 | 481 | 498 | 468 | 466 | 388 |
| 145° | 413 | 407 | 431 | 426 | 424 | 261 |
| 155° | 364 | 361 | 377 | 377 | 377 | 170 |
| 165° | 344 | 344 | 353 | 353 | 351 | 98 |
| 175° | 342 | 342 | 347 | 347 | 347 | 33 |
| 180° | 346 | 346 | 346 | 346 | 346 | |



TEST NUMBER: P1433664

CATALOG NUMBER: EHBR1-54-UNV-W-L935-UPL36

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|---------|---------|---------|---------|---------|
| 0° | 20288.0 | 20288.0 | 20288.0 | 20288.0 | 20288.0 |
| 2.5° | 20356.1 | 20356.1 | 20356.1 | 20356.1 | 20356.1 |
| 5° | 20477.7 | 20477.7 | 20477.7 | 20477.7 | 20477.7 |
| 7.5° | 20716.8 | 20716.8 | 20716.8 | 20716.8 | 20716.8 |
| 10° | 21084.8 | 21084.8 | 21084.8 | 21084.8 | 21084.8 |
| 12.5° | 21563.0 | 21563.0 | 21563.0 | 21563.0 | 21563.0 |
| 15° | 22139.3 | 22139.3 | 22139.3 | 22139.3 | 22139.3 |
| 17.5° | 22799.0 | 22799.0 | 22799.0 | 22799.0 | 22799.0 |
| 20° | 23511.5 | 23511.5 | 23511.5 | 23511.5 | 23511.5 |
| 22.5° | 24228.7 | 24228.7 | 24228.7 | 24228.7 | 24228.7 |
| 25° | 24834.2 | 24834.2 | 24834.2 | 24834.2 | 24834.2 |
| 27.5° | 25160.0 | 25160.0 | 25160.0 | 25160.0 | 25160.0 |
| 30° | 25072.5 | 25072.5 | 25072.5 | 25072.5 | 25072.5 |
| 32.5° | 24329.3 | 24329.3 | 24329.3 | 24329.3 | 24329.3 |
| 35° | 22771.5 | 22771.5 | 22771.5 | 22771.5 | 22771.5 |
| 37.5° | 20342.3 | 20342.3 | 20342.3 | 20342.3 | 20342.3 |
| 40° | 17063.7 | 17063.7 | 17063.7 | 17063.7 | 17063.7 |
| 42.5° | 13355.7 | 13355.7 | 13355.7 | 13355.7 | 13355.7 |
| 45° | 9845.4 | 9845.4 | 9845.4 | 9845.4 | 9845.4 |
| 47.5° | 7036.9 | 7036.9 | 7036.9 | 7036.9 | 7036.9 |
| 50° | 5251.4 | 5251.4 | 5251.4 | 5251.4 | 5251.4 |
| 52.5° | 4252.0 | 4252.0 | 4252.0 | 4252.0 | 4252.0 |
| 55° | 3602.8 | 3602.8 | 3602.8 | 3602.8 | 3602.8 |
| 57.5° | 3128.6 | 3128.6 | 3128.6 | 3128.6 | 3128.6 |
| 60° | 2749.3 | 2749.3 | 2749.3 | 2749.3 | 2749.3 |
| 62.5° | 2433.1 | 2433.1 | 2433.1 | 2433.1 | 2433.1 |
| 65° | 2156.0 | 2156.0 | 2156.0 | 2156.0 | 2156.0 |
| 67.5° | 1911.2 | 1911.2 | 1911.2 | 1911.2 | 1911.2 |
| 70° | 1667.2 | 1667.2 | 1667.2 | 1667.2 | 1667.2 |
| 72.5° | 1424.1 | 1424.1 | 1424.1 | 1424.1 | 1424.1 |
| 75° | 1182.6 | 1182.6 | 1182.6 | 1182.6 | 1182.6 |
| 77.5° | 949.9 | 949.9 | 949.9 | 949.9 | 949.9 |
| 80° | 719.7 | 719.7 | 719.7 | 719.7 | 719.7 |
| 82.5° | 493.6 | 493.6 | 493.6 | 493.6 | 493.6 |
| 85° | 277.2 | 277.2 | 277.2 | 277.2 | 277.2 |
| 87.5° | 87.6 | 87.6 | 87.6 | 87.6 | 87.6 |
| 90° | 25.7 | 40.6 | 68.3 | 44.2 | 25.7 |
| 92.5° | 36.1 | 60.2 | 108.3 | 56.5 | 32.4 |
| 95° | 42.4 | 70.2 | 151.8 | 75.8 | 47.9 |
| 97.5° | 53.6 | 77.7 | 174.0 | 92.4 | 74.0 |
| 100° | 70.2 | 90.6 | 270.4 | 112.8 | 98.1 |
| 102.5° | 118.5 | 190.7 | 572.6 | 211.1 | 148.1 |
| 105° | 203.7 | 400.2 | 1019.3 | 441.0 | 268.5 |
| 107.5° | 352.0 | 715.4 | 1343.8 | 780.3 | 507.7 |
| 110° | 656.8 | 949.7 | 1409.5 | 1072.1 | 812.5 |



TEST NUMBER: P1433664

CATALOG NUMBER: EHBR1-54-UNV-W-L935-UPL36

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|-------|--------|--------|--------|--------|
| 112.5° | 886.8 | 1020.2 | 1350.2 | 1183.3 | 1057.2 |
| 115° | 933.1 | 981.3 | 1205.6 | 1155.5 | 1148.1 |
| 117.5° | 901.5 | 896.0 | 1023.9 | 1038.7 | 1109.2 |
| 120° | 834.8 | 797.8 | 855.2 | 907.1 | 1001.7 |
| 122.5° | 751.3 | 706.9 | 732.9 | 771.7 | 866.4 |
| 125° | 674.3 | 629.8 | 646.6 | 655.8 | 735.5 |
| 127.5° | 605.8 | 576.1 | 585.4 | 574.3 | 624.3 |
| 130° | 560.2 | 534.3 | 547.2 | 521.3 | 545.4 |
| 132.5° | 523.0 | 506.3 | 521.0 | 489.5 | 496.9 |
| 135° | 495.9 | 481.1 | 497.8 | 468.1 | 466.3 |
| 137.5° | 472.6 | 459.6 | 476.3 | 454.0 | 448.5 |
| 140° | 452.0 | 440.8 | 459.3 | 442.7 | 438.9 |
| 142.5° | 428.7 | 421.3 | 443.5 | 432.4 | 428.7 |
| 145° | 412.8 | 407.2 | 431.3 | 425.8 | 423.9 |
| 147.5° | 398.8 | 395.1 | 417.3 | 415.5 | 415.5 |
| 150° | 385.8 | 382.1 | 404.3 | 402.5 | 404.3 |
| 152.5° | 372.9 | 369.1 | 389.5 | 387.6 | 389.5 |
| 155° | 364.3 | 360.6 | 377.3 | 377.3 | 377.3 |
| 157.5° | 356.9 | 355.1 | 368.1 | 368.1 | 368.1 |
| 160° | 352.2 | 350.4 | 361.4 | 361.4 | 359.6 |
| 162.5° | 347.5 | 345.6 | 358.5 | 356.7 | 356.7 |
| 165° | 343.8 | 343.8 | 353.0 | 353.0 | 351.2 |
| 167.5° | 343.8 | 341.9 | 351.2 | 351.2 | 349.3 |
| 170° | 341.9 | 341.9 | 349.3 | 347.5 | 345.6 |
| 172.5° | 342.7 | 342.7 | 350.1 | 348.3 | 346.4 |
| 175° | 341.7 | 341.7 | 347.2 | 347.2 | 347.2 |
| 177.5° | 343.5 | 343.5 | 347.2 | 347.2 | 345.4 |
| 180° | 346.2 | 346.2 | 346.2 | 346.2 | 346.2 |



TEST NUMBER: P1433664
 CATALOG NUMBER: EHBR1-54-UNV-W-L935-UPL36

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 | 19.82 | 21.02 | 20.30 | 21.47 | 21.94 | 19.82 | 21.02 | 20.30 | 21.47 | 21.94 |
| | 3H | 21.32 | 22.39 | 21.81 | 22.85 | 23.37 | 21.32 | 22.39 | 21.81 | 22.85 | 23.37 |
| | 4H | 21.88 | 22.88 | 22.39 | 23.36 | 23.89 | 21.88 | 22.88 | 22.39 | 23.36 | 23.89 |
| | 6H | 22.27 | 23.18 | 22.79 | 23.68 | 24.22 | 22.27 | 23.18 | 22.79 | 23.68 | 24.22 |
| | 8H | 22.37 | 23.23 | 22.90 | 23.75 | 24.30 | 22.37 | 23.23 | 22.90 | 23.75 | 24.30 |
| | 12H | 22.40 | 23.23 | 22.94 | 23.74 | 24.32 | 22.40 | 23.23 | 22.94 | 23.74 | 24.32 |
| 4H | 2H | 20.27 | 21.26 | 20.78 | 21.74 | 22.28 | 20.27 | 21.26 | 20.78 | 21.74 | 22.28 |
| | 3H | 21.99 | 22.81 | 22.51 | 23.33 | 23.88 | 21.99 | 22.81 | 22.51 | 23.33 | 23.88 |
| | 4H | 22.66 | 23.40 | 23.21 | 23.93 | 24.53 | 22.66 | 23.40 | 23.21 | 23.93 | 24.53 |
| | 6H | 23.16 | 23.80 | 23.73 | 24.36 | 24.97 | 23.16 | 23.80 | 23.73 | 24.36 | 24.97 |
| | 8H | 23.29 | 23.89 | 23.87 | 24.45 | 25.06 | 23.29 | 23.89 | 23.87 | 24.45 | 25.06 |
| | 12H | 23.35 | 23.88 | 23.94 | 24.47 | 25.09 | 23.35 | 23.88 | 23.94 | 24.47 | 25.09 |
| 8H | 4H | 22.87 | 23.46 | 23.44 | 24.02 | 24.64 | 22.87 | 23.46 | 23.44 | 24.02 | 24.64 |
| | 6H | 23.46 | 23.95 | 24.07 | 24.55 | 25.18 | 23.46 | 23.95 | 24.07 | 24.55 | 25.18 |
| | 8H | 23.65 | 24.08 | 24.27 | 24.70 | 25.34 | 23.65 | 24.08 | 24.27 | 24.70 | 25.34 |
| | 12H | 23.76 | 24.14 | 24.37 | 24.74 | 25.45 | 23.76 | 24.14 | 24.37 | 24.74 | 25.45 |
| 12H | 4H | 22.86 | 23.39 | 23.45 | 23.98 | 24.60 | 22.86 | 23.39 | 23.45 | 23.98 | 24.60 |
| | 6H | 23.48 | 23.91 | 24.10 | 24.53 | 25.17 | 23.48 | 23.91 | 24.10 | 24.53 | 25.17 |
| | 8H | 23.70 | 24.09 | 24.32 | 24.69 | 25.40 | 23.70 | 24.09 | 24.32 | 24.69 | 25.40 |

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



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

Report Prepared for

Cooper Lighting Solutions

Metalux

Report Number: SP1-2506-472-6

Test Date: 08/01/2025

Luminaire Tested: EHBR-60-L935-N

Data in this report applies to families of products including EHBR-60-L935-N

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2506-472-6
 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-L935-N**
 Description: Elevate Round Highbay at, 60000 lumens, 3500K 90CRI LEDs with N lens

Spectral Parameters

CCT (K): 3406
 CIE u': 0.2394
 CIE v': 0.5094
 Duv: -0.0028
 CIE x: 0.4076
 CIE y: 0.3856
 CIE z: 0.2068
 Peak Wavelength (nm): 630
 Dominant Wavelength (nm): 582
 Purity: 38.0517
 Rf: 91.3
 Rg: 100

| | | | |
|-----------|------|------|------|
| CRI (Ra): | 94.6 | | |
| R1: | 96.6 | R9: | 63.8 |
| R2: | 98.4 | R10: | 94.7 |
| R3: | 98.1 | R11: | 96.6 |
| R4: | 95.8 | R12: | 80.9 |
| R5: | 96.2 | R13: | 97.4 |
| R6: | 95.4 | R14: | 98.3 |
| R7: | 91.8 | R15: | 93.1 |
| R8: | 84.4 | | |



Test Conditions

Stabilization Time: 35M
 Operation Time: 1H 35M
 Sphere Temperature (°C): 25.0

REPORT NUMBER: SP1-2506-472-6

| 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 |

REPORT NUMBER: SP1-2506-472-6

CIE 1931 Chromaticity Diagram



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



CCT = 3406K
 CIE x = 0.4076
 CIE y = 0.3856
 Duv = -0.0028

Point lies inside the ANSI 3500K 4-step quadrangle

REPORT NUMBER: SP1-2506-472-6

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 | 140 | NR | 620 | 338 | NR | 750 | 8 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 159 | NR | 625 | 339 | NR | 755 | 7 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 182 | NR | 630 | 1000 | NR | 760 | 5 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 202 | NR | 635 | 653 | NR | 765 | 5 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 216 | NR | 640 | 222 | NR | 770 | 4 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 228 | NR | 645 | 214 | NR | 775 | 3 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 236 | NR | 650 | 185 | NR | 780 | 3 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 242 | NR | 655 | 157 | NR | 785 | 3 | NR | 915 | 0 | NR |
| 400 | 2 | NR | 530 | 248 | NR | 660 | 133 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 3 | NR | 535 | 253 | NR | 665 | 113 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 4 | NR | 540 | 258 | NR | 670 | 103 | NR | 800 | 2 | NR | 930 | 0 | NR |
| 415 | 7 | NR | 545 | 264 | NR | 675 | 85 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 13 | NR | 550 | 270 | NR | 680 | 72 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 22 | NR | 555 | 278 | NR | 685 | 62 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 38 | NR | 560 | 286 | NR | 690 | 53 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 65 | NR | 565 | 295 | NR | 695 | 45 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 108 | NR | 570 | 303 | NR | 700 | 39 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 193 | NR | 575 | 311 | NR | 705 | 33 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 312 | NR | 580 | 319 | NR | 710 | 28 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 300 | NR | 585 | 326 | NR | 715 | 24 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 214 | NR | 590 | 332 | NR | 720 | 20 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 184 | NR | 595 | 333 | NR | 725 | 17 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 153 | NR | 600 | 336 | NR | 730 | 15 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 122 | NR | 605 | 337 | NR | 735 | 12 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 115 | NR | 610 | 367 | NR | 740 | 10 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 125 | NR | 615 | 390 | NR | 745 | 9 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2506-472-6

Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.62

| 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 | 140 | NR | 620 | 338 | NR | 750 | 8 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 159 | NR | 625 | 339 | NR | 755 | 7 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 182 | NR | 630 | 1000 | NR | 760 | 5 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 202 | NR | 635 | 653 | NR | 765 | 5 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 216 | NR | 640 | 222 | NR | 770 | 4 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 228 | NR | 645 | 214 | NR | 775 | 3 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 236 | NR | 650 | 185 | NR | 780 | 3 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 242 | NR | 655 | 157 | NR | 785 | 3 | NR | 915 | 0 | NR |
| 400 | 2 | NR | 530 | 248 | NR | 660 | 133 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 3 | NR | 535 | 253 | NR | 665 | 113 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 4 | NR | 540 | 258 | NR | 670 | 103 | NR | 800 | 2 | NR | 930 | 0 | NR |
| 415 | 7 | NR | 545 | 264 | NR | 675 | 85 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 13 | NR | 550 | 270 | NR | 680 | 72 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 22 | NR | 555 | 278 | NR | 685 | 62 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 38 | NR | 560 | 286 | NR | 690 | 53 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 65 | NR | 565 | 295 | NR | 695 | 45 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 108 | NR | 570 | 303 | NR | 700 | 39 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 193 | NR | 575 | 311 | NR | 705 | 33 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 312 | NR | 580 | 319 | NR | 710 | 28 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 300 | NR | 585 | 326 | NR | 715 | 24 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 214 | NR | 590 | 332 | NR | 720 | 20 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 184 | NR | 595 | 333 | NR | 725 | 17 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 153 | NR | 600 | 336 | NR | 730 | 15 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 122 | NR | 605 | 337 | NR | 735 | 12 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 115 | NR | 610 | 367 | NR | 740 | 10 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 125 | NR | 615 | 390 | NR | 745 | 9 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2506-472-6

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 3.3

| 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 | 140 | NR | 620 | 338 | NR | 750 | 8 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 159 | NR | 625 | 339 | NR | 755 | 7 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 182 | NR | 630 | 1000 | NR | 760 | 5 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 202 | NR | 635 | 653 | NR | 765 | 5 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 216 | NR | 640 | 222 | NR | 770 | 4 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 228 | NR | 645 | 214 | NR | 775 | 3 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 236 | NR | 650 | 185 | NR | 780 | 3 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 242 | NR | 655 | 157 | NR | 785 | 3 | NR | 915 | 0 | NR |
| 400 | 2 | NR | 530 | 248 | NR | 660 | 133 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 3 | NR | 535 | 253 | NR | 665 | 113 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 4 | NR | 540 | 258 | NR | 670 | 103 | NR | 800 | 2 | NR | 930 | 0 | NR |
| 415 | 7 | NR | 545 | 264 | NR | 675 | 85 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 13 | NR | 550 | 270 | NR | 680 | 72 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 22 | NR | 555 | 278 | NR | 685 | 62 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 38 | NR | 560 | 286 | NR | 690 | 53 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 65 | NR | 565 | 295 | NR | 695 | 45 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 108 | NR | 570 | 303 | NR | 700 | 39 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 193 | NR | 575 | 311 | NR | 705 | 33 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 312 | NR | 580 | 319 | NR | 710 | 28 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 300 | NR | 585 | 326 | NR | 715 | 24 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 214 | NR | 590 | 332 | NR | 720 | 20 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 184 | NR | 595 | 333 | NR | 725 | 17 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 153 | NR | 600 | 336 | NR | 730 | 15 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 122 | NR | 605 | 337 | NR | 735 | 12 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 115 | NR | 610 | 367 | NR | 740 | 10 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 125 | NR | 615 | 390 | NR | 745 | 9 | NR | 875 | 0 | NR | | | |

Summary

$R_f = 91.3$
 $R_g = 100$
 $CIE R_a = 94.6$
 $R_9 = 63.8$



Color Vector Graphics



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

| | | | |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 94 | CES51 = 97 | CES76 = 90 |
| CES02 = 63 | CES27 = 92 | CES52 = 98 | CES77 = 86 |
| CES03 = 31 | CES28 = 97 | CES53 = 98 | CES78 = 86 |
| CES04 = 70 | CES29 = 97 | CES54 = 93 | CES79 = 90 |
| CES05 = 50 | CES30 = 92 | CES55 = 92 | CES80 = 91 |
| CES06 = 51 | CES31 = 97 | CES56 = 96 | CES81 = 74 |
| CES07 = 43 | CES32 = 89 | CES57 = 94 | CES82 = 96 |
| CES08 = 41 | CES33 = 99 | CES58 = 95 | CES83 = 94 |
| CES09 = 29 | CES34 = 94 | CES59 = 98 | CES84 = 95 |
| CES10 = 75 | CES35 = 97 | CES60 = 92 | CES85 = 79 |
| CES11 = 58 | CES36 = 81 | CES61 = 93 | CES86 = 79 |
| CES12 = 64 | CES37 = 96 | CES62 = 86 | CES87 = 92 |
| CES13 = 44 | CES38 = 87 | CES63 = 94 | CES88 = 98 |
| CES14 = 74 | CES39 = 99 | CES64 = 91 | CES89 = 84 |
| CES15 = 72 | CES40 = 97 | CES65 = 90 | CES90 = 96 |
| CES16 = 48 | CES41 = 96 | CES66 = 89 | CES91 = 75 |
| CES17 = 49 | CES42 = 94 | CES67 = 88 | CES92 = 76 |
| CES18 = 56 | CES43 = 93 | CES68 = 89 | CES93 = 86 |
| CES19 = 71 | CES44 = 99 | CES69 = 90 | CES94 = 74 |
| CES20 = 67 | CES45 = 97 | CES70 = 88 | CES95 = 83 |
| CES21 = 86 | CES46 = 97 | CES71 = 83 | CES96 = 92 |
| CES22 = 78 | CES47 = 91 | CES72 = 94 | CES97 = 96 |
| CES23 = 91 | CES48 = 91 | CES73 = 83 | CES98 = 95 |
| CES24 = 90 | CES49 = 96 | CES74 = 90 | CES99 = 92 |
| CES25 = 71 | CES50 = 98 | CES75 = 85 | |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)