

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: P1436424

Luminaire Tested: EHBR1-18-UNV-M-L930-UPL36

Issue Date: 3/25/2026

Test Information

Test Method: LM-79-2019
Report Number: P1436424
REPORT IS A COMBINATION OF REPORTS P1436064 AND P1431635
Test Lab: INNOVATION CENTER
Issue Date: 3/25/2026
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: METALUX
Catalog Number: EHBR1-18-UNV-M-L930-UPL36
Description: Elevate Round Highbay at, 18000 lumens, 3000K 90CRI LEDs with M lens
Light Source: -
Ballast/Driver: -

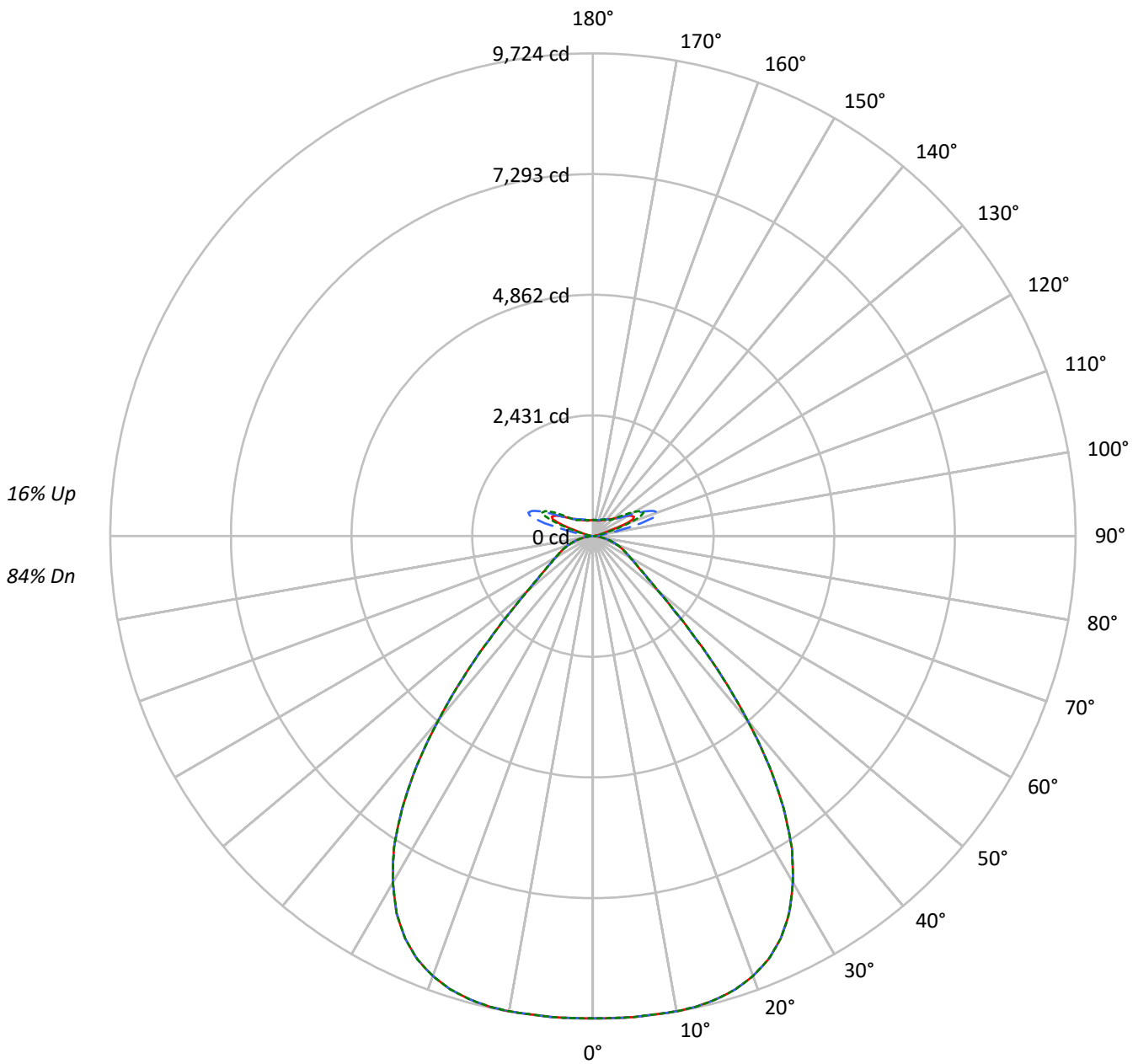
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 19631.5 lumens
Efficiency: N/A
Efficacy: 159.5 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): 123.1
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: P1436424
CATALOG NUMBER: EHBR1-18-UNV-M-L930-UPL36

Luminous Intensity Polar Plot



— 0°-180° - - 45°-225° - - - 90°-270°



TEST NUMBER: P1436424
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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 | 115 | 115 | 115 | 115 | 111 | 111 | 111 | 111 | 102 | 102 | 102 | 94 | 94 | 94 | 87 | 87 | 87 | 87 | 87 | 87 | 84 |
| 1 | 108 | 104 | 101 | 98 | 103 | 100 | 97 | 95 | 93 | 91 | 89 | 87 | 85 | 83 | 81 | 79 | 78 | 78 | 78 | 78 | 75 |
| 2 | 100 | 94 | 88 | 84 | 96 | 90 | 86 | 82 | 85 | 81 | 77 | 79 | 76 | 73 | 74 | 72 | 70 | 70 | 70 | 70 | 67 |
| 3 | 93 | 85 | 78 | 73 | 89 | 82 | 76 | 72 | 77 | 72 | 68 | 72 | 68 | 65 | 68 | 65 | 62 | 62 | 62 | 62 | 60 |
| 4 | 87 | 77 | 70 | 65 | 83 | 75 | 68 | 63 | 70 | 65 | 61 | 66 | 62 | 58 | 63 | 59 | 56 | 56 | 56 | 56 | 54 |
| 5 | 81 | 70 | 63 | 58 | 78 | 68 | 62 | 57 | 64 | 59 | 55 | 61 | 56 | 53 | 58 | 54 | 51 | 51 | 51 | 51 | 48 |
| 6 | 75 | 64 | 57 | 52 | 73 | 63 | 56 | 51 | 59 | 54 | 49 | 56 | 51 | 48 | 53 | 49 | 46 | 46 | 46 | 46 | 44 |
| 7 | 71 | 59 | 52 | 47 | 68 | 58 | 51 | 46 | 55 | 49 | 45 | 52 | 47 | 43 | 50 | 45 | 42 | 42 | 42 | 42 | 40 |
| 8 | 66 | 55 | 47 | 42 | 64 | 53 | 47 | 42 | 51 | 45 | 41 | 48 | 43 | 40 | 46 | 42 | 38 | 38 | 38 | 38 | 37 |
| 9 | 62 | 51 | 44 | 39 | 60 | 49 | 43 | 38 | 47 | 41 | 37 | 45 | 40 | 36 | 43 | 39 | 35 | 35 | 35 | 35 | 34 |
| 10 | 59 | 47 | 40 | 36 | 57 | 46 | 40 | 35 | 44 | 38 | 34 | 42 | 37 | 34 | 40 | 36 | 33 | 33 | 33 | 33 | 31 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|-------|-------|-------|
| 0° | 45618 | 45618 | 45618 |
| 5° | 45540 | 45540 | 45540 |
| 10° | 45754 | 45754 | 45754 |
| 15° | 46017 | 46017 | 46017 |
| 20° | 45877 | 45877 | 45877 |
| 25° | 44806 | 44806 | 44806 |
| 30° | 41897 | 41897 | 41897 |
| 35° | 36488 | 36488 | 36488 |
| 40° | 27964 | 27964 | 27964 |
| 45° | 18268 | 18268 | 18268 |
| 50° | 11516 | 11516 | 11516 |
| 55° | 8585 | 8585 | 8585 |
| 60° | 7228 | 7228 | 7228 |
| 65° | 6572 | 6572 | 6572 |
| 70° | 5987 | 5987 | 5987 |
| 75° | 5126 | 5126 | 5126 |
| 80° | 3946 | 3946 | 3946 |
| 85° | 2069 | 2069 | 2069 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 18268 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 927.8 | 4.7 |
| 10°-20° | 2724.6 | 13.9 |
| 20°-30° | 4088.2 | 20.8 |
| 30°-40° | 4113.1 | 21.0 |
| 40°-50° | 2354.5 | 12.0 |
| 50°-60° | 1076.9 | 5.5 |
| 60°-70° | 683.3 | 3.5 |
| 70°-80° | 383.3 | 2.0 |
| 80°-90° | 95.7 | 0.5 |
| 90°-100° | 90.8 | 0.5 |
| 100°-110° | 568.9 | 2.9 |
| 110°-120° | 1017.3 | 5.2 |
| 120°-130° | 596.9 | 3.0 |
| 130°-140° | 366.2 | 1.9 |
| 140°-150° | 254.0 | 1.3 |
| 150°-160° | 165.0 | 0.8 |
| 160°-170° | 94.0 | 0.5 |
| 170°-180° | 31.1 | 0.2 |
| 0°-30° | 7740.6 | 39.4 |
| 0°-40° | 11853.7 | 60.4 |
| 0°-60° | 15285.1 | 77.9 |
| 0°-90° | 16447.3 | 83.8 |
| 90°-120° | 1677.0 | 8.5 |
| 90°-150° | 2894.1 | 14.7 |
| 90°-180° | 3184.0 | 16.2 |
| 0°-180° | 19631.5 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 9714 | 9714 | 9714 | 9714 | 9714 | |
| 5° | 9724 | 9724 | 9724 | 9724 | 9724 | 928 |
| 15° | 9654 | 9654 | 9654 | 9654 | 9654 | 2725 |
| 25° | 8948 | 8948 | 8948 | 8948 | 8948 | 4088 |
| 35° | 6697 | 6697 | 6697 | 6697 | 6697 | 4113 |
| 45° | 2956 | 2956 | 2956 | 2956 | 2956 | 2354 |
| 55° | 1160 | 1160 | 1160 | 1160 | 1160 | 1077 |
| 65° | 686 | 686 | 686 | 686 | 686 | 683 |
| 75° | 361 | 361 | 361 | 361 | 361 | 383 |
| 85° | 71 | 71 | 71 | 71 | 71 | 87 |
| 90° | 24 | 38 | 66 | 42 | 24 | 14 |
| 95° | 40 | 68 | 148 | 73 | 46 | 39 |
| 105° | 199 | 392 | 1001 | 432 | 262 | 266 |
| 115° | 915 | 962 | 1183 | 1134 | 1126 | 843 |
| 125° | 660 | 616 | 632 | 642 | 720 | 601 |
| 135° | 481 | 467 | 483 | 454 | 452 | 376 |
| 145° | 396 | 390 | 414 | 408 | 406 | 251 |
| 155° | 346 | 343 | 359 | 359 | 359 | 162 |
| 165° | 324 | 324 | 334 | 334 | 332 | 93 |
| 175° | 321 | 321 | 326 | 326 | 326 | 31 |
| 180° | 324 | 324 | 324 | 324 | 324 | |



TEST NUMBER: P1436424

CATALOG NUMBER: EHBR1-18-UNV-M-L930-UPL36

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 9714.0 | 9714.0 | 9714.0 | 9714.0 | 9714.0 |
| 2.5° | 9718.9 | 9718.9 | 9718.9 | 9718.9 | 9718.9 |
| 5° | 9723.6 | 9723.6 | 9723.6 | 9723.6 | 9723.6 |
| 7.5° | 9716.9 | 9716.9 | 9716.9 | 9716.9 | 9716.9 |
| 10° | 9721.0 | 9721.0 | 9721.0 | 9721.0 | 9721.0 |
| 12.5° | 9704.3 | 9704.3 | 9704.3 | 9704.3 | 9704.3 |
| 15° | 9654.1 | 9654.1 | 9654.1 | 9654.1 | 9654.1 |
| 17.5° | 9570.9 | 9570.9 | 9570.9 | 9570.9 | 9570.9 |
| 20° | 9429.1 | 9429.1 | 9429.1 | 9429.1 | 9429.1 |
| 22.5° | 9234.3 | 9234.3 | 9234.3 | 9234.3 | 9234.3 |
| 25° | 8947.7 | 8947.7 | 8947.7 | 8947.7 | 8947.7 |
| 27.5° | 8562.2 | 8562.2 | 8562.2 | 8562.2 | 8562.2 |
| 30° | 8058.9 | 8058.9 | 8058.9 | 8058.9 | 8058.9 |
| 32.5° | 7462.9 | 7462.9 | 7462.9 | 7462.9 | 7462.9 |
| 35° | 6696.9 | 6696.9 | 6696.9 | 6696.9 | 6696.9 |
| 37.5° | 5829.2 | 5829.2 | 5829.2 | 5829.2 | 5829.2 |
| 40° | 4846.9 | 4846.9 | 4846.9 | 4846.9 | 4846.9 |
| 42.5° | 3873.2 | 3873.2 | 3873.2 | 3873.2 | 3873.2 |
| 45° | 2955.7 | 2955.7 | 2955.7 | 2955.7 | 2955.7 |
| 47.5° | 2225.0 | 2225.0 | 2225.0 | 2225.0 | 2225.0 |
| 50° | 1716.3 | 1716.3 | 1716.3 | 1716.3 | 1716.3 |
| 52.5° | 1386.7 | 1386.7 | 1386.7 | 1386.7 | 1386.7 |
| 55° | 1160.2 | 1160.2 | 1160.2 | 1160.2 | 1160.2 |
| 57.5° | 993.4 | 993.4 | 993.4 | 993.4 | 993.4 |
| 60° | 868.9 | 868.9 | 868.9 | 868.9 | 868.9 |
| 62.5° | 772.7 | 772.7 | 772.7 | 772.7 | 772.7 |
| 65° | 686.0 | 686.0 | 686.0 | 686.0 | 686.0 |
| 67.5° | 606.2 | 606.2 | 606.2 | 606.2 | 606.2 |
| 70° | 525.3 | 525.3 | 525.3 | 525.3 | 525.3 |
| 72.5° | 443.9 | 443.9 | 443.9 | 443.9 | 443.9 |
| 75° | 361.1 | 361.1 | 361.1 | 361.1 | 361.1 |
| 77.5° | 282.4 | 282.4 | 282.4 | 282.4 | 282.4 |
| 80° | 207.6 | 207.6 | 207.6 | 207.6 | 207.6 |
| 82.5° | 135.4 | 135.4 | 135.4 | 135.4 | 135.4 |
| 85° | 71.1 | 71.1 | 71.1 | 71.1 | 71.1 |
| 87.5° | 20.3 | 20.3 | 20.3 | 20.3 | 20.3 |
| 90° | 23.7 | 38.3 | 65.6 | 41.9 | 23.7 |
| 92.5° | 34.7 | 58.4 | 105.7 | 54.7 | 31.0 |
| 95° | 40.1 | 67.5 | 147.7 | 72.9 | 45.5 |
| 97.5° | 51.1 | 74.8 | 169.5 | 89.3 | 71.1 |
| 100° | 67.5 | 87.5 | 264.3 | 109.3 | 94.8 |
| 102.5° | 114.9 | 185.9 | 561.4 | 205.9 | 144.0 |
| 105° | 198.6 | 391.9 | 1000.7 | 432.0 | 262.4 |
| 107.5° | 344.5 | 701.8 | 1319.7 | 765.6 | 497.6 |
| 110° | 643.4 | 931.4 | 1383.5 | 1051.7 | 796.5 |



TEST NUMBER: P1436424

CATALOG NUMBER: EHBR1-18-UNV-M-L930-UPL36

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|-------|--------|--------|--------|--------|
| 112.5° | 869.5 | 1000.7 | 1325.1 | 1161.1 | 1037.1 |
| 115° | 915.0 | 962.4 | 1183.0 | 1133.7 | 1126.5 |
| 117.5° | 884.0 | 878.6 | 1004.3 | 1018.9 | 1088.2 |
| 120° | 818.4 | 782.0 | 838.5 | 889.5 | 982.5 |
| 122.5° | 736.3 | 692.7 | 718.2 | 756.4 | 849.4 |
| 125° | 659.8 | 616.0 | 632.5 | 641.6 | 720.0 |
| 127.5° | 592.4 | 563.2 | 572.4 | 561.4 | 610.6 |
| 130° | 546.8 | 521.3 | 534.1 | 508.6 | 532.3 |
| 132.5° | 508.6 | 492.2 | 506.7 | 475.7 | 483.0 |
| 135° | 481.2 | 466.6 | 483.0 | 453.9 | 452.1 |
| 137.5° | 457.5 | 444.8 | 461.2 | 439.2 | 433.8 |
| 140° | 435.7 | 424.7 | 442.9 | 426.5 | 422.8 |
| 142.5° | 412.0 | 404.7 | 426.5 | 415.6 | 412.0 |
| 145° | 395.6 | 390.1 | 413.8 | 408.3 | 406.4 |
| 147.5° | 381.0 | 377.3 | 399.1 | 397.4 | 397.4 |
| 150° | 368.2 | 364.6 | 386.4 | 384.6 | 386.4 |
| 152.5° | 355.5 | 351.8 | 371.9 | 370.0 | 371.9 |
| 155° | 346.3 | 342.6 | 359.0 | 359.0 | 359.0 |
| 157.5° | 339.0 | 337.2 | 350.0 | 350.0 | 350.0 |
| 160° | 333.6 | 331.8 | 342.6 | 342.6 | 340.9 |
| 162.5° | 328.1 | 326.2 | 339.0 | 337.2 | 337.2 |
| 165° | 324.5 | 324.5 | 333.6 | 333.6 | 331.8 |
| 167.5° | 324.5 | 322.6 | 331.8 | 331.8 | 329.9 |
| 170° | 322.6 | 322.6 | 329.9 | 328.1 | 326.2 |
| 172.5° | 322.6 | 322.6 | 329.9 | 328.1 | 326.2 |
| 175° | 320.8 | 320.8 | 326.2 | 326.2 | 326.2 |
| 177.5° | 322.6 | 322.6 | 326.2 | 326.2 | 324.5 |
| 180° | 324.5 | 324.5 | 324.5 | 324.5 | 324.5 |



TEST NUMBER: P1436424
 CATALOG NUMBER: EHBR1-18-UNV-M-L930-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 | 14.88 | 15.91 | 15.50 | 16.53 | 17.22 | 14.88 | 15.91 | 15.50 | 16.53 | 17.22 |
| | 3H | 16.35 | 17.27 | 16.99 | 17.90 | 18.64 | 16.35 | 17.27 | 16.99 | 17.90 | 18.64 |
| | 4H | 16.87 | 17.73 | 17.53 | 18.37 | 19.12 | 16.87 | 17.73 | 17.53 | 18.37 | 19.12 |
| | 6H | 17.19 | 17.98 | 17.86 | 18.63 | 19.40 | 17.19 | 17.98 | 17.86 | 18.63 | 19.40 |
| | 8H | 17.26 | 18.01 | 17.94 | 18.68 | 19.44 | 17.26 | 18.01 | 17.94 | 18.68 | 19.44 |
| | 12H | 17.27 | 17.98 | 17.95 | 18.64 | 19.44 | 17.27 | 17.98 | 17.95 | 18.64 | 19.44 |
| 4H | 2H | 15.30 | 16.16 | 15.96 | 16.80 | 17.55 | 15.30 | 16.16 | 15.96 | 16.80 | 17.55 |
| | 3H | 16.99 | 17.70 | 17.66 | 18.38 | 19.14 | 16.99 | 17.70 | 17.66 | 18.38 | 19.14 |
| | 4H | 17.62 | 18.26 | 18.30 | 18.94 | 19.74 | 17.62 | 18.26 | 18.30 | 18.94 | 19.74 |
| | 6H | 18.04 | 18.59 | 18.75 | 19.29 | 20.11 | 18.04 | 18.59 | 18.75 | 19.29 | 20.11 |
| | 8H | 18.13 | 18.64 | 18.84 | 19.35 | 20.17 | 18.13 | 18.64 | 18.84 | 19.35 | 20.17 |
| | 12H | 18.15 | 18.61 | 18.88 | 19.34 | 20.17 | 18.15 | 18.61 | 18.88 | 19.34 | 20.17 |
| 8H | 4H | 17.79 | 18.30 | 18.50 | 19.01 | 19.83 | 17.79 | 18.30 | 18.50 | 19.01 | 19.83 |
| | 6H | 18.30 | 18.71 | 19.04 | 19.47 | 20.29 | 18.30 | 18.71 | 19.04 | 19.47 | 20.29 |
| | 8H | 18.44 | 18.81 | 19.19 | 19.56 | 20.40 | 18.44 | 18.81 | 19.19 | 19.56 | 20.40 |
| | 12H | 18.50 | 18.83 | 19.25 | 19.57 | 20.47 | 18.50 | 18.83 | 19.25 | 19.57 | 20.47 |
| 12H | 4H | 17.77 | 18.23 | 18.50 | 18.96 | 19.78 | 17.77 | 18.23 | 18.50 | 18.96 | 19.78 |
| | 6H | 18.30 | 18.67 | 19.06 | 19.43 | 20.27 | 18.30 | 18.67 | 19.06 | 19.43 | 20.27 |
| | 8H | 18.47 | 18.79 | 19.22 | 19.53 | 20.44 | 18.47 | 18.79 | 19.22 | 19.53 | 20.44 |

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

Report Prepared for

Cooper Lighting Solutions

Metalux

Report Number: SP1-2506-472-5

Test Date: 08/01/2025

Luminaire Tested: EHBR-60-L930-N

Data in this report applies to families of products including EHBR-60-L930-N

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2506-472-5
 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-L930-N**
 Description: Elevate Round Highbay at, 60000 lumens, 3000K 90CRI LEDs with N lens

Spectral Parameters

CCT (K): 2996
 CIE u': 0.2519
 CIE v': 0.5169
 Duv: -0.0033
 CIE x: 0.4325
 CIE y: 0.3945
 CIE z: 0.1730
 Peak Wavelength (nm): 630
 Dominant Wavelength (nm): 584
 Purity: 48.21818
 Rf: 91.3
 Rg: 102

| | | | |
|-----------|------|------|------|
| CRI (Ra): | 94.4 | | |
| R1: | 96.8 | R9: | 61.4 |
| R2: | 98.1 | R10: | 94.4 |
| R3: | 97.8 | R11: | 95.7 |
| R4: | 95.6 | R12: | 88.5 |
| R5: | 96.9 | R13: | 97.3 |
| R6: | 95.7 | R14: | 97.8 |
| R7: | 90.9 | R15: | 92.3 |
| R8: | 83.0 | | |



Test Conditions

Stabilization Time: 40M
 Operation Time: 1H 40M
 Sphere Temperature (°C): 25.0

REPORT NUMBER: SP1-2506-472-5

| 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: SP1-2506-472-5

CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 3000K 7-step quadrangle

REPORT NUMBER: SP1-2506-472-5

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 | 101 | NR | 620 | 317 | NR | 750 | 7 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 121 | NR | 625 | 320 | NR | 755 | 6 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 141 | NR | 630 | 1000 | NR | 760 | 5 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 158 | NR | 635 | 651 | NR | 765 | 4 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 171 | NR | 640 | 207 | NR | 770 | 4 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 182 | NR | 645 | 201 | NR | 775 | 3 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 189 | NR | 650 | 174 | NR | 780 | 3 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 194 | NR | 655 | 146 | NR | 785 | 2 | NR | 915 | 0 | NR |
| 400 | 1 | NR | 530 | 199 | NR | 660 | 124 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 3 | NR | 535 | 205 | NR | 665 | 105 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 4 | NR | 540 | 210 | NR | 670 | 96 | NR | 800 | 1 | NR | 930 | 0 | NR |
| 415 | 7 | NR | 545 | 216 | NR | 675 | 79 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 13 | NR | 550 | 222 | NR | 680 | 67 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 22 | NR | 555 | 230 | NR | 685 | 58 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 37 | NR | 560 | 240 | NR | 690 | 49 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 60 | NR | 565 | 248 | NR | 695 | 42 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 101 | NR | 570 | 258 | NR | 700 | 36 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 172 | NR | 575 | 268 | NR | 705 | 30 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 223 | NR | 580 | 278 | NR | 710 | 26 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 167 | NR | 585 | 287 | NR | 715 | 22 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 126 | NR | 590 | 295 | NR | 720 | 19 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 111 | NR | 595 | 298 | NR | 725 | 16 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 86 | NR | 600 | 303 | NR | 730 | 14 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 74 | NR | 605 | 307 | NR | 735 | 12 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 77 | NR | 610 | 341 | NR | 740 | 10 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 86 | NR | 615 | 368 | NR | 745 | 8 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2506-472-5

Scotopic Flux vs. Wavelength



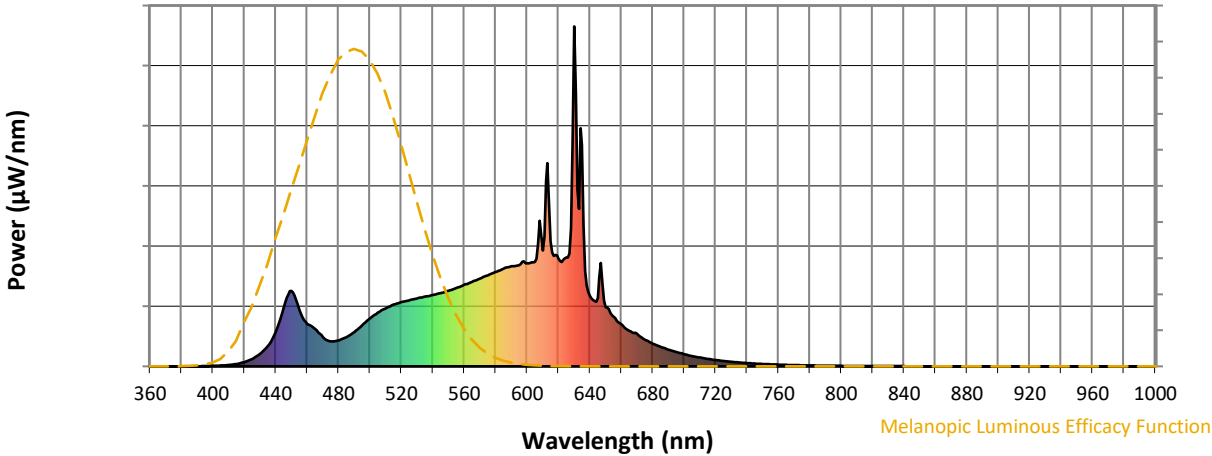
Scotopic Lumens: NR

S/P: 1.44

| 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 | 101 | NR | 620 | 317 | NR | 750 | 7 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 121 | NR | 625 | 320 | NR | 755 | 6 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 141 | NR | 630 | 1000 | NR | 760 | 5 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 158 | NR | 635 | 651 | NR | 765 | 4 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 171 | NR | 640 | 207 | NR | 770 | 4 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 182 | NR | 645 | 201 | NR | 775 | 3 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 189 | NR | 650 | 174 | NR | 780 | 3 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 194 | NR | 655 | 146 | NR | 785 | 2 | NR | 915 | 0 | NR |
| 400 | 1 | NR | 530 | 199 | NR | 660 | 124 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 3 | NR | 535 | 205 | NR | 665 | 105 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 4 | NR | 540 | 210 | NR | 670 | 96 | NR | 800 | 1 | NR | 930 | 0 | NR |
| 415 | 7 | NR | 545 | 216 | NR | 675 | 79 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 13 | NR | 550 | 222 | NR | 680 | 67 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 22 | NR | 555 | 230 | NR | 685 | 58 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 37 | NR | 560 | 240 | NR | 690 | 49 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 60 | NR | 565 | 248 | NR | 695 | 42 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 101 | NR | 570 | 258 | NR | 700 | 36 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 172 | NR | 575 | 268 | NR | 705 | 30 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 223 | NR | 580 | 278 | NR | 710 | 26 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 167 | NR | 585 | 287 | NR | 715 | 22 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 126 | NR | 590 | 295 | NR | 720 | 19 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 111 | NR | 595 | 298 | NR | 725 | 16 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 86 | NR | 600 | 303 | NR | 730 | 14 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 74 | NR | 605 | 307 | NR | 735 | 12 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 77 | NR | 610 | 341 | NR | 740 | 10 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 86 | NR | 615 | 368 | NR | 745 | 8 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2506-472-5

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.85

| 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 | 101 | NR | 620 | 317 | NR | 750 | 7 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 121 | NR | 625 | 320 | NR | 755 | 6 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 141 | NR | 630 | 1000 | NR | 760 | 5 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 158 | NR | 635 | 651 | NR | 765 | 4 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 171 | NR | 640 | 207 | NR | 770 | 4 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 182 | NR | 645 | 201 | NR | 775 | 3 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 189 | NR | 650 | 174 | NR | 780 | 3 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 194 | NR | 655 | 146 | NR | 785 | 2 | NR | 915 | 0 | NR |
| 400 | 1 | NR | 530 | 199 | NR | 660 | 124 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 3 | NR | 535 | 205 | NR | 665 | 105 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 4 | NR | 540 | 210 | NR | 670 | 96 | NR | 800 | 1 | NR | 930 | 0 | NR |
| 415 | 7 | NR | 545 | 216 | NR | 675 | 79 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 13 | NR | 550 | 222 | NR | 680 | 67 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 22 | NR | 555 | 230 | NR | 685 | 58 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 37 | NR | 560 | 240 | NR | 690 | 49 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 60 | NR | 565 | 248 | NR | 695 | 42 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 101 | NR | 570 | 258 | NR | 700 | 36 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 172 | NR | 575 | 268 | NR | 705 | 30 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 223 | NR | 580 | 278 | NR | 710 | 26 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 167 | NR | 585 | 287 | NR | 715 | 22 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 126 | NR | 590 | 295 | NR | 720 | 19 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 111 | NR | 595 | 298 | NR | 725 | 16 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 86 | NR | 600 | 303 | NR | 730 | 14 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 74 | NR | 605 | 307 | NR | 735 | 12 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 77 | NR | 610 | 341 | NR | 740 | 10 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 86 | NR | 615 | 368 | NR | 745 | 8 | NR | 875 | 0 | NR | | | |

Summary

$R_f = 91.3$
 $R_g = 102$
 CIE $R_a = 94.4$
 $R_9 = 61.4$



Color Vector Graphics

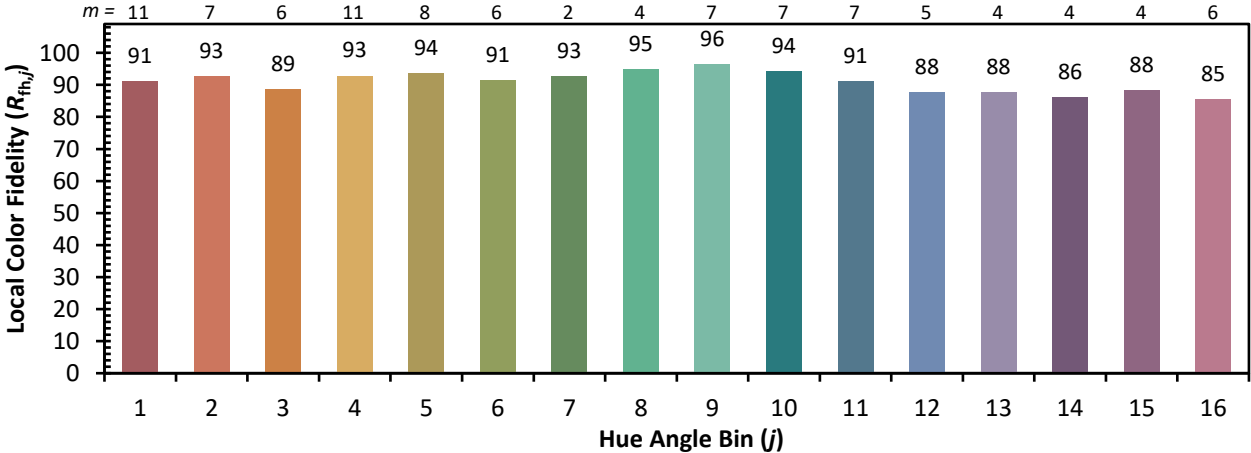


Individual Sample Fidelity Index ($R_{f,i}$)

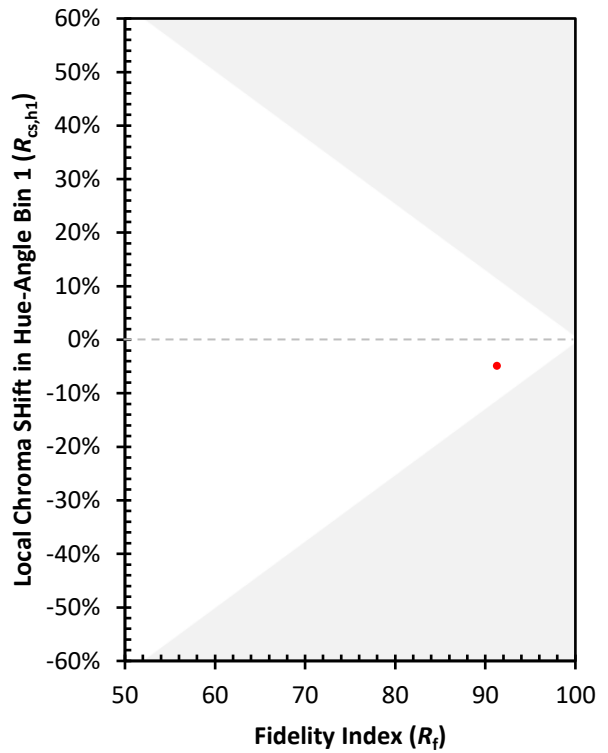
| | | | |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 91 | CES51 = 96 | CES76 = 89 |
| CES02 = 63 | CES27 = 96 | CES52 = 95 | CES77 = 85 |
| CES03 = 32 | CES28 = 96 | CES53 = 93 | CES78 = 86 |
| CES04 = 70 | CES29 = 90 | CES54 = 98 | CES79 = 89 |
| CES05 = 51 | CES30 = 96 | CES55 = 98 | CES80 = 91 |
| CES06 = 51 | CES31 = 90 | CES56 = 95 | CES81 = 72 |
| CES07 = 44 | CES32 = 84 | CES57 = 95 | CES82 = 95 |
| CES08 = 42 | CES33 = 91 | CES58 = 95 | CES83 = 93 |
| CES09 = 29 | CES34 = 92 | CES59 = 99 | CES84 = 96 |
| CES10 = 76 | CES35 = 96 | CES60 = 96 | CES85 = 80 |
| CES11 = 59 | CES36 = 90 | CES61 = 96 | CES86 = 77 |
| CES12 = 65 | CES37 = 94 | CES62 = 95 | CES87 = 91 |
| CES13 = 44 | CES38 = 99 | CES63 = 94 | CES88 = 96 |
| CES14 = 74 | CES39 = 97 | CES64 = 96 | CES89 = 82 |
| CES15 = 72 | CES40 = 94 | CES65 = 92 | CES90 = 97 |
| CES16 = 48 | CES41 = 94 | CES66 = 95 | CES91 = 82 |
| CES17 = 50 | CES42 = 91 | CES67 = 94 | CES92 = 78 |
| CES18 = 57 | CES43 = 88 | CES68 = 93 | CES93 = 87 |
| CES19 = 72 | CES44 = 99 | CES69 = 94 | CES94 = 73 |
| CES20 = 67 | CES45 = 93 | CES70 = 90 | CES95 = 85 |
| CES21 = 86 | CES46 = 93 | CES71 = 90 | CES96 = 92 |
| CES22 = 79 | CES47 = 86 | CES72 = 96 | CES97 = 93 |
| CES23 = 92 | CES48 = 95 | CES73 = 85 | CES98 = 94 |
| CES24 = 91 | CES49 = 91 | CES74 = 90 | CES99 = 93 |
| CES25 = 72 | CES50 = 96 | CES75 = 90 | |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)