

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: P735636

Luminaire Tested: **4APN6-39-B2750-W2D-CP125-4000K**

Issue Date: 1/5/2024



**Test Information**

Test Method: LM-79-08  
Report Number: P735636  
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: 4APN6-39-B2750-W2D-CP125-4000K  
Description: 4FT 3900 AMBIENT LUMEN OUTPUT APN WITH BIO UP LEDS AT 4000K CCT, AND CP125 LENS

Light Source: -  
Ballast/Driver: -

**Summary**

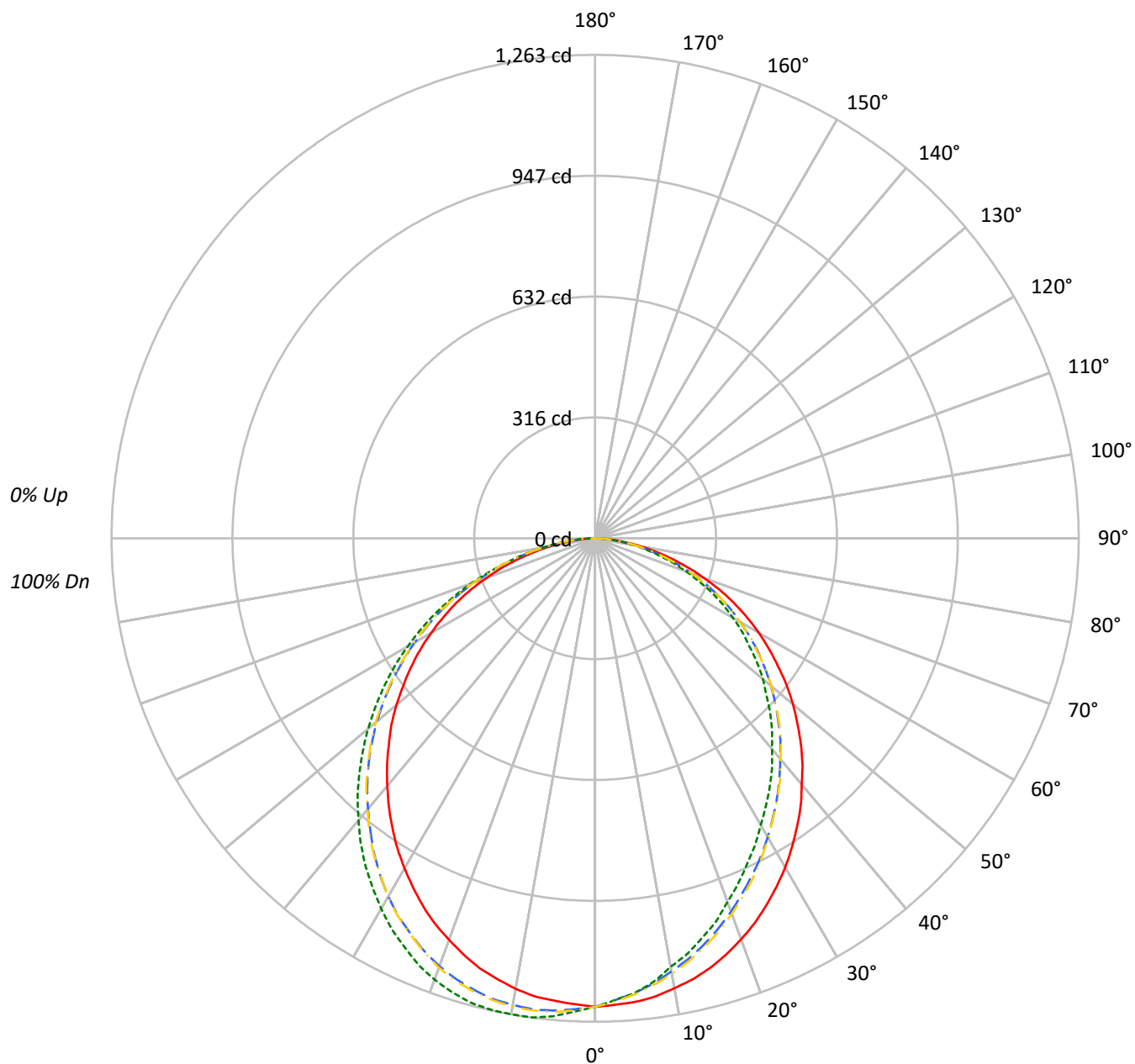
Lumens per Lamp: N/A  
Luminaire Lumens: 3283.0 lumens  
Efficiency: N/A  
Efficacy: 66.9 lumens/watt  
Spacing Criteria (0/90/45): 1.21 / 1.21 / 1.33  
Luminous Opening: Rectangular (W 0.29' x L: 4' x H: 0')  
CIE Type: Direct

Input Watts (W): 49.1  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT

TEST NUMBER: P735636

CATALOG NUMBER: 4APN6-39-B2750-W2D-CP125-4000K

### Luminous Intensity Polar Plot





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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°  | 11294 | 11294 | 11294 | 11294 |
| 5°  | 11260 | 11042 | 11234 | 11607 |
| 10° | 11182 | 10651 | 11196 | 11831 |
| 15° | 11097 | 10318 | 11111 | 11996 |
| 20° | 10945 | 9925  | 10958 | 12046 |
| 25° | 10769 | 9558  | 10811 | 11996 |
| 30° | 10577 | 9221  | 10607 | 11904 |
| 35° | 10355 | 8952  | 10401 | 11776 |
| 40° | 10106 | 8655  | 10174 | 11574 |
| 45° | 9919  | 8438  | 9939  | 11365 |
| 50° | 9680  | 8209  | 9719  | 11110 |
| 55° | 9376  | 7908  | 9444  | 10803 |
| 60° | 9095  | 7665  | 9123  | 10426 |
| 65° | 8735  | 7346  | 8735  | 9977  |
| 70° | 8144  | 6801  | 8106  | 9298  |
| 75° | 7404  | 6171  | 7304  | 8345  |
| 80° | 6402  | 5297  | 6185  | 7141  |
| 85° | 4986  | 3959  | 4690  | 5865  |



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 115.7  | 3.5       |
| 10°-20°   | 328.3  | 10.0      |
| 20°-30°   | 488.0  | 14.9      |
| 30°-40°   | 575.2  | 17.5      |
| 40°-50°   | 585.7  | 17.8      |
| 50°-60°   | 521.7  | 15.9      |
| 60°-70°   | 393.1  | 12.0      |
| 70°-80°   | 218.6  | 6.7       |
| 80°-90°   | 56.8   | 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°    | 931.9  | 28.4      |
| 0°-40°    | 1507.1 | 45.9      |
| 0°-60°    | 2614.5 | 79.6      |
| 0°-90°    | 3283.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 3283.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 90°  | 180° | 270° | 360° | Flux |
|-----|------|------|------|------|------|------|
| 0°  | 1224 | 1224 | 1224 | 1224 | 1224 |      |
| 5°  | 1216 | 1192 | 1213 | 1253 | 1216 | 115  |
| 15° | 1162 | 1080 | 1163 | 1256 | 1162 | 327  |
| 25° | 1058 | 939  | 1062 | 1178 | 1058 | 487  |
| 35° | 919  | 795  | 924  | 1046 | 919  | 575  |
| 45° | 760  | 647  | 762  | 871  | 760  | 586  |
| 55° | 583  | 492  | 587  | 672  | 583  | 522  |
| 65° | 400  | 336  | 400  | 457  | 400  | 395  |
| 75° | 208  | 173  | 205  | 234  | 208  | 221  |
| 85° | 47   | 37   | 44   | 55   | 47   | 57   |
| 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°    | 1224.1 | 1224.1 | 1224.1 | 1224.1 | 1224.1 | 1224.1 | 1224.1 | 1224.1 | 1224.1 | 1224.1 | 1224.1 |
| 2.5°  | 1220.0 | 1220.0 | 1221.3 | 1215.8 | 1208.9 | 1206.1 | 1204.8 | 1203.3 | 1206.1 | 1207.4 | 1206.1 |
| 5°    | 1215.8 | 1213.0 | 1210.2 | 1203.3 | 1195.1 | 1189.5 | 1186.7 | 1185.3 | 1188.1 | 1192.3 | 1188.1 |
| 7.5°  | 1207.4 | 1202.0 | 1196.4 | 1186.7 | 1177.1 | 1168.7 | 1164.6 | 1161.8 | 1164.6 | 1168.7 | 1165.9 |
| 10°   | 1193.6 | 1186.7 | 1178.4 | 1167.4 | 1153.5 | 1143.8 | 1139.7 | 1135.6 | 1136.9 | 1136.9 | 1136.9 |
| 12.5° | 1179.7 | 1170.2 | 1160.4 | 1146.6 | 1131.3 | 1120.2 | 1113.3 | 1107.9 | 1110.5 | 1112.0 | 1112.0 |
| 15°   | 1161.8 | 1149.4 | 1135.6 | 1120.2 | 1105.1 | 1092.5 | 1084.3 | 1078.7 | 1080.2 | 1080.2 | 1081.5 |
| 17.5° | 1139.7 | 1125.8 | 1112.0 | 1094.0 | 1075.9 | 1062.0 | 1052.5 | 1045.5 | 1048.2 | 1049.7 | 1051.0 |
| 20°   | 1114.8 | 1099.4 | 1084.3 | 1064.8 | 1045.5 | 1030.2 | 1020.5 | 1012.2 | 1010.9 | 1010.9 | 1012.2 |
| 22.5° | 1088.4 | 1071.8 | 1053.8 | 1033.0 | 1012.2 | 995.6  | 985.9  | 977.6  | 976.3  | 976.3  | 977.6  |
| 25°   | 1057.9 | 1039.9 | 1022.0 | 1001.2 | 978.9  | 962.5  | 949.9  | 941.7  | 940.2  | 938.9  | 941.7  |
| 27.5° | 1026.1 | 1008.1 | 990.1  | 969.4  | 945.8  | 929.1  | 916.6  | 908.4  | 905.6  | 904.3  | 907.1  |
| 30°   | 992.8  | 972.0  | 952.7  | 930.5  | 909.7  | 893.2  | 880.7  | 871.0  | 868.3  | 865.5  | 868.3  |
| 32.5° | 956.8  | 936.1  | 915.3  | 893.2  | 872.4  | 855.8  | 843.3  | 833.7  | 830.9  | 829.4  | 832.2  |
| 35°   | 919.4  | 898.7  | 879.4  | 857.1  | 836.3  | 819.8  | 807.3  | 799.1  | 796.3  | 794.8  | 796.3  |
| 37.5° | 882.0  | 861.4  | 841.9  | 819.8  | 799.1  | 782.4  | 769.9  | 761.7  | 760.2  | 758.8  | 760.2  |
| 40°   | 839.1  | 821.2  | 801.7  | 780.9  | 760.2  | 743.7  | 734.0  | 724.2  | 721.4  | 718.6  | 722.9  |
| 42.5° | 801.7  | 783.7  | 764.5  | 745.0  | 724.2  | 707.6  | 696.5  | 688.3  | 685.5  | 684.0  | 685.5  |
| 45°   | 760.2  | 740.9  | 721.4  | 703.5  | 684.0  | 668.8  | 657.8  | 649.4  | 648.1  | 646.7  | 648.1  |
| 47.5° | 716.0  | 699.3  | 682.7  | 664.7  | 645.3  | 630.1  | 620.4  | 612.1  | 609.3  | 606.5  | 609.3  |
| 50°   | 674.4  | 657.8  | 641.1  | 624.5  | 606.5  | 592.7  | 582.9  | 574.7  | 573.2  | 571.9  | 573.2  |
| 52.5° | 630.1  | 613.4  | 598.3  | 581.6  | 566.3  | 552.4  | 542.9  | 536.0  | 534.5  | 533.2  | 534.5  |
| 55°   | 582.9  | 569.1  | 555.2  | 541.4  | 526.2  | 513.7  | 505.5  | 497.1  | 494.4  | 491.6  | 494.4  |
| 57.5° | 538.6  | 526.2  | 512.4  | 498.5  | 484.7  | 473.6  | 465.2  | 458.3  | 457.0  | 455.5  | 457.0  |
| 60°   | 492.9  | 481.9  | 469.4  | 457.0  | 443.1  | 432.1  | 425.2  | 419.6  | 416.8  | 415.4  | 416.8  |
| 62.5° | 447.3  | 436.2  | 426.5  | 414.0  | 401.6  | 393.2  | 386.3  | 380.8  | 378.0  | 376.7  | 378.0  |
| 65°   | 400.1  | 390.6  | 380.8  | 369.8  | 360.1  | 351.6  | 344.7  | 339.3  | 337.8  | 336.5  | 336.5  |
| 67.5° | 351.6  | 343.4  | 335.2  | 325.4  | 314.4  | 306.0  | 299.1  | 294.9  | 293.6  | 292.1  | 293.6  |
| 70°   | 301.9  | 294.9  | 286.7  | 278.3  | 270.0  | 263.1  | 259.0  | 254.9  | 253.4  | 252.1  | 252.1  |
| 72.5° | 254.9  | 249.3  | 242.3  | 235.4  | 228.5  | 221.6  | 217.4  | 214.6  | 213.3  | 211.8  | 211.8  |
| 75°   | 207.7  | 202.1  | 198.0  | 192.6  | 185.6  | 181.3  | 177.2  | 174.4  | 173.1  | 173.1  | 173.1  |
| 77.5° | 163.4  | 159.3  | 155.1  | 149.5  | 145.4  | 141.3  | 138.5  | 137.2  | 135.7  | 135.7  | 135.7  |
| 80°   | 120.5  | 117.7  | 114.9  | 112.1  | 108.0  | 103.9  | 102.5  | 101.1  | 99.7   | 99.7   | 99.7   |
| 82.5° | 81.8   | 80.3   | 77.5   | 74.8   | 72.0   | 70.6   | 69.2   | 67.9   | 67.9   | 67.9   | 67.9   |
| 85°   | 47.1   | 45.7   | 44.3   | 42.9   | 41.5   | 41.5   | 40.2   | 38.7   | 37.4   | 37.4   | 37.4   |
| 87.5° | 19.5   | 19.5   | 19.5   | 18.0   | 16.7   | 16.7   | 16.7   | 16.7   | 16.7   | 16.7   | 16.7   |
| 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°    | 1224.1 | 1224.1 | 1224.1 | 1224.1 | 1224.1 | 1224.1 | 1224.1 | 1224.1 | 1224.1 | 1224.1 | 1224.1 |
| 2.5°  | 1203.3 | 1206.1 | 1208.9 | 1213.0 | 1217.2 | 1221.3 | 1220.0 | 1218.6 | 1224.1 | 1231.0 | 1232.5 |
| 5°    | 1185.3 | 1188.1 | 1192.3 | 1199.2 | 1206.1 | 1211.7 | 1213.0 | 1213.0 | 1224.1 | 1233.8 | 1236.6 |
| 7.5°  | 1163.3 | 1167.4 | 1172.8 | 1179.7 | 1189.5 | 1197.9 | 1202.0 | 1207.4 | 1218.6 | 1231.0 | 1236.6 |
| 10°   | 1135.6 | 1142.5 | 1150.7 | 1160.4 | 1170.2 | 1179.7 | 1188.1 | 1195.1 | 1208.9 | 1222.8 | 1231.0 |
| 12.5° | 1110.5 | 1117.4 | 1125.8 | 1136.9 | 1149.4 | 1161.8 | 1170.2 | 1179.7 | 1196.4 | 1213.0 | 1222.8 |
| 15°   | 1082.8 | 1089.7 | 1099.4 | 1110.5 | 1124.3 | 1138.2 | 1150.7 | 1163.3 | 1179.7 | 1197.9 | 1208.9 |
| 17.5° | 1052.5 | 1059.4 | 1069.0 | 1082.8 | 1098.1 | 1113.3 | 1127.1 | 1141.0 | 1160.4 | 1179.7 | 1192.3 |
| 20°   | 1015.0 | 1024.8 | 1037.1 | 1051.0 | 1069.0 | 1087.1 | 1100.9 | 1116.1 | 1136.9 | 1157.6 | 1171.5 |
| 22.5° | 978.9  | 988.7  | 1002.5 | 1019.2 | 1038.6 | 1057.9 | 1074.6 | 1091.2 | 1113.3 | 1134.1 | 1149.4 |
| 25°   | 944.3  | 955.5  | 969.4  | 985.9  | 1004.0 | 1023.3 | 1042.7 | 1062.0 | 1084.3 | 1106.4 | 1121.7 |
| 27.5° | 909.7  | 919.4  | 933.3  | 949.9  | 970.7  | 990.1  | 1009.4 | 1028.9 | 1052.5 | 1075.9 | 1092.5 |
| 30°   | 871.0  | 882.0  | 894.5  | 911.2  | 933.3  | 955.5  | 974.8  | 995.6  | 1019.2 | 1042.7 | 1059.4 |
| 32.5° | 835.0  | 844.7  | 857.1  | 873.8  | 895.8  | 918.1  | 938.9  | 961.0  | 983.2  | 1006.6 | 1023.3 |
| 35°   | 799.1  | 808.6  | 821.2  | 837.8  | 859.9  | 882.0  | 902.8  | 923.5  | 945.8  | 967.9  | 984.5  |
| 37.5° | 763.0  | 772.7  | 785.2  | 801.7  | 822.5  | 844.7  | 864.0  | 884.8  | 907.1  | 929.1  | 944.3  |
| 40°   | 725.5  | 735.3  | 745.0  | 761.7  | 782.4  | 804.5  | 824.0  | 844.7  | 866.8  | 888.9  | 904.3  |
| 42.5° | 688.3  | 697.9  | 710.4  | 727.0  | 746.3  | 765.8  | 785.2  | 804.5  | 825.3  | 846.1  | 861.4  |
| 45°   | 650.9  | 659.1  | 671.6  | 686.8  | 706.3  | 724.2  | 743.7  | 761.7  | 782.4  | 801.7  | 817.0  |
| 47.5° | 612.1  | 620.4  | 630.1  | 645.3  | 664.7  | 684.0  | 703.5  | 721.4  | 739.4  | 758.8  | 772.7  |
| 50°   | 574.7  | 582.9  | 594.0  | 607.8  | 626.0  | 643.9  | 660.6  | 677.1  | 695.2  | 713.2  | 725.5  |
| 52.5° | 536.0  | 544.2  | 553.9  | 567.8  | 582.9  | 599.6  | 614.8  | 631.4  | 648.1  | 664.7  | 677.1  |
| 55°   | 497.1  | 502.7  | 510.9  | 523.4  | 540.1  | 556.7  | 571.9  | 587.1  | 602.4  | 616.2  | 628.6  |
| 57.5° | 458.3  | 465.2  | 475.0  | 486.0  | 499.9  | 513.7  | 527.6  | 541.4  | 555.2  | 569.1  | 580.1  |
| 60°   | 419.6  | 425.2  | 432.1  | 441.7  | 455.5  | 468.0  | 481.9  | 494.4  | 506.8  | 519.3  | 529.0  |
| 62.5° | 379.3  | 384.9  | 391.9  | 401.6  | 412.6  | 423.7  | 436.2  | 447.3  | 458.3  | 469.4  | 479.1  |
| 65°   | 337.8  | 343.4  | 350.3  | 358.6  | 368.3  | 378.0  | 389.1  | 400.1  | 408.5  | 416.8  | 426.5  |
| 67.5° | 294.9  | 300.5  | 307.5  | 314.4  | 322.6  | 332.4  | 342.1  | 351.6  | 360.1  | 368.3  | 375.2  |
| 70°   | 253.4  | 257.5  | 264.4  | 270.0  | 277.0  | 283.9  | 292.1  | 300.5  | 306.0  | 312.9  | 321.3  |
| 72.5° | 213.3  | 217.4  | 222.9  | 228.5  | 232.6  | 238.2  | 246.5  | 253.4  | 260.3  | 268.7  | 272.8  |
| 75°   | 174.4  | 177.2  | 181.3  | 185.6  | 189.8  | 193.9  | 199.5  | 204.9  | 210.5  | 214.6  | 220.3  |
| 77.5° | 135.7  | 138.5  | 142.6  | 145.4  | 148.2  | 151.0  | 155.1  | 159.3  | 163.4  | 166.2  | 171.8  |
| 80°   | 99.7   | 102.5  | 105.2  | 108.0  | 110.8  | 113.6  | 114.9  | 116.4  | 121.8  | 126.0  | 128.8  |
| 82.5° | 67.9   | 69.2   | 70.6   | 73.4   | 74.8   | 76.2   | 77.5   | 77.5   | 80.3   | 83.1   | 87.2   |
| 85°   | 38.7   | 40.2   | 41.5   | 41.5   | 41.5   | 41.5   | 42.9   | 44.3   | 45.7   | 48.5   | 51.3   |
| 87.5° | 15.2   | 15.2   | 16.7   | 16.7   | 16.7   | 16.7   | 16.7   | 16.7   | 18.0   | 20.8   | 22.1   |
| 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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CATALOG NUMBER: 4APN6-39-B2750-W2D-CP125-4000K

**CANDELA DISTRIBUTION (continued):**

|       | 220°   | 230°   | 240°   | 250°   | 260°   | 270°   | 280°   | 290°   | 300°   | 310°   | 320°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1224.1 | 1224.1 | 1224.1 | 1224.1 | 1224.1 | 1224.1 | 1224.1 | 1224.1 | 1224.1 | 1224.1 | 1224.1 |
| 2.5°  | 1231.0 | 1232.5 | 1235.1 | 1236.6 | 1237.9 | 1237.9 | 1239.4 | 1240.7 | 1237.9 | 1235.1 | 1233.8 |
| 5°    | 1237.9 | 1239.4 | 1243.5 | 1247.7 | 1250.5 | 1253.3 | 1251.8 | 1250.5 | 1247.7 | 1243.5 | 1240.7 |
| 7.5°  | 1239.4 | 1243.5 | 1247.7 | 1253.3 | 1257.4 | 1262.8 | 1260.2 | 1257.4 | 1251.8 | 1246.3 | 1242.1 |
| 10°   | 1235.1 | 1240.7 | 1247.7 | 1254.6 | 1258.7 | 1262.8 | 1260.2 | 1257.4 | 1251.8 | 1244.9 | 1239.4 |
| 12.5° | 1229.7 | 1236.6 | 1244.9 | 1251.8 | 1255.9 | 1261.5 | 1257.4 | 1253.3 | 1246.3 | 1239.4 | 1232.5 |
| 15°   | 1217.2 | 1225.6 | 1235.1 | 1243.5 | 1250.5 | 1255.9 | 1251.8 | 1249.0 | 1240.7 | 1231.0 | 1221.3 |
| 17.5° | 1202.0 | 1213.0 | 1222.8 | 1232.5 | 1237.9 | 1243.5 | 1240.7 | 1237.9 | 1228.2 | 1217.2 | 1206.1 |
| 20°   | 1184.0 | 1195.1 | 1204.8 | 1214.4 | 1221.3 | 1226.9 | 1222.8 | 1218.6 | 1208.9 | 1199.2 | 1188.1 |
| 22.5° | 1161.8 | 1172.8 | 1184.0 | 1193.6 | 1200.5 | 1206.1 | 1200.5 | 1193.6 | 1184.0 | 1174.3 | 1163.3 |
| 25°   | 1134.1 | 1146.6 | 1159.0 | 1168.7 | 1172.8 | 1178.4 | 1172.8 | 1167.4 | 1157.6 | 1147.9 | 1135.6 |
| 27.5° | 1106.4 | 1118.9 | 1131.3 | 1141.0 | 1145.1 | 1150.7 | 1145.1 | 1139.7 | 1129.9 | 1120.2 | 1107.9 |
| 30°   | 1074.6 | 1087.1 | 1099.4 | 1109.2 | 1113.3 | 1117.4 | 1112.0 | 1106.4 | 1098.1 | 1088.4 | 1075.9 |
| 32.5° | 1038.6 | 1051.0 | 1060.7 | 1070.4 | 1075.9 | 1081.5 | 1075.9 | 1071.8 | 1062.0 | 1049.7 | 1037.1 |
| 35°   | 999.7  | 1012.2 | 1024.8 | 1034.3 | 1039.9 | 1045.5 | 1038.6 | 1031.7 | 1023.3 | 1013.6 | 1002.5 |
| 37.5° | 956.8  | 970.7  | 984.5  | 995.6  | 999.7  | 1005.3 | 999.7  | 992.8  | 984.5  | 974.8  | 962.5  |
| 40°   | 916.6  | 929.1  | 941.7  | 952.7  | 956.8  | 961.0  | 955.5  | 949.9  | 940.2  | 930.5  | 918.1  |
| 42.5° | 875.2  | 887.6  | 898.7  | 908.4  | 912.5  | 918.1  | 912.5  | 905.6  | 898.7  | 890.4  | 879.4  |
| 45°   | 830.9  | 843.3  | 853.0  | 862.7  | 866.8  | 871.0  | 865.5  | 858.6  | 851.7  | 844.7  | 833.7  |
| 47.5° | 785.2  | 796.3  | 806.0  | 815.6  | 818.4  | 822.5  | 817.0  | 812.9  | 806.0  | 799.1  | 789.3  |
| 50°   | 738.1  | 749.1  | 758.8  | 767.1  | 769.9  | 774.0  | 768.6  | 763.0  | 757.5  | 751.9  | 743.7  |
| 52.5° | 689.6  | 699.3  | 709.1  | 717.3  | 720.1  | 722.9  | 717.3  | 711.7  | 706.3  | 700.7  | 692.4  |
| 55°   | 639.8  | 649.4  | 659.1  | 666.0  | 668.8  | 671.6  | 666.0  | 661.9  | 656.3  | 652.2  | 643.9  |
| 57.5° | 589.9  | 599.6  | 607.8  | 614.8  | 617.6  | 620.4  | 614.8  | 609.3  | 605.2  | 600.9  | 594.0  |
| 60°   | 538.6  | 548.3  | 555.2  | 560.9  | 563.7  | 565.0  | 559.4  | 555.2  | 552.4  | 549.8  | 542.9  |
| 62.5° | 488.8  | 495.7  | 502.7  | 506.8  | 509.6  | 510.9  | 506.8  | 504.0  | 501.3  | 498.5  | 492.9  |
| 65°   | 436.2  | 444.5  | 450.1  | 454.2  | 455.5  | 457.0  | 452.9  | 450.1  | 447.3  | 444.5  | 440.3  |
| 67.5° | 383.6  | 390.6  | 394.7  | 398.8  | 400.1  | 400.1  | 400.1  | 398.8  | 396.0  | 391.9  | 387.8  |
| 70°   | 330.9  | 336.5  | 340.6  | 343.4  | 344.7  | 344.7  | 342.1  | 339.3  | 339.3  | 337.8  | 335.2  |
| 72.5° | 277.0  | 281.1  | 283.9  | 286.7  | 286.7  | 286.7  | 286.7  | 288.0  | 286.7  | 283.9  | 279.8  |
| 75°   | 225.7  | 229.8  | 232.6  | 234.1  | 234.1  | 234.1  | 234.1  | 235.4  | 234.1  | 232.6  | 229.8  |
| 77.5° | 177.2  | 180.0  | 181.3  | 182.8  | 182.8  | 182.8  | 184.1  | 185.6  | 184.1  | 182.8  | 181.3  |
| 80°   | 131.6  | 132.9  | 134.4  | 135.7  | 134.4  | 134.4  | 135.7  | 138.5  | 137.2  | 135.7  | 134.4  |
| 82.5° | 90.0   | 91.3   | 92.8   | 92.8   | 94.1   | 95.6   | 95.6   | 95.6   | 95.6   | 94.1   | 92.8   |
| 85°   | 54.1   | 55.4   | 55.4   | 55.4   | 55.4   | 55.4   | 56.7   | 58.2   | 58.2   | 56.7   | 56.7   |
| 87.5° | 24.9   | 26.4   | 24.9   | 23.6   | 22.1   | 22.1   | 24.9   | 27.7   | 27.7   | 26.4   | 26.4   |
| 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: P735636

CATALOG NUMBER: 4APN6-39-B2750-W2D-CP125-4000K

**CANDELA DISTRIBUTION (continued):**

|       | 330°   | 340°   | 350°   | 360°   |
|-------|--------|--------|--------|--------|
| 0°    | 1224.1 | 1224.1 | 1224.1 | 1224.1 |
| 2.5°  | 1235.1 | 1233.8 | 1226.9 | 1220.0 |
| 5°    | 1239.4 | 1235.1 | 1225.6 | 1215.8 |
| 7.5°  | 1239.4 | 1233.8 | 1220.0 | 1207.4 |
| 10°   | 1232.5 | 1224.1 | 1208.9 | 1193.6 |
| 12.5° | 1224.1 | 1214.4 | 1196.4 | 1179.7 |
| 15°   | 1211.7 | 1200.5 | 1181.2 | 1161.8 |
| 17.5° | 1193.6 | 1179.7 | 1160.4 | 1139.7 |
| 20°   | 1175.6 | 1160.4 | 1136.9 | 1114.8 |
| 22.5° | 1150.7 | 1136.9 | 1112.0 | 1088.4 |
| 25°   | 1123.0 | 1107.9 | 1082.8 | 1057.9 |
| 27.5° | 1094.0 | 1075.9 | 1051.0 | 1026.1 |
| 30°   | 1060.7 | 1042.7 | 1017.8 | 992.8  |
| 32.5° | 1024.8 | 1008.1 | 983.2  | 956.8  |
| 35°   | 988.7  | 970.7  | 945.8  | 919.4  |
| 37.5° | 948.6  | 932.0  | 907.1  | 882.0  |
| 40°   | 905.6  | 888.9  | 864.0  | 839.1  |
| 42.5° | 865.5  | 850.2  | 825.3  | 801.7  |
| 45°   | 821.2  | 806.0  | 782.4  | 760.2  |
| 47.5° | 775.5  | 760.2  | 738.1  | 716.0  |
| 50°   | 731.2  | 716.0  | 695.2  | 674.4  |
| 52.5° | 681.4  | 668.8  | 649.4  | 630.1  |
| 55°   | 632.9  | 620.4  | 600.9  | 582.9  |
| 57.5° | 584.4  | 573.2  | 555.2  | 538.6  |
| 60°   | 533.2  | 522.1  | 508.3  | 492.9  |
| 62.5° | 484.7  | 475.0  | 461.1  | 447.3  |
| 65°   | 433.4  | 425.2  | 412.6  | 400.1  |
| 67.5° | 380.8  | 373.9  | 362.9  | 351.6  |
| 70°   | 328.2  | 319.8  | 311.6  | 301.9  |
| 72.5° | 275.6  | 271.4  | 263.1  | 254.9  |
| 75°   | 225.7  | 221.6  | 214.6  | 207.7  |
| 77.5° | 178.7  | 174.4  | 169.0  | 163.4  |
| 80°   | 131.6  | 128.8  | 124.6  | 120.5  |
| 82.5° | 91.3   | 88.7   | 85.9   | 81.8   |
| 85°   | 55.4   | 52.6   | 49.8   | 47.1   |
| 87.5° | 24.9   | 23.6   | 20.8   | 19.5   |
| 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

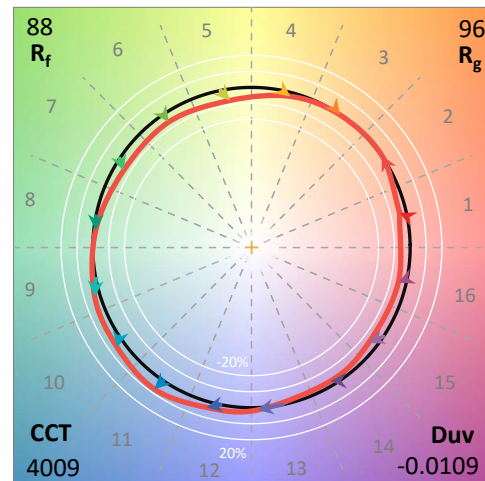
TUNABLE BOARD, 4000K-315MA, PROGRAMMED @ 5.0Vdc.

### 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

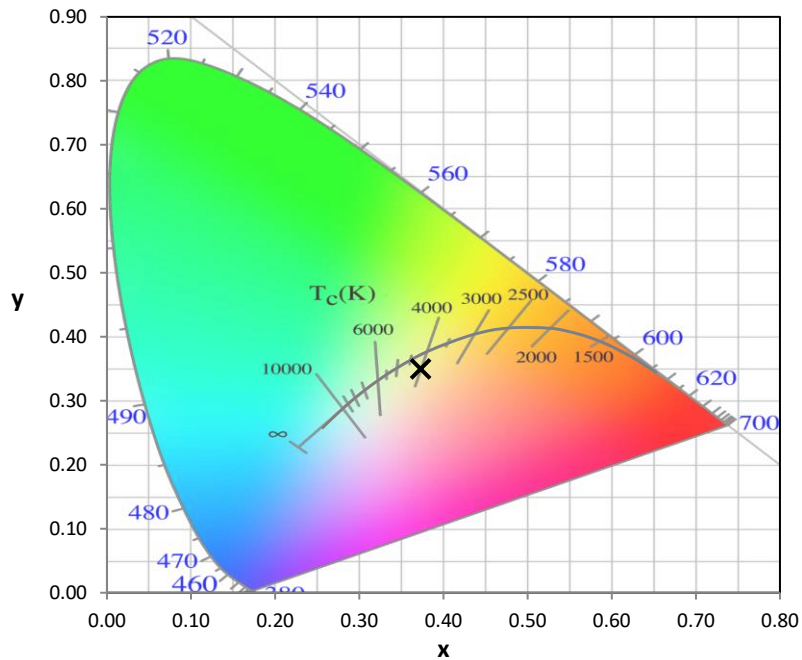


REPORT NUMBER: SP1-2210-795-4

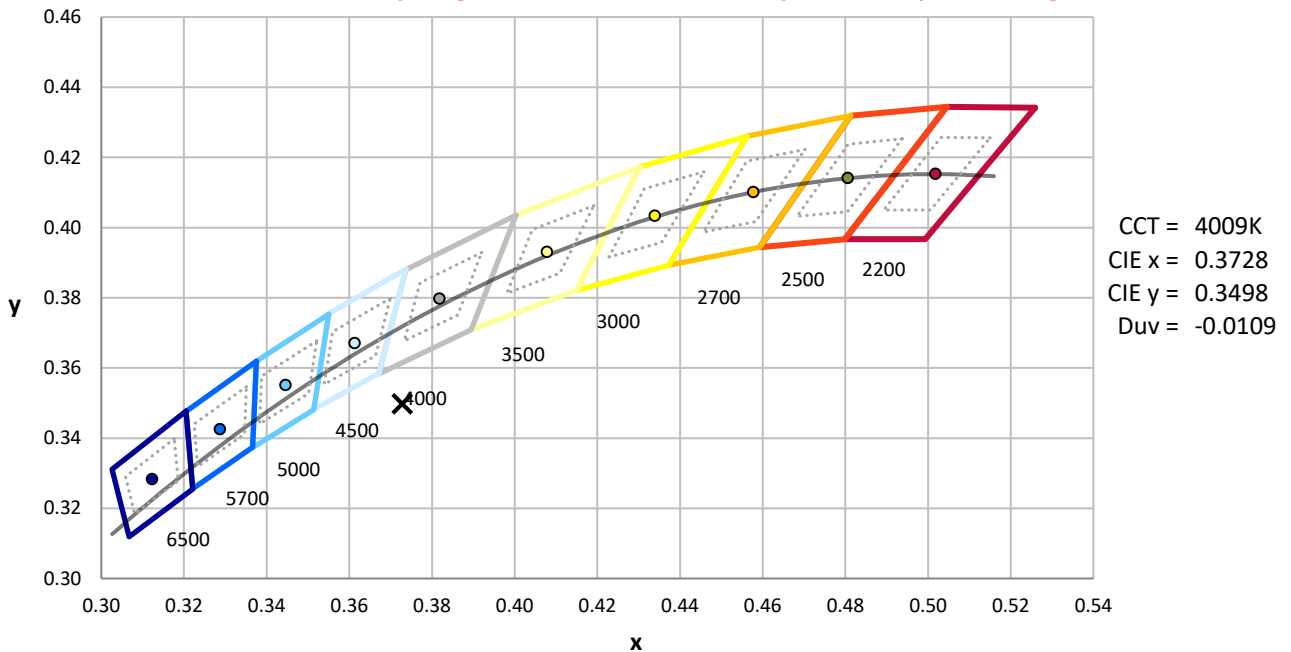
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date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



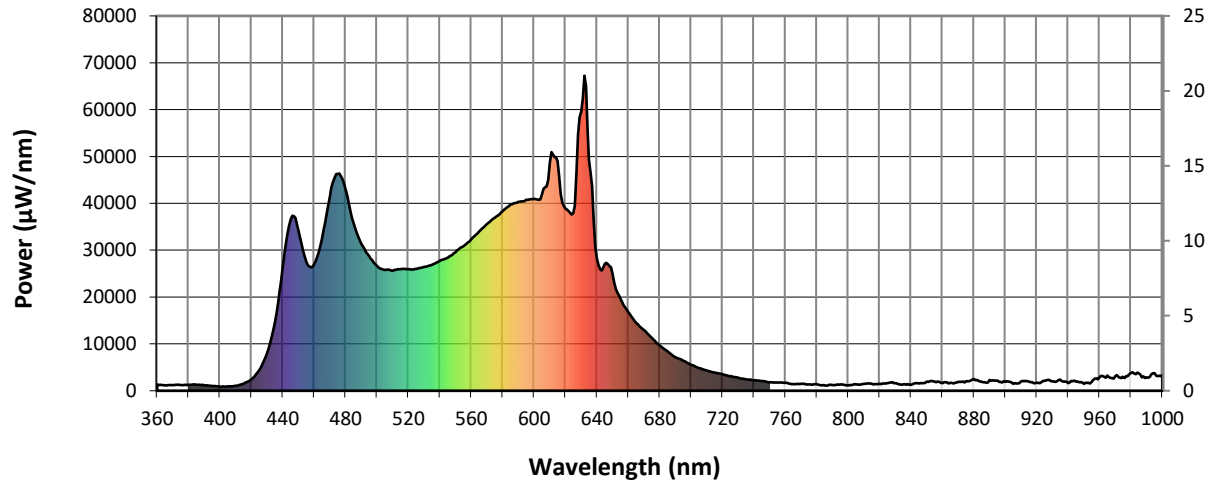
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies outside the range

REPORT NUMBER: SP1-2210-795-4

**Photopic Flux vs. Wavelength**

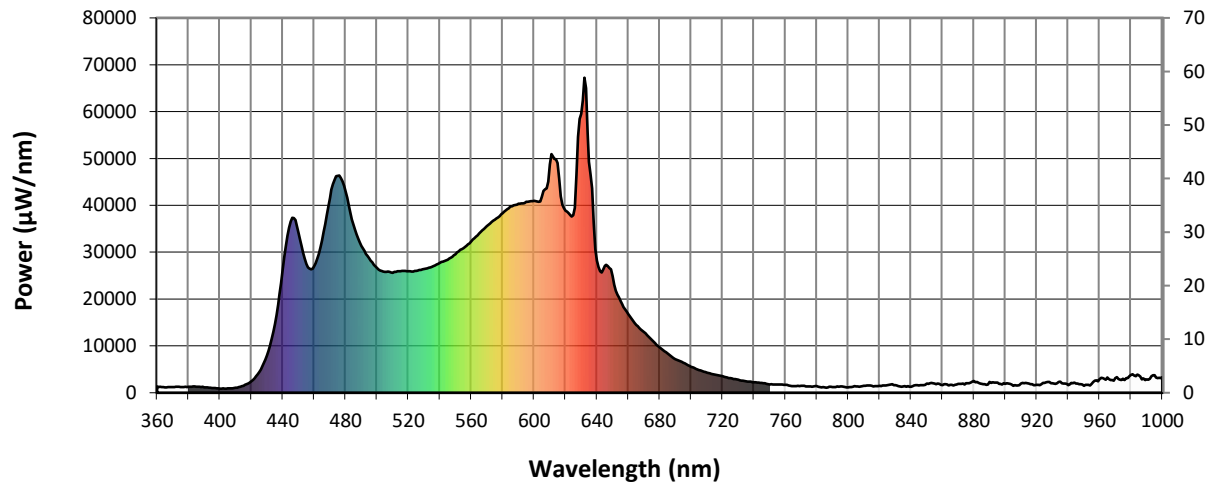


#####

| 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**



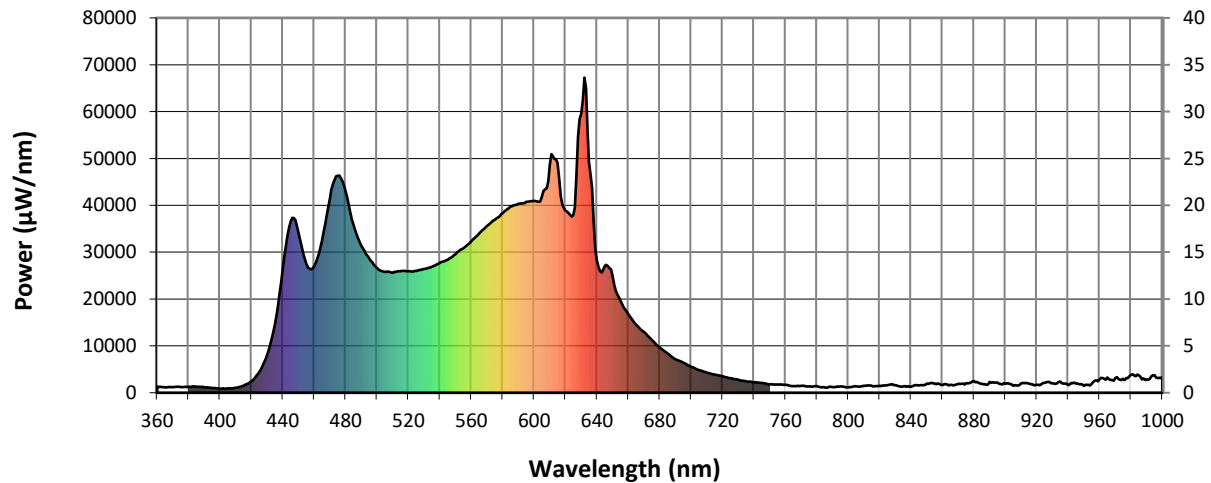
**Scotopic Lumens: 4927.4**

**S/P: 2.02**

| $\lambda$<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                             |                   |                               |                                |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 2189.1**

**S/P: 0.9**

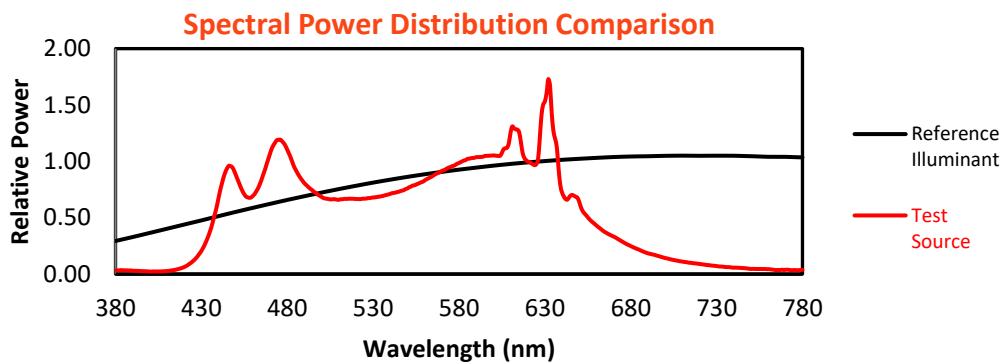
| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------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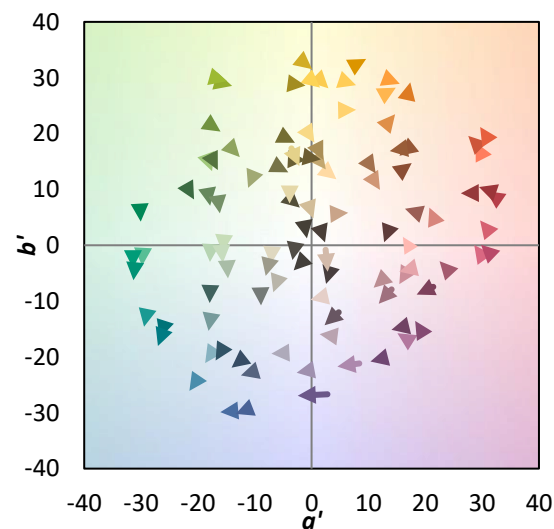
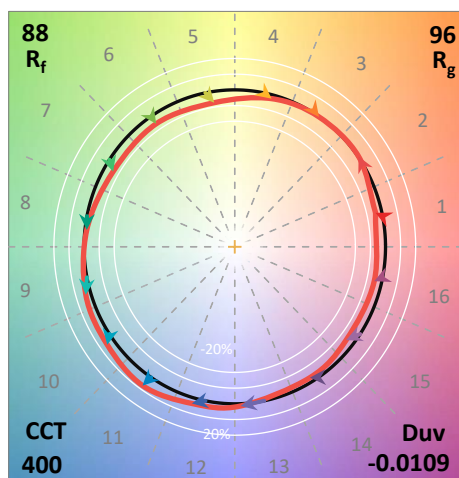
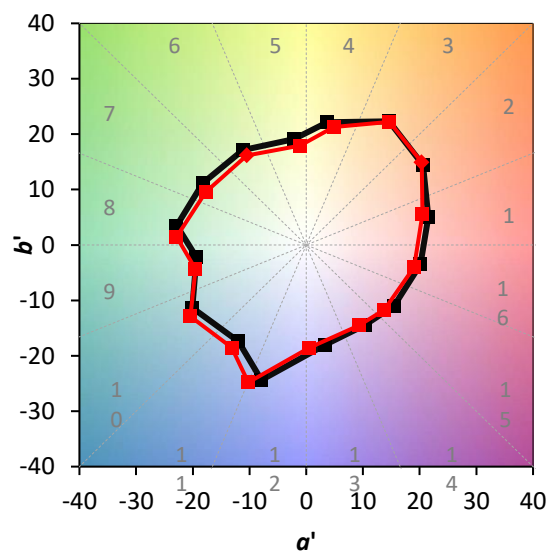
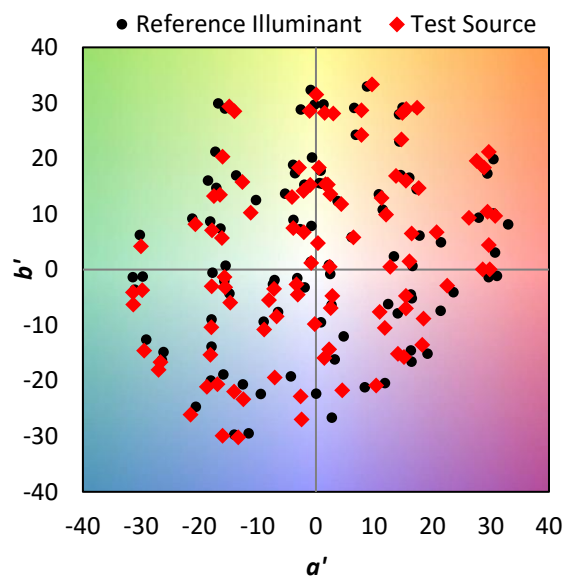
**TM-30-18**

**Summary**

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



**Color Vector Graphics**

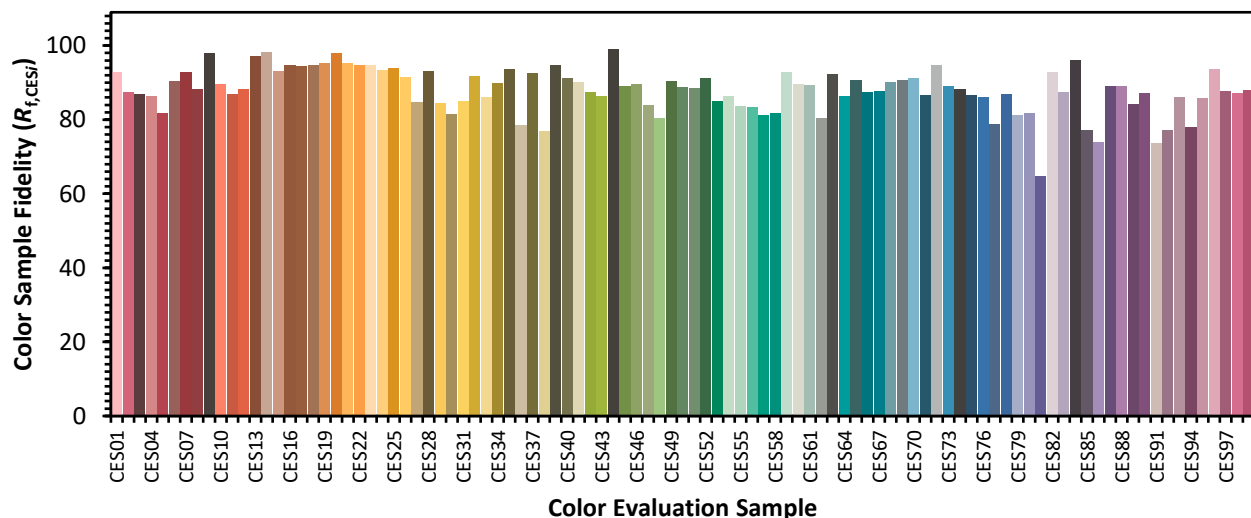


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**Individual Sample Fidelity Index ( $R_{f,i}$ )**

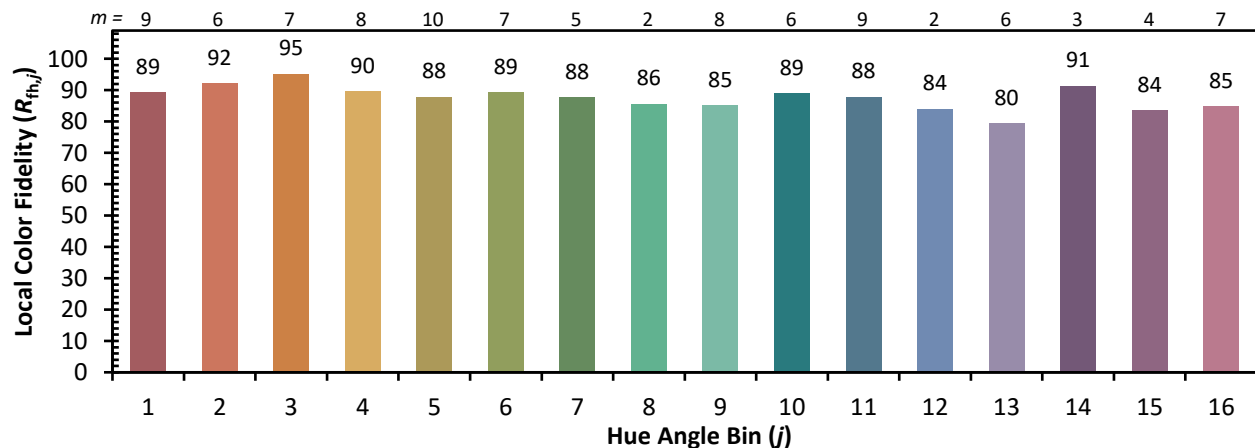
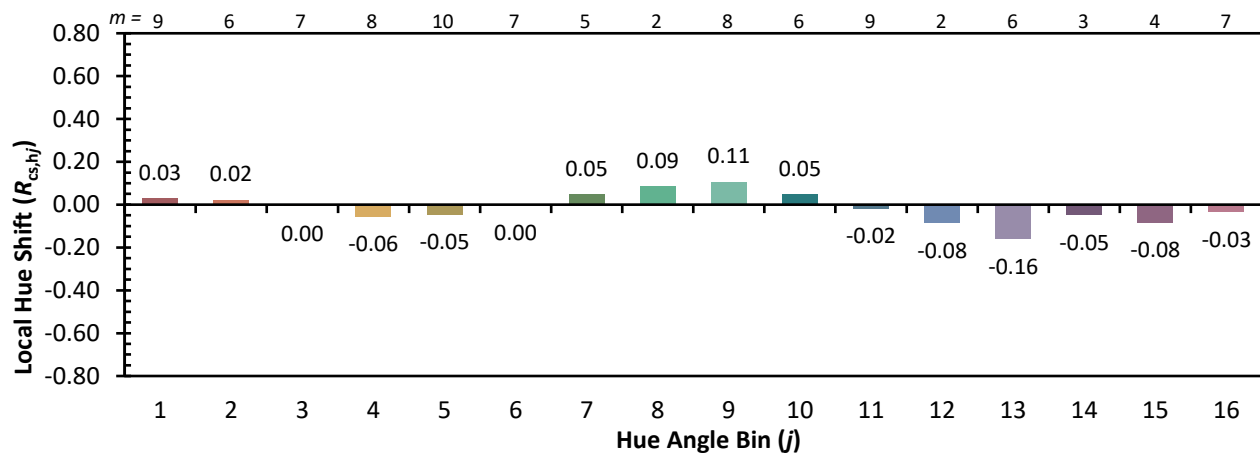
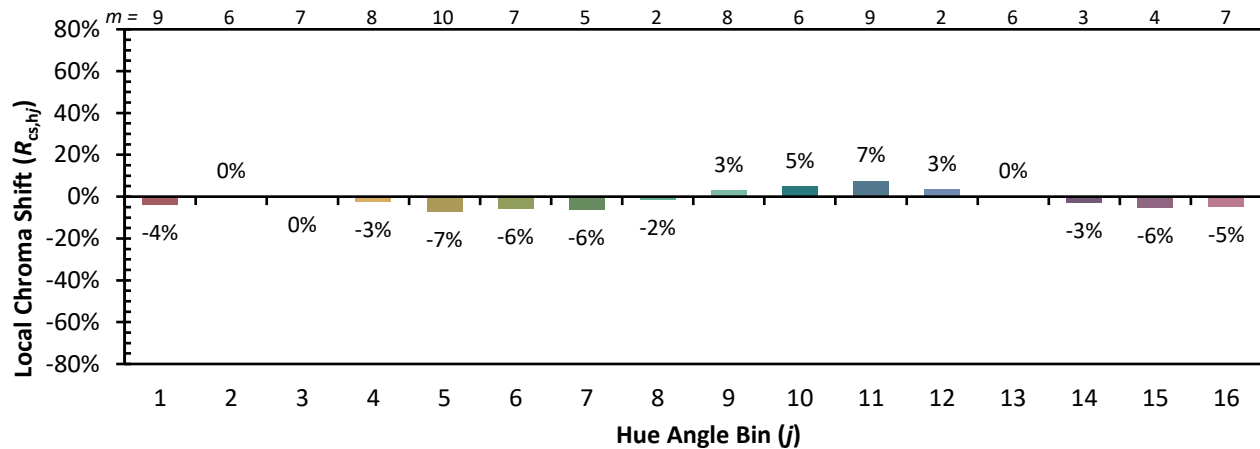
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 91 | CES51 = 88 | CES76 = 86 |
| CES02 = 62 | CES27 = 85 | CES52 = 91 | CES77 = 79 |
| CES03 = 31 | CES28 = 93 | CES53 = 85 | CES78 = 87 |
| CES04 = 70 | CES29 = 84 | CES54 = 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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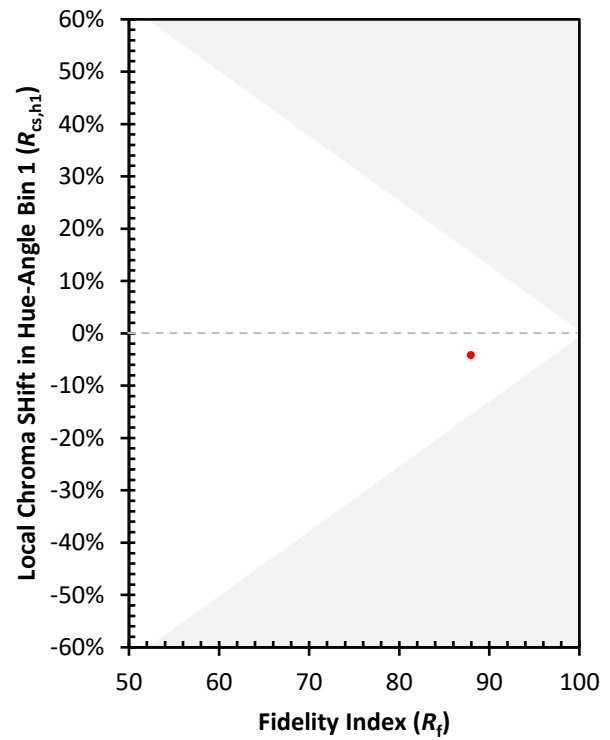
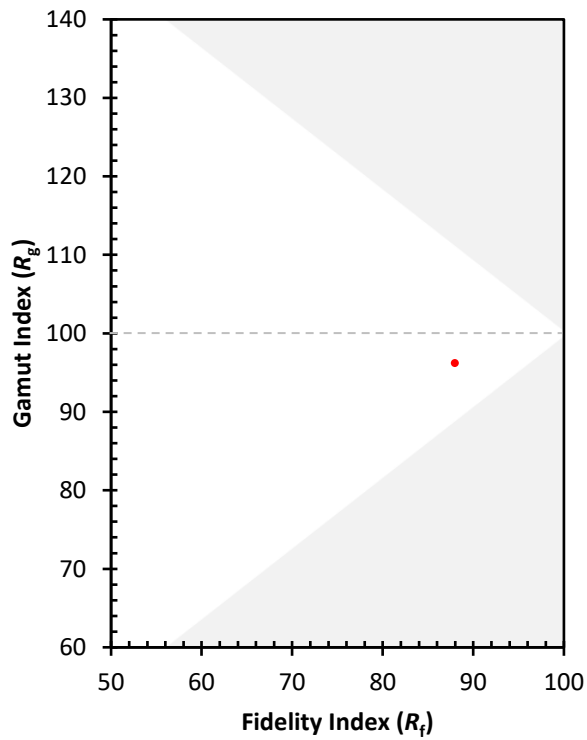
**Color Rendition by Hue-Angle Bin**



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**Measure Comparisons**



(END OF REPORT)