

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: P1433811

Luminaire Tested: EHBR1-30-UNV-N-L940-UPL12

Issue Date: 3/20/2026

Test Information

Test Method: LM-79-2019
Report Number: P1433811
REPORT IS A COMBINATION OF REPORTS P1431748 AND P1431635
Test Lab: INNOVATION CENTER
Issue Date: 3/20/2026
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: METALUX
Catalog Number: EHBR1-30-UNV-N-L940-UPL12
Description: Elevate Round Highbay at, 30000 lumens, 4000K 90CRI LEDs with N lens
Light Source: -
Ballast/Driver: -

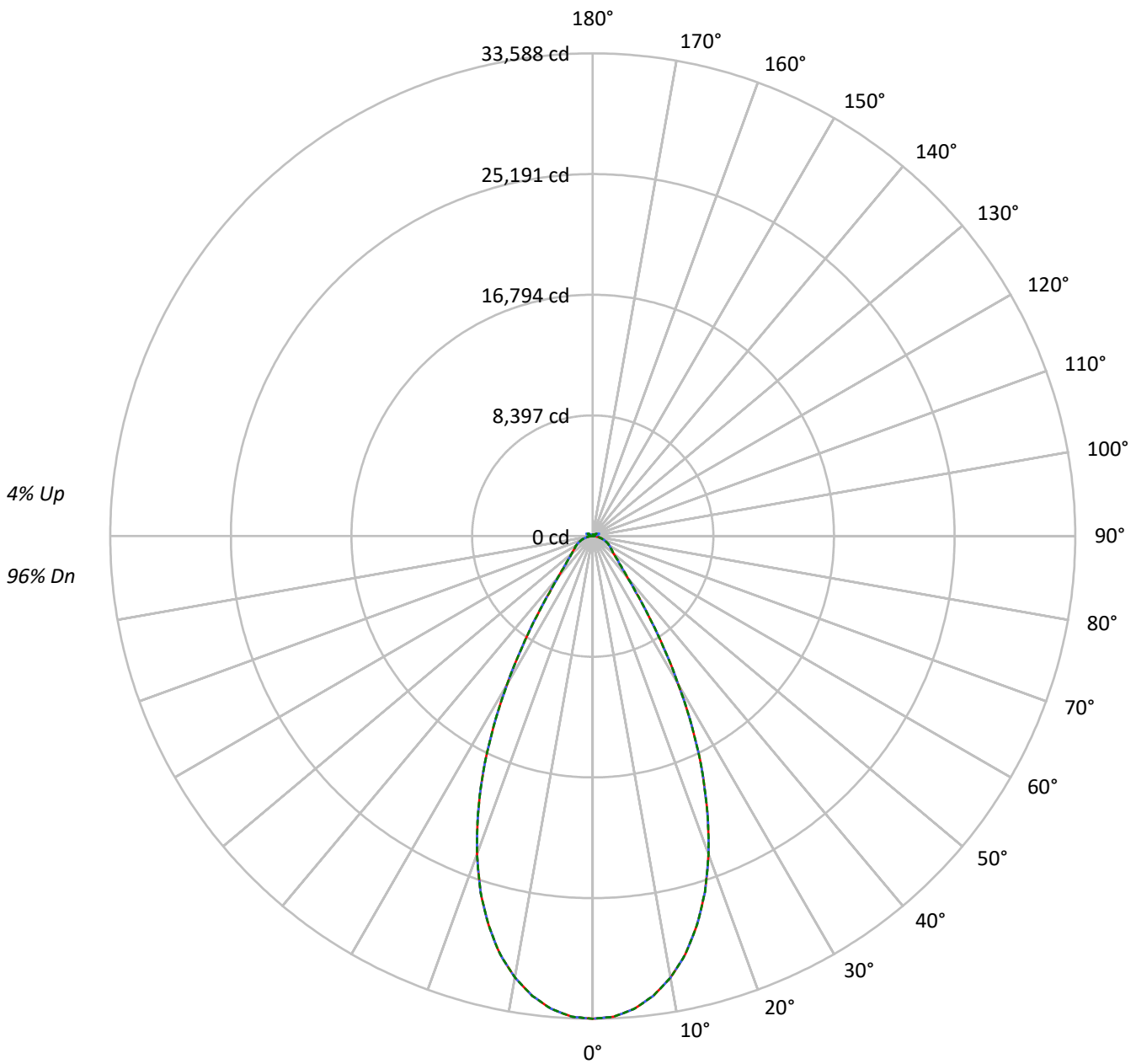
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 29877.4 lumens
Efficiency: N/A
Efficacy: 178.7 lumens/watt
Spacing Criteria (0/90/45): 0.82 / 0.82 / 0.8
Luminous Opening: Vertical Cylinder (Dia: 1.71' x H: 0.1')
CIE Type: Direct

Input Watts (W): 167.2
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: 24 FT

TEST NUMBER: P1433811
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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 | 118 | 118 | 118 | 118 | 115 | 115 | 115 | 115 | 109 | 109 | 109 | 104 | 104 | 104 | 99 | 99 | 99 | 99 | 99 | 99 | 96 |
| 1 | 111 | 108 | 105 | 103 | 108 | 106 | 103 | 101 | 101 | 99 | 97 | 96 | 95 | 93 | 92 | 91 | 90 | 92 | 91 | 90 | 88 |
| 2 | 105 | 99 | 94 | 90 | 102 | 97 | 93 | 89 | 93 | 90 | 87 | 90 | 87 | 84 | 86 | 84 | 82 | 86 | 84 | 82 | 80 |
| 3 | 99 | 91 | 86 | 81 | 96 | 90 | 84 | 80 | 86 | 82 | 79 | 84 | 80 | 77 | 81 | 78 | 75 | 81 | 78 | 75 | 73 |
| 4 | 93 | 85 | 78 | 74 | 91 | 83 | 78 | 73 | 81 | 76 | 72 | 78 | 74 | 71 | 76 | 72 | 69 | 76 | 72 | 69 | 68 |
| 5 | 88 | 79 | 72 | 68 | 86 | 78 | 72 | 67 | 75 | 70 | 66 | 73 | 69 | 65 | 71 | 67 | 64 | 71 | 67 | 64 | 63 |
| 6 | 83 | 74 | 67 | 62 | 82 | 73 | 67 | 62 | 71 | 65 | 61 | 69 | 64 | 61 | 67 | 63 | 60 | 67 | 63 | 60 | 58 |
| 7 | 79 | 69 | 63 | 58 | 78 | 68 | 62 | 58 | 67 | 61 | 57 | 65 | 60 | 57 | 64 | 59 | 56 | 64 | 59 | 56 | 54 |
| 8 | 75 | 65 | 59 | 54 | 74 | 64 | 58 | 54 | 63 | 57 | 54 | 61 | 57 | 53 | 60 | 56 | 53 | 60 | 56 | 53 | 51 |
| 9 | 72 | 61 | 55 | 51 | 70 | 61 | 55 | 51 | 59 | 54 | 50 | 58 | 53 | 50 | 57 | 53 | 50 | 57 | 53 | 50 | 48 |
| 10 | 68 | 58 | 52 | 48 | 67 | 57 | 52 | 48 | 56 | 51 | 47 | 55 | 50 | 47 | 54 | 50 | 47 | 54 | 50 | 47 | 45 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|--------|--------|--------|
| 0° | 157732 | 157732 | 157732 |
| 5° | 154670 | 154670 | 154670 |
| 10° | 146800 | 146800 | 146800 |
| 15° | 133569 | 133569 | 133569 |
| 20° | 114572 | 114572 | 114572 |
| 25° | 90129 | 90129 | 90129 |
| 30° | 61852 | 61852 | 61852 |
| 35° | 36742 | 36742 | 36742 |
| 40° | 21739 | 21739 | 21739 |
| 45° | 15605 | 15605 | 15605 |
| 50° | 12827 | 12827 | 12827 |
| 55° | 11658 | 11658 | 11658 |
| 60° | 11161 | 11161 | 11161 |
| 65° | 10645 | 10645 | 10645 |
| 70° | 9899 | 9899 | 9899 |
| 75° | 8949 | 8949 | 8949 |
| 80° | 7427 | 7427 | 7427 |
| 85° | 4702 | 4702 | 4702 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 15605 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 3094.0 | 10.4 |
| 10°-20° | 7766.4 | 26.0 |
| 20°-30° | 8120.5 | 27.2 |
| 30°-40° | 4400.0 | 14.7 |
| 40°-50° | 2024.2 | 6.8 |
| 50°-60° | 1426.5 | 4.8 |
| 60°-70° | 1097.8 | 3.7 |
| 70°-80° | 665.5 | 2.2 |
| 80°-90° | 189.4 | 0.6 |
| 90°-100° | 31.3 | 0.1 |
| 100°-110° | 195.3 | 0.7 |
| 110°-120° | 349.2 | 1.2 |
| 120°-130° | 204.9 | 0.7 |
| 130°-140° | 125.7 | 0.4 |
| 140°-150° | 87.2 | 0.3 |
| 150°-160° | 56.7 | 0.2 |
| 160°-170° | 32.3 | 0.1 |
| 170°-180° | 10.7 | 0.0 |
| 0°-30° | 18980.9 | 63.5 |
| 0°-40° | 23380.9 | 78.3 |
| 0°-60° | 26831.5 | 89.8 |
| 0°-90° | 28784.2 | 96.3 |
| 90°-120° | 575.8 | 1.9 |
| 90°-150° | 993.6 | 3.3 |
| 90°-180° | 1093.0 | 3.7 |
| 0°-180° | 29877.4 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|-------|-------|-------|-------|-------|------|
| 0° | 33588 | 33588 | 33588 | 33588 | 33588 | |
| 5° | 33024 | 33024 | 33024 | 33024 | 33024 | 3094 |
| 15° | 28022 | 28022 | 28022 | 28022 | 28022 | 7766 |
| 25° | 17999 | 17999 | 17999 | 17999 | 17999 | 8121 |
| 35° | 6744 | 6744 | 6744 | 6744 | 6744 | 4400 |
| 45° | 2525 | 2525 | 2525 | 2525 | 2525 | 2024 |
| 55° | 1576 | 1576 | 1576 | 1576 | 1576 | 1426 |
| 65° | 1111 | 1111 | 1111 | 1111 | 1111 | 1098 |
| 75° | 630 | 630 | 630 | 630 | 630 | 666 |
| 85° | 162 | 162 | 162 | 162 | 162 | 179 |
| 90° | 9 | 14 | 24 | 15 | 9 | 12 |
| 95° | 14 | 23 | 51 | 25 | 16 | 13 |
| 105° | 68 | 134 | 344 | 148 | 90 | 91 |
| 115° | 314 | 330 | 406 | 389 | 387 | 289 |
| 125° | 226 | 212 | 217 | 220 | 247 | 207 |
| 135° | 165 | 160 | 166 | 156 | 155 | 129 |
| 145° | 136 | 134 | 142 | 140 | 140 | 86 |
| 155° | 119 | 118 | 123 | 123 | 123 | 55 |
| 165° | 111 | 111 | 114 | 114 | 114 | 32 |
| 175° | 110 | 110 | 112 | 112 | 112 | 11 |
| 180° | 111 | 111 | 111 | 111 | 111 | |



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CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|---------|---------|---------|---------|---------|
| 0° | 33587.9 | 33587.9 | 33587.9 | 33587.9 | 33587.9 |
| 2.5° | 33468.7 | 33468.7 | 33468.7 | 33468.7 | 33468.7 |
| 5° | 33024.4 | 33024.4 | 33024.4 | 33024.4 | 33024.4 |
| 7.5° | 32265.9 | 32265.9 | 32265.9 | 32265.9 | 32265.9 |
| 10° | 31189.6 | 31189.6 | 31189.6 | 31189.6 | 31189.6 |
| 12.5° | 29798.8 | 29798.8 | 29798.8 | 29798.8 | 29798.8 |
| 15° | 28022.0 | 28022.0 | 28022.0 | 28022.0 | 28022.0 |
| 17.5° | 25960.5 | 25960.5 | 25960.5 | 25960.5 | 25960.5 |
| 20° | 23547.9 | 23547.9 | 23547.9 | 23547.9 | 23547.9 |
| 22.5° | 20861.8 | 20861.8 | 20861.8 | 20861.8 | 20861.8 |
| 25° | 17998.7 | 17998.7 | 17998.7 | 17998.7 | 17998.7 |
| 27.5° | 14963.4 | 14963.4 | 14963.4 | 14963.4 | 14963.4 |
| 30° | 11897.1 | 11897.1 | 11897.1 | 11897.1 | 11897.1 |
| 32.5° | 9130.7 | 9130.7 | 9130.7 | 9130.7 | 9130.7 |
| 35° | 6743.5 | 6743.5 | 6743.5 | 6743.5 | 6743.5 |
| 37.5° | 4951.3 | 4951.3 | 4951.3 | 4951.3 | 4951.3 |
| 40° | 3768.0 | 3768.0 | 3768.0 | 3768.0 | 3768.0 |
| 42.5° | 3021.4 | 3021.4 | 3021.4 | 3021.4 | 3021.4 |
| 45° | 2524.9 | 2524.9 | 2524.9 | 2524.9 | 2524.9 |
| 47.5° | 2167.2 | 2167.2 | 2167.2 | 2167.2 | 2167.2 |
| 50° | 1911.7 | 1911.7 | 1911.7 | 1911.7 | 1911.7 |
| 52.5° | 1725.2 | 1725.2 | 1725.2 | 1725.2 | 1725.2 |
| 55° | 1575.5 | 1575.5 | 1575.5 | 1575.5 | 1575.5 |
| 57.5° | 1454.0 | 1454.0 | 1454.0 | 1454.0 | 1454.0 |
| 60° | 1341.7 | 1341.7 | 1341.7 | 1341.7 | 1341.7 |
| 62.5° | 1229.2 | 1229.2 | 1229.2 | 1229.2 | 1229.2 |
| 65° | 1111.1 | 1111.1 | 1111.1 | 1111.1 | 1111.1 |
| 67.5° | 990.5 | 990.5 | 990.5 | 990.5 | 990.5 |
| 70° | 868.6 | 868.6 | 868.6 | 868.6 | 868.6 |
| 72.5° | 750.0 | 750.0 | 750.0 | 750.0 | 750.0 |
| 75° | 630.4 | 630.4 | 630.4 | 630.4 | 630.4 |
| 77.5° | 513.2 | 513.2 | 513.2 | 513.2 | 513.2 |
| 80° | 390.7 | 390.7 | 390.7 | 390.7 | 390.7 |
| 82.5° | 273.6 | 273.6 | 273.6 | 273.6 | 273.6 |
| 85° | 161.6 | 161.6 | 161.6 | 161.6 | 161.6 |
| 87.5° | 57.9 | 57.9 | 57.9 | 57.9 | 57.9 |
| 90° | 9.0 | 14.1 | 23.5 | 15.3 | 9.0 |
| 92.5° | 11.9 | 20.0 | 36.3 | 18.7 | 10.6 |
| 95° | 13.8 | 23.1 | 50.7 | 25.1 | 15.7 |
| 97.5° | 17.5 | 25.6 | 58.2 | 30.7 | 24.4 |
| 100° | 23.1 | 30.0 | 90.7 | 37.5 | 32.5 |
| 102.5° | 39.4 | 63.8 | 192.8 | 70.7 | 49.5 |
| 105° | 68.2 | 134.5 | 343.5 | 148.3 | 90.1 |
| 107.5° | 118.2 | 240.9 | 453.0 | 262.8 | 170.9 |
| 110° | 220.9 | 319.7 | 475.0 | 361.0 | 273.4 |



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CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 298.5 | 343.5 | 454.9 | 398.6 | 356.0 |
| 115° | 314.2 | 330.4 | 406.1 | 389.1 | 386.7 |
| 117.5° | 303.4 | 301.6 | 344.8 | 349.7 | 373.6 |
| 120° | 281.0 | 268.4 | 287.8 | 305.3 | 337.3 |
| 122.5° | 252.8 | 237.8 | 246.5 | 259.6 | 291.6 |
| 125° | 226.5 | 211.5 | 217.2 | 220.2 | 247.2 |
| 127.5° | 203.4 | 193.3 | 196.5 | 192.8 | 209.6 |
| 130° | 187.7 | 179.0 | 183.3 | 174.6 | 182.7 |
| 132.5° | 174.6 | 168.9 | 173.9 | 163.3 | 165.8 |
| 135° | 165.2 | 160.1 | 165.8 | 155.8 | 155.2 |
| 137.5° | 157.1 | 152.7 | 158.3 | 150.8 | 148.9 |
| 140° | 149.5 | 145.8 | 152.0 | 146.5 | 145.2 |
| 142.5° | 141.4 | 138.9 | 146.5 | 142.6 | 141.4 |
| 145° | 135.7 | 133.9 | 142.1 | 140.1 | 139.6 |
| 147.5° | 130.8 | 129.5 | 137.0 | 136.4 | 136.4 |
| 150° | 126.4 | 125.1 | 132.7 | 132.0 | 132.7 |
| 152.5° | 122.0 | 120.7 | 127.6 | 127.0 | 127.6 |
| 155° | 118.9 | 117.7 | 123.3 | 123.3 | 123.3 |
| 157.5° | 116.4 | 115.7 | 120.2 | 120.2 | 120.2 |
| 160° | 114.5 | 113.8 | 117.7 | 117.7 | 117.0 |
| 162.5° | 112.6 | 112.0 | 116.4 | 115.7 | 115.7 |
| 165° | 111.3 | 111.3 | 114.5 | 114.5 | 113.8 |
| 167.5° | 111.3 | 110.8 | 113.8 | 113.8 | 113.3 |
| 170° | 110.8 | 110.8 | 113.3 | 112.6 | 112.0 |
| 172.5° | 110.8 | 110.8 | 113.3 | 112.6 | 112.0 |
| 175° | 110.1 | 110.1 | 112.0 | 112.0 | 112.0 |
| 177.5° | 110.8 | 110.8 | 112.0 | 112.0 | 111.3 |
| 180° | 111.3 | 111.3 | 111.3 | 111.3 | 111.3 |



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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 | 16.71 | 17.82 | 17.15 | 18.21 | 18.62 | 16.71 | 17.82 | 17.15 | 18.21 | 18.62 |
| | 3H | 18.49 | 19.48 | 18.94 | 19.89 | 20.35 | 18.49 | 19.48 | 18.94 | 19.89 | 20.35 |
| | 4H | 19.15 | 20.07 | 19.62 | 20.50 | 20.98 | 19.15 | 20.07 | 19.62 | 20.50 | 20.98 |
| | 6H | 19.61 | 20.46 | 20.10 | 20.90 | 21.39 | 19.61 | 20.46 | 20.10 | 20.90 | 21.39 |
| | 8H | 19.74 | 20.53 | 20.24 | 21.00 | 21.50 | 19.74 | 20.53 | 20.24 | 21.00 | 21.50 |
| | 12H | 19.79 | 20.55 | 20.29 | 21.01 | 21.53 | 19.79 | 20.55 | 20.29 | 21.01 | 21.53 |
| 4H | 2H | 17.26 | 18.17 | 17.73 | 18.60 | 19.08 | 17.26 | 18.17 | 17.73 | 18.60 | 19.08 |
| | 3H | 19.23 | 19.99 | 19.71 | 20.46 | 20.96 | 19.23 | 19.99 | 19.71 | 20.46 | 20.96 |
| | 4H | 20.00 | 20.68 | 20.50 | 21.17 | 21.71 | 20.00 | 20.68 | 20.50 | 21.17 | 21.71 |
| | 6H | 20.57 | 21.16 | 21.10 | 21.68 | 22.23 | 20.57 | 21.16 | 21.10 | 21.68 | 22.23 |
| | 8H | 20.73 | 21.28 | 21.27 | 21.79 | 22.35 | 20.73 | 21.28 | 21.27 | 21.79 | 22.35 |
| | 12H | 20.81 | 21.29 | 21.36 | 21.84 | 22.40 | 20.81 | 21.29 | 21.36 | 21.84 | 22.40 |
| 8H | 4H | 20.23 | 20.78 | 20.77 | 21.29 | 21.85 | 20.23 | 20.78 | 20.77 | 21.29 | 21.85 |
| | 6H | 20.92 | 21.36 | 21.48 | 21.92 | 22.49 | 20.92 | 21.36 | 21.48 | 21.92 | 22.49 |
| | 8H | 21.14 | 21.53 | 21.72 | 22.11 | 22.69 | 21.14 | 21.53 | 21.72 | 22.11 | 22.69 |
| | 12H | 21.28 | 21.62 | 21.86 | 22.18 | 22.84 | 21.28 | 21.62 | 21.86 | 22.18 | 22.84 |
| 12H | 4H | 20.23 | 20.71 | 20.78 | 21.26 | 21.82 | 20.23 | 20.71 | 20.78 | 21.26 | 21.82 |
| | 6H | 20.94 | 21.33 | 21.53 | 21.91 | 22.49 | 20.94 | 21.33 | 21.53 | 21.91 | 22.49 |
| | 8H | 21.20 | 21.54 | 21.78 | 22.11 | 22.76 | 21.20 | 21.54 | 21.78 | 22.11 | 22.76 |

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

Report Prepared for

Cooper Lighting Solutions

Metalux

Report Number: SP1-2506-472-7

Test Date: 08/04/2025

Luminaire Tested: EHBR-60-L940-N

Data in this report applies to families of products including EHBR-60-L940-N

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2506-472-7
 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-L940-N**
 Description: Elevate Round Highbay at, 60000 lumens, 4000K 90CRI LEDs with N lens

Spectral Parameters

CCT (K): 3963
 CIE u': 0.2267
 CIE v': 0.5003
 Duv: -0.0016
 CIE x: 0.3810
 CIE y: 0.3738
 CIE z: 0.2453
 Peak Wavelength (nm): 630
 Dominant Wavelength (nm): 580
 Purity: 26.49712
 Rf: 90.7
 Rg: 101

| | | | |
|-----------|------|------|------|
| CRI (Ra): | 93.4 | | |
| R1: | 95.2 | R9: | 66.4 |
| R2: | 95.1 | R10: | 86.6 |
| R3: | 93.3 | R11: | 94.4 |
| R4: | 94.5 | R12: | 75.4 |
| R5: | 94.2 | R13: | 95.0 |
| R6: | 92.9 | R14: | 95.4 |
| R7: | 94.0 | R15: | 92.8 |
| R8: | 87.7 | | |



Test Conditions

Stabilization Time: 44M
 Operation Time: 1H 44M
 Sphere Temperature (°C): 25.0

REPORT NUMBER: SP1-2506-472-7

| 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 | 141 | NR | 620 | 276 | NR | 750 | 5 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 167 | NR | 625 | 279 | NR | 755 | 4 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 193 | NR | 630 | 1000 | NR | 760 | 4 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 215 | NR | 635 | 628 | NR | 765 | 3 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 230 | NR | 640 | 164 | NR | 770 | 3 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 243 | NR | 645 | 161 | NR | 775 | 2 | NR | 905 | 0 | NR |
| 390 | 1 | NR | 520 | 251 | NR | 650 | 137 | NR | 780 | 2 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 256 | NR | 655 | 111 | NR | 785 | 2 | NR | 915 | 0 | NR |
| 400 | 3 | NR | 530 | 262 | NR | 660 | 92 | NR | 790 | 1 | NR | 920 | 0 | NR |
| 405 | 4 | NR | 535 | 267 | NR | 665 | 76 | NR | 795 | 1 | NR | 925 | 0 | NR |
| 410 | 6 | NR | 540 | 271 | NR | 670 | 71 | NR | 800 | 1 | NR | 930 | 0 | NR |
| 415 | 11 | NR | 545 | 276 | NR | 675 | 56 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 20 | NR | 550 | 280 | NR | 680 | 47 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 37 | NR | 555 | 285 | NR | 685 | 40 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 63 | NR | 560 | 290 | NR | 690 | 34 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 108 | NR | 565 | 294 | NR | 695 | 29 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 186 | NR | 570 | 296 | NR | 700 | 25 | NR | 830 | 0 | NR | 960 | 0 | NR |
| 445 | 323 | NR | 575 | 298 | NR | 705 | 21 | NR | 835 | 0 | NR | 965 | 0 | NR |
| 450 | 403 | NR | 580 | 299 | NR | 710 | 18 | NR | 840 | 0 | NR | 970 | 0 | NR |
| 455 | 293 | NR | 585 | 298 | NR | 715 | 15 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 214 | NR | 590 | 296 | NR | 720 | 13 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 180 | NR | 595 | 288 | NR | 725 | 11 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 132 | NR | 600 | 286 | NR | 730 | 9 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 109 | NR | 605 | 282 | NR | 735 | 8 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 110 | NR | 610 | 311 | NR | 740 | 7 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 121 | NR | 615 | 334 | NR | 745 | 6 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2506-472-7

Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.76

| 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 | 141 | NR | 620 | 276 | NR | 750 | 5 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 167 | NR | 625 | 279 | NR | 755 | 4 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 193 | NR | 630 | 1000 | NR | 760 | 4 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 215 | NR | 635 | 628 | NR | 765 | 3 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 230 | NR | 640 | 164 | NR | 770 | 3 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 243 | NR | 645 | 161 | NR | 775 | 2 | NR | 905 | 0 | NR |
| 390 | 1 | NR | 520 | 251 | NR | 650 | 137 | NR | 780 | 2 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 256 | NR | 655 | 111 | NR | 785 | 2 | NR | 915 | 0 | NR |
| 400 | 3 | NR | 530 | 262 | NR | 660 | 92 | NR | 790 | 1 | NR | 920 | 0 | NR |
| 405 | 4 | NR | 535 | 267 | NR | 665 | 76 | NR | 795 | 1 | NR | 925 | 0 | NR |
| 410 | 6 | NR | 540 | 271 | NR | 670 | 71 | NR | 800 | 1 | NR | 930 | 0 | NR |
| 415 | 11 | NR | 545 | 276 | NR | 675 | 56 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 20 | NR | 550 | 280 | NR | 680 | 47 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 37 | NR | 555 | 285 | NR | 685 | 40 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 63 | NR | 560 | 290 | NR | 690 | 34 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 108 | NR | 565 | 294 | NR | 695 | 29 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 186 | NR | 570 | 296 | NR | 700 | 25 | NR | 830 | 0 | NR | 960 | 0 | NR |
| 445 | 323 | NR | 575 | 298 | NR | 705 | 21 | NR | 835 | 0 | NR | 965 | 0 | NR |
| 450 | 403 | NR | 580 | 299 | NR | 710 | 18 | NR | 840 | 0 | NR | 970 | 0 | NR |
| 455 | 293 | NR | 585 | 298 | NR | 715 | 15 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 214 | NR | 590 | 296 | NR | 720 | 13 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 180 | NR | 595 | 288 | NR | 725 | 11 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 132 | NR | 600 | 286 | NR | 730 | 9 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 109 | NR | 605 | 282 | NR | 735 | 8 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 110 | NR | 610 | 311 | NR | 740 | 7 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 121 | NR | 615 | 334 | NR | 745 | 6 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2506-472-7

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 3.64

| 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 | 141 | NR | 620 | 276 | NR | 750 | 5 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 167 | NR | 625 | 279 | NR | 755 | 4 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 193 | NR | 630 | 1000 | NR | 760 | 4 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 215 | NR | 635 | 628 | NR | 765 | 3 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 230 | NR | 640 | 164 | NR | 770 | 3 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 243 | NR | 645 | 161 | NR | 775 | 2 | NR | 905 | 0 | NR |
| 390 | 1 | NR | 520 | 251 | NR | 650 | 137 | NR | 780 | 2 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 256 | NR | 655 | 111 | NR | 785 | 2 | NR | 915 | 0 | NR |
| 400 | 3 | NR | 530 | 262 | NR | 660 | 92 | NR | 790 | 1 | NR | 920 | 0 | NR |
| 405 | 4 | NR | 535 | 267 | NR | 665 | 76 | NR | 795 | 1 | NR | 925 | 0 | NR |
| 410 | 6 | NR | 540 | 271 | NR | 670 | 71 | NR | 800 | 1 | NR | 930 | 0 | NR |
| 415 | 11 | NR | 545 | 276 | NR | 675 | 56 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 20 | NR | 550 | 280 | NR | 680 | 47 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 37 | NR | 555 | 285 | NR | 685 | 40 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 63 | NR | 560 | 290 | NR | 690 | 34 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 108 | NR | 565 | 294 | NR | 695 | 29 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 186 | NR | 570 | 296 | NR | 700 | 25 | NR | 830 | 0 | NR | 960 | 0 | NR |
| 445 | 323 | NR | 575 | 298 | NR | 705 | 21 | NR | 835 | 0 | NR | 965 | 0 | NR |
| 450 | 403 | NR | 580 | 299 | NR | 710 | 18 | NR | 840 | 0 | NR | 970 | 0 | NR |
| 455 | 293 | NR | 585 | 298 | NR | 715 | 15 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 214 | NR | 590 | 296 | NR | 720 | 13 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 180 | NR | 595 | 288 | NR | 725 | 11 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 132 | NR | 600 | 286 | NR | 730 | 9 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 109 | NR | 605 | 282 | NR | 735 | 8 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 110 | NR | 610 | 311 | NR | 740 | 7 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 121 | NR | 615 | 334 | NR | 745 | 6 | NR | 875 | 0 | NR | | | |

Summary

$R_f = 90.7$
 $R_g = 101$
 $CIE R_a = 93.4$
 $R_9 = 66.4$



Color Vector Graphics



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

| | | | |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 90 | CES51 = 99 | CES76 = 83 |
| CES02 = 62 | CES27 = 93 | CES52 = 97 | CES77 = 87 |
| CES03 = 31 | CES28 = 94 | CES53 = 95 | CES78 = 79 |
| CES04 = 69 | CES29 = 91 | CES54 = 96 | CES79 = 94 |
| CES05 = 49 | CES30 = 98 | CES55 = 95 | CES80 = 91 |
| CES06 = 50 | CES31 = 92 | CES56 = 95 | CES81 = 80 |
| CES07 = 42 | CES32 = 84 | CES57 = 94 | CES82 = 96 |
| CES08 = 41 | CES33 = 95 | CES58 = 95 | CES83 = 95 |
| CES09 = 29 | CES34 = 90 | CES59 = 98 | CES84 = 93 |
| CES10 = 74 | CES35 = 94 | CES60 = 93 | CES85 = 82 |
| CES11 = 57 | CES36 = 84 | CES61 = 93 | CES86 = 84 |
| CES12 = 63 | CES37 = 92 | CES62 = 90 | CES87 = 90 |
| CES13 = 43 | CES38 = 93 | CES63 = 92 | CES88 = 97 |
| CES14 = 74 | CES39 = 98 | CES64 = 91 | CES89 = 84 |
| CES15 = 71 | CES40 = 96 | CES65 = 88 | CES90 = 99 |
| CES16 = 47 | CES41 = 98 | CES66 = 88 | CES91 = 74 |
| CES17 = 49 | CES42 = 89 | CES67 = 87 | CES92 = 78 |
| CES18 = 56 | CES43 = 89 | CES68 = 87 | CES93 = 87 |
| CES19 = 71 | CES44 = 99 | CES69 = 88 | CES94 = 75 |
| CES20 = 66 | CES45 = 93 | CES70 = 84 | CES95 = 83 |
| CES21 = 85 | CES46 = 95 | CES71 = 80 | CES96 = 91 |
| CES22 = 78 | CES47 = 92 | CES72 = 93 | CES97 = 93 |
| CES23 = 91 | CES48 = 96 | CES73 = 78 | CES98 = 93 |
| CES24 = 90 | CES49 = 93 | CES74 = 92 | CES99 = 94 |
| CES25 = 71 | CES50 = 99 | CES75 = 81 | |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)