

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



Scaled data based on original data using  
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State  
Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: FAIL-SAFE

Report Number: P735576

Luminaire Tested: **4APN6-19-B2750-W2D-CP125-4000K**

Issue Date: 1/5/2024



**Test Information**

Test Method: LM-79-08  
Report Number: P735576  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P709119)  
Test Lab: INNOVATION CENTER(G2)  
Issue Date: 1/5/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: FAIL-SAFE  
Catalog Number: 4APN6-19-B2750-W2D-CP125-4000K  
Description: 4FT 1900 AMBIENT LUMEN OUTPUT APN WITH BIO UP LEDS AT 4000K CCT, AND CP125 LENS

Light Source: -  
Ballast/Driver: -

**Summary**

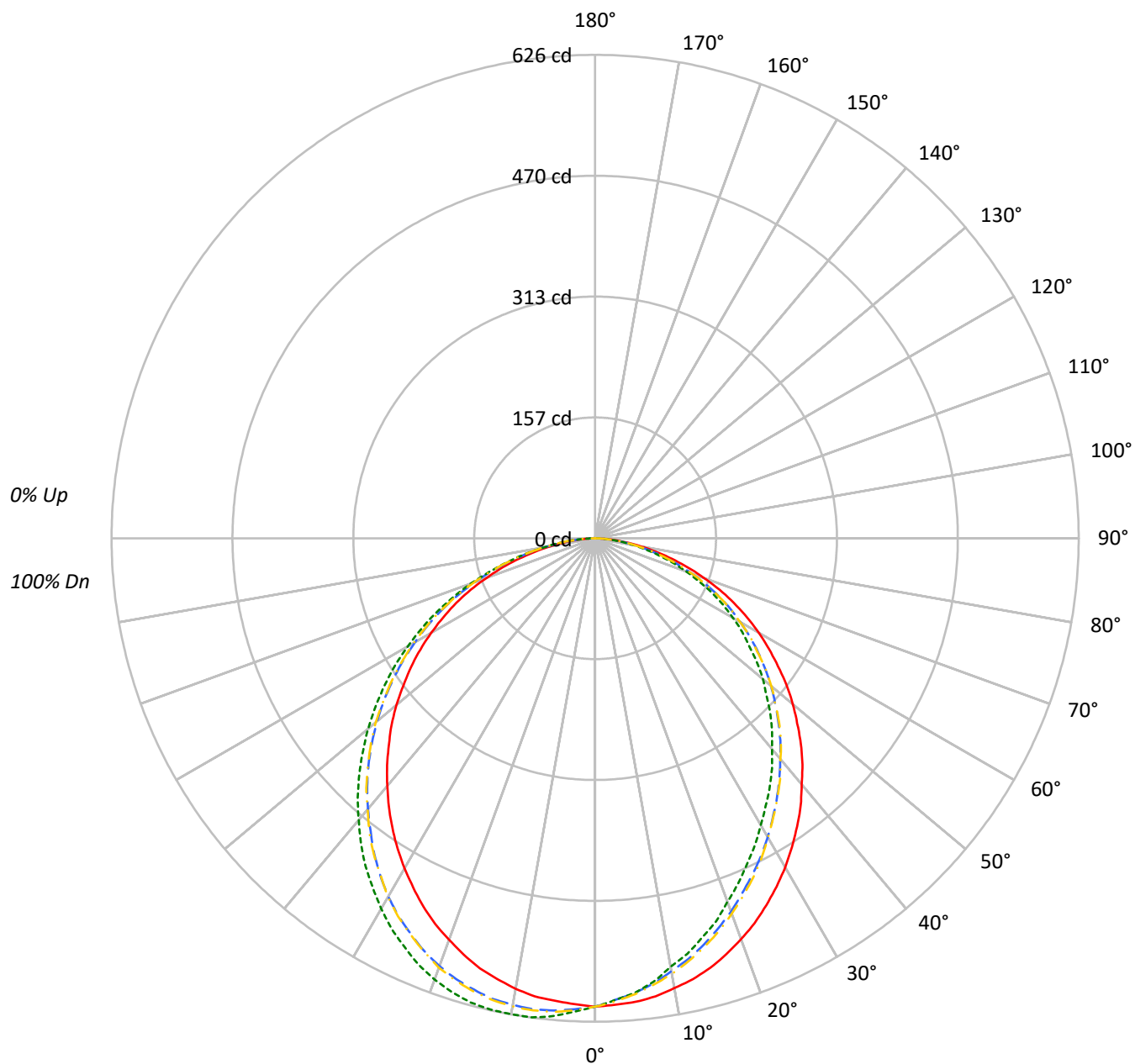
Lumens per Lamp: N/A  
Luminaire Lumens: 1627.0 lumens  
Efficiency: N/A  
Efficacy: 85.6 lumens/watt  
Spacing Criteria (0/90/45): 1.21 / 1.21 / 1.33  
Luminous Opening: Rectangular (W 0.29' x L: 4' x H: 0')  
CIE Type: Direct

Input Watts (W): 19  
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: 25 FT

TEST NUMBER: P735576

CATALOG NUMBER: 4APN6-19-B2750-W2D-CP125-4000K

### Luminous Intensity Polar Plot





TEST NUMBER: P735576

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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|
| RF  | 20  |     |     |     | 20  |     |     |     |     | 20  |     |     |     |     | 20  |     |     |     |    | 20 |
| RC  | 80  |     |     |     | 70  |     |     |     |     | 50  |     |     |     |     | 30  |     |     |     |    | 10 |
| RW  | 70  | 50  | 30  | 10  | 70  | 50  | 30  | 10  | 50  | 30  | 10  | 50  | 30  | 10  | 50  | 30  | 10  | 50  | 30 | 10 |
| RCR |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 100 |    |    |
| 1   | 109 | 104 | 100 | 96  | 106 | 102 | 98  | 95  | 98  | 94  | 92  | 94  | 91  | 89  | 90  | 88  | 86  | 84  |    |    |
| 2   | 99  | 91  | 84  | 78  | 96  | 89  | 83  | 77  | 85  | 80  | 76  | 82  | 78  | 74  | 79  | 76  | 72  | 70  |    |    |
| 3   | 90  | 80  | 72  | 65  | 88  | 78  | 71  | 65  | 75  | 69  | 64  | 73  | 67  | 62  | 70  | 65  | 61  | 59  |    |    |
| 4   | 83  | 71  | 62  | 55  | 81  | 70  | 61  | 55  | 67  | 60  | 54  | 65  | 59  | 54  | 63  | 57  | 53  | 51  |    |    |
| 5   | 76  | 63  | 54  | 48  | 74  | 62  | 54  | 48  | 60  | 53  | 47  | 58  | 52  | 47  | 56  | 51  | 46  | 44  |    |    |
| 6   | 70  | 57  | 48  | 42  | 68  | 56  | 48  | 42  | 54  | 47  | 41  | 53  | 46  | 41  | 51  | 45  | 41  | 38  |    |    |
| 7   | 65  | 52  | 43  | 37  | 64  | 51  | 43  | 37  | 49  | 42  | 37  | 48  | 41  | 36  | 47  | 41  | 36  | 34  |    |    |
| 8   | 61  | 47  | 39  | 33  | 59  | 47  | 39  | 33  | 45  | 38  | 33  | 44  | 37  | 33  | 43  | 37  | 32  | 30  |    |    |
| 9   | 57  | 43  | 35  | 30  | 55  | 43  | 35  | 30  | 42  | 35  | 30  | 41  | 34  | 29  | 40  | 34  | 29  | 27  |    |    |
| 10  | 53  | 40  | 32  | 27  | 52  | 40  | 32  | 27  | 39  | 32  | 27  | 38  | 31  | 27  | 37  | 31  | 27  | 25  |    |    |

**AVERAGE LUMINANCE (cd/sqm):**

|     | 0°   | 90°  | 180° | 270° |
|-----|------|------|------|------|
| 0°  | 5597 | 5597 | 5597 | 5597 |
| 5°  | 5581 | 5473 | 5568 | 5752 |
| 10° | 5541 | 5278 | 5549 | 5863 |
| 15° | 5500 | 5113 | 5507 | 5945 |
| 20° | 5425 | 4919 | 5431 | 5970 |
| 25° | 5337 | 4737 | 5358 | 5945 |
| 30° | 5242 | 4569 | 5256 | 5900 |
| 35° | 5133 | 4437 | 5155 | 5837 |
| 40° | 5009 | 4289 | 5042 | 5735 |
| 45° | 4915 | 4182 | 4926 | 5631 |
| 50° | 4797 | 4068 | 4816 | 5506 |
| 55° | 4647 | 3918 | 4679 | 5355 |
| 60° | 4508 | 3799 | 4521 | 5167 |
| 65° | 4329 | 3641 | 4329 | 4945 |
| 70° | 4036 | 3369 | 4017 | 4607 |
| 75° | 3668 | 3059 | 3622 | 4135 |
| 80° | 3172 | 2625 | 3066 | 3539 |
| 85° | 2477 | 1958 | 2329 | 2911 |



TEST NUMBER: P735576

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 57.3   | 3.5       |
| 10°-20°   | 162.7  | 10.0      |
| 20°-30°   | 241.9  | 14.9      |
| 30°-40°   | 285.1  | 17.5      |
| 40°-50°   | 290.2  | 17.8      |
| 50°-60°   | 258.6  | 15.9      |
| 60°-70°   | 194.8  | 12.0      |
| 70°-80°   | 108.3  | 6.7       |
| 80°-90°   | 28.2   | 1.7       |
| 90°-100°  | 0.0    | 0.0       |
| 100°-110° | 0.0    | 0.0       |
| 110°-120° | 0.0    | 0.0       |
| 120°-130° | 0.0    | 0.0       |
| 130°-140° | 0.0    | 0.0       |
| 140°-150° | 0.0    | 0.0       |
| 150°-160° | 0.0    | 0.0       |
| 160°-170° | 0.0    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| 0°-30°    | 461.9  | 28.4      |
| 0°-40°    | 746.9  | 45.9      |
| 0°-60°    | 1295.7 | 79.6      |
| 0°-90°    | 1627.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 1627.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°  | 90° | 180° | 270° | 360° | Flux |
|-----|-----|-----|------|------|------|------|
| 0°  | 607 | 607 | 607  | 607  | 607  |      |
| 5°  | 603 | 591 | 601  | 621  | 603  | 57   |
| 15° | 576 | 535 | 576  | 622  | 576  | 162  |
| 25° | 524 | 465 | 526  | 584  | 524  | 242  |
| 35° | 456 | 394 | 458  | 518  | 456  | 285  |
| 45° | 377 | 320 | 378  | 432  | 377  | 290  |
| 55° | 289 | 244 | 291  | 333  | 289  | 259  |
| 65° | 198 | 167 | 198  | 226  | 198  | 196  |
| 75° | 103 | 86  | 102  | 116  | 103  | 109  |
| 85° | 23  | 18  | 22   | 28   | 23   | 28   |
| 90° | 0   | 0   | 0    | 0    | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°    | 10°   | 20°   | 30°   | 40°   | 50°   | 60°   | 70°   | 80°   | 90°   | 100°  |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 606.6 | 606.6 | 606.6 | 606.6 | 606.6 | 606.6 | 606.6 | 606.6 | 606.6 | 606.6 | 606.6 |
| 2.5°  | 604.6 | 604.6 | 605.2 | 602.6 | 599.1 | 597.7 | 597.1 | 596.3 | 597.7 | 598.4 | 597.7 |
| 5°    | 602.6 | 601.2 | 599.8 | 596.3 | 592.3 | 589.5 | 588.1 | 587.4 | 588.8 | 590.9 | 588.8 |
| 7.5°  | 598.4 | 595.7 | 592.9 | 588.1 | 583.4 | 579.2 | 577.1 | 575.8 | 577.1 | 579.2 | 577.8 |
| 10°   | 591.5 | 588.1 | 584.0 | 578.5 | 571.7 | 566.8 | 564.8 | 562.8 | 563.4 | 563.4 | 563.4 |
| 12.5° | 584.7 | 579.9 | 575.1 | 568.2 | 560.6 | 555.2 | 551.7 | 549.0 | 550.3 | 551.1 | 551.1 |
| 15°   | 575.8 | 569.6 | 562.8 | 555.2 | 547.6 | 541.4 | 537.4 | 534.6 | 535.3 | 535.3 | 536.0 |
| 17.5° | 564.8 | 557.9 | 551.1 | 542.2 | 533.2 | 526.3 | 521.6 | 518.2 | 519.5 | 520.2 | 520.8 |
| 20°   | 552.5 | 544.9 | 537.4 | 527.7 | 518.2 | 510.6 | 505.7 | 501.6 | 501.0 | 501.0 | 501.6 |
| 22.5° | 539.4 | 531.1 | 522.2 | 511.9 | 501.6 | 493.4 | 488.6 | 484.5 | 483.8 | 483.8 | 484.5 |
| 25°   | 524.3 | 515.4 | 506.5 | 496.2 | 485.1 | 477.0 | 470.8 | 466.7 | 465.9 | 465.3 | 466.7 |
| 27.5° | 508.5 | 499.6 | 490.7 | 480.4 | 468.7 | 460.5 | 454.3 | 450.2 | 448.8 | 448.1 | 449.5 |
| 30°   | 492.0 | 481.7 | 472.2 | 461.1 | 450.8 | 442.7 | 436.5 | 431.6 | 430.3 | 428.9 | 430.3 |
| 32.5° | 474.2 | 463.9 | 453.6 | 442.7 | 432.4 | 424.1 | 417.9 | 413.2 | 411.8 | 411.0 | 412.4 |
| 35°   | 455.7 | 445.4 | 435.8 | 424.8 | 414.5 | 406.3 | 400.1 | 396.0 | 394.6 | 393.9 | 394.6 |
| 37.5° | 437.1 | 426.9 | 417.3 | 406.3 | 396.0 | 387.8 | 381.5 | 377.5 | 376.7 | 376.1 | 376.7 |
| 40°   | 415.9 | 407.0 | 397.3 | 387.0 | 376.7 | 368.6 | 363.7 | 358.9 | 357.5 | 356.1 | 358.3 |
| 42.5° | 397.3 | 388.4 | 378.9 | 369.2 | 358.9 | 350.7 | 345.2 | 341.1 | 339.7 | 339.0 | 339.7 |
| 45°   | 376.7 | 367.2 | 357.5 | 348.6 | 339.0 | 331.5 | 326.0 | 321.8 | 321.2 | 320.5 | 321.2 |
| 47.5° | 354.8 | 346.6 | 338.3 | 329.4 | 319.8 | 312.3 | 307.4 | 303.4 | 302.0 | 300.6 | 302.0 |
| 50°   | 334.2 | 326.0 | 317.7 | 309.5 | 300.6 | 293.7 | 288.9 | 284.8 | 284.1 | 283.4 | 284.1 |
| 52.5° | 312.3 | 304.0 | 296.5 | 288.2 | 280.6 | 273.8 | 269.0 | 265.6 | 264.9 | 264.2 | 264.9 |
| 55°   | 288.9 | 282.0 | 275.2 | 268.3 | 260.8 | 254.6 | 250.5 | 246.3 | 245.0 | 243.6 | 245.0 |
| 57.5° | 266.9 | 260.8 | 253.9 | 247.1 | 240.2 | 234.7 | 230.6 | 227.1 | 226.5 | 225.7 | 226.5 |
| 60°   | 244.3 | 238.8 | 232.6 | 226.5 | 219.6 | 214.1 | 210.7 | 207.9 | 206.5 | 205.9 | 206.5 |
| 62.5° | 221.7 | 216.2 | 211.4 | 205.2 | 199.0 | 194.9 | 191.4 | 188.7 | 187.3 | 186.7 | 187.3 |
| 65°   | 198.3 | 193.6 | 188.7 | 183.3 | 178.4 | 174.3 | 170.8 | 168.1 | 167.4 | 166.8 | 166.8 |
| 67.5° | 174.3 | 170.2 | 166.1 | 161.3 | 155.8 | 151.6 | 148.2 | 146.2 | 145.5 | 144.8 | 145.5 |
| 70°   | 149.6 | 146.2 | 142.1 | 137.9 | 133.8 | 130.4 | 128.4 | 126.3 | 125.6 | 124.9 | 124.9 |
| 72.5° | 126.3 | 123.5 | 120.1 | 116.7 | 113.2 | 109.8 | 107.8 | 106.4 | 105.7 | 105.0 | 105.0 |
| 75°   | 102.9 | 100.2 | 98.1  | 95.4  | 92.0  | 89.9  | 87.8  | 86.4  | 85.8  | 85.8  | 85.8  |
| 77.5° | 81.0  | 78.9  | 76.9  | 74.1  | 72.1  | 70.0  | 68.6  | 68.0  | 67.2  | 67.2  | 67.2  |
| 80°   | 59.7  | 58.3  | 56.9  | 55.6  | 53.5  | 51.5  | 50.8  | 50.1  | 49.4  | 49.4  | 49.4  |
| 82.5° | 40.5  | 39.8  | 38.4  | 37.1  | 35.7  | 35.0  | 34.3  | 33.7  | 33.7  | 33.7  | 33.7  |
| 85°   | 23.4  | 22.6  | 22.0  | 21.2  | 20.6  | 20.6  | 19.9  | 19.2  | 18.5  | 18.5  | 18.5  |
| 87.5° | 9.6   | 9.6   | 9.6   | 8.9   | 8.3   | 8.3   | 8.3   | 8.3   | 8.3   | 8.3   | 8.3   |
| 90°   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |



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**CANDELA DISTRIBUTION (continued):**

|       | 110°  | 120°  | 130°  | 140°  | 150°  | 160°  | 170°  | 180°  | 190°  | 200°  | 210°  |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 606.6 | 606.6 | 606.6 | 606.6 | 606.6 | 606.6 | 606.6 | 606.6 | 606.6 | 606.6 | 606.6 |
| 2.5°  | 596.3 | 597.7 | 599.1 | 601.2 | 603.2 | 605.2 | 604.6 | 603.9 | 606.6 | 610.1 | 610.8 |
| 5°    | 587.4 | 588.8 | 590.9 | 594.3 | 597.7 | 600.5 | 601.2 | 601.2 | 606.6 | 611.5 | 612.8 |
| 7.5°  | 576.5 | 578.5 | 581.2 | 584.7 | 589.5 | 593.6 | 595.7 | 598.4 | 603.9 | 610.1 | 612.8 |
| 10°   | 562.8 | 566.2 | 570.3 | 575.1 | 579.9 | 584.7 | 588.8 | 592.3 | 599.1 | 606.0 | 610.1 |
| 12.5° | 550.3 | 553.8 | 557.9 | 563.4 | 569.6 | 575.8 | 579.9 | 584.7 | 592.9 | 601.2 | 606.0 |
| 15°   | 536.6 | 540.0 | 544.9 | 550.3 | 557.2 | 564.1 | 570.3 | 576.5 | 584.7 | 593.6 | 599.1 |
| 17.5° | 521.6 | 525.0 | 529.8 | 536.6 | 544.2 | 551.7 | 558.6 | 565.5 | 575.1 | 584.7 | 590.9 |
| 20°   | 503.0 | 507.9 | 514.0 | 520.8 | 529.8 | 538.7 | 545.6 | 553.1 | 563.4 | 573.7 | 580.6 |
| 22.5° | 485.1 | 490.0 | 496.8 | 505.1 | 514.7 | 524.3 | 532.5 | 540.8 | 551.7 | 562.0 | 569.6 |
| 25°   | 468.0 | 473.5 | 480.4 | 488.6 | 497.6 | 507.1 | 516.8 | 526.3 | 537.4 | 548.3 | 555.9 |
| 27.5° | 450.8 | 455.7 | 462.5 | 470.8 | 481.1 | 490.7 | 500.3 | 509.9 | 521.6 | 533.2 | 541.4 |
| 30°   | 431.6 | 437.1 | 443.3 | 451.6 | 462.5 | 473.5 | 483.1 | 493.4 | 505.1 | 516.8 | 525.0 |
| 32.5° | 413.8 | 418.6 | 424.8 | 433.0 | 444.0 | 455.0 | 465.3 | 476.2 | 487.3 | 498.9 | 507.1 |
| 35°   | 396.0 | 400.7 | 407.0 | 415.2 | 426.2 | 437.1 | 447.4 | 457.7 | 468.7 | 479.7 | 487.9 |
| 37.5° | 378.1 | 382.9 | 389.1 | 397.3 | 407.6 | 418.6 | 428.2 | 438.5 | 449.5 | 460.5 | 468.0 |
| 40°   | 359.6 | 364.4 | 369.2 | 377.5 | 387.8 | 398.7 | 408.3 | 418.6 | 429.6 | 440.5 | 448.1 |
| 42.5° | 341.1 | 345.8 | 352.1 | 360.3 | 369.9 | 379.5 | 389.1 | 398.7 | 409.0 | 419.3 | 426.9 |
| 45°   | 322.6 | 326.6 | 332.9 | 340.4 | 350.0 | 358.9 | 368.6 | 377.5 | 387.8 | 397.3 | 404.9 |
| 47.5° | 303.4 | 307.4 | 312.3 | 319.8 | 329.4 | 339.0 | 348.6 | 357.5 | 366.4 | 376.1 | 382.9 |
| 50°   | 284.8 | 288.9 | 294.4 | 301.2 | 310.2 | 319.1 | 327.4 | 335.5 | 344.5 | 353.4 | 359.6 |
| 52.5° | 265.6 | 269.7 | 274.5 | 281.4 | 288.9 | 297.1 | 304.7 | 312.9 | 321.2 | 329.4 | 335.5 |
| 55°   | 246.3 | 249.1 | 253.2 | 259.4 | 267.7 | 275.9 | 283.4 | 290.9 | 298.5 | 305.4 | 311.5 |
| 57.5° | 227.1 | 230.6 | 235.4 | 240.9 | 247.7 | 254.6 | 261.4 | 268.3 | 275.2 | 282.0 | 287.5 |
| 60°   | 207.9 | 210.7 | 214.1 | 218.9 | 225.7 | 232.0 | 238.8 | 245.0 | 251.2 | 257.4 | 262.2 |
| 62.5° | 188.0 | 190.8 | 194.2 | 199.0 | 204.5 | 210.0 | 216.2 | 221.7 | 227.1 | 232.6 | 237.4 |
| 65°   | 167.4 | 170.2 | 173.6 | 177.7 | 182.5 | 187.3 | 192.8 | 198.3 | 202.5 | 206.5 | 211.4 |
| 67.5° | 146.2 | 148.9 | 152.4 | 155.8 | 159.9 | 164.7 | 169.5 | 174.3 | 178.4 | 182.5 | 186.0 |
| 70°   | 125.6 | 127.6 | 131.0 | 133.8 | 137.3 | 140.7 | 144.8 | 148.9 | 151.6 | 155.1 | 159.2 |
| 72.5° | 105.7 | 107.8 | 110.5 | 113.2 | 115.3 | 118.1 | 122.1 | 125.6 | 129.0 | 133.2 | 135.2 |
| 75°   | 86.4  | 87.8  | 89.9  | 92.0  | 94.0  | 96.1  | 98.9  | 101.6 | 104.3 | 106.4 | 109.2 |
| 77.5° | 67.2  | 68.6  | 70.7  | 72.1  | 73.4  | 74.8  | 76.9  | 78.9  | 81.0  | 82.4  | 85.1  |
| 80°   | 49.4  | 50.8  | 52.1  | 53.5  | 54.9  | 56.3  | 56.9  | 57.7  | 60.4  | 62.4  | 63.8  |
| 82.5° | 33.7  | 34.3  | 35.0  | 36.4  | 37.1  | 37.7  | 38.4  | 38.4  | 39.8  | 41.2  | 43.2  |
| 85°   | 19.2  | 19.9  | 20.6  | 20.6  | 20.6  | 20.6  | 21.2  | 22.0  | 22.6  | 24.0  | 25.4  |
| 87.5° | 7.5   | 7.5   | 8.3   | 8.3   | 8.3   | 8.3   | 8.3   | 8.3   | 8.9   | 10.3  | 10.9  |
| 90°   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |



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**CANDELA DISTRIBUTION (continued):**

|       | 220°  | 230°  | 240°  | 250°  | 260°  | 270°  | 280°  | 290°  | 300°  | 310°  | 320°  |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 606.6 | 606.6 | 606.6 | 606.6 | 606.6 | 606.6 | 606.6 | 606.6 | 606.6 | 606.6 | 606.6 |
| 2.5°  | 610.1 | 610.8 | 612.1 | 612.8 | 613.5 | 613.5 | 614.2 | 614.9 | 613.5 | 612.1 | 611.5 |
| 5°    | 613.5 | 614.2 | 616.3 | 618.3 | 619.7 | 621.1 | 620.4 | 619.7 | 618.3 | 616.3 | 614.9 |
| 7.5°  | 614.2 | 616.3 | 618.3 | 621.1 | 623.1 | 625.8 | 624.5 | 623.1 | 620.4 | 617.7 | 615.5 |
| 10°   | 612.1 | 614.9 | 618.3 | 621.8 | 623.8 | 625.8 | 624.5 | 623.1 | 620.4 | 616.9 | 614.2 |
| 12.5° | 609.4 | 612.8 | 616.9 | 620.4 | 622.4 | 625.2 | 623.1 | 621.1 | 617.7 | 614.2 | 610.8 |
| 15°   | 603.2 | 607.4 | 612.1 | 616.3 | 619.7 | 622.4 | 620.4 | 619.0 | 614.9 | 610.1 | 605.2 |
| 17.5° | 595.7 | 601.2 | 606.0 | 610.8 | 613.5 | 616.3 | 614.9 | 613.5 | 608.7 | 603.2 | 597.7 |
| 20°   | 586.8 | 592.3 | 597.1 | 601.8 | 605.2 | 608.0 | 606.0 | 603.9 | 599.1 | 594.3 | 588.8 |
| 22.5° | 575.8 | 581.2 | 586.8 | 591.5 | 595.0 | 597.7 | 595.0 | 591.5 | 586.8 | 582.0 | 576.5 |
| 25°   | 562.0 | 568.2 | 574.4 | 579.2 | 581.2 | 584.0 | 581.2 | 578.5 | 573.7 | 568.9 | 562.8 |
| 27.5° | 548.3 | 554.5 | 560.6 | 565.5 | 567.5 | 570.3 | 567.5 | 564.8 | 560.0 | 555.2 | 549.0 |
| 30°   | 532.5 | 538.7 | 544.9 | 549.7 | 551.7 | 553.8 | 551.1 | 548.3 | 544.2 | 539.4 | 533.2 |
| 32.5° | 514.7 | 520.8 | 525.7 | 530.5 | 533.2 | 536.0 | 533.2 | 531.1 | 526.3 | 520.2 | 514.0 |
| 35°   | 495.4 | 501.6 | 507.9 | 512.6 | 515.4 | 518.2 | 514.7 | 511.3 | 507.1 | 502.3 | 496.8 |
| 37.5° | 474.2 | 481.1 | 487.9 | 493.4 | 495.4 | 498.2 | 495.4 | 492.0 | 487.9 | 483.1 | 477.0 |
| 40°   | 454.3 | 460.5 | 466.7 | 472.2 | 474.2 | 476.2 | 473.5 | 470.8 | 465.9 | 461.1 | 455.0 |
| 42.5° | 433.8 | 439.9 | 445.4 | 450.2 | 452.2 | 455.0 | 452.2 | 448.8 | 445.4 | 441.3 | 435.8 |
| 45°   | 411.8 | 417.9 | 422.7 | 427.5 | 429.6 | 431.6 | 428.9 | 425.5 | 422.1 | 418.6 | 413.2 |
| 47.5° | 389.1 | 394.6 | 399.4 | 404.2 | 405.6 | 407.6 | 404.9 | 402.9 | 399.4 | 396.0 | 391.2 |
| 50°   | 365.8 | 371.3 | 376.1 | 380.2 | 381.5 | 383.6 | 380.9 | 378.1 | 375.4 | 372.6 | 368.6 |
| 52.5° | 341.8 | 346.6 | 351.4 | 355.5 | 356.9 | 358.3 | 355.5 | 352.7 | 350.0 | 347.2 | 343.1 |
| 55°   | 317.1 | 321.8 | 326.6 | 330.1 | 331.5 | 332.9 | 330.1 | 328.0 | 325.3 | 323.2 | 319.1 |
| 57.5° | 292.3 | 297.1 | 301.2 | 304.7 | 306.1 | 307.4 | 304.7 | 302.0 | 299.9 | 297.8 | 294.4 |
| 60°   | 266.9 | 271.7 | 275.2 | 277.9 | 279.3 | 280.0 | 277.2 | 275.2 | 273.8 | 272.5 | 269.0 |
| 62.5° | 242.2 | 245.7 | 249.1 | 251.2 | 252.5 | 253.2 | 251.2 | 249.8 | 248.5 | 247.1 | 244.3 |
| 65°   | 216.2 | 220.3 | 223.0 | 225.1 | 225.7 | 226.5 | 224.4 | 223.0 | 221.7 | 220.3 | 218.2 |
| 67.5° | 190.1 | 193.6 | 195.6 | 197.6 | 198.3 | 198.3 | 198.3 | 197.6 | 196.2 | 194.2 | 192.2 |
| 70°   | 164.0 | 166.8 | 168.8 | 170.2 | 170.8 | 170.8 | 169.5 | 168.1 | 168.1 | 167.4 | 166.1 |
| 72.5° | 137.3 | 139.3 | 140.7 | 142.1 | 142.1 | 142.1 | 142.1 | 142.7 | 142.1 | 140.7 | 138.6 |
| 75°   | 111.8 | 113.9 | 115.3 | 116.0 | 116.0 | 116.0 | 116.0 | 116.7 | 116.0 | 115.3 | 113.9 |
| 77.5° | 87.8  | 89.2  | 89.9  | 90.6  | 90.6  | 90.6  | 91.3  | 92.0  | 91.3  | 90.6  | 89.9  |
| 80°   | 65.2  | 65.9  | 66.6  | 67.2  | 66.6  | 66.6  | 67.2  | 68.6  | 68.0  | 67.2  | 66.6  |
| 82.5° | 44.6  | 45.3  | 46.0  | 46.0  | 46.7  | 47.4  | 47.4  | 47.4  | 47.4  | 46.7  | 46.0  |
| 85°   | 26.8  | 27.5  | 27.5  | 27.5  | 27.5  | 27.5  | 28.1  | 28.8  | 28.8  | 28.1  | 28.1  |
| 87.5° | 12.3  | 13.1  | 12.3  | 11.7  | 10.9  | 10.9  | 12.3  | 13.7  | 13.7  | 13.1  | 13.1  |
| 90°   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |



TEST NUMBER: P735576

CATALOG NUMBER: 4APN6-19-B2750-W2D-CP125-4000K

**CANDELA DISTRIBUTION (continued):**

|       | 330°  | 340°  | 350°  | 360°  |
|-------|-------|-------|-------|-------|
| 0°    | 606.6 | 606.6 | 606.6 | 606.6 |
| 2.5°  | 612.1 | 611.5 | 608.0 | 604.6 |
| 5°    | 614.2 | 612.1 | 607.4 | 602.6 |
| 7.5°  | 614.2 | 611.5 | 604.6 | 598.4 |
| 10°   | 610.8 | 606.6 | 599.1 | 591.5 |
| 12.5° | 606.6 | 601.8 | 592.9 | 584.7 |
| 15°   | 600.5 | 595.0 | 585.4 | 575.8 |
| 17.5° | 591.5 | 584.7 | 575.1 | 564.8 |
| 20°   | 582.6 | 575.1 | 563.4 | 552.5 |
| 22.5° | 570.3 | 563.4 | 551.1 | 539.4 |
| 25°   | 556.6 | 549.0 | 536.6 | 524.3 |
| 27.5° | 542.2 | 533.2 | 520.8 | 508.5 |
| 30°   | 525.7 | 516.8 | 504.4 | 492.0 |
| 32.5° | 507.9 | 499.6 | 487.3 | 474.2 |
| 35°   | 490.0 | 481.1 | 468.7 | 455.7 |
| 37.5° | 470.1 | 461.9 | 449.5 | 437.1 |
| 40°   | 448.8 | 440.5 | 428.2 | 415.9 |
| 42.5° | 428.9 | 421.3 | 409.0 | 397.3 |
| 45°   | 407.0 | 399.4 | 387.8 | 376.7 |
| 47.5° | 384.3 | 376.7 | 365.8 | 354.8 |
| 50°   | 362.3 | 354.8 | 344.5 | 334.2 |
| 52.5° | 337.7 | 331.5 | 321.8 | 312.3 |
| 55°   | 313.7 | 307.4 | 297.8 | 288.9 |
| 57.5° | 289.6 | 284.1 | 275.2 | 266.9 |
| 60°   | 264.2 | 258.7 | 251.9 | 244.3 |
| 62.5° | 240.2 | 235.4 | 228.5 | 221.7 |
| 65°   | 214.8 | 210.7 | 204.5 | 198.3 |
| 67.5° | 188.7 | 185.3 | 179.8 | 174.3 |
| 70°   | 162.7 | 158.5 | 154.4 | 149.6 |
| 72.5° | 136.6 | 134.5 | 130.4 | 126.3 |
| 75°   | 111.8 | 109.8 | 106.4 | 102.9 |
| 77.5° | 88.6  | 86.4  | 83.7  | 81.0  |
| 80°   | 65.2  | 63.8  | 61.8  | 59.7  |
| 82.5° | 45.3  | 44.0  | 42.6  | 40.5  |
| 85°   | 27.5  | 26.1  | 24.7  | 23.4  |
| 87.5° | 12.3  | 11.7  | 10.3  | 9.6   |
| 90°   | 0.0   | 0.0   | 0.0   | 0.0   |



Report Generated By 670246072 / DESKTOP-50001EG





— 0°-180°    - - 45°-225°    - - - - 90°-270°    - · - 135°-315°













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

Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

METALUX

Report Number: SP1-2210-795-4

Test Date: 10/06/2022

Luminaire Tested: 9WP217084MDER4AM-4000K-315MA

Data in this report applies to families of products including 9WP217084MDER4AM-4000K.

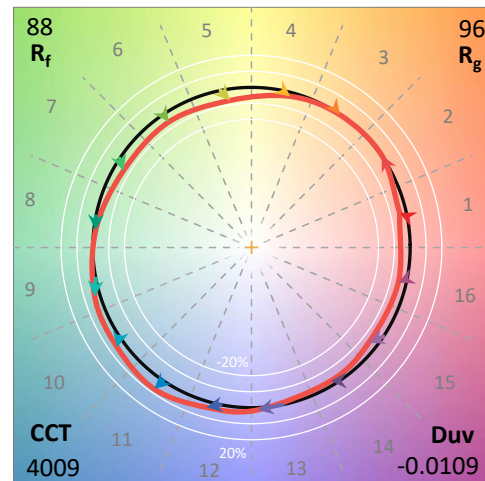
### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2210-795-4  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 10/06/2022  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: METALUX  
 Catalog Number: **9WP217084MDER4AM-4000K-315MA**  
 Description: METALUX

TUNABLE BOARD, 4000K-315MA, PROGRAMMED @ 5.0Vdc.

### Spectral Parameters

|                           |         |           |      |      |      |
|---------------------------|---------|-----------|------|------|------|
| CCT (K):                  | 4009    | CRI (Ra): | 87.8 |      |      |
| CIE u':                   | 0.2311  | R1:       | 94.2 | R9:  | 79.5 |
| CIE v':                   | 0.4879  | R2:       | 88.6 | R10: | 77.2 |
| Duv:                      | -0.0109 | R3:       | 84.5 | R11: | 92.9 |
| CIE x:                    | 0.3728  | R4:       | 91.1 | R12: | 72.5 |
| CIE y:                    | 0.3498  | R5:       | 92.1 | R13: | 92.1 |
| CIE z:                    | 0.2775  | R6:       | 82.3 | R14: | 92.6 |
| Peak Wavelength (nm):     | 632     | R7:       | 84.3 |      |      |
| Dominant Wavelength (nm): | 588     | R8:       | 84.9 |      |      |
| Purity:                   | 17.1    |           |      |      |      |
| Rf:                       | 88      |           |      |      |      |
| Rg:                       | 96.2    |           |      |      |      |



### Test Conditions

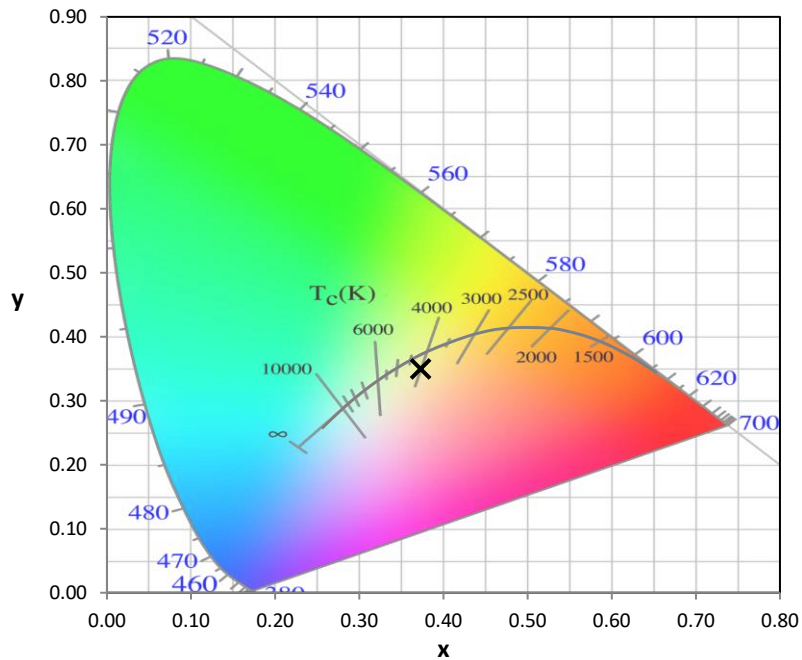
Stabilization Time: 44M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 24.0/38%  
 Sphere Temperature (°C): 24.4

REPORT NUMBER: SP1-2210-795-4

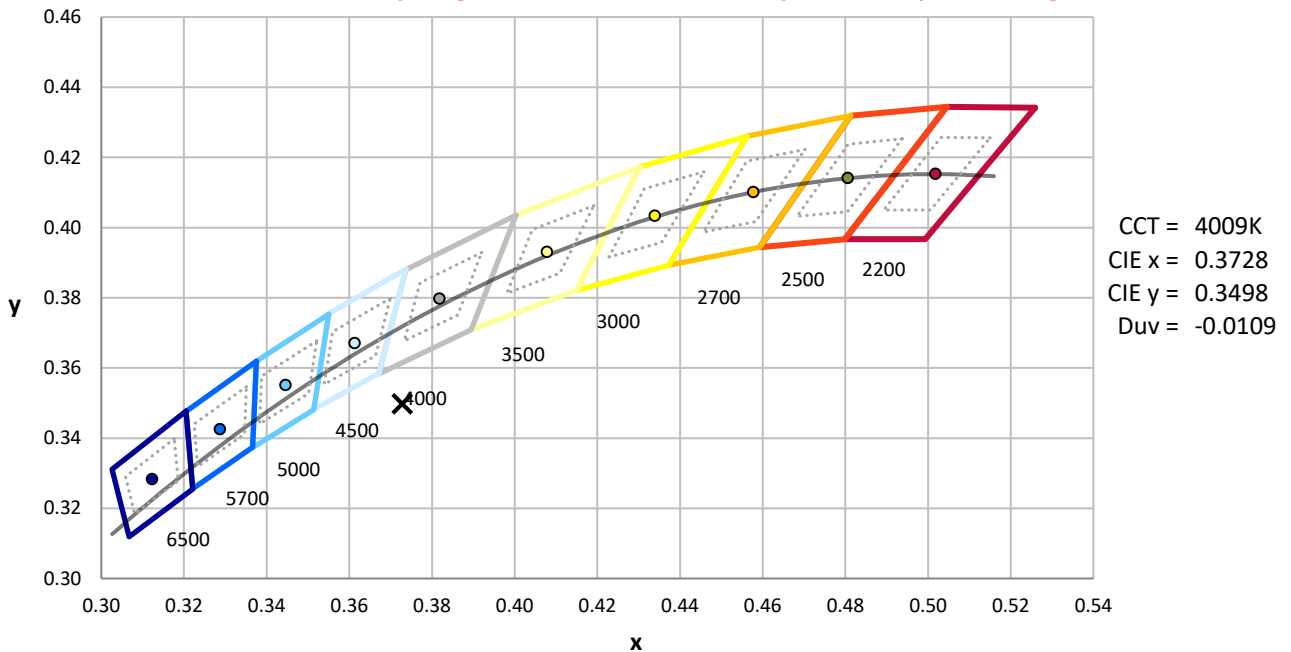
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | 76INCH SPHERE IN0058  | 8/8/2022         | 2/8/2023             |
| Power Meter                    | XITRON 2801 IN0071    | 11/29/2021       | 11/29/2022           |
| AC Power Source                | CHROMA 61603 IN0063   | 11/29/2021       | 11/29/2022           |
| DC Power Source                | AGILENT E3634A IN0208 | 11/29/2021       | 11/29/2022           |
| Sphere Thermometer             | ONSET IN0085          | 11/29/2021       | 11/29/2022           |
| Room Thermometer               | ONSET IN0046          | 11/29/2021       | 11/29/2022           |

REPORT NUMBER: SP1-2210-795-4

**CIE 1931 Chromaticity Diagram**



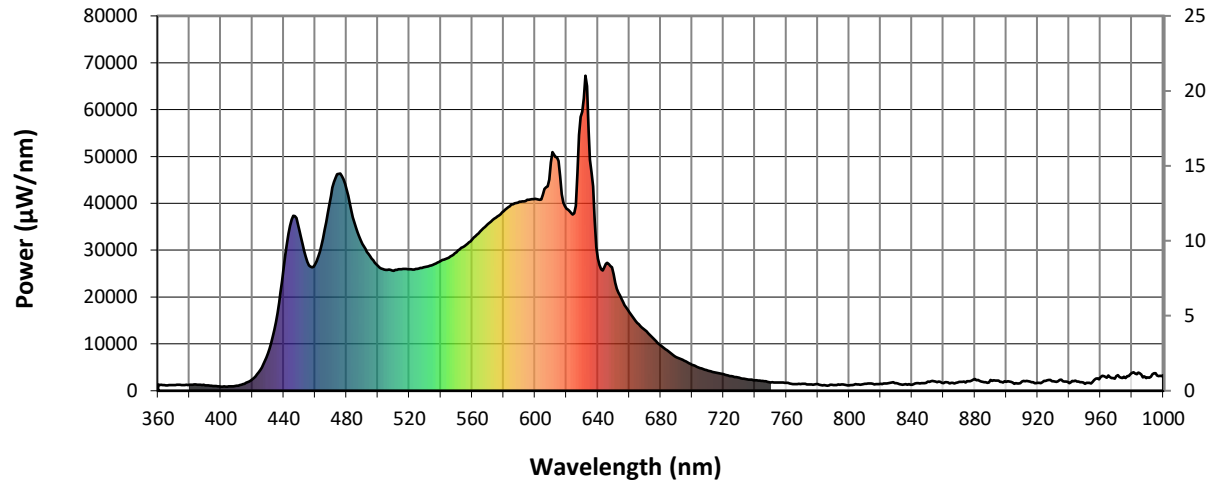
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies outside the range

REPORT NUMBER: SP1-2210-795-4

**Photopic Flux vs. Wavelength**

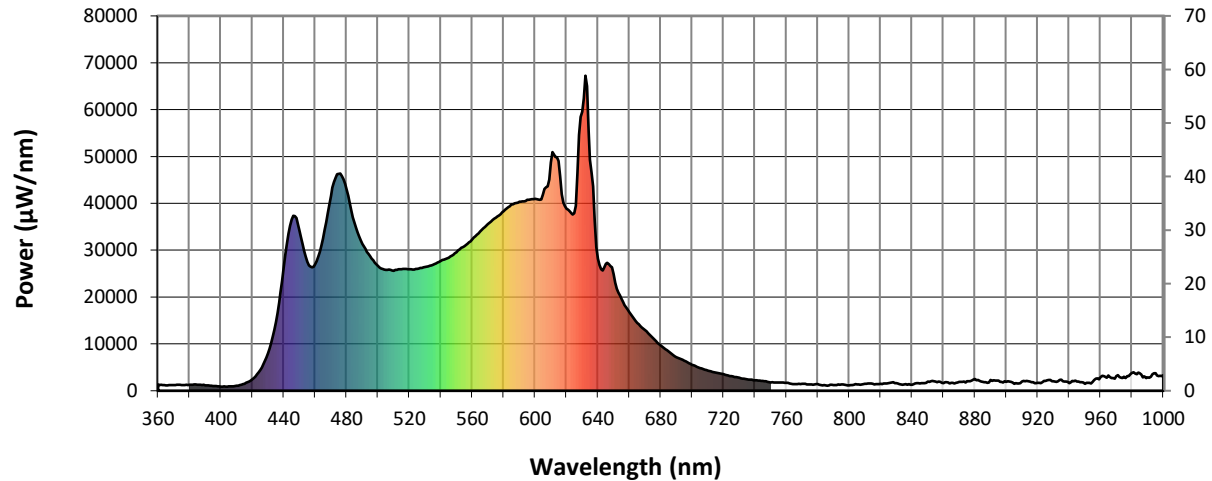


#####

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 1347             | NR               | 490       | 31353            | NR               | 620       | 38840            | NR               | 750       | 1762             | NR               | 880       | 2493             | NR               |
| 365       | 1168             | NR               | 495       | 28718            | NR               | 625       | 37861            | NR               | 755       | 1752             | NR               | 885       | 1913             | NR               |
| 370       | 1204             | NR               | 500       | 26605            | NR               | 630       | 59547            | NR               | 760       | 1690             | NR               | 890       | 2275             | NR               |
| 375       | 1232             | NR               | 505       | 25784            | NR               | 635       | 49312            | NR               | 765       | 1395             | NR               | 895       | 2173             | NR               |
| 380       | 1249             | NR               | 510       | 25614            | NR               | 640       | 28168            | NR               | 770       | 1452             | NR               | 900       | 1923             | NR               |
| 385       | 1285             | NR               | 515       | 25941            | NR               | 645       | 27115            | NR               | 775       | 1370             | NR               | 905       | 1511             | NR               |
| 390       | 1154             | NR               | 520       | 25900            | NR               | 650       | 24916            | NR               | 780       | 1429             | NR               | 910       | 1971             | NR               |
| 395       | 1036             | NR               | 525       | 26015            | NR               | 655       | 19572            | NR               | 785       | 1112             | NR               | 915       | 1957             | NR               |
| 400       | 873              | NR               | 530       | 26424            | NR               | 660       | 16766            | NR               | 790       | 1222             | NR               | 920       | 1699             | NR               |
| 405       | 908              | NR               | 535       | 26869            | NR               | 665       | 14487            | NR               | 795       | 1347             | NR               | 925       | 2123             | NR               |
| 410       | 1056             | NR               | 540       | 27684            | NR               | 670       | 12943            | NR               | 800       | 1132             | NR               | 930       | 2029             | NR               |
| 415       | 1492             | NR               | 545       | 28407            | NR               | 675       | 11228            | NR               | 805       | 1360             | NR               | 935       | 2371             | NR               |
| 420       | 2426             | NR               | 550       | 29571            | NR               | 680       | 9665             | NR               | 810       | 1451             | NR               | 940       | 1649             | NR               |
| 425       | 4409             | NR               | 555       | 30862            | NR               | 685       | 8389             | NR               | 815       | 1507             | NR               | 945       | 1984             | NR               |
| 430       | 7984             | NR               | 560       | 32297            | NR               | 690       | 7170             | NR               | 820       | 1466             | NR               | 950       | 1495             | NR               |
| 435       | 14687            | NR               | 565       | 33979            | NR               | 695       | 6398             | NR               | 825       | 1609             | NR               | 955       | 1862             | NR               |
| 440       | 26286            | NR               | 570       | 35579            | NR               | 700       | 5544             | NR               | 830       | 1642             | NR               | 960       | 2951             | NR               |
| 445       | 36513            | NR               | 575       | 36922            | NR               | 705       | 4845             | NR               | 835       | 1363             | NR               | 965       | 3240             | NR               |
| 450       | 34274            | NR               | 580       | 38319            | NR               | 710       | 4309             | NR               | 840       | 1294             | NR               | 970       | 3119             | NR               |
| 455       | 27519            | NR               | 585       | 39771            | NR               | 715       | 3879             | NR               | 845       | 1584             | NR               | 975       | 3020             | NR               |
| 460       | 26986            | NR               | 590       | 40329            | NR               | 720       | 3504             | NR               | 850       | 1930             | NR               | 980       | 3800             | NR               |
| 465       | 32511            | NR               | 595       | 40738            | NR               | 725       | 3094             | NR               | 855       | 1952             | NR               | 985       | 3748             | NR               |
| 470       | 41588            | NR               | 600       | 40944            | NR               | 730       | 2758             | NR               | 860       | 1631             | NR               | 990       | 2878             | NR               |
| 475       | 46297            | NR               | 605       | 41826            | NR               | 735       | 2441             | NR               | 865       | 1714             | NR               | 995       | 3708             | NR               |
| 480       | 42885            | NR               | 610       | 48714            | NR               | 740       | 2221             | NR               | 870       | 1878             | NR               | 1000      | 3359             | NR               |
| 485       | 35895            | NR               | 615       | 48984            | NR               | 745       | 2091             | NR               | 875       | 2024             | NR               |           |                  |                  |

REPORT NUMBER: SP1-2210-795-4

**Scotopic Flux vs. Wavelength**



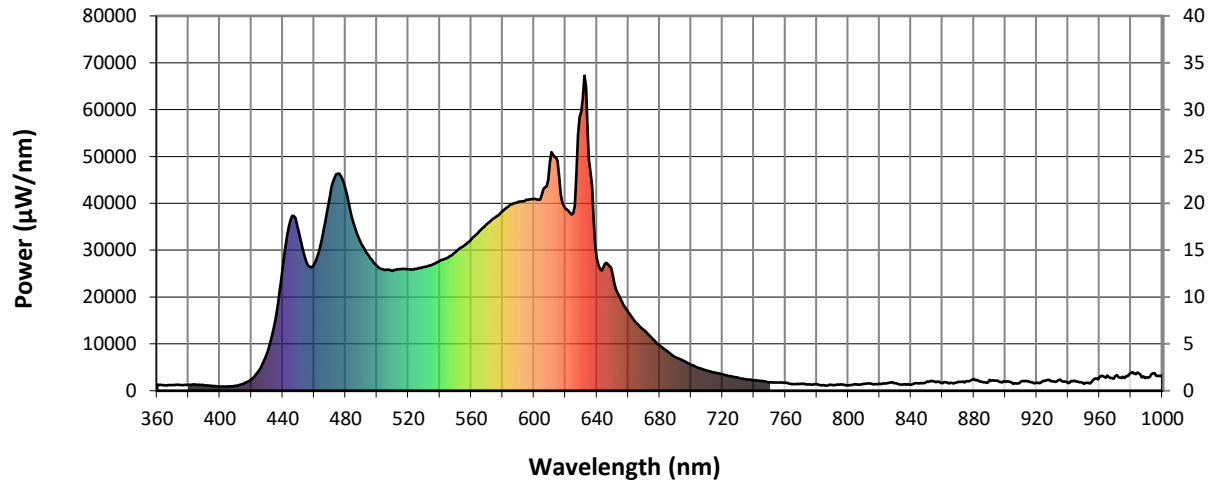
**Scotopic Lumens: 4927.4**

**S/P: 2.02**

| $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|
| 360               | 1347                          | NR                             | 490               | 31353                         | NR                             | 620               | 38840                         | NR                             | 750               | 1762                          | NR                             | 880               | 2493                          | NR                             |
| 365               | 1168                          | NR                             | 495               | 28718                         | NR                             | 625               | 37861                         | NR                             | 755               | 1752                          | NR                             | 885               | 1913                          | NR                             |
| 370               | 1204                          | NR                             | 500               | 26605                         | NR                             | 630               | 59547                         | NR                             | 760               | 1690                          | NR                             | 890               | 2275                          | NR                             |
| 375               | 1232                          | NR                             | 505               | 25784                         | NR                             | 635               | 49312                         | NR                             | 765               | 1395                          | NR                             | 895               | 2173                          | NR                             |
| 380               | 1249                          | NR                             | 510               | 25614                         | NR                             | 640               | 28168                         | NR                             | 770               | 1452                          | NR                             | 900               | 1923                          | NR                             |
| 385               | 1285                          | NR                             | 515               | 25941                         | NR                             | 645               | 27115                         | NR                             | 775               | 1370                          | NR                             | 905               | 1511                          | NR                             |
| 390               | 1154                          | NR                             | 520               | 25900                         | NR                             | 650               | 24916                         | NR                             | 780               | 1429                          | NR                             | 910               | 1971                          | NR                             |
| 395               | 1036                          | NR                             | 525               | 26015                         | NR                             | 655               | 19572                         | NR                             | 785               | 1112                          | NR                             | 915               | 1957                          | NR                             |
| 400               | 873                           | NR                             | 530               | 26424                         | NR                             | 660               | 16766                         | NR                             | 790               | 1222                          | NR                             | 920               | 1699                          | NR                             |
| 405               | 908                           | NR                             | 535               | 26869                         | NR                             | 665               | 14487                         | NR                             | 795               | 1347                          | NR                             | 925               | 2123                          | NR                             |
| 410               | 1056                          | NR                             | 540               | 27684                         | NR                             | 670               | 12943                         | NR                             | 800               | 1132                          | NR                             | 930               | 2029                          | NR                             |
| 415               | 1492                          | NR                             | 545               | 28407                         | NR                             | 675               | 11228                         | NR                             | 805               | 1360                          | NR                             | 935               | 2371                          | NR                             |
| 420               | 2426                          | NR                             | 550               | 29571                         | NR                             | 680               | 9665                          | NR                             | 810               | 1451                          | NR                             | 940               | 1649                          | NR                             |
| 425               | 4409                          | NR                             | 555               | 30862                         | NR                             | 685               | 8389                          | NR                             | 815               | 1507                          | NR                             | 945               | 1984                          | NR                             |
| 430               | 7984                          | NR                             | 560               | 32297                         | NR                             | 690               | 7170                          | NR                             | 820               | 1466                          | NR                             | 950               | 1495                          | NR                             |
| 435               | 14687                         | NR                             | 565               | 33979                         | NR                             | 695               | 6398                          | NR                             | 825               | 1609                          | NR                             | 955               | 1862                          | NR                             |
| 440               | 26286                         | NR                             | 570               | 35579                         | NR                             | 700               | 5544                          | NR                             | 830               | 1642                          | NR                             | 960               | 2951                          | NR                             |
| 445               | 36513                         | NR                             | 575               | 36922                         | NR                             | 705               | 4845                          | NR                             | 835               | 1363                          | NR                             | 965               | 3240                          | NR                             |
| 450               | 34274                         | NR                             | 580               | 38319                         | NR                             | 710               | 4309                          | NR                             | 840               | 1294                          | NR                             | 970               | 3119                          | NR                             |
| 455               | 27519                         | NR                             | 585               | 39771                         | NR                             | 715               | 3879                          | NR                             | 845               | 1584                          | NR                             | 975               | 3020                          | NR                             |
| 460               | 26986                         | NR                             | 590               | 40329                         | NR                             | 720               | 3504                          | NR                             | 850               | 1930                          | NR                             | 980               | 3800                          | NR                             |
| 465               | 32511                         | NR                             | 595               | 40738                         | NR                             | 725               | 3094                          | NR                             | 855               | 1952                          | NR                             | 985               | 3748                          | NR                             |
| 470               | 41588                         | NR                             | 600               | 40944                         | NR                             | 730               | 2758                          | NR                             | 860               | 1631                          | NR                             | 990               | 2878                          | NR                             |
| 475               | 46297                         | NR                             | 605               | 41826                         | NR                             | 735               | 2441                          | NR                             | 865               | 1714                          | NR                             | 995               | 3708                          | NR                             |
| 480               | 42885                         | NR                             | 610               | 48714                         | NR                             | 740               | 2221                          | NR                             | 870               | 1878                          | NR                             | 1000              | 3359                          | NR                             |
| 485               | 35895                         | NR                             | 615               | 48984                         | NR                             | 745               | 2091                          | NR                             | 875               | 2024                          | NR                             |                   |                               |                                |

REPORT NUMBER: SP1-2210-795-4

**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 2189.1**

**S/P: 0.9**

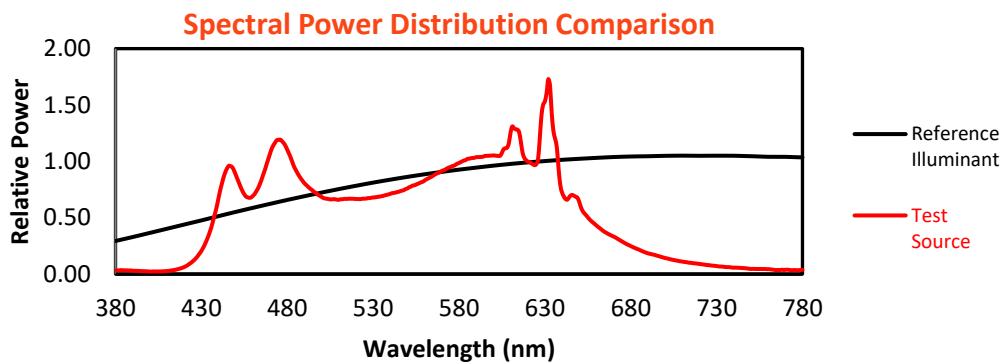
| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 1347             | NR               | 490       | 31353            | NR               | 620       | 38840            | NR               | 750       | 1762             | NR               | 880       | 2493             | NR               |
| 365       | 1168             | NR               | 495       | 28718            | NR               | 625       | 37861            | NR               | 755       | 1752             | NR               | 885       | 1913             | NR               |
| 370       | 1204             | NR               | 500       | 26605            | NR               | 630       | 59547            | NR               | 760       | 1690             | NR               | 890       | 2275             | NR               |
| 375       | 1232             | NR               | 505       | 25784            | NR               | 635       | 49312            | NR               | 765       | 1395             | NR               | 895       | 2173             | NR               |
| 380       | 1249             | NR               | 510       | 25614            | NR               | 640       | 28168            | NR               | 770       | 1452             | NR               | 900       | 1923             | NR               |
| 385       | 1285             | NR               | 515       | 25941            | NR               | 645       | 27115            | NR               | 775       | 1370             | NR               | 905       | 1511             | NR               |
| 390       | 1154             | NR               | 520       | 25900            | NR               | 650       | 24916            | NR               | 780       | 1429             | NR               | 910       | 1971             | NR               |
| 395       | 1036             | NR               | 525       | 26015            | NR               | 655       | 19572            | NR               | 785       | 1112             | NR               | 915       | 1957             | NR               |
| 400       | 873              | NR               | 530       | 26424            | NR               | 660       | 16766            | NR               | 790       | 1222             | NR               | 920       | 1699             | NR               |
| 405       | 908              | NR               | 535       | 26869            | NR               | 665       | 14487            | NR               | 795       | 1347             | NR               | 925       | 2123             | NR               |
| 410       | 1056             | NR               | 540       | 27684            | NR               | 670       | 12943            | NR               | 800       | 1132             | NR               | 930       | 2029             | NR               |
| 415       | 1492             | NR               | 545       | 28407            | NR               | 675       | 11228            | NR               | 805       | 1360             | NR               | 935       | 2371             | NR               |
| 420       | 2426             | NR               | 550       | 29571            | NR               | 680       | 9665             | NR               | 810       | 1451             | NR               | 940       | 1649             | NR               |
| 425       | 4409             | NR               | 555       | 30862            | NR               | 685       | 8389             | NR               | 815       | 1507             | NR               | 945       | 1984             | NR               |
| 430       | 7984             | NR               | 560       | 32297            | NR               | 690       | 7170             | NR               | 820       | 1466             | NR               | 950       | 1495             | NR               |
| 435       | 14687            | NR               | 565       | 33979            | NR               | 695       | 6398             | NR               | 825       | 1609             | NR               | 955       | 1862             | NR               |
| 440       | 26286            | NR               | 570       | 35579            | NR               | 700       | 5544             | NR               | 830       | 1642             | NR               | 960       | 2951             | NR               |
| 445       | 36513            | NR               | 575       | 36922            | NR               | 705       | 4845             | NR               | 835       | 1363             | NR               | 965       | 3240             | NR               |
| 450       | 34274            | NR               | 580       | 38319            | NR               | 710       | 4309             | NR               | 840       | 1294             | NR               | 970       | 3119             | NR               |
| 455       | 27519            | NR               | 585       | 39771            | NR               | 715       | 3879             | NR               | 845       | 1584             | NR               | 975       | 3020             | NR               |
| 460       | 26986            | NR               | 590       | 40329            | NR               | 720       | 3504             | NR               | 850       | 1930             | NR               | 980       | 3800             | NR               |
| 465       | 32511            | NR               | 595       | 40738            | NR               | 725       | 3094             | NR               | 855       | 1952             | NR               | 985       | 3748             | NR               |
| 470       | 41588            | NR               | 600       | 40944            | NR               | 730       | 2758             | NR               | 860       | 1631             | NR               | 990       | 2878             | NR               |
| 475       | 46297            | NR               | 605       | 41826            | NR               | 735       | 2441             | NR               | 865       | 1714             | NR               | 995       | 3708             | NR               |
| 480       | 42885            | NR               | 610       | 48714            | NR               | 740       | 2221             | NR               | 870       | 1878             | NR               | 1000      | 3359             | NR               |
| 485       | 35895            | NR               | 615       | 48984            | NR               | 745       | 2091             | NR               | 875       | 2024             | NR               |           |                  |                  |

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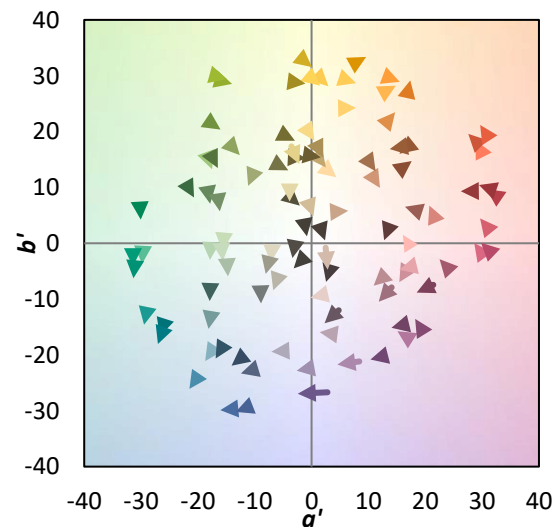
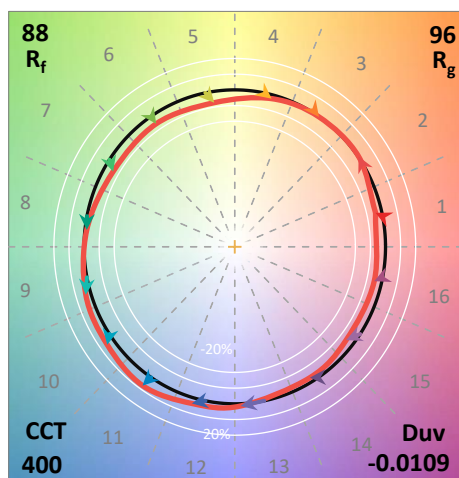
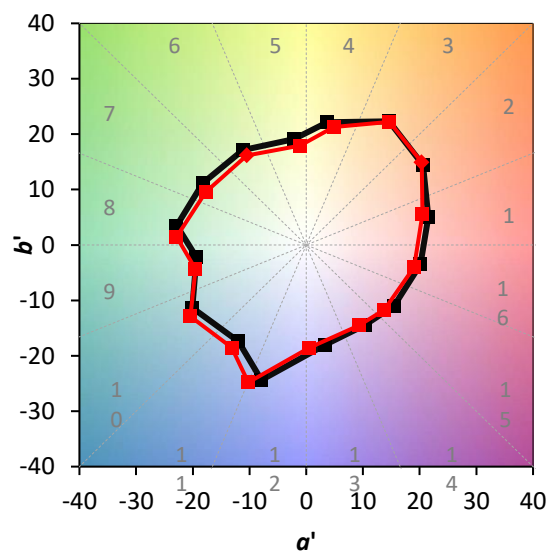
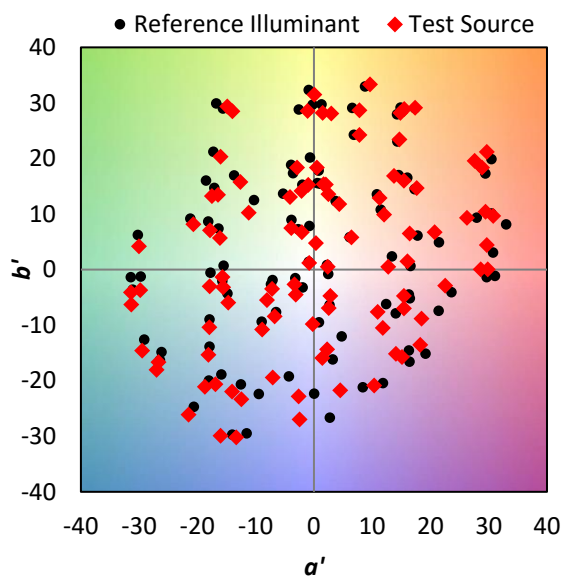
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### Summary

$R_f = 88$   
 $R_g = 96.2$   
 CIE  $R_a = 87.8$   
 $R_g = 79.5$



### Color Vector Graphics

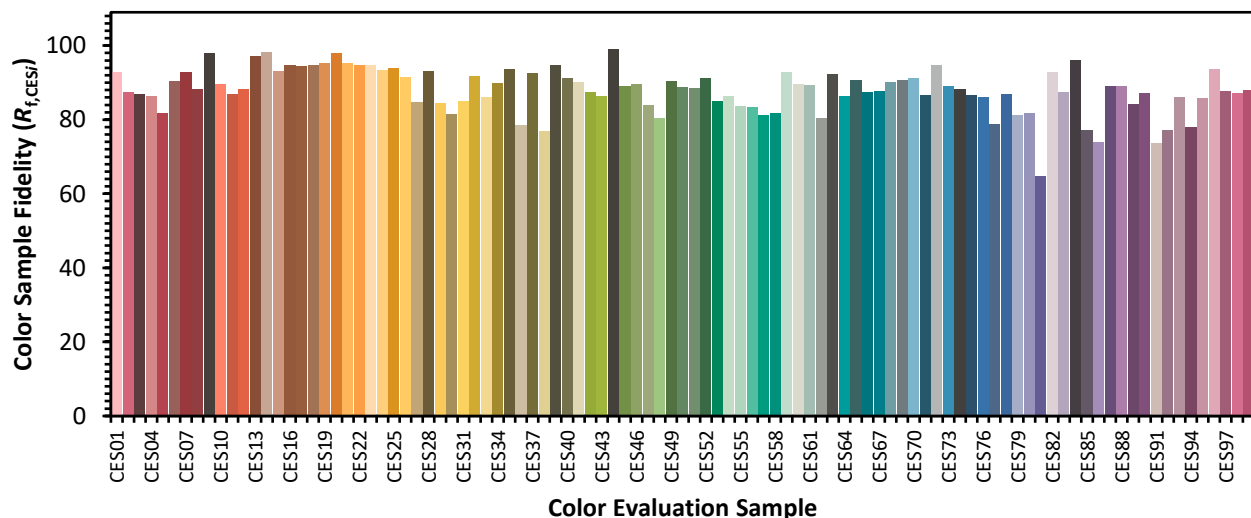


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**Individual Sample Fidelity Index ( $R_{f,i}$ )**

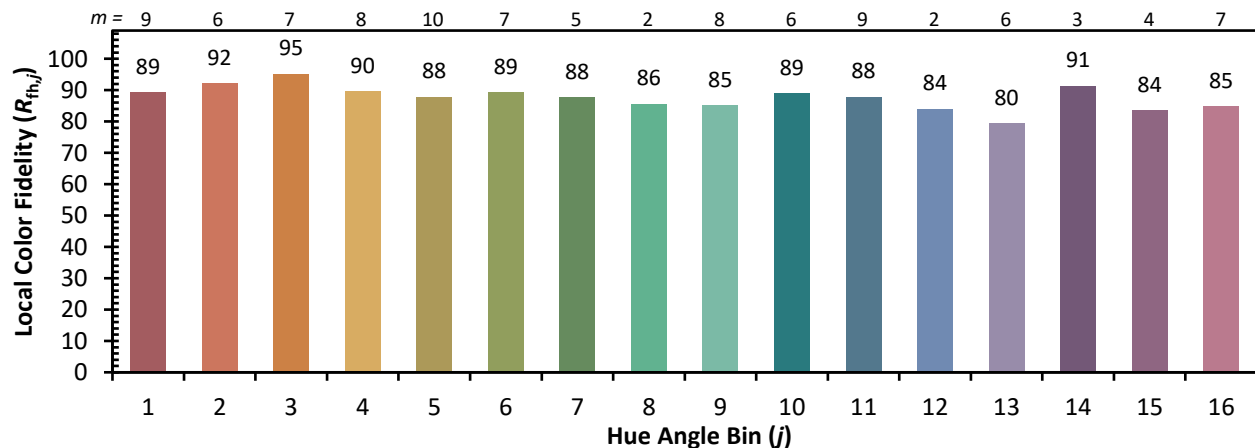
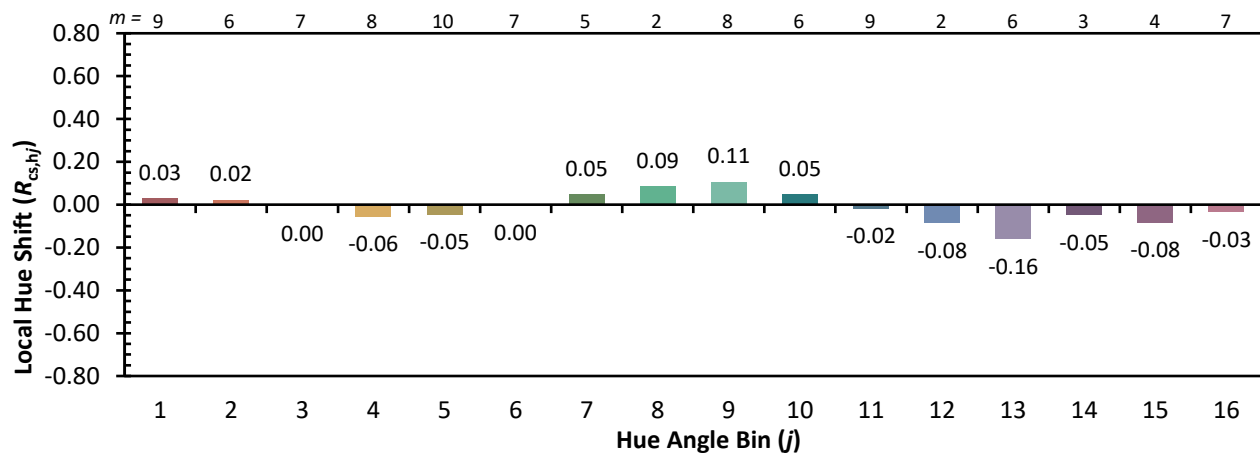
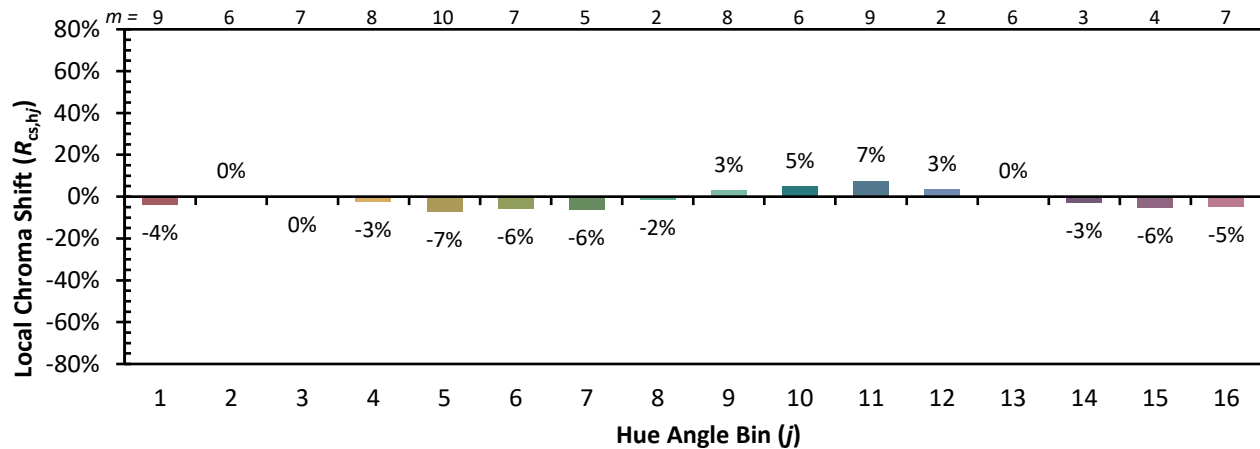
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|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 91 | CES51 = 88 | CES76 = 86 |
| CES02 = 62 | CES27 = 85 | CES52 = 91 | CES77 = 79 |
| CES03 = 31 | CES28 = 93 | CES53 = 85 | CES78 = 87 |
| CES04 = 70 | CES29 = 84 | CES54 = 86 | CES79 = 81 |
| CES05 = 49 | CES30 = 81 | CES55 = 84 | CES80 = 82 |
| CES06 = 51 | CES31 = 85 | CES56 = 83 | CES81 = 65 |
| CES07 = 42 | CES32 = 92 | CES57 = 81 | CES82 = 93 |
| CES08 = 41 | CES33 = 86 | CES58 = 82 | CES83 = 87 |
| CES09 = 29 | CES34 = 90 | CES59 = 93 | CES84 = 96 |
| CES10 = 75 | CES35 = 94 | CES60 = 90 | CES85 = 77 |
| CES11 = 58 | CES36 = 78 | CES61 = 89 | CES86 = 74 |
| CES12 = 64 | CES37 = 92 | CES62 = 80 | CES87 = 89 |
| CES13 = 43 | CES38 = 77 | CES63 = 92 | CES88 = 89 |
| CES14 = 74 | CES39 = 95 | CES64 = 86 | CES89 = 84 |
| CES15 = 71 | CES40 = 91 | CES65 = 91 | CES90 = 87 |
| CES16 = 47 | CES41 = 90 | CES66 = 87 | CES91 = 74 |
| CES17 = 49 | CES42 = 87 | CES67 = 88 | CES92 = 77 |
| CES18 = 56 | CES43 = 86 | CES68 = 90 | CES93 = 86 |
| CES19 = 71 | CES44 = 99 | CES69 = 91 | CES94 = 78 |
| CES20 = 66 | CES45 = 89 | CES70 = 91 | CES95 = 86 |
| CES21 = 85 | CES46 = 90 | CES71 = 86 | CES96 = 94 |
| CES22 = 78 | CES47 = 84 | CES72 = 95 | CES97 = 88 |
| CES23 = 91 | CES48 = 80 | CES73 = 89 | CES98 = 87 |
| CES24 = 90 | CES49 = 90 | CES74 = 88 | CES99 = 88 |
| CES25 = 71 | CES50 = 89 | CES75 = 86 |            |



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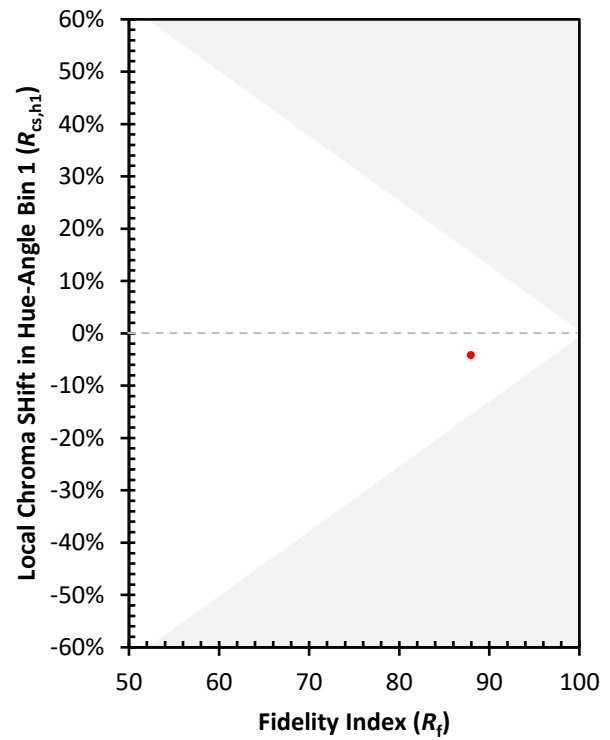
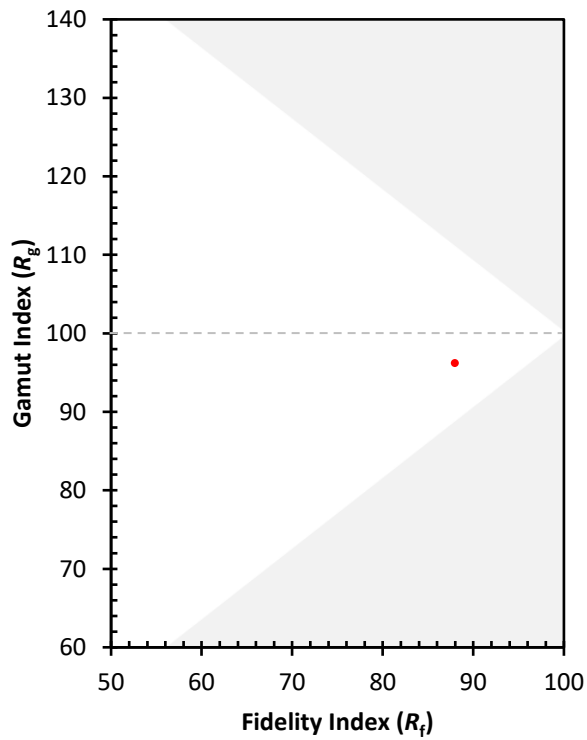
**Color Rendition by Hue-Angle Bin**



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**Measure Comparisons**



(END OF REPORT)