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: McGRAW-EDISON

Report Number: P322725

Luminaire Tested: **GLEON-SA1C-830-U-T4FT-HSS**

Issue Date: 3/3/2020

Report Generated By E0585644

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

Scaled Data Report

**Test Information**

| | |
|---|---|
| Test Method: | LM-79-08 |
| Report Number: | P322725 |
| | TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-17) |
| Test Lab: | INNOVATION CENTER |
| Issue Date: | 3/3/2020 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS (FORMERLY EATON) |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | GLEON-SA1C-830-U-T4FT-HSS |
| Description: | GALLEON AREA AND ROADWAY LUMINAIRE |
| | (1) 80 CRI, 3000K, 1050mA LIGHTSQUARE WITH 16 LEDS AND TYPE IV FORWARD THROW OPTICS WITH HOUSE SIDE SHIELD |
| Light Source: | - |
| Ballast/Driver: | ELECTRONIC DRIVER |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 4180 lumens |
| Efficiency: | N/A |
| Efficacy: | 70.8 lumens/watt |
| Luminous Opening: | Rectangular (W 0.5' x L: 0.5' x H: 0') |
| IES Classification: | Type IV - Short |
| BUG Rating: | B1 - U0 - G2 |

| | |
|---|---|
| Input Watts (W): | 59 |
| Input Voltage (V): | NR |
| Input Current (Ain): | NR |
| Voltage Rise (V): | NR |
| Power Factor: | NR |
| Total Harmonic Distortion (THDi): | NR |
| Frequency (hertz): | 60 |
| Stabilization Time: | NR |
| Operation Time: | NR |
| Ambient Temperature (°C): | NR |
| Test Distance: | 24 FT |

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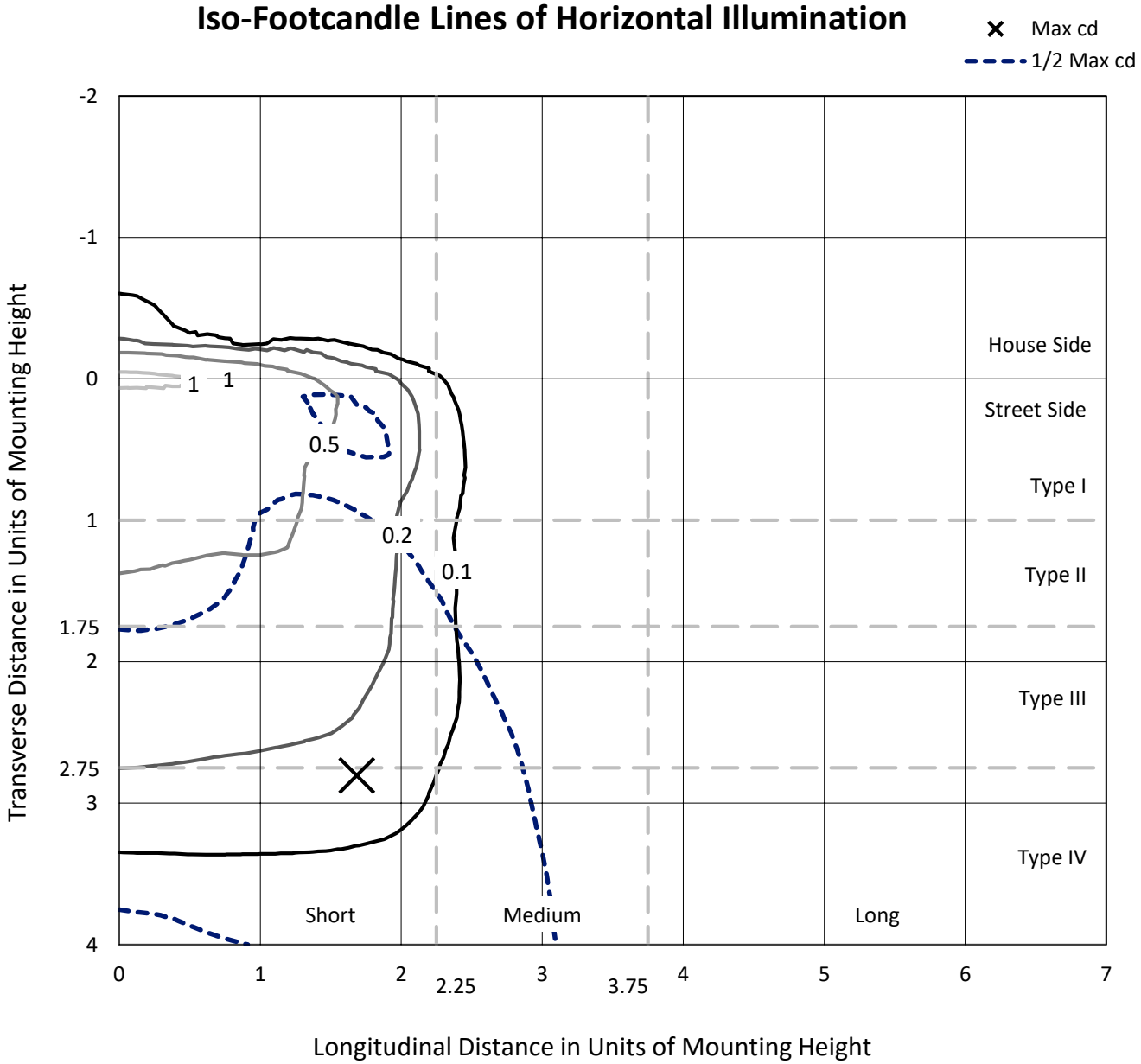
REPORT NUMBER: P322725
CATALOG NUMBER: GLEON-SA1C-830-U-T4FT-HSS

## Iso-Footcandle Lines of Horizontal Illumination




Based on 25 foot mounting height. Maximum calculated value = 1.2 fc
Type IV - Short - N/A

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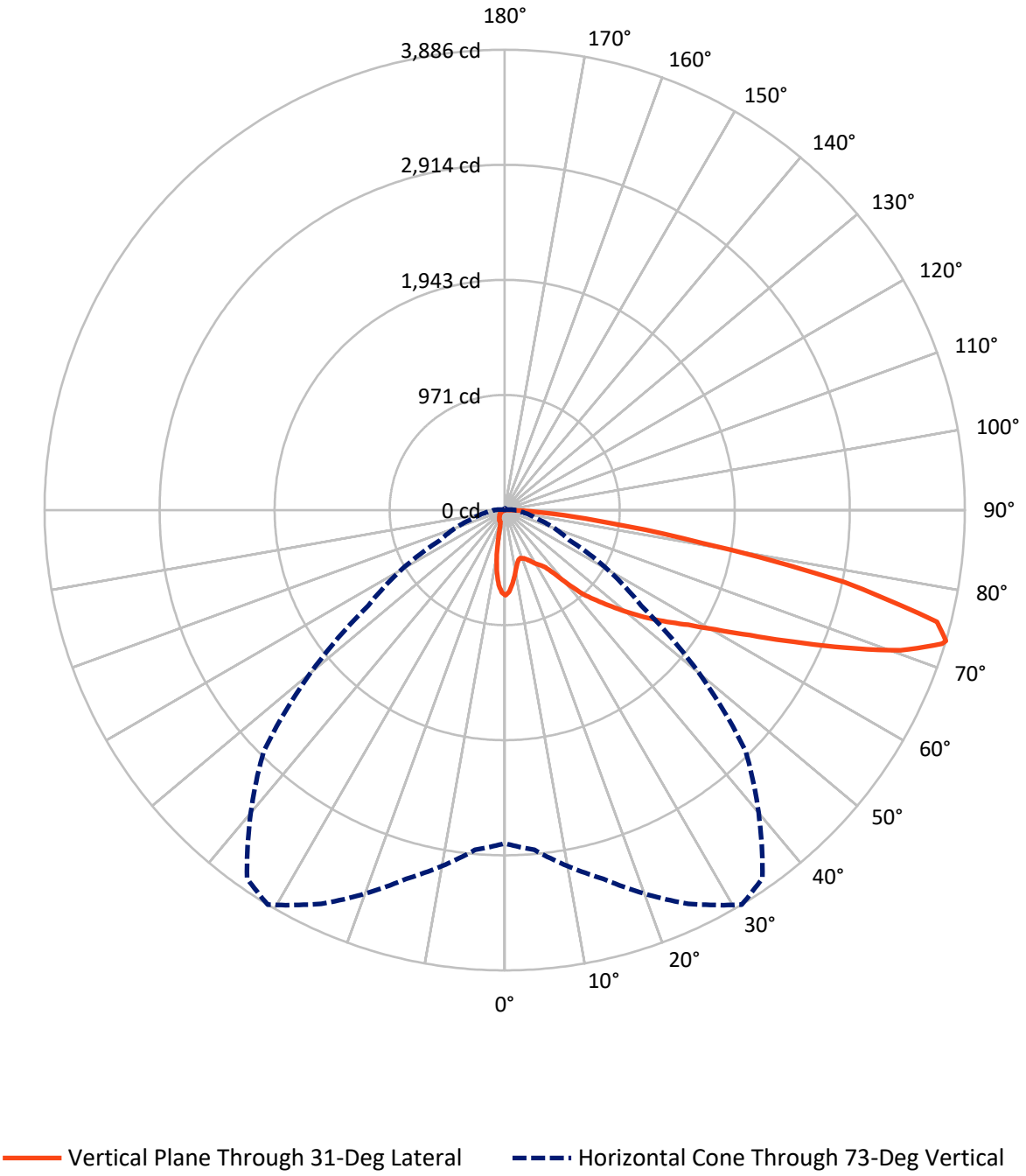
## Luminous Intensity Polar Plot



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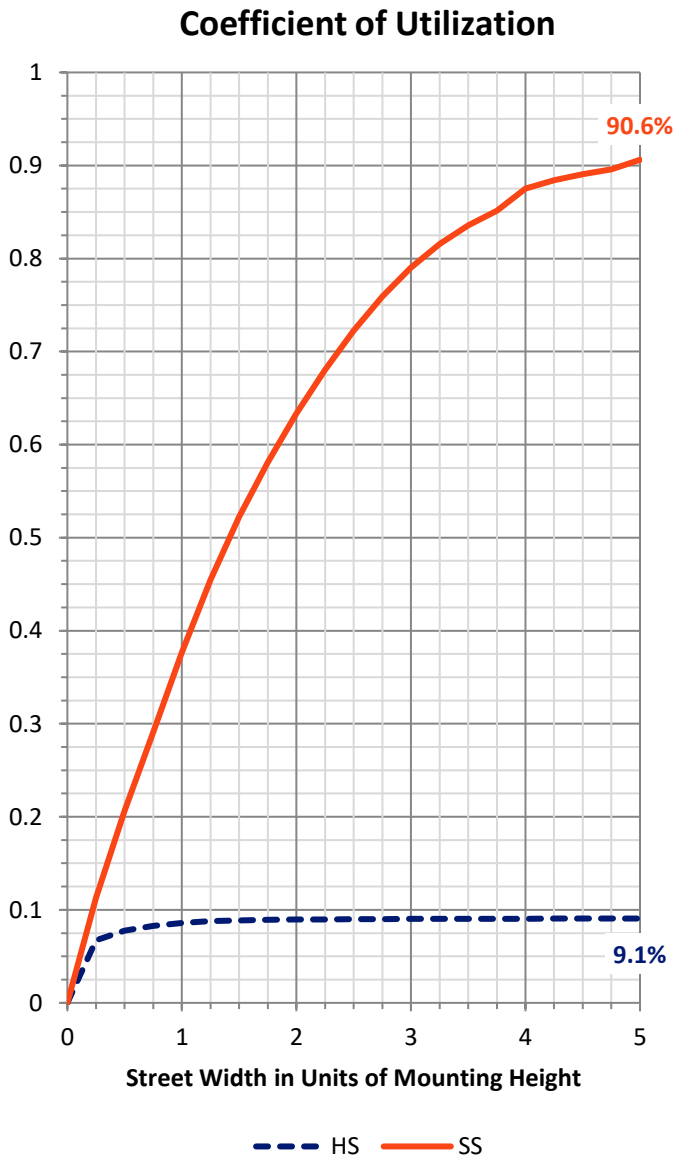
REPORT NUMBER: P322725
CATALOG NUMBER: GLEON-SA1C-830-U-T4FT-HSS

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 381.0 | 0.0 | 381.0 |
| | % Fixture | 9.1 | 0.0 | 9.1 |
| **Street Side** | Lumens | 3799.0 | 0.0 | 3799.0 |
| | % Fixture | 90.9 | 0.0 | 90.9 |
| **Total** | Lumens | 4180.0 | 0.0 | 4180.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 59.6 | 1.4 |
| 10°-20° | 129.5 | 3.1 |
| 20°-30° | 194.0 | 4.6 |
| 30°-40° | 308.6 | 7.4 |
| 40°-50° | 551.1 | 13.2 |
| 50°-60° | 855.2 | 20.5 |
| 60°-70° | 1136.9 | 27.2 |
| 70°-80° | 855.2 | 20.5 |
| 80°-90° | 89.9 | 2.1 |
| 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°-90° | 4180.0 | 100.0 |
| 0°-180° | 4180.0 | 100.0 |



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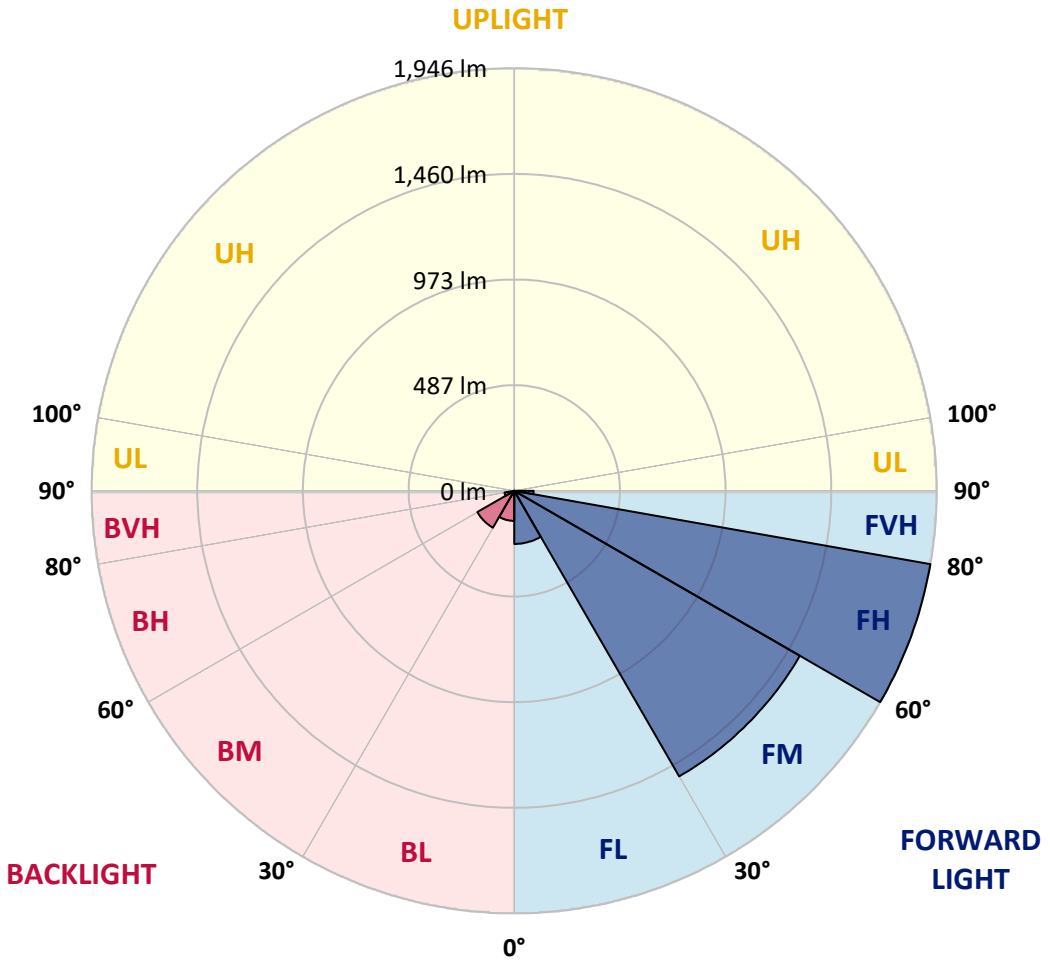
REPORT NUMBER: P322725
CATALOG NUMBER: GLEON-SA1C-830-U-T4FT-HSS

## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 244.5 | 5.9 | | | |
| FM | (30°-60°) | 1518.9 | 36.3 | | | |
| FH | (60°-80°) | 1946.5 | 46.6 | | | G2/5000 |
| FVH | (80°-90°) | 89.1 | 2.1 | | | G1/100 |
| BL | (0°-30°) | 138.6 | 3.3 | B1/500 | | |
| BM | (30°-60°) | 196.1 | 4.7 | B0/220 | | |
| BH | (60°-80°) | 45.6 | 1.1 | B0/110 | | G0/110 |
| BVH | (80°-90°) | 0.8 | 0.0 | | | G0/10 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

**BUG Rating: B1-U0-G2**
Type IV Short



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REPORT NUMBER: P322725
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**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 31° | 35° | 45° | 55° | 65° | 75° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 719.2 | 719.2 | 719.2 | 719.2 | 719.2 | 719.2 | 719.2 | 719.2 | 719.2 | 719.2 | 719.2 |
| 2.5° | 681.5 | 684.4 | 687.5 | 688.1 | 693.2 | 693.4 | 700.8 | 706.3 | 711.8 | 717.1 | 719.0 |
| 5° | 611.6 | 616.3 | 621.8 | 627.3 | 638.2 | 642.5 | 660.5 | 678.9 | 696.5 | 713.2 | 721.4 |
| 7.5° | 536.9 | 542.2 | 550.0 | 563.7 | 575.8 | 584.2 | 612.6 | 645.3 | 678.1 | 709.0 | 726.7 |
| 10° | 468.8 | 473.7 | 481.9 | 496.4 | 515.0 | 526.5 | 564.7 | 610.2 | 658.2 | 705.1 | 734.7 |
| 12.5° | 425.5 | 428.1 | 432.6 | 448.2 | 464.9 | 477.8 | 522.8 | 579.1 | 641.9 | 704.9 | 747.6 |
| 15° | 417.5 | 418.3 | 414.6 | 421.6 | 434.7 | 447.1 | 492.7 | 553.9 | 629.4 | 708.1 | 764.4 |
| 17.5° | 430.2 | 429.7 | 417.5 | 416.7 | 427.1 | 437.3 | 478.0 | 536.5 | 620.6 | 715.7 | 786.1 |
| 20° | 449.4 | 448.0 | 426.7 | 422.8 | 433.8 | 443.5 | 477.0 | 530.0 | 617.3 | 728.4 | 812.4 |
| 22.5° | 475.0 | 472.5 | 439.2 | 435.1 | 446.9 | 457.0 | 489.7 | 536.3 | 620.2 | 745.4 | 843.1 |
| 25° | 506.7 | 503.0 | 460.6 | 456.1 | 468.2 | 478.2 | 512.4 | 554.5 | 628.8 | 766.0 | 882.0 |
| 27.5° | 542.5 | 537.1 | 495.0 | 483.3 | 497.0 | 507.5 | 542.7 | 582.3 | 642.3 | 787.9 | 929.7 |
| 30° | 576.2 | 569.2 | 531.2 | 512.0 | 528.7 | 540.4 | 575.4 | 615.5 | 664.0 | 821.7 | 994.9 |
| 32.5° | 610.2 | 602.4 | 563.5 | 540.6 | 555.7 | 568.4 | 609.1 | 661.1 | 704.7 | 873.2 | 1081.6 |
| 35° | 688.3 | 680.1 | 632.5 | 594.6 | 594.4 | 601.6 | 656.4 | 723.5 | 758.5 | 945.0 | 1185.1 |
| 37.5° | 819.8 | 815.1 | 769.7 | 697.9 | 678.7 | 670.7 | 720.8 | 797.9 | 835.8 | 1043.8 | 1301.9 |
| 40° | 963.8 | 959.7 | 908.8 | 843.7 | 814.5 | 794.9 | 813.3 | 901.6 | 945.0 | 1164.5 | 1421.2 |
| 42.5° | 1126.4 | 1107.0 | 1016.2 | 996.7 | 970.6 | 955.6 | 939.1 | 1029.5 | 1079.2 | 1295.8 | 1539.4 |
| 45° | 1274.1 | 1241.4 | 1123.6 | 1094.1 | 1088.2 | 1091.9 | 1101.1 | 1201.3 | 1230.1 | 1451.9 | 1657.2 |
| 47.5° | 1362.1 | 1336.3 | 1245.9 | 1217.7 | 1216.0 | 1240.4 | 1309.9 | 1395.4 | 1380.5 | 1587.9 | 1760.9 |
| 50° | 1445.7 | 1422.4 | 1347.3 | 1354.3 | 1361.9 | 1395.0 | 1547.0 | 1595.0 | 1517.7 | 1711.2 | 1856.0 |
| 52.5° | 1513.4 | 1477.8 | 1438.6 | 1477.6 | 1514.9 | 1568.2 | 1791.6 | 1774.2 | 1615.1 | 1809.4 | 1937.4 |
| 55° | 1552.5 | 1536.3 | 1555.4 | 1594.6 | 1664.6 | 1751.3 | 2022.5 | 1923.3 | 1686.3 | 1899.0 | 1991.6 |
| 57.5° | 1695.7 | 1664.0 | 1701.8 | 1735.8 | 1827.0 | 1948.3 | 2220.3 | 2034.4 | 1737.6 | 1954.4 | 2004.1 |
| 60° | 1868.9 | 1843.4 | 1865.6 | 1922.1 | 2045.2 | 2187.8 | 2405.2 | 2125.0 | 1764.4 | 1990.0 | 1971.8 |
| 62.5° | 2144.6 | 2110.9 | 2097.0 | 2160.2 | 2323.4 | 2479.1 | 2545.6 | 2187.8 | 1758.5 | 1974.3 | 1860.9 |
| 65° | 2514.1 | 2479.1 | 2416.9 | 2474.2 | 2681.8 | 2791.6 | 2702.4 | 2201.1 | 1717.6 | 1846.8 | 1580.7 |
| 67.5° | 2892.5 | 2867.1 | 2813.9 | 2910.5 | 3097.8 | 3133.2 | 2868.3 | 2168.8 | 1585.8 | 1497.5 | 1116.8 |
| 70° | 3142.4 | 3131.6 | 3166.1 | 3379.7 | 3546.8 | 3536.6 | 3020.5 | 1995.1 | 1236.1 | 920.9 | 552.5 |
| 72.5° | 2962.2 | 3014.2 | 3269.4 | 3656.6 | 3860.8 | 3777.3 | 2942.4 | 1532.0 | 706.5 | 354.3 | 159.7 |
| 73° | 2812.9 | 2879.4 | 3223.0 | 3667.1 | 3885.5 | 3794.1 | 2876.7 | 1406.2 | 602.2 | 279.6 | 121.1 |
| 75° | 1956.9 | 2038.5 | 2668.3 | 3415.3 | 3769.8 | 3614.9 | 2397.9 | 860.7 | 279.0 | 124.0 | 48.9 |
| 77.5° | 950.1 | 1010.4 | 1469.2 | 2467.6 | 2931.7 | 2824.3 | 1492.8 | 320.7 | 126.0 | 77.5 | 22.5 |
| 80° | 354.7 | 394.4 | 637.8 | 1255.9 | 1694.2 | 1738.6 | 656.6 | 121.3 | 83.9 | 62.4 | 11.5 |
| 82.5° | 92.9 | 103.5 | 235.2 | 560.0 | 868.3 | 908.8 | 207.0 | 61.2 | 61.4 | 51.3 | 7.0 |
| 85° | 29.7 | 34.0 | 73.4 | 251.4 | 409.1 | 359.2 | 54.0 | 29.7 | 44.6 | 38.2 | 3.9 |
| 87.5° | 3.7 | 4.7 | 23.3 | 59.1 | 90.2 | 50.1 | 8.4 | 8.8 | 19.0 | 21.3 | 2.2 |
| 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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Scaled Data Report

REPORT NUMBER: P322725
CATALOG NUMBER: GLEON-SA1C-830-U-T4FT-HSS

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 719.2 | 719.2 | 719.2 | 719.2 | 719.2 | 719.2 | 719.2 | 719.2 | 719.2 | 719.2 | 719.2 |
| 2.5° | 720.8 | 719.8 | 720.0 | 714.7 | 711.2 | 704.2 | 697.1 | 693.8 | 690.3 | 688.9 | 690.3 |
| 5° | 724.5 | 722.7 | 717.3 | 701.0 | 683.6 | 661.1 | 640.0 | 624.1 | 604.0 | 598.5 | 604.2 |
| 7.5° | 730.2 | 726.5 | 711.0 | 677.7 | 639.0 | 596.0 | 547.8 | 512.6 | 483.7 | 465.1 | 471.9 |
| 10° | 738.6 | 731.7 | 700.4 | 643.7 | 574.6 | 498.5 | 430.0 | 376.6 | 338.7 | 323.2 | 322.6 |
| 12.5° | 752.7 | 739.6 | 687.3 | 599.5 | 495.8 | 394.4 | 304.6 | 246.7 | 216.0 | 196.2 | 195.7 |
| 15° | 768.3 | 749.0 | 670.7 | 546.5 | 404.2 | 282.5 | 196.2 | 152.2 | 132.3 | 126.0 | 125.2 |
| 17.5° | 787.3 | 759.9 | 649.2 | 481.3 | 308.2 | 187.2 | 128.0 | 115.4 | 114.5 | 113.9 | 113.9 |
| 20° | 811.2 | 772.8 | 621.6 | 406.6 | 218.7 | 125.0 | 108.8 | 109.6 | 110.0 | 109.2 | 109.4 |
| 22.5° | 839.0 | 785.9 | 588.7 | 326.5 | 147.9 | 104.5 | 104.1 | 105.1 | 105.5 | 105.1 | 105.3 |
| 25° | 871.4 | 801.0 | 548.6 | 242.4 | 106.8 | 99.2 | 100.2 | 101.7 | 102.7 | 102.7 | 102.7 |
| 27.5° | 911.4 | 819.4 | 500.3 | 169.2 | 92.2 | 93.7 | 96.5 | 99.2 | 100.6 | 101.0 | 101.0 |
| 30° | 963.6 | 842.3 | 442.4 | 116.0 | 83.9 | 86.3 | 91.6 | 96.7 | 99.4 | 99.8 | 100.0 |
| 32.5° | 1029.5 | 868.1 | 375.3 | 85.7 | 76.7 | 78.5 | 84.3 | 92.9 | 98.0 | 98.8 | 98.8 |
| 35° | 1104.9 | 897.9 | 303.1 | 74.7 | 71.6 | 72.2 | 76.7 | 86.5 | 95.5 | 97.8 | 98.0 |
| 37.5° | 1187.6 | 927.4 | 230.5 | 69.7 | 67.3 | 67.3 | 70.6 | 79.0 | 89.6 | 96.5 | 97.4 |
| 40° | 1264.7 | 945.2 | 161.6 | 65.9 | 63.4 | 63.4 | 66.3 | 72.4 | 82.4 | 92.9 | 95.1 |
| 42.5° | 1335.9 | 951.3 | 112.5 | 62.2 | 59.7 | 60.3 | 62.8 | 67.7 | 75.3 | 85.7 | 87.7 |
| 45° | 1409.1 | 950.3 | 82.0 | 57.9 | 56.0 | 57.9 | 59.7 | 63.4 | 68.9 | 74.9 | 75.3 |
| 47.5° | 1464.3 | 941.7 | 65.0 | 53.8 | 52.6 | 55.0 | 56.7 | 59.1 | 62.2 | 61.8 | 61.8 |
| 50° | 1516.1 | 920.9 | 52.4 | 48.3 | 49.1 | 52.0 | 52.8 | 53.6 | 53.8 | 49.9 | 49.5 |
| 52.5° | 1555.4 | 888.3 | 41.9 | 42.3 | 45.6 | 48.5 | 47.7 | 46.4 | 44.4 | 39.7 | 38.9 |
| 55° | 1568.4 | 825.7 | 32.9 | 35.0 | 40.5 | 44.2 | 41.1 | 38.5 | 34.6 | 30.7 | 29.9 |
| 57.5° | 1544.7 | 745.0 | 26.8 | 27.2 | 34.2 | 37.2 | 33.7 | 30.7 | 26.4 | 23.1 | 22.5 |
| 60° | 1494.4 | 655.2 | 22.1 | 20.5 | 26.4 | 29.0 | 26.8 | 23.7 | 19.8 | 17.4 | 17.2 |
| 62.5° | 1394.6 | 559.4 | 18.2 | 16.0 | 20.0 | 22.3 | 20.9 | 18.6 | 15.3 | 13.7 | 13.5 |
| 65° | 1184.7 | 447.5 | 14.7 | 12.9 | 15.5 | 17.4 | 16.2 | 14.5 | 12.1 | 10.8 | 10.6 |
| 67.5° | 827.0 | 302.5 | 12.1 | 10.6 | 12.3 | 13.7 | 12.7 | 11.9 | 9.6 | 9.4 | 9.6 |
| 70° | 398.9 | 145.8 | 10.0 | 8.6 | 9.6 | 10.6 | 10.2 | 9.6 | 9.2 | 10.6 | 12.3 |
| 72.5° | 114.3 | 48.9 | 8.0 | 7.2 | 7.8 | 8.4 | 8.8 | 8.6 | 10.0 | 12.9 | 14.9 |
| 73° | *88.0* | *39.5* | *7.6* | *6.7* | *7.4* | *8.2* | *8.6* | *8.4* | *10.2* | *13.1* | *14.9* |
| 75° | 37.6 | 19.0 | 5.7 | 5.5 | 6.1 | 7.2 | 7.6 | 7.6 | 10.2 | 13.3 | 14.3 |
| 77.5° | 17.0 | 10.2 | 3.7 | 4.3 | 5.3 | 5.7 | 6.3 | 6.3 | 8.2 | 10.2 | 10.2 |
| 80° | 9.6 | 5.5 | 2.9 | 3.3 | 3.9 | 3.9 | 3.9 | 3.5 | 3.7 | 4.1 | 4.5 |
| 82.5° | 6.1 | 3.7 | 2.2 | 2.7 | 2.5 | 2.0 | 1.6 | 1.6 | 1.4 | 1.6 | 2.0 |
| 85° | 3.5 | 2.0 | 2.0 | 1.6 | 1.0 | 0.8 | 1.0 | 0.8 | 0.2 | 0.0 | 0.2 |
| 87.5° | 2.0 | 1.2 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 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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# LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

MCGRAW EDISON

Report Number: SP1-2408-195-9

Test Date: 08/07/2024

Luminaire Tested: GALN-SB1A-830-U-5WQ

Data in this report applies to families of products including GALN-SB1A-830-U-5WQ.

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

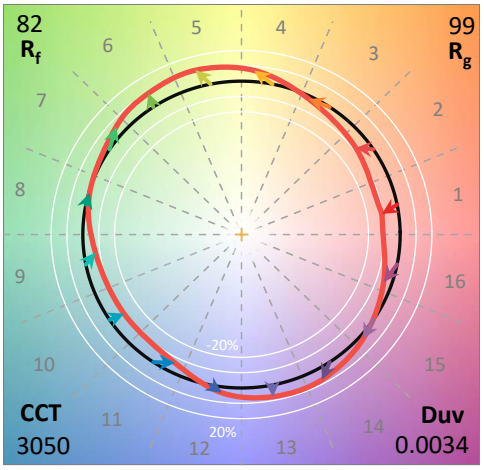
## Test Information

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | SP1-2408-195-9 |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Photometer: | SP1 - 76IN SPHERE |
| Measurement Geometry: | 4π |
| Issue Date: | 08/07/2024 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | MCGRAW EDISON |
| Catalog Number: | **GALN-SB1A-830-U-5WQ** |
| Description: | GALLEON AREA AND ROADWAY LUMINAIRE. (1) 80 CRI, 3000K, 350MA HIGH DENSITY LIGHTSQUARE WITH 26 LEDS AND TYPE V WIDE OPTICS |

## Spectral Parameters

| | | | | | |
|---|---|---|---|---|---|
| CCT (K): | 3050 | CRI (Ra): | 81.0 | | |
| CIE u': | 0.2476 | R1: | 79.6 | R9: | 7.1 |
| CIE v': | 0.5251 | R2: | 85.6 | R10: | 67.0 |
| Duv: | 0.0034 | R3: | 92.0 | R11: | 82.7 |
| CIE x: | 0.4383 | R4: | 82.6 | R12: | 63.2 |
| CIE y: | 0.4131 | R5: | 78.9 | R13: | 80.3 |
| CIE z: | 0.1487 | R6: | 81.7 | R14: | 95.0 |
| Peak Wavelength (nm): | 603 | R7: | 85.2 | R15: | 71.7 |
| Dominant Wavelength (nm): | 581 | R8: | 62.0 | | |
| Purity: | 55.55201 | | | | |

| | |
|---|---|
| Rf: | 81.5 |
| Rg: | 99.2 |




## Test Conditions

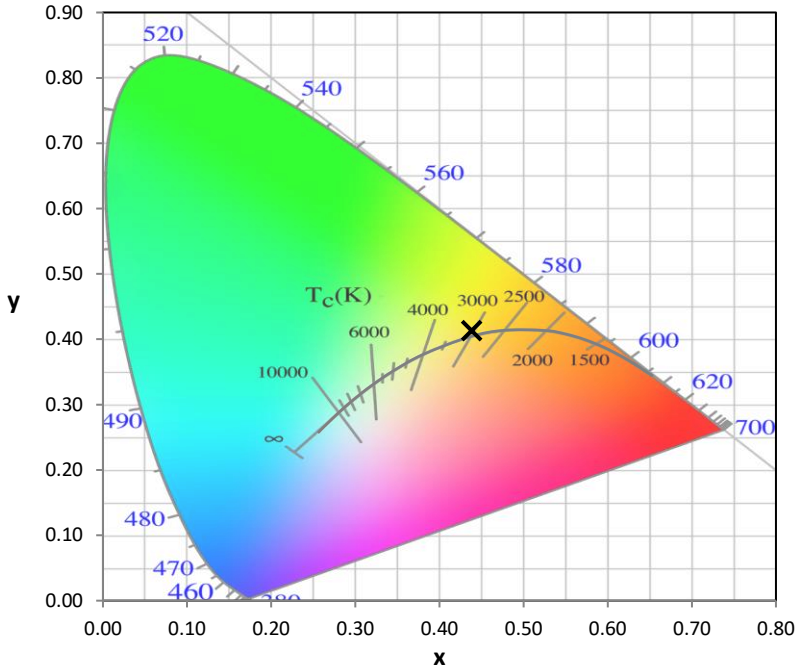
| | |
|---|---|
| Stabilization Time: | 20M |
| Operation Time: | 1H 20M |
| Sphere Temperature (°C): | 24.2 |

REPORT NUMBER: SP1-2408-195-9

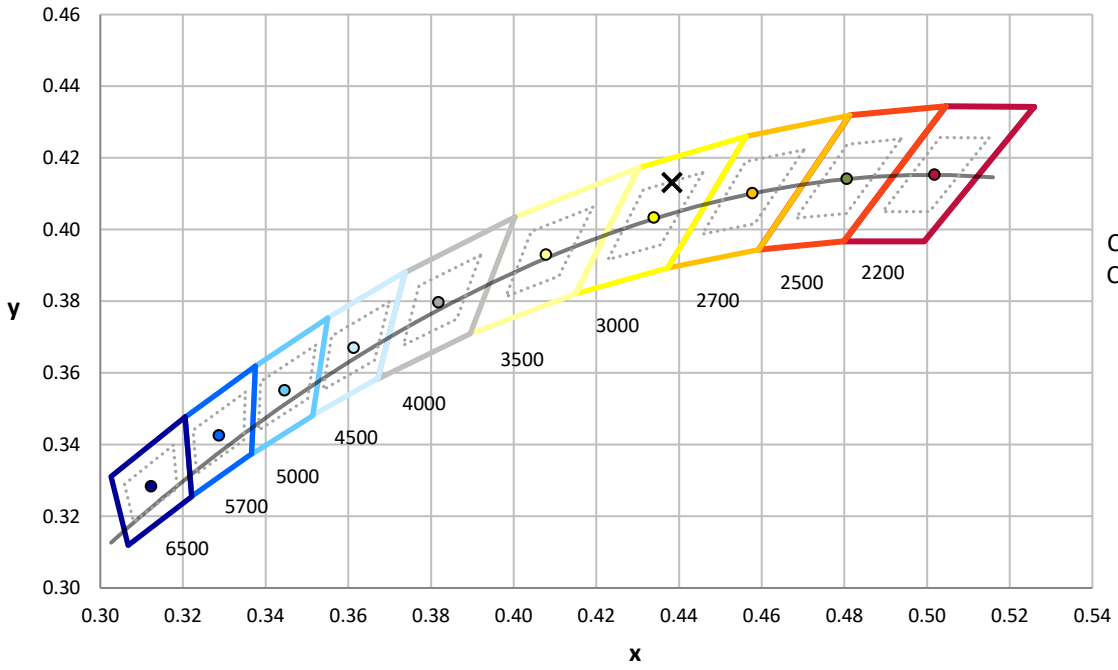
| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 | 2/8/2024 | 2/8/2025 |
| AC Power Source | IN0063 | 10/24/2023 | 10/24/2024 |
| DC Power Source | IN0208 | 10/24/2023 | 10/24/2024 |
| Sphere Thermometer | IN0085 | 10/24/2023 | 10/24/2024 |
| Room Thermometer | IN0046 | 10/24/2023 | 10/24/2024 |

REPORT NUMBER: SP1-2408-195-9

## CIE 1931 Chromaticity Diagram




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




CCT = 3050K
CIE x = 0.4383
CIE y = 0.4131
Duv = 0.0034

Point lies inside the ANSI 3000K 4-step quadrangle

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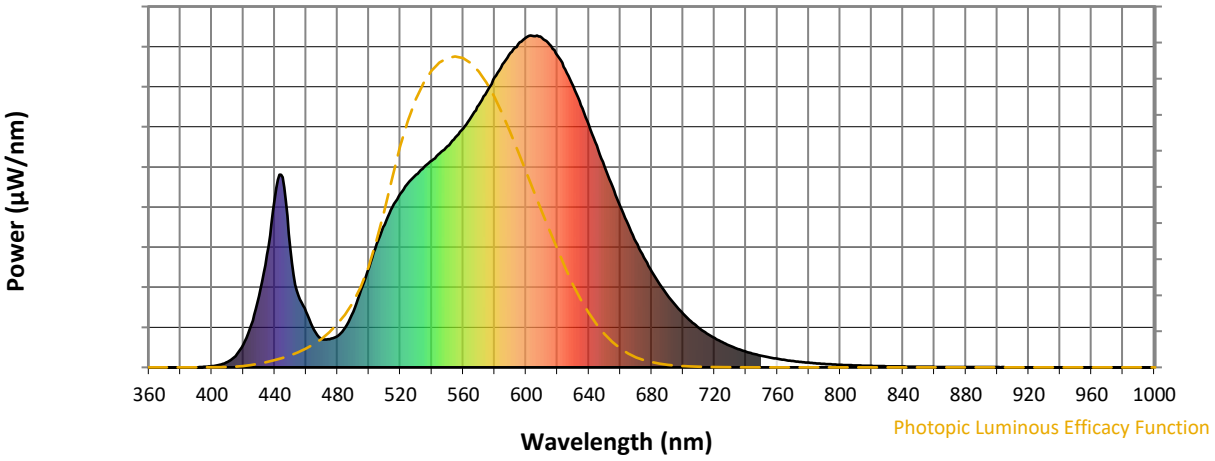
## Photopic Flux vs. Wavelength




## Photopic Lumens: NR

| λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 360 | 0 | NR | 490 | 168 | NR | 620 | 940 | NR | 750 | 35 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 233 | NR | 625 | 897 | NR | 755 | 30 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 300 | NR | 630 | 847 | NR | 760 | 26 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 372 | NR | 635 | 790 | NR | 765 | 22 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 430 | NR | 640 | 730 | NR | 770 | 19 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 483 | NR | 645 | 668 | NR | 775 | 16 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 524 | NR | 650 | 605 | NR | 780 | 14 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 555 | NR | 655 | 545 | NR | 785 | 12 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 581 | NR | 660 | 485 | NR | 790 | 10 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 604 | NR | 665 | 430 | NR | 795 | 9 | NR | 925 | 0 | NR |
| 410 | 17 | NR | 540 | 623 | NR | 670 | 378 | NR | 800 | 8 | NR | 930 | 0 | NR |
| 415 | 34 | NR | 545 | 645 | NR | 675 | 331 | NR | 805 | 7 | NR | 935 | 0 | NR |
| 420 | 68 | NR | 550 | 667 | NR | 680 | 290 | NR | 810 | 6 | NR | 940 | 0 | NR |
| 425 | 128 | NR | 555 | 693 | NR | 685 | 251 | NR | 815 | 5 | NR | 945 | 0 | NR |
| 430 | 214 | NR | 560 | 719 | NR | 690 | 218 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 339 | NR | 565 | 754 | NR | 695 | 188 | NR | 825 | 4 | NR | 955 | 0 | NR |
| 440 | 507 | NR | 570 | 791 | NR | 700 | 162 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 573 | NR | 575 | 830 | NR | 705 | 139 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 356 | NR | 580 | 873 | NR | 710 | 119 | NR | 840 | 3 | NR | 970 | 0 | NR |
| 455 | 217 | NR | 585 | 913 | NR | 715 | 102 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 168 | NR | 590 | 948 | NR | 720 | 88 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 113 | NR | 595 | 974 | NR | 725 | 76 | NR | 855 | 2 | NR | 985 | 0 | NR |
| 470 | 85 | NR | 600 | 994 | NR | 730 | 65 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 85 | NR | 605 | 998 | NR | 735 | 55 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 94 | NR | 610 | 994 | NR | 740 | 47 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 120 | NR | 615 | 973 | NR | 745 | 41 | NR | 875 | 1 | NR | | | |

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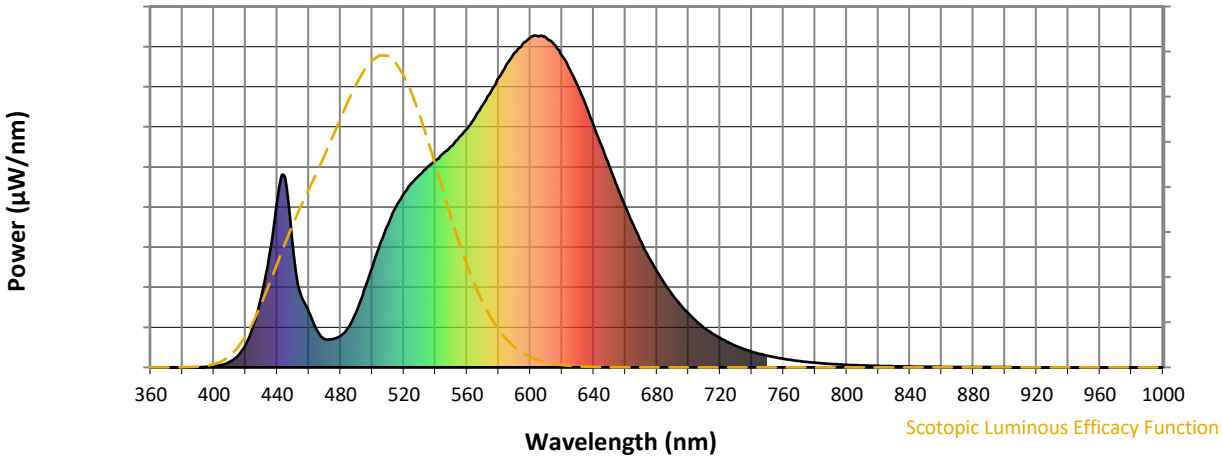
## Scotopic Flux vs. Wavelength




**Scotopic Lumens: NR** **S/P: 1.27**

| λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 360 | 0 | NR | 490 | 168 | NR | 620 | 940 | NR | 750 | 35 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 233 | NR | 625 | 897 | NR | 755 | 30 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 300 | NR | 630 | 847 | NR | 760 | 26 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 372 | NR | 635 | 790 | NR | 765 | 22 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 430 | NR | 640 | 730 | NR | 770 | 19 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 483 | NR | 645 | 668 | NR | 775 | 16 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 524 | NR | 650 | 605 | NR | 780 | 14 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 555 | NR | 655 | 545 | NR | 785 | 12 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 581 | NR | 660 | 485 | NR | 790 | 10 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 604 | NR | 665 | 430 | NR | 795 | 9 | NR | 925 | 0 | NR |
| 410 | 17 | NR | 540 | 623 | NR | 670 | 378 | NR | 800 | 8 | NR | 930 | 0 | NR |
| 415 | 34 | NR | 545 | 645 | NR | 675 | 331 | NR | 805 | 7 | NR | 935 | 0 | NR |
| 420 | 68 | NR | 550 | 667 | NR | 680 | 290 | NR | 810 | 6 | NR | 940 | 0 | NR |
| 425 | 128 | NR | 555 | 693 | NR | 685 | 251 | NR | 815 | 5 | NR | 945 | 0 | NR |
| 430 | 214 | NR | 560 | 719 | NR | 690 | 218 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 339 | NR | 565 | 754 | NR | 695 | 188 | NR | 825 | 4 | NR | 955 | 0 | NR |
| 440 | 507 | NR | 570 | 791 | NR | 700 | 162 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 573 | NR | 575 | 830 | NR | 705 | 139 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 356 | NR | 580 | 873 | NR | 710 | 119 | NR | 840 | 3 | NR | 970 | 0 | NR |
| 455 | 217 | NR | 585 | 913 | NR | 715 | 102 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 168 | NR | 590 | 948 | NR | 720 | 88 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 113 | NR | 595 | 974 | NR | 725 | 76 | NR | 855 | 2 | NR | 985 | 0 | NR |
| 470 | 85 | NR | 600 | 994 | NR | 730 | 65 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 85 | NR | 605 | 998 | NR | 735 | 55 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 94 | NR | 610 | 994 | NR | 740 | 47 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 120 | NR | 615 | 973 | NR | 745 | 41 | NR | 875 | 1 | NR | | | |

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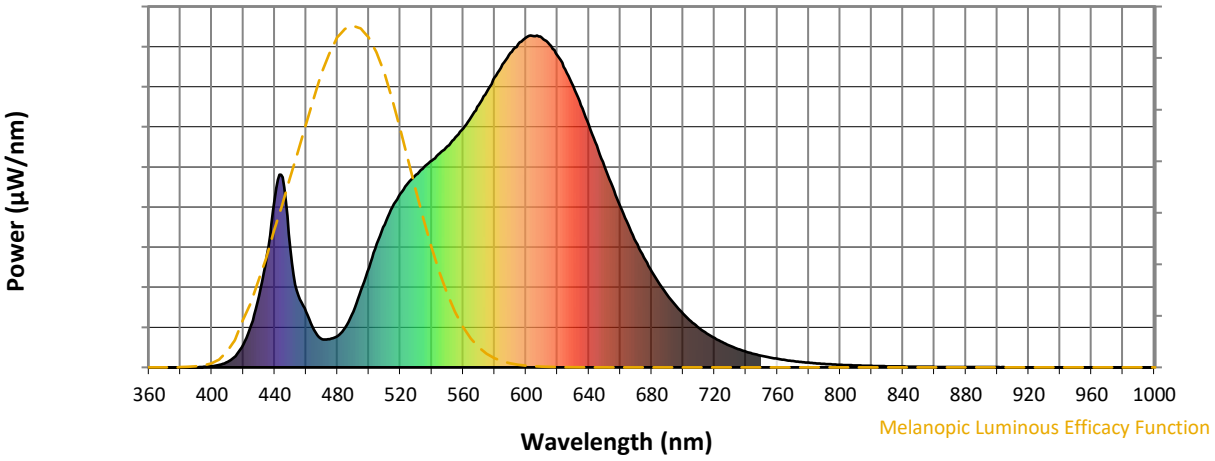
## Melanopic Flux vs. Wavelength




**Melanopic Lumens: NR** **M/P: 2.32**

| λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 360 | 0 | NR | 490 | 168 | NR | 620 | 940 | NR | 750 | 35 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 233 | NR | 625 | 897 | NR | 755 | 30 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 300 | NR | 630 | 847 | NR | 760 | 26 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 372 | NR | 635 | 790 | NR | 765 | 22 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 430 | NR | 640 | 730 | NR | 770 | 19 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 483 | NR | 645 | 668 | NR | 775 | 16 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 524 | NR | 650 | 605 | NR | 780 | 14 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 555 | NR | 655 | 545 | NR | 785 | 12 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 581 | NR | 660 | 485 | NR | 790 | 10 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 604 | NR | 665 | 430 | NR | 795 | 9 | NR | 925 | 0 | NR |
| 410 | 17 | NR | 540 | 623 | NR | 670 | 378 | NR | 800 | 8 | NR | 930 | 0 | NR |
| 415 | 34 | NR | 545 | 645 | NR | 675 | 331 | NR | 805 | 7 | NR | 935 | 0 | NR |
| 420 | 68 | NR | 550 | 667 | NR | 680 | 290 | NR | 810 | 6 | NR | 940 | 0 | NR |
| 425 | 128 | NR | 555 | 693 | NR | 685 | 251 | NR | 815 | 5 | NR | 945 | 0 | NR |
| 430 | 214 | NR | 560 | 719 | NR | 690 | 218 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 339 | NR | 565 | 754 | NR | 695 | 188 | NR | 825 | 4 | NR | 955 | 0 | NR |
| 440 | 507 | NR | 570 | 791 | NR | 700 | 162 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 573 | NR | 575 | 830 | NR | 705 | 139 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 356 | NR | 580 | 873 | NR | 710 | 119 | NR | 840 | 3 | NR | 970 | 0 | NR |
| 455 | 217 | NR | 585 | 913 | NR | 715 | 102 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 168 | NR | 590 | 948 | NR | 720 | 88 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 113 | NR | 595 | 974 | NR | 725 | 76 | NR | 855 | 2 | NR | 985 | 0 | NR |
| 470 | 85 | NR | 600 | 994 | NR | 730 | 65 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 85 | NR | 605 | 998 | NR | 735 | 55 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 94 | NR | 610 | 994 | NR | 740 | 47 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 120 | NR | 615 | 973 | NR | 745 | 41 | NR | 875 | 1 | NR | | | |

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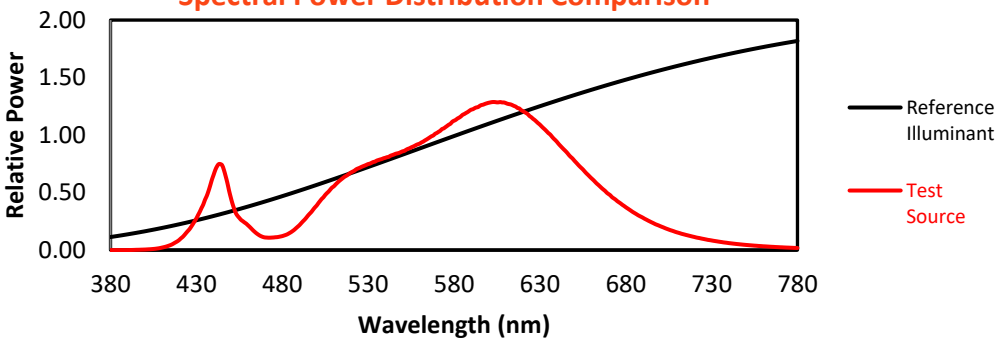
# TM-30-18

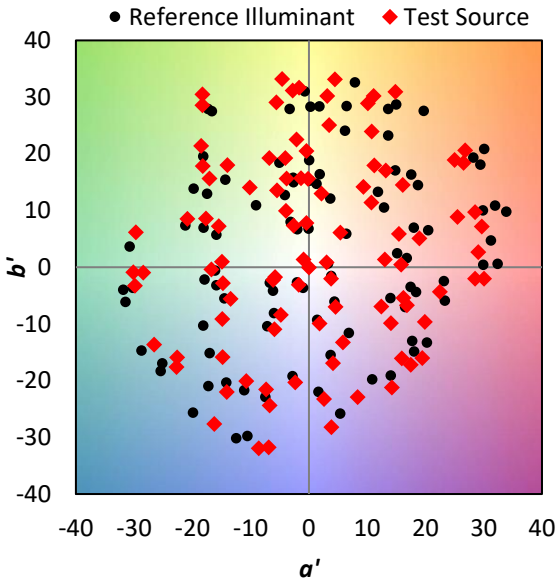
## Summary

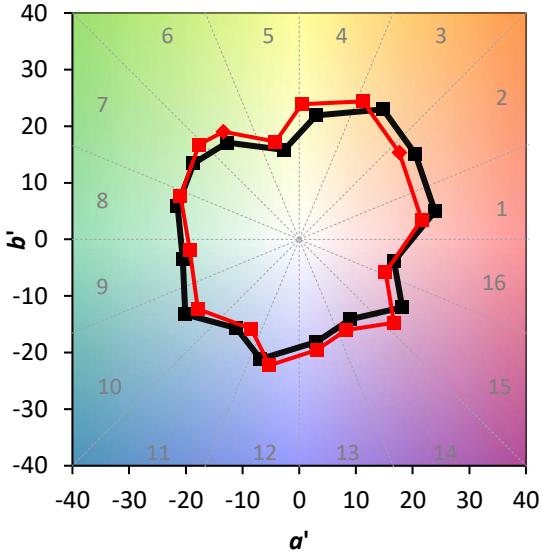
$R_f$ = 81.5
$R_g$ = 99.2
CIE $R_a$ = 81.0
$R_9$ = 7.1

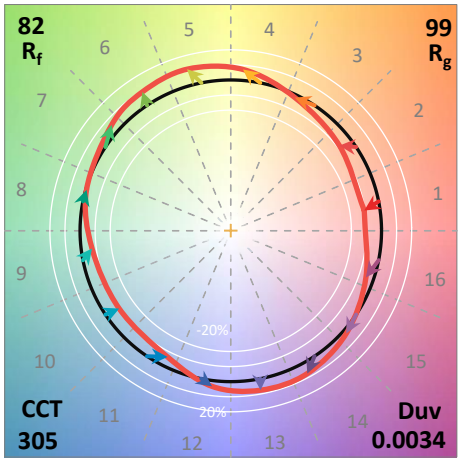
## Spectral Power Distribution Comparison

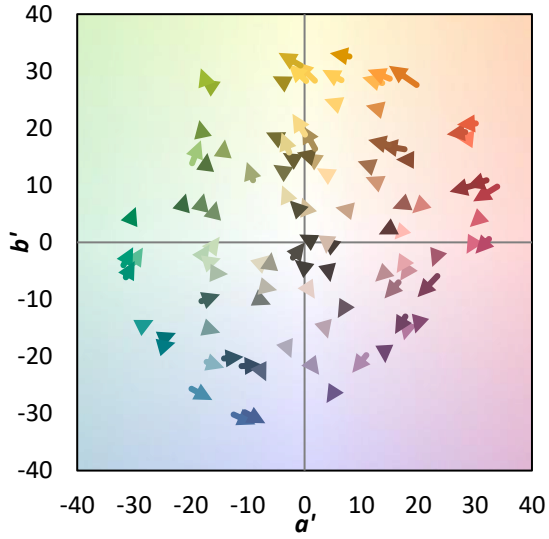



## Color Vector Graphics



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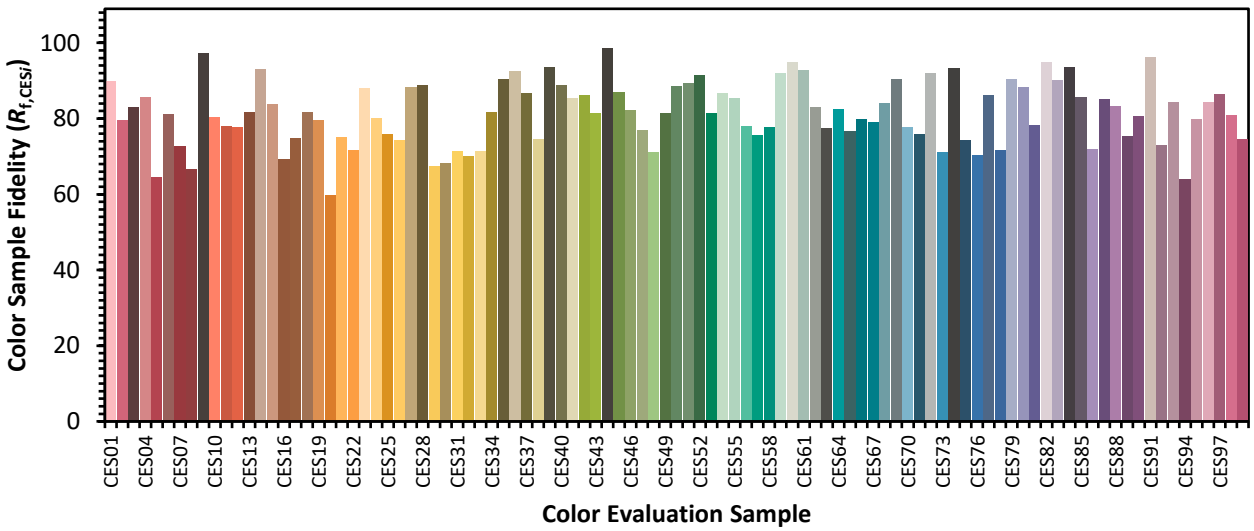
## Individual Sample Fidelity Index ($R_{f,i}$)

| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 74 | CES51 = 89 | CES76 = 70 |
| CES02 = 63 | CES27 = 88 | CES52 = 92 | CES77 = 86 |
| CES03 = 31 | CES28 = 89 | CES53 = 81 | CES78 = 72 |
| CES04 = 70 | CES29 = 67 | CES54 = 87 | CES79 = 90 |
| CES05 = 50 | CES30 = 68 | CES55 = 85 | CES80 = 88 |
| CES06 = 51 | CES31 = 71 | CES56 = 78 | CES81 = 78 |
| CES07 = 42 | CES32 = 70 | CES57 = 76 | CES82 = 95 |
| CES08 = 41 | CES33 = 71 | CES58 = 78 | CES83 = 90 |
| CES09 = 29 | CES34 = 82 | CES59 = 92 | CES84 = 94 |
| CES10 = 76 | CES35 = 90 | CES60 = 95 | CES85 = 86 |
| CES11 = 59 | CES36 = 93 | CES61 = 93 | CES86 = 72 |
| CES12 = 65 | CES37 = 87 | CES62 = 83 | CES87 = 85 |
| CES13 = 43 | CES38 = 75 | CES63 = 77 | CES88 = 83 |
| CES14 = 74 | CES39 = 94 | CES64 = 83 | CES89 = 75 |
| CES15 = 71 | CES40 = 89 | CES65 = 77 | CES90 = 81 |
| CES16 = 47 | CES41 = 85 | CES66 = 80 | CES91 = 96 |
| CES17 = 50 | CES42 = 86 | CES67 = 79 | CES92 = 73 |
| CES18 = 56 | CES43 = 81 | CES68 = 84 | CES93 = 84 |
| CES19 = 72 | CES44 = 99 | CES69 = 91 | CES94 = 64 |
| CES20 = 66 | CES45 = 87 | CES70 = 78 | CES95 = 80 |
| CES21 = 87 | CES46 = 82 | CES71 = 76 | CES96 = 84 |
| CES22 = 79 | CES47 = 77 | CES72 = 92 | CES97 = 87 |
| CES23 = 92 | CES48 = 71 | CES73 = 71 | CES98 = 81 |
| CES24 = 91 | CES49 = 81 | CES74 = 93 | CES99 = 74 |
| CES25 = 72 | CES50 = 89 | CES75 = 74 | |



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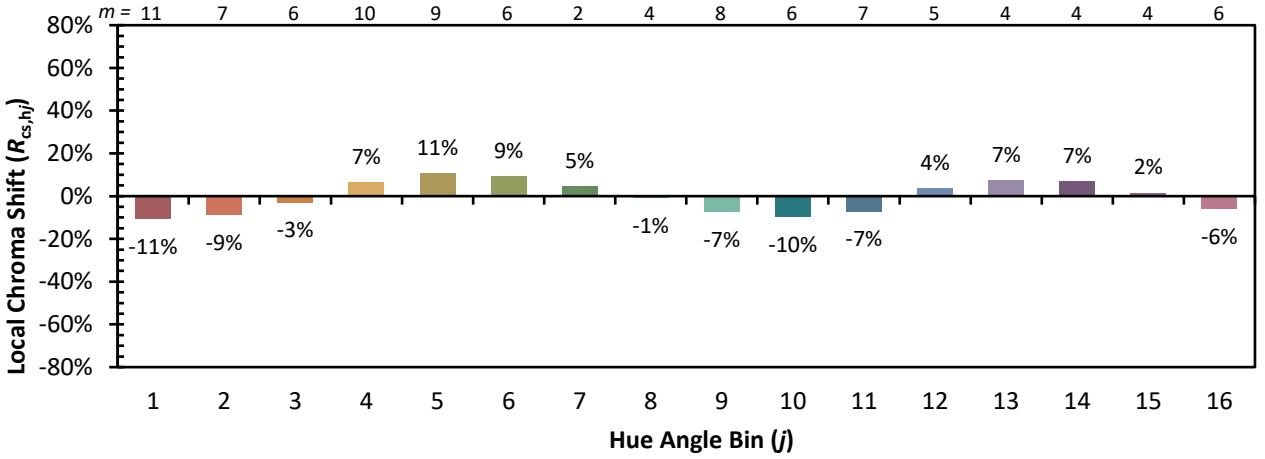
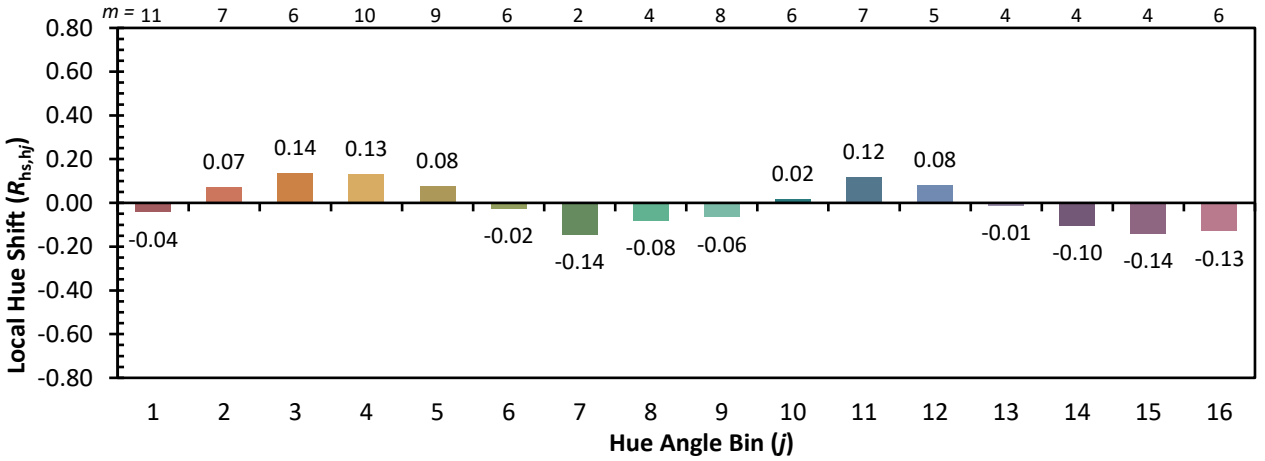
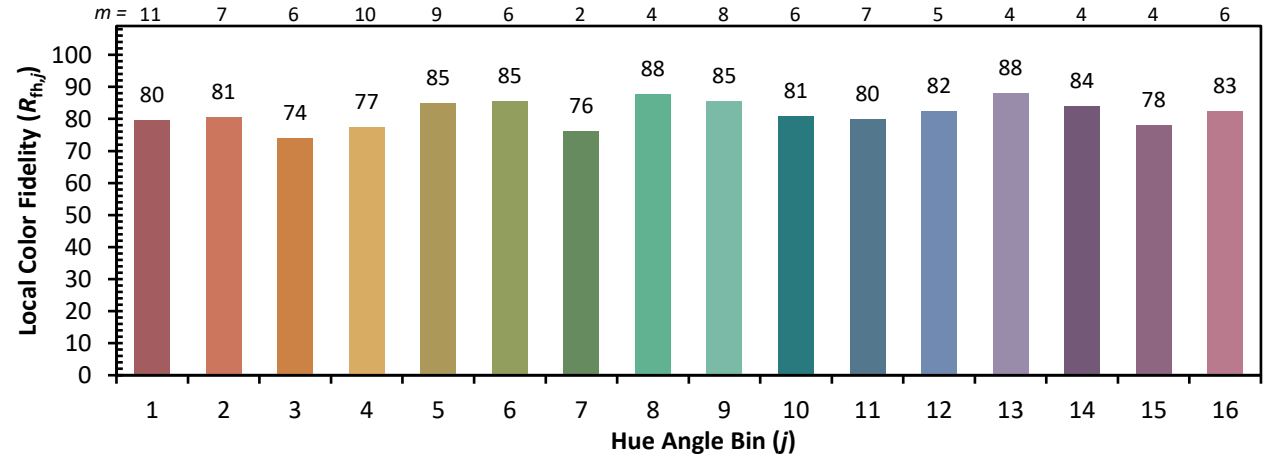
## Color Rendition by Hue-Angle Bin



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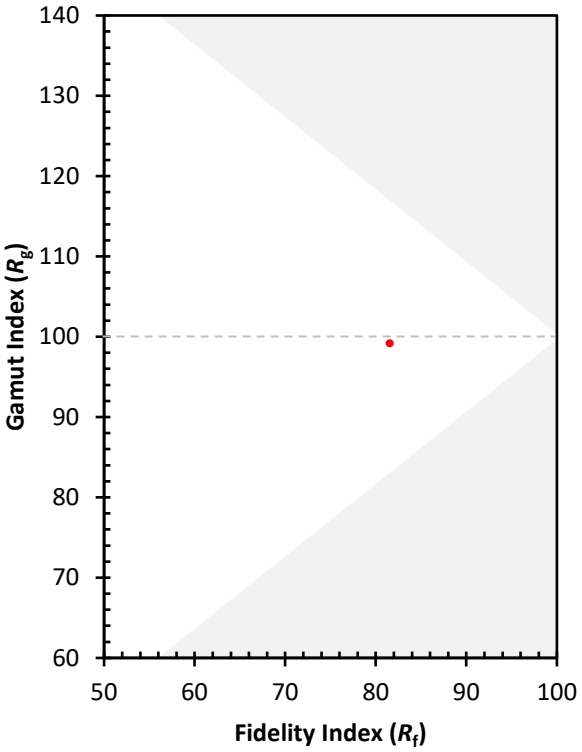
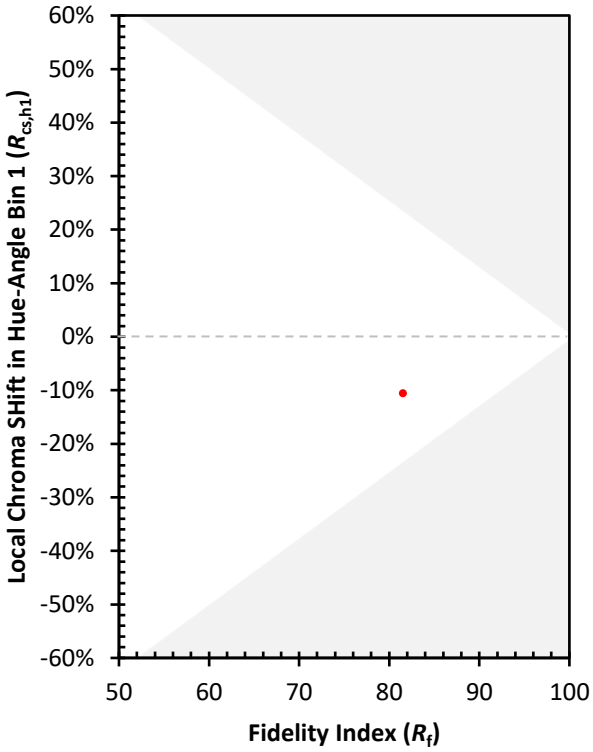
## Measure Comparisons

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