

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: P735606

Luminaire Tested: **4APN6-29-B2750-W2D-CP125-4000K**

Issue Date: 1/5/2024



**Test Information**

Test Method: LM-79-08  
Report Number: P735606  
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: 4APN6-29-B2750-W2D-CP125-4000K  
Description: 4FT 2900 AMBIENT LUMEN OUTPUT APN WITH BIO UP LEDS AT 4000K CCT, AND CP125 LENS

Light Source: -  
Ballast/Driver: -

**Summary**

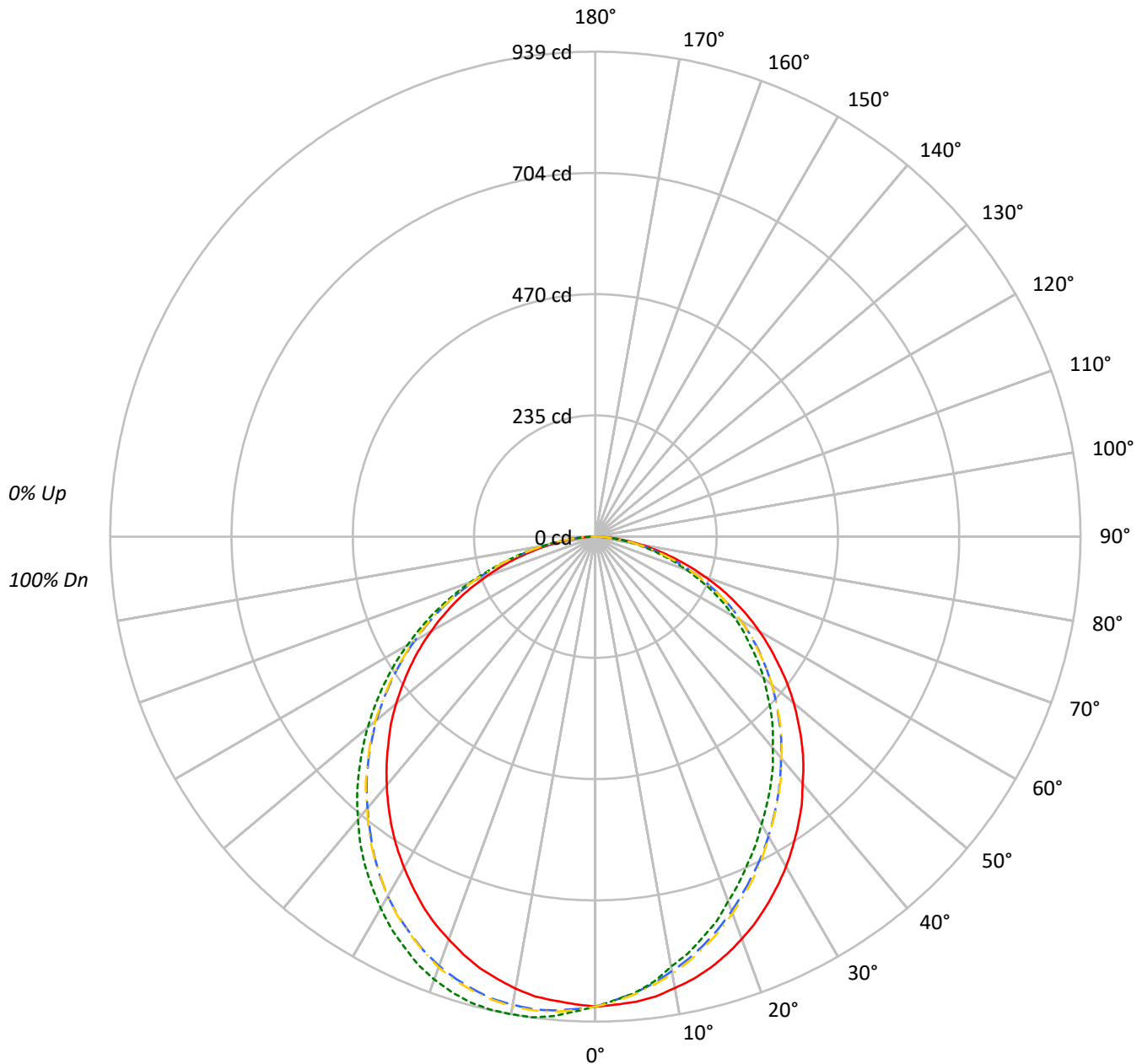
Lumens per Lamp: N/A  
Luminaire Lumens: 2441.0 lumens  
Efficiency: N/A  
Efficacy: 85.6 lumens/watt  
Spacing Criteria (0/90/45): 1.21 / 1.21 / 1.33  
Luminous Opening: Rectangular (W 0.29' x L: 4' x H: 0')  
CIE Type: Direct

Input Watts (W): 28.5  
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: P735606

CATALOG NUMBER: 4APN6-29-B2750-W2D-CP125-4000K

### Luminous Intensity Polar Plot





TEST NUMBER: P735606

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

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|
| RF  | 20  |     |     |     | 20  |     |     |     |     | 20  |     |     |     |     | 20  |     |     |     |    | 20 |
| RC  | 80  |     |     |     | 70  |     |     |     |     | 50  |     |     |     |     | 30  |     |     |     |    | 0  |
| 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°  | 8397 | 8397 | 8397 | 8397 |
| 5°  | 8372 | 8210 | 8353 | 8630 |
| 10° | 8315 | 7919 | 8325 | 8796 |
| 15° | 8251 | 7671 | 8261 | 8919 |
| 20° | 8138 | 7379 | 8148 | 8956 |
| 25° | 8008 | 7107 | 8038 | 8920 |
| 30° | 7864 | 6856 | 7886 | 8851 |
| 35° | 7699 | 6655 | 7734 | 8756 |
| 40° | 7514 | 6435 | 7565 | 8605 |
| 45° | 7375 | 6275 | 7389 | 8450 |
| 50° | 7198 | 6103 | 7226 | 8260 |
| 55° | 6971 | 5879 | 7021 | 8033 |
| 60° | 6763 | 5700 | 6783 | 7752 |
| 65° | 6495 | 5462 | 6495 | 7418 |
| 70° | 6053 | 5055 | 6029 | 6914 |
| 75° | 5504 | 4588 | 5433 | 6206 |
| 80° | 4761 | 3942 | 4596 | 5308 |
| 85° | 3716 | 2943 | 3493 | 4361 |



TEST NUMBER: P735606

CATALOG NUMBER: 4APN6-29-B2750-W2D-CP125-4000K

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 86.0   | 3.5       |
| 10°-20°   | 244.1  | 10.0      |
| 20°-30°   | 362.9  | 14.9      |
| 30°-40°   | 427.7  | 17.5      |
| 40°-50°   | 435.5  | 17.8      |
| 50°-60°   | 387.9  | 15.9      |
| 60°-70°   | 292.3  | 12.0      |
| 70°-80°   | 162.5  | 6.7       |
| 80°-90°   | 42.2   | 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°    | 692.9  | 28.4      |
| 0°-40°    | 1120.6 | 45.9      |
| 0°-60°    | 1944.0 | 79.6      |
| 0°-90°    | 2441.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 2441.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°  | 90° | 180° | 270° | 360° | Flux |
|-----|-----|-----|------|------|------|------|
| 0°  | 910 | 910 | 910  | 910  | 910  |      |
| 5°  | 904 | 886 | 902  | 932  | 904  | 86   |
| 15° | 864 | 803 | 865  | 934  | 864  | 243  |
| 25° | 787 | 698 | 790  | 876  | 787  | 362  |
| 35° | 684 | 591 | 687  | 777  | 684  | 428  |
| 45° | 565 | 481 | 566  | 648  | 565  | 436  |
| 55° | 433 | 366 | 436  | 499  | 433  | 388  |
| 65° | 298 | 250 | 298  | 340  | 298  | 294  |
| 75° | 154 | 129 | 152  | 174  | 154  | 164  |
| 85° | 35  | 28  | 33   | 41   | 35   | 42   |
| 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°    | 910.1 | 910.1 | 910.1 | 910.1 | 910.1 | 910.1 | 910.1 | 910.1 | 910.1 | 910.1 | 910.1 |
| 2.5°  | 907.1 | 907.1 | 908.1 | 904.0 | 898.9 | 896.8 | 895.8 | 894.7 | 896.8 | 897.8 | 896.8 |
| 5°    | 904.0 | 901.9 | 899.8 | 894.7 | 888.6 | 884.4 | 882.3 | 881.3 | 883.4 | 886.5 | 883.4 |
| 7.5°  | 897.8 | 893.7 | 889.5 | 882.3 | 875.2 | 869.0 | 865.9 | 863.8 | 865.9 | 869.0 | 866.9 |
| 10°   | 887.5 | 882.3 | 876.2 | 868.0 | 857.7 | 850.4 | 847.4 | 844.3 | 845.3 | 845.3 | 845.3 |
| 12.5° | 877.2 | 870.1 | 862.8 | 852.5 | 841.1 | 832.9 | 827.8 | 823.7 | 825.7 | 826.8 | 826.8 |
| 15°   | 863.8 | 854.6 | 844.3 | 832.9 | 821.6 | 812.3 | 806.2 | 802.0 | 803.1 | 803.1 | 804.1 |
| 17.5° | 847.4 | 837.1 | 826.8 | 813.4 | 799.9 | 789.6 | 782.5 | 777.4 | 779.3 | 780.5 | 781.4 |
| 20°   | 828.9 | 817.5 | 806.2 | 791.7 | 777.4 | 766.0 | 758.8 | 752.6 | 751.6 | 751.6 | 752.6 |
| 22.5° | 809.3 | 796.9 | 783.5 | 768.1 | 752.6 | 740.2 | 733.0 | 726.9 | 725.9 | 725.9 | 726.9 |
| 25°   | 786.6 | 773.2 | 759.9 | 744.4 | 727.9 | 715.6 | 706.3 | 700.2 | 699.1 | 698.1 | 700.2 |
| 27.5° | 762.9 | 749.6 | 736.2 | 720.8 | 703.2 | 690.8 | 681.5 | 675.4 | 673.3 | 672.3 | 674.4 |
| 30°   | 738.2 | 722.7 | 708.4 | 691.8 | 676.4 | 664.1 | 654.8 | 647.6 | 645.6 | 643.5 | 645.6 |
| 32.5° | 711.4 | 696.0 | 680.6 | 664.1 | 648.7 | 636.3 | 627.0 | 619.9 | 617.8 | 616.7 | 618.8 |
| 35°   | 683.6 | 668.2 | 653.8 | 637.3 | 621.8 | 609.6 | 600.3 | 594.1 | 592.1 | 590.9 | 592.1 |
| 37.5° | 655.8 | 640.5 | 626.0 | 609.6 | 594.1 | 581.8 | 572.4 | 566.3 | 565.2 | 564.2 | 565.2 |
| 40°   | 623.9 | 610.6 | 596.1 | 580.7 | 565.2 | 552.9 | 545.7 | 538.5 | 536.4 | 534.3 | 537.5 |
| 42.5° | 596.1 | 582.7 | 568.4 | 553.9 | 538.5 | 526.1 | 517.9 | 511.8 | 509.7 | 508.6 | 509.7 |
| 45°   | 565.2 | 550.9 | 536.4 | 523.0 | 508.6 | 497.3 | 489.1 | 482.8 | 481.9 | 480.9 | 481.9 |
| 47.5° | 532.4 | 520.0 | 507.6 | 494.2 | 479.8 | 468.5 | 461.3 | 455.1 | 453.0 | 451.0 | 453.0 |
| 50°   | 501.5 | 489.1 | 476.7 | 464.3 | 451.0 | 440.7 | 433.4 | 427.3 | 426.2 | 425.2 | 426.2 |
| 52.5° | 468.5 | 456.1 | 444.8 | 432.5 | 421.1 | 410.8 | 403.6 | 398.5 | 397.4 | 396.4 | 397.4 |
| 55°   | 433.4 | 423.1 | 412.8 | 402.5 | 391.3 | 382.0 | 375.8 | 369.6 | 367.6 | 365.5 | 367.6 |
| 57.5° | 400.5 | 391.3 | 381.0 | 370.7 | 360.4 | 352.2 | 345.9 | 340.8 | 339.8 | 338.7 | 339.8 |
| 60°   | 366.5 | 358.3 | 349.0 | 339.8 | 329.5 | 321.3 | 316.1 | 312.0 | 309.9 | 308.9 | 309.9 |
| 62.5° | 332.6 | 324.3 | 317.1 | 307.8 | 298.6 | 292.3 | 287.2 | 283.2 | 281.1 | 280.1 | 281.1 |
| 65°   | 297.5 | 290.4 | 283.2 | 274.9 | 267.7 | 261.5 | 256.3 | 252.3 | 251.2 | 250.2 | 250.2 |
| 67.5° | 261.5 | 255.3 | 249.2 | 242.0 | 233.8 | 227.5 | 222.4 | 219.3 | 218.3 | 217.2 | 218.3 |
| 70°   | 224.4 | 219.3 | 213.2 | 206.9 | 200.8 | 195.6 | 192.6 | 189.5 | 188.4 | 187.4 | 187.4 |
| 72.5° | 189.5 | 185.3 | 180.2 | 175.0 | 169.9 | 164.7 | 161.7 | 159.6 | 158.6 | 157.5 | 157.5 |
| 75°   | 154.4 | 150.3 | 147.2 | 143.2 | 138.0 | 134.8 | 131.8 | 129.7 | 128.7 | 128.7 | 128.7 |
| 77.5° | 121.5 | 118.4 | 115.3 | 111.2 | 108.1 | 105.0 | 103.0 | 102.0 | 100.9 | 100.9 | 100.9 |
| 80°   | 89.6  | 87.5  | 85.4  | 83.4  | 80.3  | 77.2  | 76.2  | 75.1  | 74.2  | 74.2  | 74.2  |
| 82.5° | 60.8  | 59.7  | 57.6  | 55.7  | 53.6  | 52.5  | 51.5  | 50.5  | 50.5  | 50.5  | 50.5  |
| 85°   | 35.1  | 34.0  | 33.0  | 31.9  | 30.9  | 30.9  | 29.9  | 28.8  | 27.8  | 27.8  | 27.8  |
| 87.5° | 14.5  | 14.5  | 14.5  | 13.4  | 12.4  | 12.4  | 12.4  | 12.4  | 12.4  | 12.4  | 12.4  |
| 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°    | 910.1 | 910.1 | 910.1 | 910.1 | 910.1 | 910.1 | 910.1 | 910.1 | 910.1 | 910.1 | 910.1 |
| 2.5°  | 894.7 | 896.8 | 898.9 | 901.9 | 905.0 | 908.1 | 907.1 | 906.1 | 910.1 | 915.3 | 916.4 |
| 5°    | 881.3 | 883.4 | 886.5 | 891.6 | 896.8 | 900.9 | 901.9 | 901.9 | 910.1 | 917.4 | 919.5 |
| 7.5°  | 864.9 | 868.0 | 872.0 | 877.2 | 884.4 | 890.6 | 893.7 | 897.8 | 906.1 | 915.3 | 919.5 |
| 10°   | 844.3 | 849.5 | 855.6 | 862.8 | 870.1 | 877.2 | 883.4 | 888.6 | 898.9 | 909.2 | 915.3 |
| 12.5° | 825.7 | 830.8 | 837.1 | 845.3 | 854.6 | 863.8 | 870.1 | 877.2 | 889.5 | 901.9 | 909.2 |
| 15°   | 805.1 | 810.2 | 817.5 | 825.7 | 836.0 | 846.3 | 855.6 | 864.9 | 877.2 | 890.6 | 898.9 |
| 17.5° | 782.5 | 787.7 | 794.8 | 805.1 | 816.5 | 827.8 | 838.1 | 848.4 | 862.8 | 877.2 | 886.5 |
| 20°   | 754.7 | 761.9 | 771.1 | 781.4 | 794.8 | 808.3 | 818.6 | 829.9 | 845.3 | 860.7 | 871.0 |
| 22.5° | 727.9 | 735.1 | 745.4 | 757.8 | 772.2 | 786.6 | 799.0 | 811.3 | 827.8 | 843.2 | 854.6 |
| 25°   | 702.1 | 710.5 | 720.8 | 733.0 | 746.5 | 760.8 | 775.3 | 789.6 | 806.2 | 822.6 | 834.0 |
| 27.5° | 676.4 | 683.6 | 693.9 | 706.3 | 721.7 | 736.2 | 750.5 | 765.0 | 782.5 | 799.9 | 812.3 |
| 30°   | 647.6 | 655.8 | 665.1 | 677.5 | 693.9 | 710.5 | 724.8 | 740.2 | 757.8 | 775.3 | 787.7 |
| 32.5° | 620.9 | 628.1 | 637.3 | 649.7 | 666.1 | 682.6 | 698.1 | 714.5 | 731.1 | 748.5 | 760.8 |
| 35°   | 594.1 | 601.2 | 610.6 | 622.9 | 639.4 | 655.8 | 671.2 | 686.7 | 703.2 | 719.7 | 732.0 |
| 37.5° | 567.3 | 574.5 | 583.8 | 596.1 | 611.5 | 628.1 | 642.4 | 657.9 | 674.4 | 690.8 | 702.1 |
| 40°   | 539.5 | 546.7 | 553.9 | 566.3 | 581.8 | 598.2 | 612.6 | 628.1 | 644.5 | 660.9 | 672.3 |
| 42.5° | 511.8 | 518.9 | 528.2 | 540.6 | 554.9 | 569.4 | 583.8 | 598.2 | 613.6 | 629.1 | 640.5 |
| 45°   | 483.9 | 490.1 | 499.4 | 510.7 | 525.1 | 538.5 | 552.9 | 566.3 | 581.8 | 596.1 | 607.5 |
| 47.5° | 455.1 | 461.3 | 468.5 | 479.8 | 494.2 | 508.6 | 523.0 | 536.4 | 549.8 | 564.2 | 574.5 |
| 50°   | 427.3 | 433.4 | 441.6 | 451.9 | 465.4 | 478.8 | 491.2 | 503.4 | 516.9 | 530.3 | 539.5 |
| 52.5° | 398.5 | 404.6 | 411.9 | 422.2 | 433.4 | 445.8 | 457.1 | 469.5 | 481.9 | 494.2 | 503.4 |
| 55°   | 369.6 | 373.7 | 379.9 | 389.2 | 401.6 | 413.9 | 425.2 | 436.5 | 447.9 | 458.2 | 467.4 |
| 57.5° | 340.8 | 345.9 | 353.1 | 361.4 | 371.7 | 382.0 | 392.2 | 402.5 | 412.8 | 423.1 | 431.4 |
| 60°   | 312.0 | 316.1 | 321.3 | 328.4 | 338.7 | 348.0 | 358.3 | 367.6 | 376.8 | 386.1 | 393.4 |
| 62.5° | 282.1 | 286.2 | 291.4 | 298.6 | 306.8 | 315.0 | 324.3 | 332.6 | 340.8 | 349.0 | 356.2 |
| 65°   | 251.2 | 255.3 | 260.5 | 266.6 | 273.8 | 281.1 | 289.3 | 297.5 | 303.7 | 309.9 | 317.1 |
| 67.5° | 219.3 | 223.5 | 228.6 | 233.8 | 239.9 | 247.1 | 254.3 | 261.5 | 267.7 | 273.8 | 279.0 |
| 70°   | 188.4 | 191.5 | 196.6 | 200.8 | 205.9 | 211.1 | 217.2 | 223.5 | 227.5 | 232.7 | 238.9 |
| 72.5° | 158.6 | 161.7 | 165.7 | 169.9 | 173.0 | 177.1 | 183.3 | 188.4 | 193.6 | 199.8 | 202.9 |
| 75°   | 129.7 | 131.8 | 134.8 | 138.0 | 141.1 | 144.2 | 148.3 | 152.4 | 156.5 | 159.6 | 163.8 |
| 77.5° | 100.9 | 103.0 | 106.0 | 108.1 | 110.2 | 112.3 | 115.3 | 118.4 | 121.5 | 123.6 | 127.7 |
| 80°   | 74.2  | 76.2  | 78.2  | 80.3  | 82.4  | 84.5  | 85.4  | 86.5  | 90.6  | 93.6  | 95.7  |
| 82.5° | 50.5  | 51.5  | 52.5  | 54.5  | 55.7  | 56.6  | 57.6  | 57.6  | 59.7  | 61.8  | 64.8  |
| 85°   | 28.8  | 29.9  | 30.9  | 30.9  | 30.9  | 30.9  | 31.9  | 33.0  | 34.0  | 36.0  | 38.1  |
| 87.5° | 11.3  | 11.3  | 12.4  | 12.4  | 12.4  | 12.4  | 12.4  | 12.4  | 13.4  | 15.4  | 16.4  |
| 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: P735606

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**CANDELA DISTRIBUTION (continued):**

|       | 220°  | 230°  | 240°  | 250°  | 260°  | 270°  | 280°  | 290°  | 300°  | 310°  | 320°  |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 910.1 | 910.1 | 910.1 | 910.1 | 910.1 | 910.1 | 910.1 | 910.1 | 910.1 | 910.1 | 910.1 |
| 2.5°  | 915.3 | 916.4 | 918.4 | 919.5 | 920.4 | 920.4 | 921.5 | 922.5 | 920.4 | 918.4 | 917.4 |
| 5°    | 920.4 | 921.5 | 924.6 | 927.7 | 929.8 | 931.8 | 930.7 | 929.8 | 927.7 | 924.6 | 922.5 |
| 7.5°  | 921.5 | 924.6 | 927.7 | 931.8 | 934.9 | 938.9 | 937.0 | 934.9 | 930.7 | 926.7 | 923.5 |
| 10°   | 918.4 | 922.5 | 927.7 | 932.8 | 935.9 | 938.9 | 937.0 | 934.9 | 930.7 | 925.6 | 921.5 |
| 12.5° | 914.3 | 919.5 | 925.6 | 930.7 | 933.8 | 938.0 | 934.9 | 931.8 | 926.7 | 921.5 | 916.4 |
| 15°   | 905.0 | 911.2 | 918.4 | 924.6 | 929.8 | 933.8 | 930.7 | 928.6 | 922.5 | 915.3 | 908.1 |
| 17.5° | 893.7 | 901.9 | 909.2 | 916.4 | 920.4 | 924.6 | 922.5 | 920.4 | 913.2 | 905.0 | 896.8 |
| 20°   | 880.4 | 888.6 | 895.8 | 902.9 | 908.1 | 912.2 | 909.2 | 906.1 | 898.9 | 891.6 | 883.4 |
| 22.5° | 863.8 | 872.0 | 880.4 | 887.5 | 892.6 | 896.8 | 892.6 | 887.5 | 880.4 | 873.1 | 864.9 |
| 25°   | 843.2 | 852.5 | 861.7 | 869.0 | 872.0 | 876.2 | 872.0 | 868.0 | 860.7 | 853.5 | 844.3 |
| 27.5° | 822.6 | 831.9 | 841.1 | 848.4 | 851.4 | 855.6 | 851.4 | 847.4 | 840.1 | 832.9 | 823.7 |
| 30°   | 799.0 | 808.3 | 817.5 | 824.7 | 827.8 | 830.8 | 826.8 | 822.6 | 816.5 | 809.3 | 799.9 |
| 32.5° | 772.2 | 781.4 | 788.7 | 795.9 | 799.9 | 804.1 | 799.9 | 796.9 | 789.6 | 780.5 | 771.1 |
| 35°   | 743.3 | 752.6 | 761.9 | 769.1 | 773.2 | 777.4 | 772.2 | 767.1 | 760.8 | 753.6 | 745.4 |
| 37.5° | 711.4 | 721.7 | 732.0 | 740.2 | 743.3 | 747.5 | 743.3 | 738.2 | 732.0 | 724.8 | 715.6 |
| 40°   | 681.5 | 690.8 | 700.2 | 708.4 | 711.4 | 714.5 | 710.5 | 706.3 | 699.1 | 691.8 | 682.6 |
| 42.5° | 650.8 | 660.0 | 668.2 | 675.4 | 678.5 | 682.6 | 678.5 | 673.3 | 668.2 | 662.0 | 653.8 |
| 45°   | 617.8 | 627.0 | 634.2 | 641.4 | 644.5 | 647.6 | 643.5 | 638.4 | 633.2 | 628.1 | 619.9 |
| 47.5° | 583.8 | 592.1 | 599.3 | 606.4 | 608.5 | 611.5 | 607.5 | 604.4 | 599.3 | 594.1 | 586.9 |
| 50°   | 548.8 | 557.0 | 564.2 | 570.4 | 572.4 | 575.5 | 571.5 | 567.3 | 563.2 | 559.1 | 552.9 |
| 52.5° | 512.7 | 520.0 | 527.2 | 533.3 | 535.4 | 537.5 | 533.3 | 529.2 | 525.1 | 521.0 | 514.8 |
| 55°   | 475.7 | 482.8 | 490.1 | 495.2 | 497.3 | 499.4 | 495.2 | 492.1 | 488.0 | 484.9 | 478.8 |
| 57.5° | 438.6 | 445.8 | 451.9 | 457.1 | 459.2 | 461.3 | 457.1 | 453.0 | 450.0 | 446.8 | 441.6 |
| 60°   | 400.5 | 407.7 | 412.8 | 417.0 | 419.1 | 420.1 | 415.9 | 412.8 | 410.8 | 408.8 | 403.6 |
| 62.5° | 363.4 | 368.6 | 373.7 | 376.8 | 378.9 | 379.9 | 376.8 | 374.7 | 372.8 | 370.7 | 366.5 |
| 65°   | 324.3 | 330.5 | 334.6 | 337.7 | 338.7 | 339.8 | 336.7 | 334.6 | 332.6 | 330.5 | 327.4 |
| 67.5° | 285.2 | 290.4 | 293.5 | 296.5 | 297.5 | 297.5 | 297.5 | 296.5 | 294.4 | 291.4 | 288.3 |
| 70°   | 246.0 | 250.2 | 253.2 | 255.3 | 256.3 | 256.3 | 254.3 | 252.3 | 252.3 | 251.2 | 249.2 |
| 72.5° | 205.9 | 209.0 | 211.1 | 213.2 | 213.2 | 213.2 | 213.2 | 214.1 | 213.2 | 211.1 | 208.0 |
| 75°   | 167.8 | 170.9 | 173.0 | 174.1 | 174.1 | 174.1 | 174.1 | 175.0 | 174.1 | 173.0 | 170.9 |
| 77.5° | 131.8 | 133.9 | 134.8 | 135.9 | 135.9 | 135.9 | 136.9 | 138.0 | 136.9 | 135.9 | 134.8 |
| 80°   | 97.8  | 98.8  | 99.9  | 100.9 | 99.9  | 99.9  | 100.9 | 103.0 | 102.0 | 100.9 | 99.9  |
| 82.5° | 66.9  | 67.9  | 69.0  | 69.0  | 70.0  | 71.1  | 71.1  | 71.1  | 71.1  | 70.0  | 69.0  |
| 85°   | 40.2  | 41.2  | 41.2  | 41.2  | 41.2  | 41.2  | 42.2  | 43.3  | 43.3  | 42.2  | 42.2  |
| 87.5° | 18.5  | 19.6  | 18.5  | 17.5  | 16.4  | 16.4  | 18.5  | 20.6  | 20.6  | 19.6  | 19.6  |
| 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: P735606

CATALOG NUMBER: 4APN6-29-B2750-W2D-CP125-4000K

**CANDELA DISTRIBUTION (continued):**

|       | 330°  | 340°  | 350°  | 360°  |
|-------|-------|-------|-------|-------|
| 0°    | 910.1 | 910.1 | 910.1 | 910.1 |
| 2.5°  | 918.4 | 917.4 | 912.2 | 907.1 |
| 5°    | 921.5 | 918.4 | 911.2 | 904.0 |
| 7.5°  | 921.5 | 917.4 | 907.1 | 897.8 |
| 10°   | 916.4 | 910.1 | 898.9 | 887.5 |
| 12.5° | 910.1 | 902.9 | 889.5 | 877.2 |
| 15°   | 900.9 | 892.6 | 878.3 | 863.8 |
| 17.5° | 887.5 | 877.2 | 862.8 | 847.4 |
| 20°   | 874.1 | 862.8 | 845.3 | 828.9 |
| 22.5° | 855.6 | 845.3 | 826.8 | 809.3 |
| 25°   | 835.0 | 823.7 | 805.1 | 786.6 |
| 27.5° | 813.4 | 799.9 | 781.4 | 762.9 |
| 30°   | 788.7 | 775.3 | 756.8 | 738.2 |
| 32.5° | 761.9 | 749.6 | 731.1 | 711.4 |
| 35°   | 735.1 | 721.7 | 703.2 | 683.6 |
| 37.5° | 705.3 | 692.9 | 674.4 | 655.8 |
| 40°   | 673.3 | 660.9 | 642.4 | 623.9 |
| 42.5° | 643.5 | 632.1 | 613.6 | 596.1 |
| 45°   | 610.6 | 599.3 | 581.8 | 565.2 |
| 47.5° | 576.6 | 565.2 | 548.8 | 532.4 |
| 50°   | 543.6 | 532.4 | 516.9 | 501.5 |
| 52.5° | 506.6 | 497.3 | 482.8 | 468.5 |
| 55°   | 470.6 | 461.3 | 446.8 | 433.4 |
| 57.5° | 434.5 | 426.2 | 412.8 | 400.5 |
| 60°   | 396.4 | 388.2 | 377.9 | 366.5 |
| 62.5° | 360.4 | 353.1 | 342.8 | 332.6 |
| 65°   | 322.3 | 316.1 | 306.8 | 297.5 |
| 67.5° | 283.2 | 278.0 | 269.8 | 261.5 |
| 70°   | 244.1 | 237.8 | 231.7 | 224.4 |
| 72.5° | 204.9 | 201.8 | 195.6 | 189.5 |
| 75°   | 167.8 | 164.7 | 159.6 | 154.4 |
| 77.5° | 132.9 | 129.7 | 125.6 | 121.5 |
| 80°   | 97.8  | 95.7  | 92.7  | 89.6  |
| 82.5° | 67.9  | 65.9  | 63.9  | 60.8  |
| 85°   | 41.2  | 39.1  | 37.0  | 35.1  |
| 87.5° | 18.5  | 17.5  | 15.4  | 14.5  |
| 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.

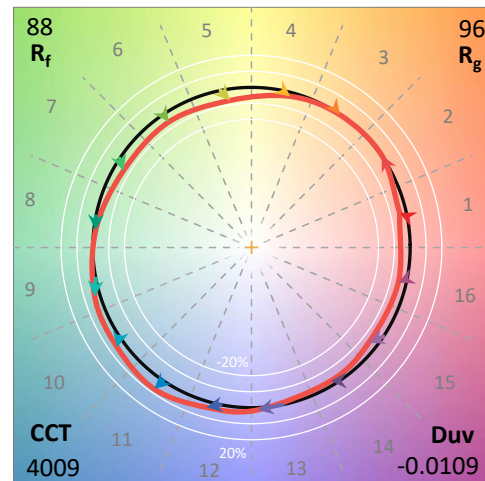
### Test Information

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

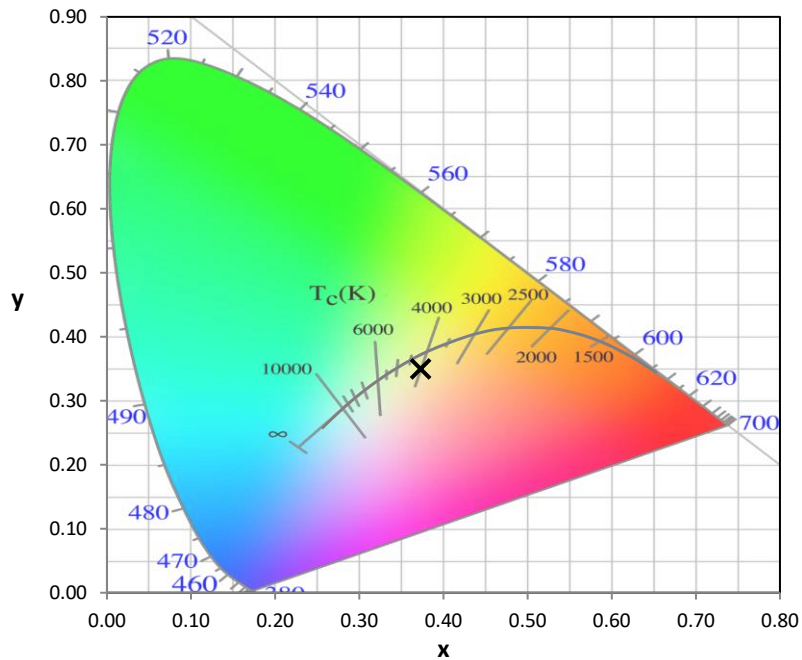
Stabilization Time: 44M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 24.0/38%  
 Sphere Temperature (°C): 24.4

REPORT NUMBER: SP1-2210-795-4

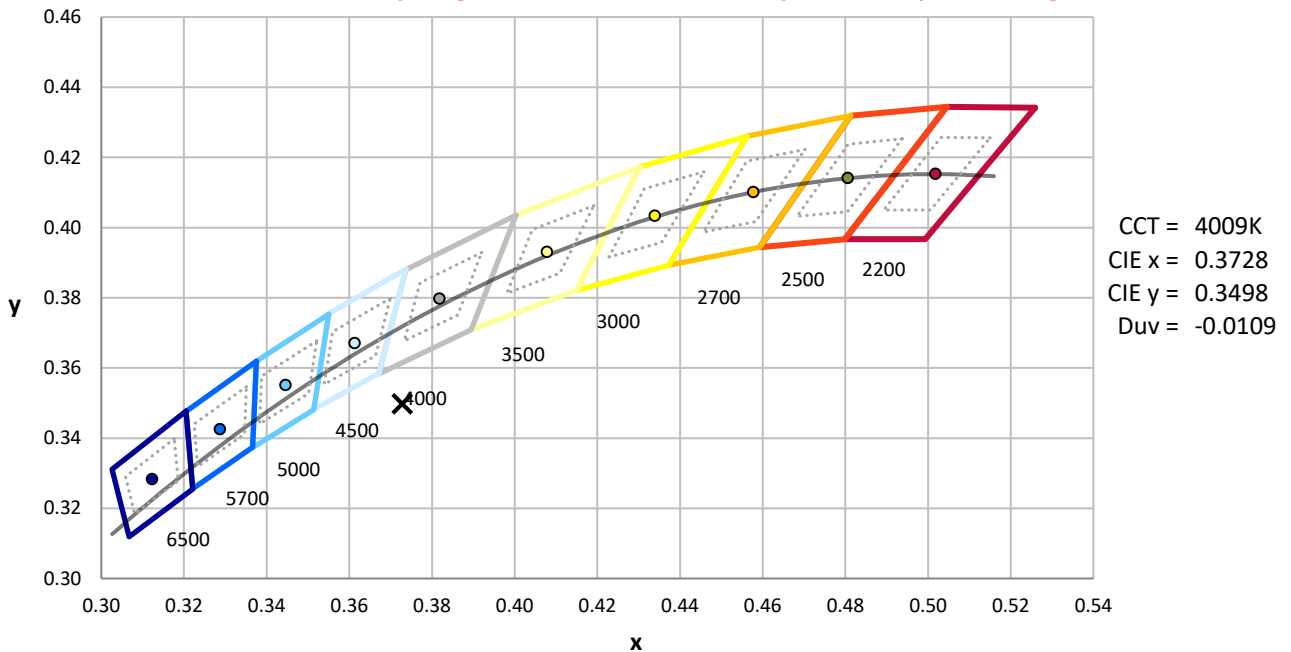
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| 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**



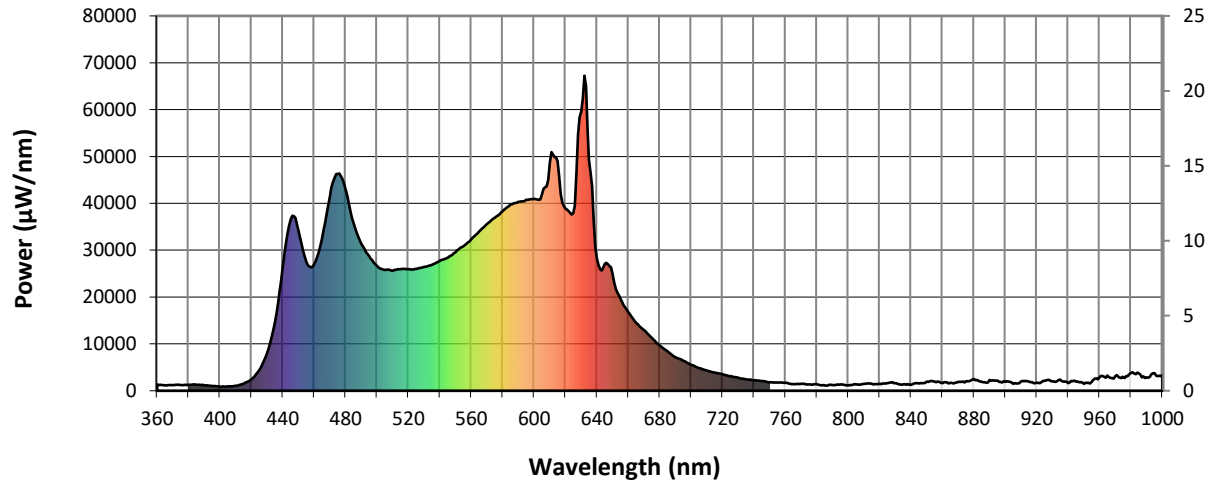
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies outside the range

REPORT NUMBER: SP1-2210-795-4

**Photopic Flux vs. Wavelength**

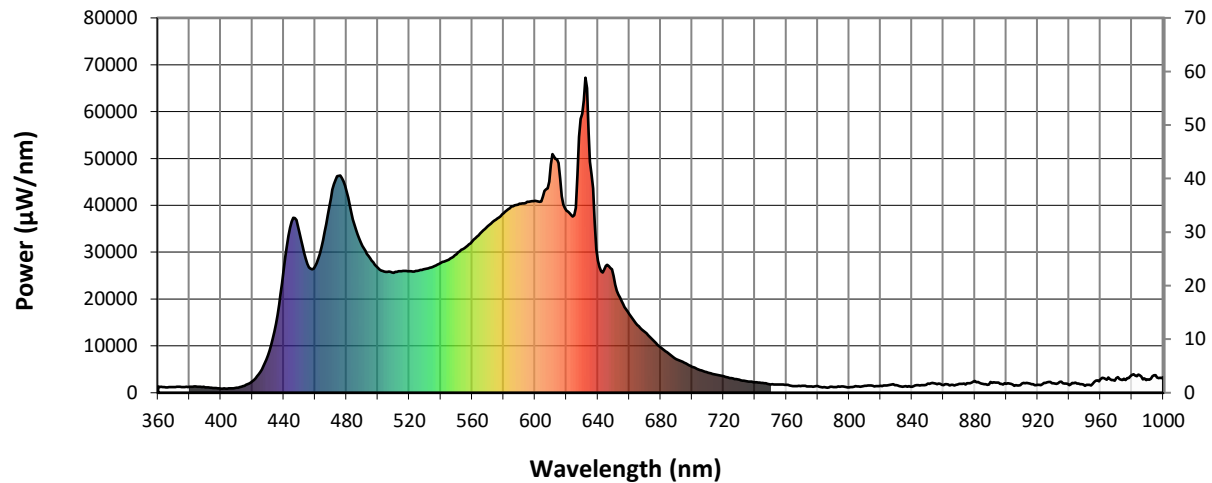


#####

| 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**



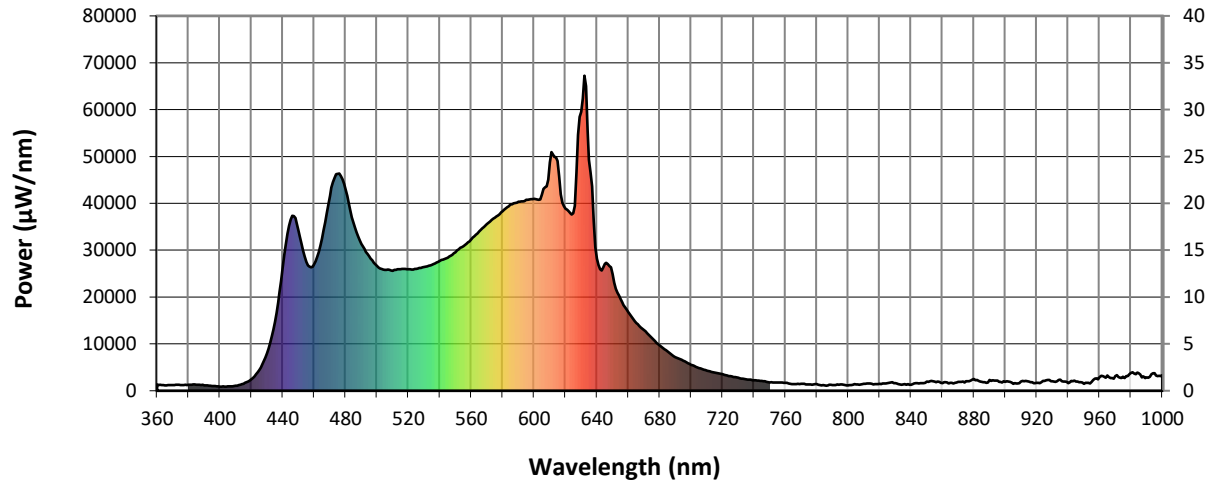
**Scotopic Lumens: 4927.4**

**S/P: 2.02**

| 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

**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 2189.1**

**S/P: 0.9**

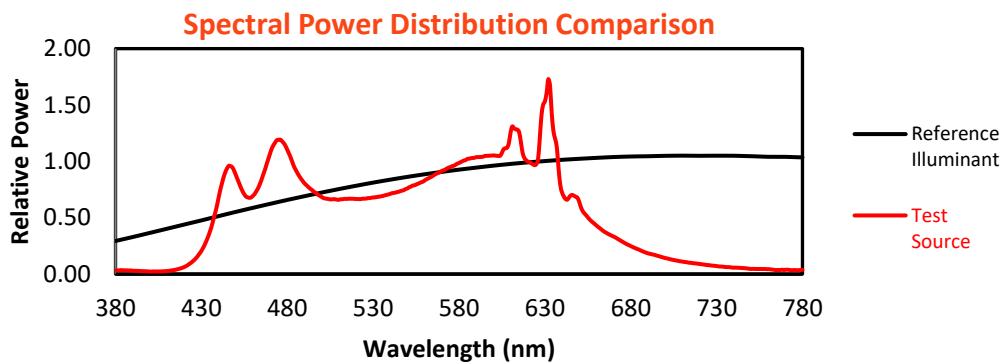
| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 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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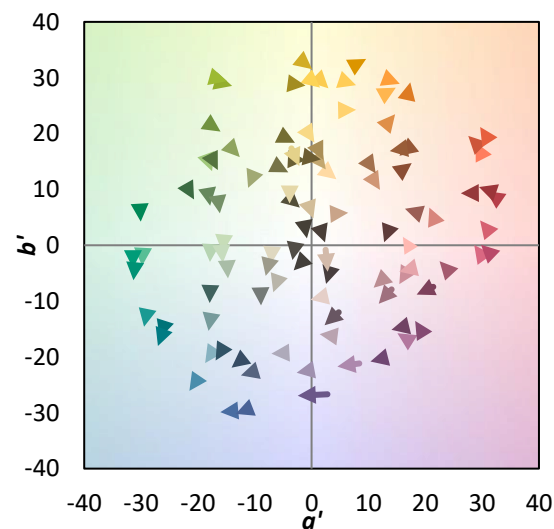
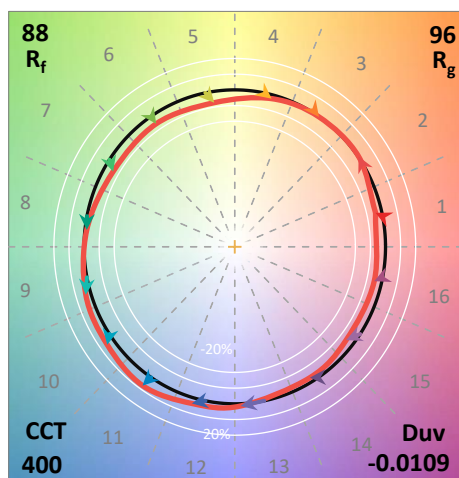
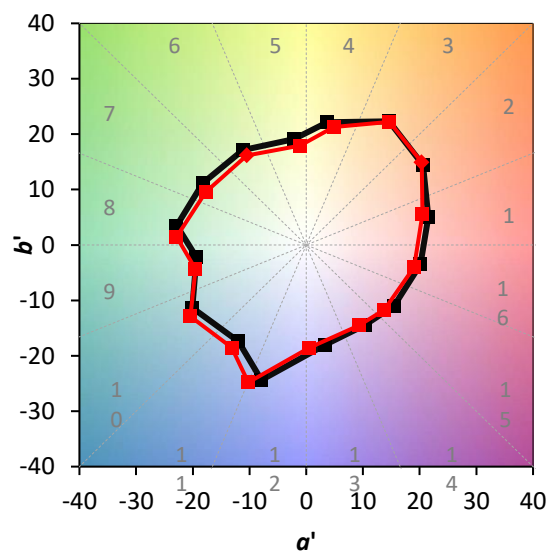
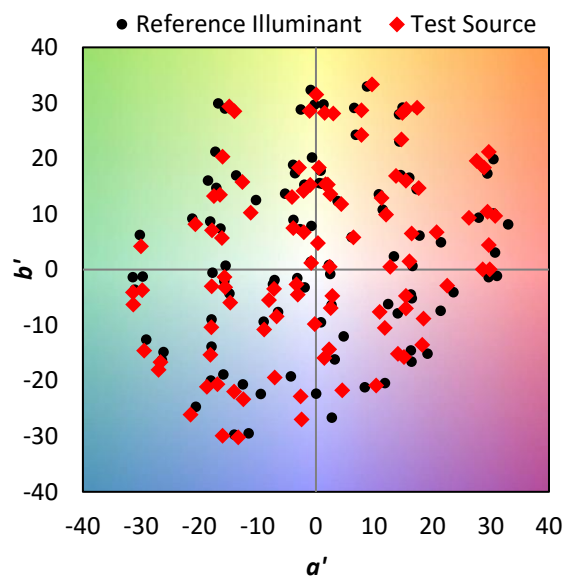
TM-30-18

### Summary

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



### Color Vector Graphics

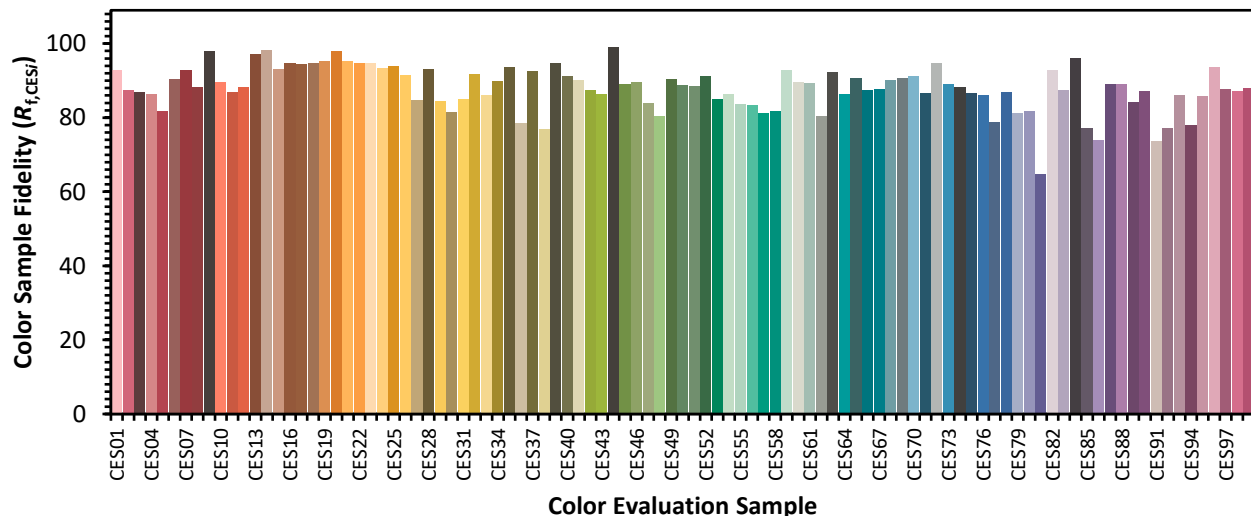


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**Individual Sample Fidelity Index ( $R_{f,i}$ )**

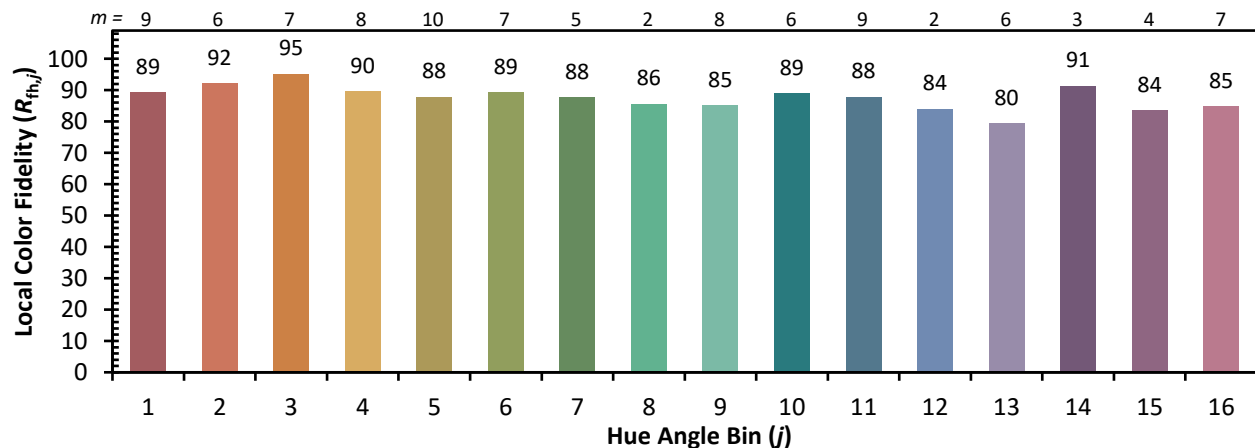
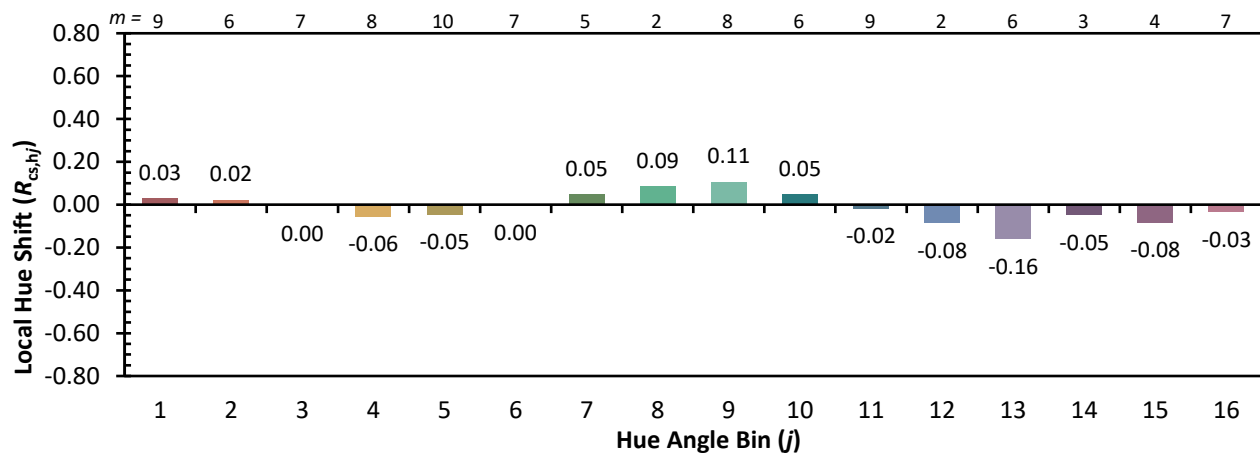
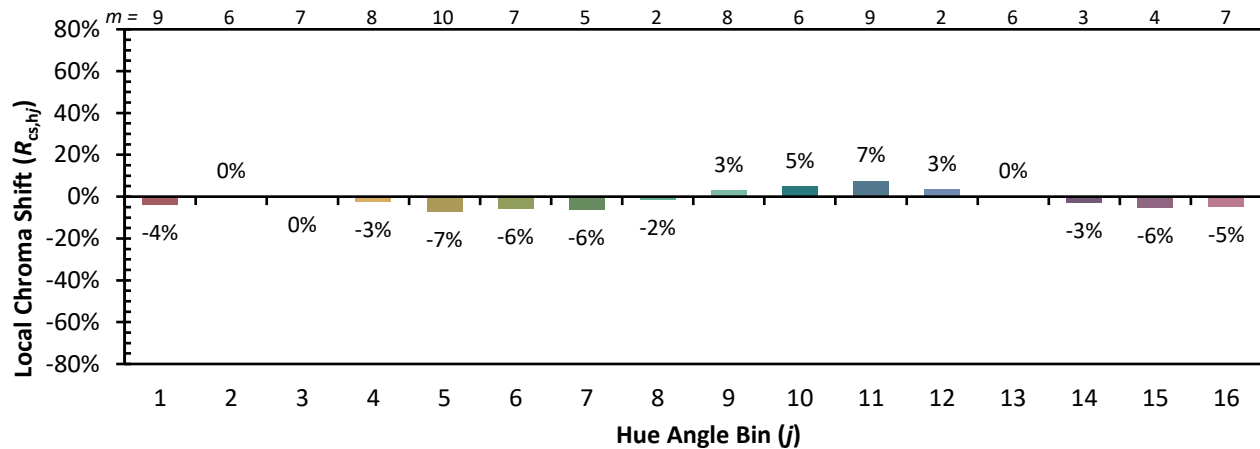
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|------------|------------|------------|------------|
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| CES02 = 62 | CES27 = 85 | CES52 = 91 | CES77 = 79 |
| CES03 = 31 | CES28 = 93 | CES53 = 85 | CES78 = 87 |
| CES04 = 70 | CES29 = 84 | CES54 = 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 |
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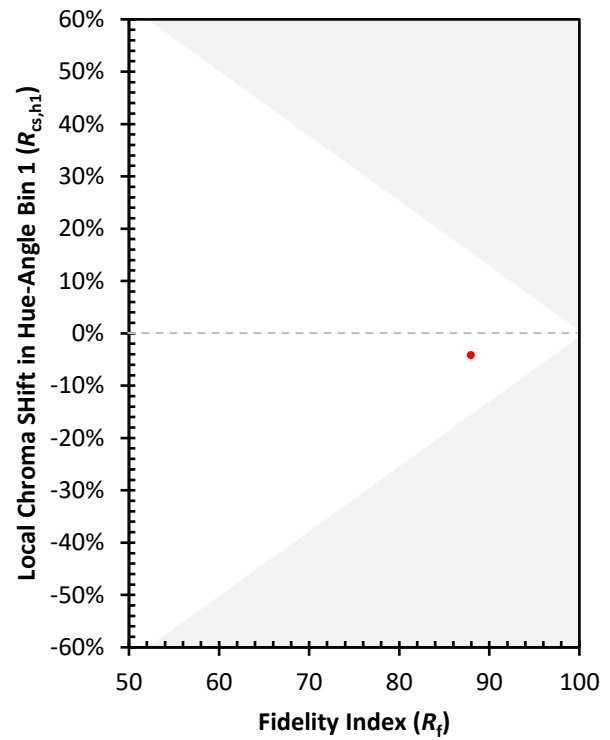
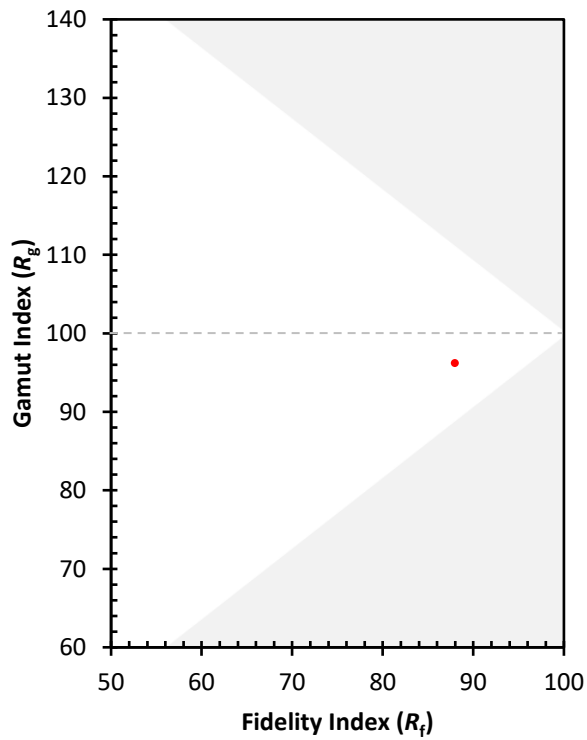
**Color Rendition by Hue-Angle Bin**



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**Measure Comparisons**



(END OF REPORT)