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: P1362790

Luminaire Tested: **GSS-SB4D-830-U-SL2**

Issue Date: 02/18/2026

This test was performed under the Supervised Manufacturer's Testing Program. The results of this test have not been influenced by sources from within Cooper Lighting Solutions or from external interests.

Report Generated By 670245763

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: | P1362790 |
| Test Lab: | INNOVATION CENTER(G1) |
| Issue Date: | 02/18/2026 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS (FORMERLY EATON) |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | GSS-SB4D-830-U-SL2 |
| Description: | GALLEON II SLIM SITE HIGH DENSITY LED ARRAYS 4SQUARE 238W 80CRI 3000K FIXTURE w/ TYPE II SPILL CONTROL DISTRIBUTION OPTIC |
| Light Source: | (104) 3000K CCT, 80 CRI LEDS |
| Ballast/Driver: | ELECTRONIC DRIVER |

Luminaire Equipment:

| Sample No. | Condition | Description |
|---|---|---|
| a | good | reflector |
| b | good | lens |
| c | good | housing |
| d | good | cord |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 28215.2 lumens |
| Efficiency: | N/A |
| Efficacy: | 118.6 lumens/watt |
| Luminous Opening: | Rectangular (W 1.5' x L: 1' x H: 0') |
| IES Classification: | Type II - Medium |
| BUG Rating: | B3 - U0 - G4 |

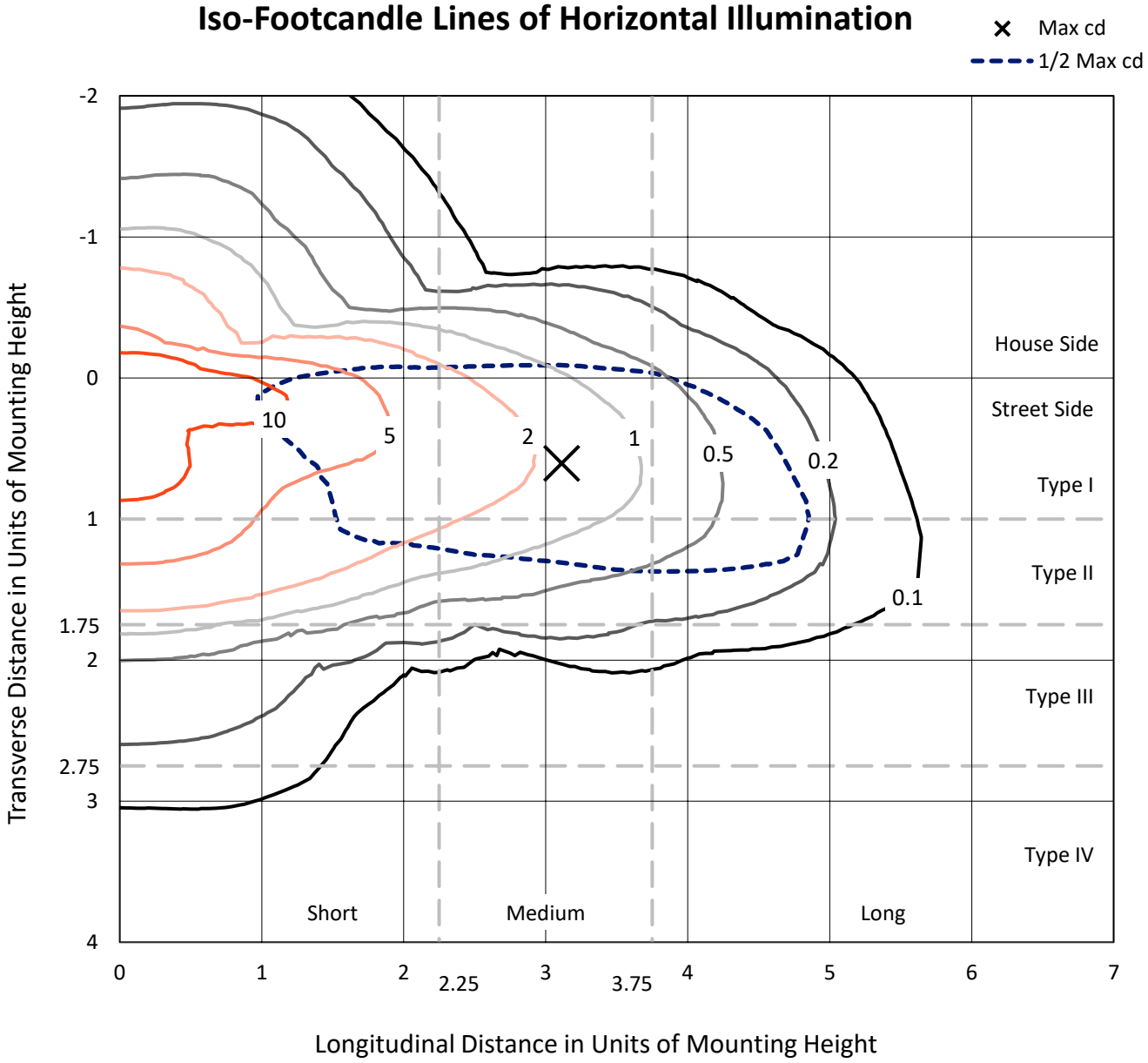
| | |
|---|---|
| Input Watts (W): | 238 |
| Input Voltage (V): | 120 |
| Input Current (Ain): | NR |
| Voltage Rise (V): | NR |
| Power Factor: | 0.98 |
| Total Harmonic Distortion (THDi): | -- |
| Frequency (hertz): | 60 |
| Stabilization Time: | NR |
| Operation Time: | NR |
| Ambient Temperature (°C): | NR |
| Test Distance: | 28.75 FT |

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CATALOG NUMBER: GSS-SB4D-830-U-SL2

## Iso-Footcandle Lines of Horizontal Illumination



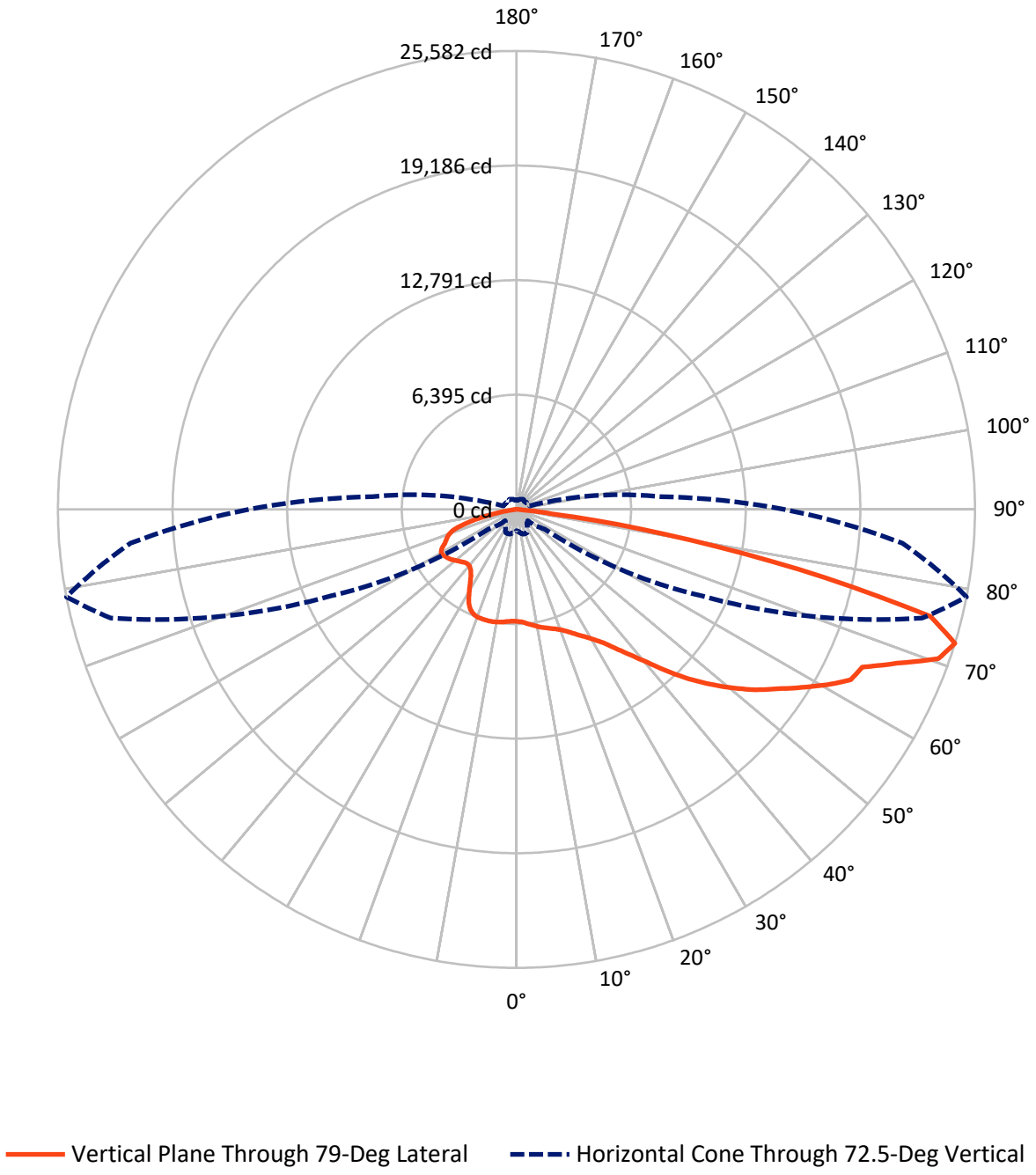

Based on 20 foot mounting height. Maximum calculated value = 15.7 fc
Type II - Medium - N/A

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## Luminous Intensity Polar Plot



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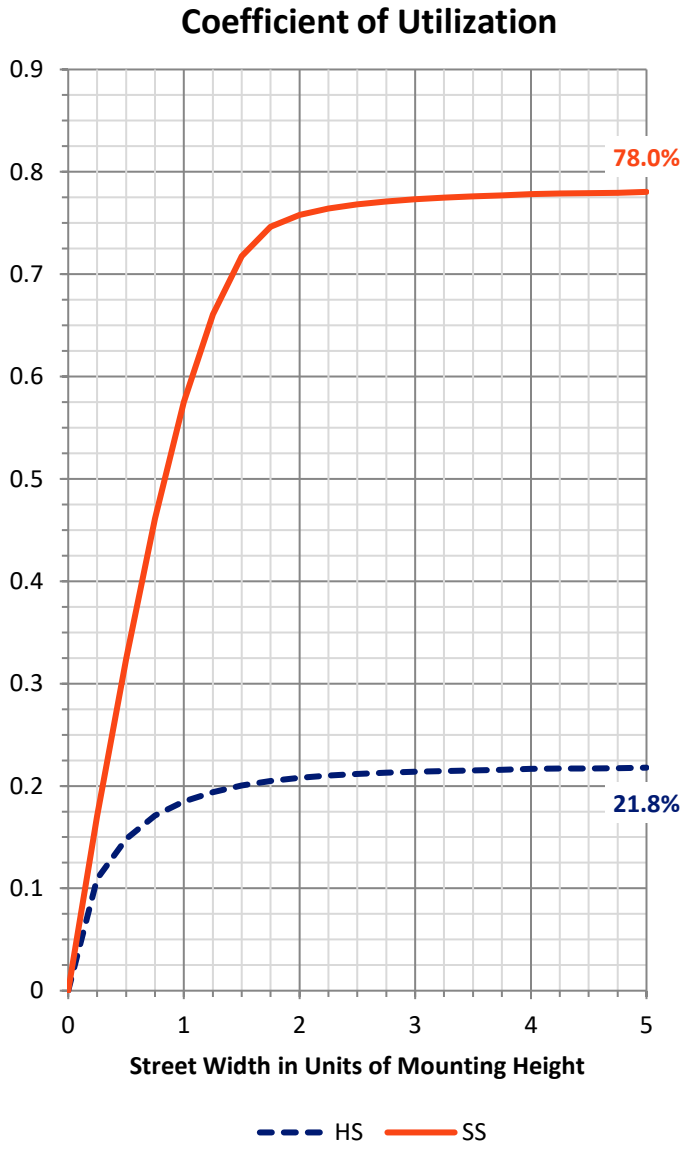
REPORT NUMBER: P1362790
CATALOG NUMBER: GSS-SB4D-830-U-SL2

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 6198.0 | 0.0 | 6198.0 |
| | % Fixture | 22.0 | 0.0 | 22.0 |
| **Street Side** | Lumens | 22017.3 | 0.0 | 22017.3 |
| | % Fixture | 78.0 | 0.0 | 78.0 |
| **Total** | Lumens | 28215.2 | 0.0 | 28215.2 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 580.1 | 2.1 |
| 10°-20° | 1440.6 | 5.1 |
| 20°-30° | 2268.1 | 8.0 |
| 30°-40° | 3384.8 | 12.0 |
| 40°-50° | 4812.7 | 17.1 |
| 50°-60° | 6079.3 | 21.5 |
| 60°-70° | 5690.3 | 20.2 |
| 70°-80° | 3614.6 | 12.8 |
| 80°-90° | 344.8 | 1.2 |
| 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° | 28215.2 | 100.0 |
| 0°-180° | 28215.2 | 100.0 |



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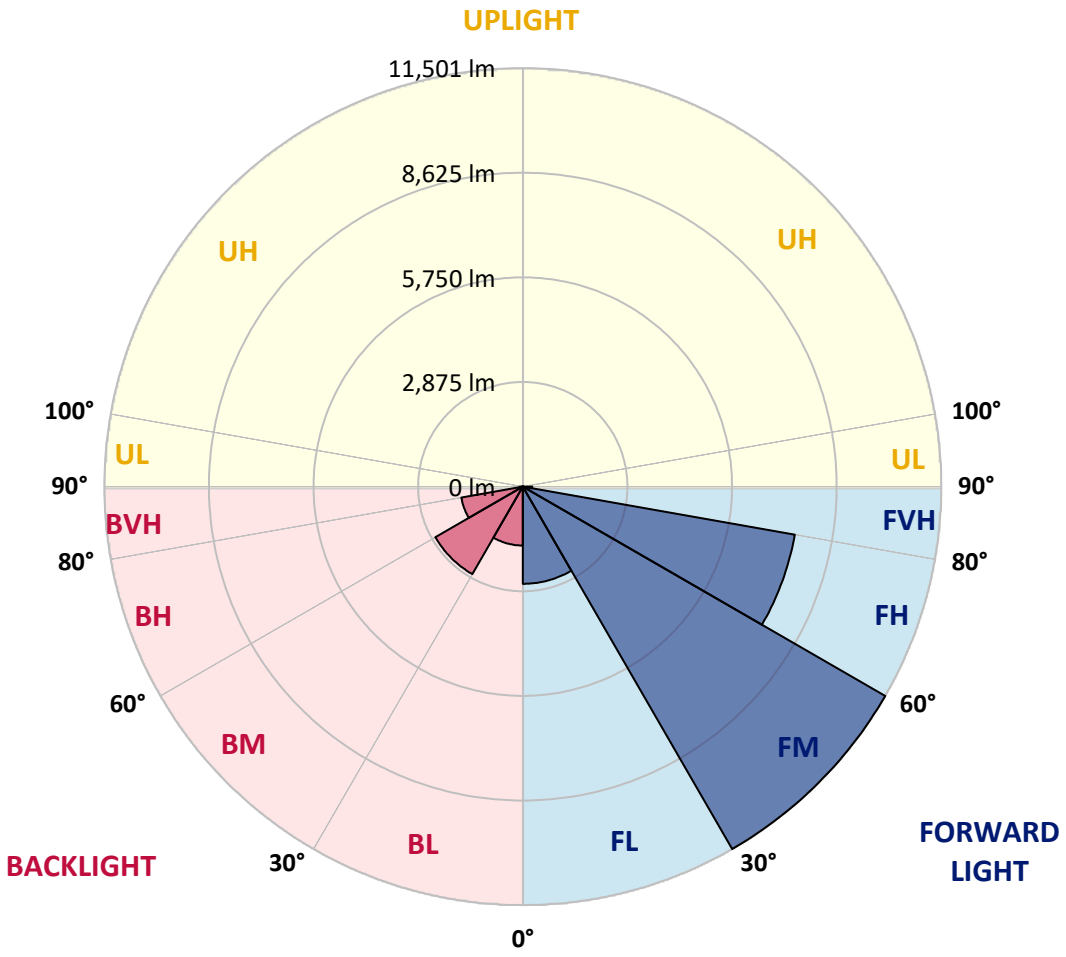
Scaled Data Report

REPORT NUMBER: P1362790
CATALOG NUMBER: GSS-SB4D-830-U-SL2

## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 2670.7 | 9.5 | | | |
| FM | (30°-60°) | 11500.6 | 40.8 | | | |
| FH | (60°-80°) | 7589.2 | 26.9 | | | G4/12000 |
| FVH | (80°-90°) | 256.9 | 0.9 | | | G3/500 |
| BL | (0°-30°) | 1618.1 | 5.7 | B3/2500 | | |
| BM | (30°-60°) | 2776.2 | 9.8 | B3/5000 | | |
| BH | (60°-80°) | 1715.7 | 6.1 | B3/2500 | | G3/2500 |
| BVH | (80°-90°) | 88.0 | 0.3 | | | G1/100 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

**BUG Rating: B3-U0-G4**
Type II Medium



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**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 79° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 6248.6 | 6248.6 | 6248.6 | 6248.6 | 6248.6 | 6248.6 | 6248.6 | 6248.6 | 6248.6 | *6248.6* | 6248.6 |
| 2.5° | 6395.5 | 6402.1 | 6375.4 | 6375.4 | 6382.1 | 6355.4 | 6322.0 | 6315.3 | 6288.6 | *6288.6* | 6288.6 |
| 5° | 6428.8 | 6428.8 | 6422.2 | 6455.5 | 6468.9 | 6488.9 | 6462.2 | 6442.2 | 6402.1 | *6402.1* | 6348.7 |
| 7.5° | 6075.0 | 6061.7 | 6115.1 | 6268.6 | 6428.8 | 6515.6 | 6569.0 | 6569.0 | 6549.0 | *6515.6* | 6468.9 |
| 10° | 5407.4 | 5427.5 | 5507.6 | 5714.5 | 6008.3 | 6402.1 | 6615.8 | 6702.5 | 6669.2 | *6655.8* | 6575.7 |
| 12.5° | 5053.6 | 5046.9 | 5107.0 | 5260.6 | 5514.2 | 5994.9 | 6522.3 | 6796.0 | 6802.7 | *6769.3* | 6675.8 |
| 15° | 5013.6 | 4993.5 | 5020.2 | 5073.6 | 5240.5 | 5627.7 | 6241.9 | 6829.4 | 6896.1 | *6882.8* | 6776.0 |
| 17.5° | 5240.5 | 5233.9 | 5193.8 | 5180.5 | 5173.8 | 5387.4 | 5968.2 | 6802.7 | 7023.0 | *7009.6* | 6889.5 |
| 20° | 5634.4 | 5601.0 | 5527.6 | 5460.8 | 5320.6 | 5340.7 | 5754.6 | 6769.3 | 7196.6 | *7176.5* | 7056.4 |
| 22.5° | 6055.0 | 6068.3 | 6001.6 | 5841.4 | 5594.4 | 5480.9 | 5687.8 | 6722.6 | 7430.2 | *7416.9* | 7256.6 |
| 25° | 6569.0 | 6555.7 | 6475.6 | 6295.3 | 5968.2 | 5721.2 | 5761.3 | 6709.2 | 7697.2 | *7710.6* | 7517.0 |
| 27.5° | 7096.4 | 7083.1 | 6982.9 | 6756.0 | 6375.4 | 6014.9 | 5928.1 | 6762.6 | 8037.7 | *8031.0* | 7790.7 |
| 30° | 7683.9 | 7690.6 | 7563.7 | 7256.6 | 6796.0 | 6382.1 | 6195.2 | 6902.8 | 8378.2 | *8398.2* | 8104.5 |
| 32.5° | 8211.3 | 8244.7 | 8171.2 | 7884.2 | 7310.0 | 6762.6 | 6522.3 | 7129.8 | 8832.1 | *8865.5* | 8505.0 |
| 35° | 8545.1 | 8565.1 | 8558.4 | 8424.9 | 7857.5 | 7196.6 | 6849.4 | 7416.9 | 9379.6 | *9506.4* | 9039.1 |
| 37.5° | 8865.5 | 8912.2 | 8918.9 | 8818.8 | 8391.5 | 7710.6 | 7236.6 | 7817.4 | 10080.5 | *10287.5* | 9740.1 |
| 40° | 9212.7 | 9199.3 | 9292.8 | 9172.6 | 8872.2 | 8258.0 | 7637.2 | 8271.4 | 10854.9 | *11195.4* | 10561.2 |
| 42.5° | 9419.6 | 9453.0 | 9573.2 | 9546.5 | 9246.0 | 8765.4 | 8091.1 | 8778.7 | 11822.9 | *12323.6* | 11555.9 |
| 45° | 9553.1 | 9586.5 | 9760.1 | 9786.8 | 9626.6 | 9112.5 | 8518.4 | 9266.1 | 12710.8 | *13491.9* | 12624.0 |
| 47.5° | 9599.9 | 9619.9 | 9846.9 | 9953.7 | 9886.9 | 9332.8 | 8852.2 | 9820.2 | 13585.3 | *14593.4* | 13692.1 |
| 50° | 9412.9 | 9486.4 | 9780.1 | 10020.4 | 10067.2 | 9446.3 | 9139.2 | 10407.6 | 14526.6 | *15661.5* | 14767.0 |
| 52.5° | 9125.9 | 9165.9 | 9519.7 | 10033.8 | 10180.7 | 9633.2 | 9493.0 | 11028.5 | 15414.5 | *16729.7* | 15688.2 |
| 55° | 8565.1 | 8645.2 | 9085.8 | 9813.5 | 10247.4 | 9880.2 | 9953.7 | 11729.5 | 16335.8 | *17664.3* | 16689.6 |
| 57.5° | 6976.3 | 7116.4 | 7844.1 | 8872.2 | 10067.2 | 10367.6 | 10641.3 | 12597.3 | 17343.8 | *18745.8* | 17584.2 |
| 60° | 4372.7 | 4559.6 | 5320.6 | 6982.9 | 9045.8 | 10654.6 | 11736.1 | 13725.5 | 18545.5 | *19880.7* | 18578.9 |
| 62.5° | 2369.9 | 2363.2 | 2590.2 | 3571.6 | 6522.3 | 9906.9 | 12677.4 | 15681.6 | 20094.3 | *20935.4* | 19159.7 |
| 65° | 2056.2 | 2056.2 | 2082.9 | 2076.2 | 2817.2 | 7310.0 | 11742.8 | 16849.8 | 21162.4 | *21215.8* | 18665.7 |
| 67.5° | 1849.2 | 1849.2 | 1889.3 | 1789.1 | 1535.4 | 3271.2 | 8591.8 | 16155.5 | 22931.5 | *22898.1* | 19299.9 |
| 70° | 1628.9 | 1635.6 | 1702.3 | 1642.3 | 1235.0 | 1328.5 | 4699.8 | 14713.6 | 24253.3 | *24967.6* | 20561.6 |
| 72.5° | *1195.0* | *1235.0* | *1428.6* | *1428.6* | *1014.7* | *894.6* | *1909.3* | *11409.0* | *23425.5* | *25581.8* | *21609.7* |
| 75° | 841.2 | 847.8 | 948.0 | 1021.4 | 801.1 | 674.3 | 927.9 | 7637.2 | 21489.5 | *23866.1* | 20675.1 |
| 77.5° | 640.9 | 647.6 | 680.9 | 814.5 | 547.4 | 494.0 | 640.9 | 4172.4 | 15501.3 | *16115.5* | 13411.8 |
| 80° | 427.3 | 420.6 | 467.3 | 574.1 | 387.2 | 333.8 | 413.9 | 1395.3 | 8698.6 | *8298.1* | 5601.0 |
| 82.5° | 213.6 | 220.3 | 253.7 | 300.4 | 227.0 | 200.3 | 240.3 | 721.0 | 3411.4 | *1982.7* | 814.5 |
| 85° | 60.1 | 73.4 | 86.8 | 120.2 | 93.5 | 86.8 | 113.5 | 253.7 | 433.9 | *320.4* | 220.3 |
| 87.5° | 6.7 | 6.7 | 13.4 | 13.4 | 13.4 | 20.0 | 33.4 | 53.4 | 73.4 | *73.4* | 73.4 |
| 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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Scaled Data Report

REPORT NUMBER: P1362790
CATALOG NUMBER: GSS-SB4D-830-U-SL2

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 6248.6 | 6248.6 | 6248.6 | 6248.6 | 6248.6 | 6248.6 | 6248.6 | 6248.6 | 6248.6 | 6248.6 | 6248.6 |
| 2.5° | 6275.3 | 6255.3 | 6228.6 | 6188.5 | 6188.5 | 6141.8 | 6115.1 | 6061.7 | 6081.7 | 6055.0 | 6041.6 |
| 5° | 6335.4 | 6308.7 | 6248.6 | 6181.8 | 6115.1 | 6014.9 | 5934.8 | 5821.3 | 5808.0 | 5781.3 | 5741.2 |
| 7.5° | 6442.2 | 6375.4 | 6302.0 | 6148.4 | 6021.6 | 5794.6 | 5614.4 | 5387.4 | 5260.6 | 5180.5 | 5187.1 |
| 10° | 6549.0 | 6462.2 | 6308.7 | 6108.4 | 5834.7 | 5460.8 | 4993.5 | 4546.2 | 4205.8 | 4012.2 | 4052.2 |
| 12.5° | 6622.4 | 6529.0 | 6322.0 | 6001.6 | 5494.2 | 4746.5 | 3878.7 | 3244.5 | 2997.5 | 2870.6 | 2870.6 |
| 15° | 6695.9 | 6575.7 | 6302.0 | 5774.6 | 4853.3 | 3578.3 | 2890.6 | 2650.3 | 2583.6 | 2543.5 | 2530.1 |
| 17.5° | 6789.3 | 6649.1 | 6241.9 | 5354.0 | 3825.3 | 2797.2 | 2556.8 | 2483.4 | 2483.4 | 2476.7 | 2463.4 |
| 20° | 6902.8 | 6735.9 | 6168.5 | 4686.4 | 2937.4 | 2510.1 | 2443.4 | 2430.0 | 2443.4 | 2436.7 | 2430.0 |
| 22.5° | 7076.4 | 6842.7 | 5981.6 | 3765.2 | 2523.5 | 2376.6 | 2369.9 | 2303.2 | 2316.5 | 2329.9 | 2323.2 |
| 25° | 7296.7 | 6976.3 | 5627.7 | 2877.3 | 2316.5 | 2289.8 | 2223.1 | 2163.0 | 2156.3 | 2163.0 | 2163.0 |
| 27.5° | 7503.6 | 7076.4 | 5053.6 | 2369.9 | 2169.6 | 2163.0 | 2102.9 | 2049.5 | 2049.5 | 2056.2 | 2056.2 |
| 30° | 7730.6 | 7136.5 | 4172.4 | 2109.6 | 2082.9 | 2049.5 | 2029.5 | 2009.4 | 2016.1 | 2036.1 | 2036.1 |
| 32.5° | 8031.0 | 7196.6 | 3311.2 | 1962.7 | 1996.1 | 1949.3 | 1962.7 | 1956.0 | 1969.4 | 2002.8 | 2009.4 |
| 35° | 8398.2 | 7223.3 | 2650.3 | 1875.9 | 1875.9 | 1835.9 | 1842.5 | 1815.8 | 1815.8 | 1835.9 | 1849.2 |
| 37.5° | 8885.5 | 7236.6 | 2229.7 | 1829.2 | 1782.4 | 1762.4 | 1749.1 | 1715.7 | 1669.0 | 1635.6 | 1642.3 |
| 40° | 9412.9 | 7270.0 | 2002.8 | 1795.8 | 1742.4 | 1735.7 | 1709.0 | 1662.3 | 1528.8 | 1422.0 | 1415.3 |
| 42.5° | 10113.9 | 7363.5 | 1889.3 | 1742.4 | 1742.4 | 1742.4 | 1702.3 | 1495.4 | 1388.6 | 1315.1 | 1308.5 |
| 45° | 10821.5 | 7610.5 | 1829.2 | 1695.7 | 1735.7 | 1742.4 | 1562.1 | 1435.3 | 1348.5 | 1268.4 | 1248.4 |
| 47.5° | 11609.3 | 7964.3 | 1802.5 | 1669.0 | 1689.0 | 1702.3 | 1468.7 | 1408.6 | 1308.5 | 1215.0 | 1195.0 |
| 50° | 12390.4 | 8338.1 | 1775.8 | 1622.2 | 1622.2 | 1535.4 | 1448.7 | 1381.9 | 1281.8 | 1181.6 | 1168.3 |
| 52.5° | 13218.2 | 8772.1 | 1749.1 | 1542.1 | 1535.4 | 1442.0 | 1428.6 | 1375.2 | 1268.4 | 1141.6 | 1114.9 |
| 55° | 13939.2 | 9165.9 | 1702.3 | 1448.7 | 1442.0 | 1348.5 | 1415.3 | 1348.5 | 1188.3 | 1041.4 | 1014.7 |
| 57.5° | 14626.8 | 9486.4 | 1642.3 | 1348.5 | 1361.9 | 1275.1 | 1361.9 | 1295.1 | 1114.9 | 968.0 | 954.6 |
| 60° | 15281.0 | 9820.2 | 1562.1 | 1261.7 | 1261.7 | 1208.3 | 1295.1 | 1208.3 | 1041.4 | 894.6 | 874.5 |
| 62.5° | 15474.6 | 9713.3 | 1428.6 | 1168.3 | 1161.6 | 1121.5 | 1208.3 | 1108.2 | 948.0 | 814.5 | 794.4 |
| 65° | 14807.0 | 9165.9 | 1268.4 | 1074.8 | 1054.8 | 1021.4 | 1081.5 | 988.0 | 841.2 | 734.3 | 727.7 |
| 67.5° | 14900.5 | 8952.3 | 1088.2 | 954.6 | 934.6 | 907.9 | 927.9 | 854.5 | 741.0 | 660.9 | 654.2 |
| 70° | 15020.6 | 8718.6 | 921.3 | 841.2 | 794.4 | 747.7 | 794.4 | 734.3 | 654.2 | 587.5 | 580.8 |
| 72.5° | *14927.2* | *8071.1* | *761.0* | *707.6* | *674.3* | *620.9* | *680.9* | *634.2* | *567.4* | *514.0* | *500.7* |
| 75° | 13578.7 | 6488.9 | 620.9 | 580.8 | 540.7 | 507.4 | 547.4 | 534.1 | 480.7 | 474.0 | 427.3 |
| 77.5° | 9132.6 | 4159.0 | 480.7 | 447.3 | 433.9 | 400.6 | 427.3 | 407.2 | 380.5 | 353.8 | 333.8 |
| 80° | 3958.8 | 1862.6 | 347.1 | 313.8 | 300.4 | 280.4 | 307.1 | 300.4 | 287.1 | 267.0 | 260.4 |
| 82.5° | 567.4 | 440.6 | 233.7 | 213.6 | 180.2 | 166.9 | 180.2 | 193.6 | 280.4 | 340.5 | 333.8 |
| 85° | 160.2 | 133.5 | 113.5 | 100.1 | 80.1 | 66.8 | 73.4 | 120.2 | 160.2 | 100.1 | 86.8 |
| 87.5° | 73.4 | 66.8 | 53.4 | 33.4 | 20.0 | 20.0 | 13.4 | 6.7 | 6.7 | 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: SP1-2407-184-9

Test Date: 10/10/2024

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

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

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

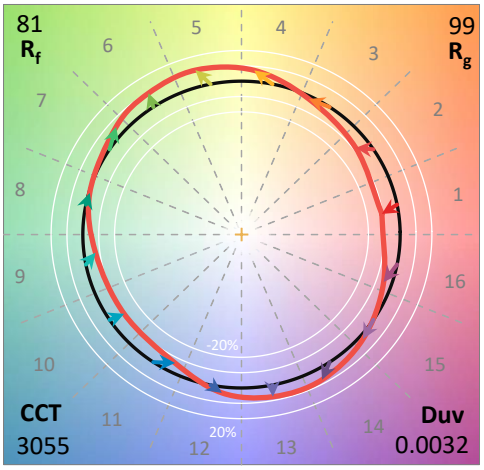
## Test Information

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | SP1-2407-184-9 |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Photometer: | SP1 - 76IN SPHERE |
| Measurement Geometry: | 4π |
| Issue Date: | 10/15/2024 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | McGraw-Edison |
| Catalog Number: | **GSS-SB1A-830-U-5WQ** |
| Description: | GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 80 CRI 3000K CCT 26 LEDS |

## Spectral Parameters

| | |
|---|---|
| CCT (K): | 3055 |
| CIE u': | 0.2475 |
| CIE v': | 0.5247 |
| Duv: | 0.0032 |
| CIE x: | 0.4377 |
| CIE y: | 0.4124 |
| CIE z: | 0.1499 |
| Peak Wavelength (nm): | 604 |
| Dominant Wavelength (nm): | 581 |
| Purity: | 55.16339 |
| Rf: | 81.5 |
| Rg: | 99.2 |

| | |
|---|---|
| CRI (Ra): | 80.9 |
| R1: | 79.5 |
| R2: | 85.6 |
| R3: | 92.1 |
| R4: | 82.4 |
| R5: | 78.9 |
| R6: | 81.7 |
| R7: | 85.1 |
| R8: | 61.9 |
| R9: | 6.8 |
| R10: | 67.1 |
| R11: | 82.5 |
| R12: | 63.4 |
| R13: | 80.2 |
| R14: | 95.1 |
| R15: | 71.7 |




## Test Conditions

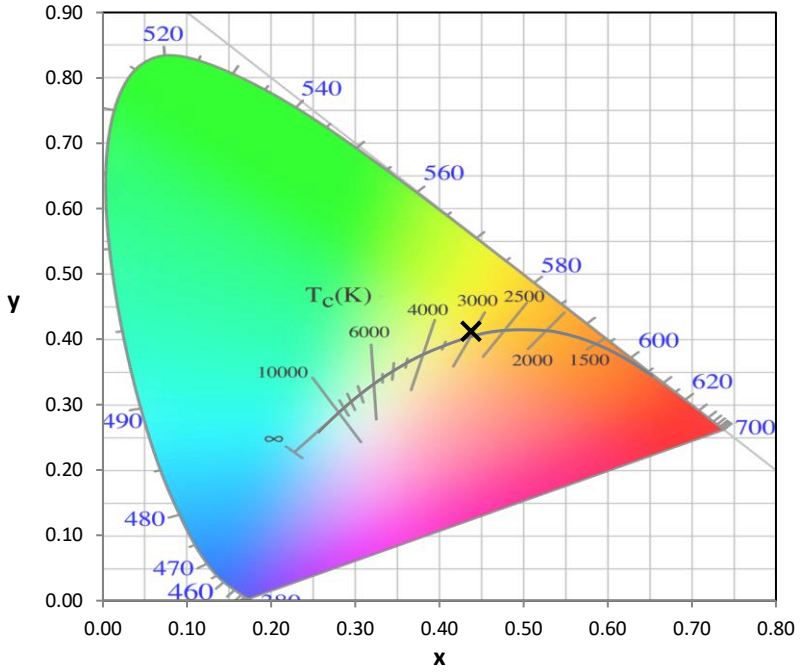
| | |
|---|---|
| Stabilization Time: | 20M |
| Operation Time: | 1H 20M |
| Sphere Temperature (°C): | 25.2 |

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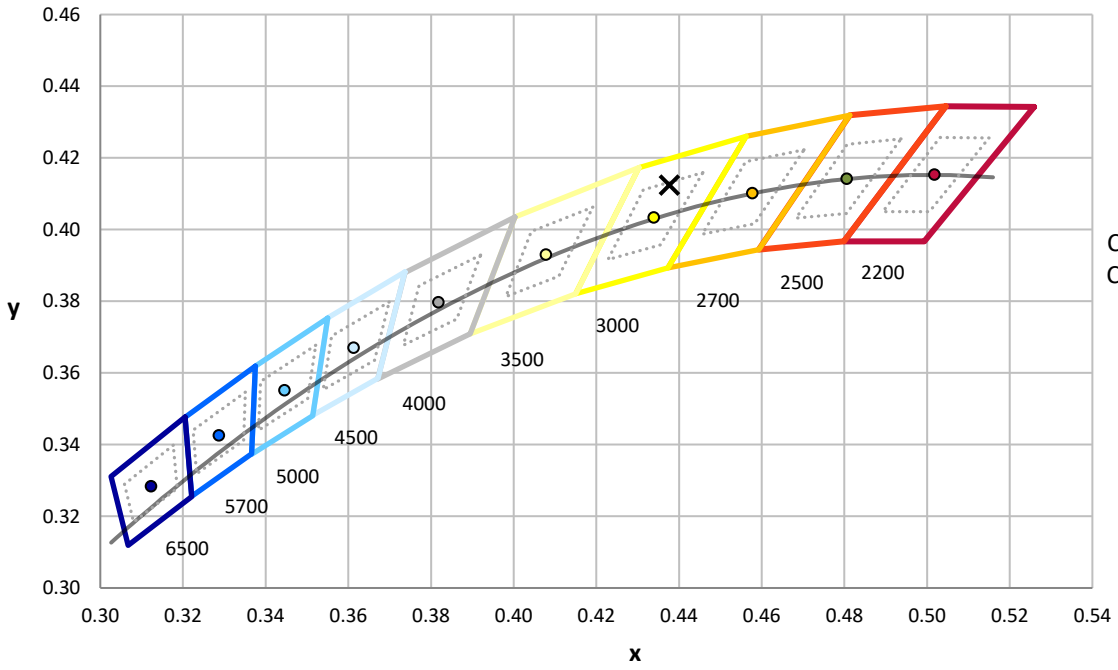
| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 | 2/8/2024 | 2/8/2025 |
| AC Power Source | IN0063 | 10/24/2023 | 10/24/2024 |
| DC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

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## CIE 1931 Chromaticity Diagram




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

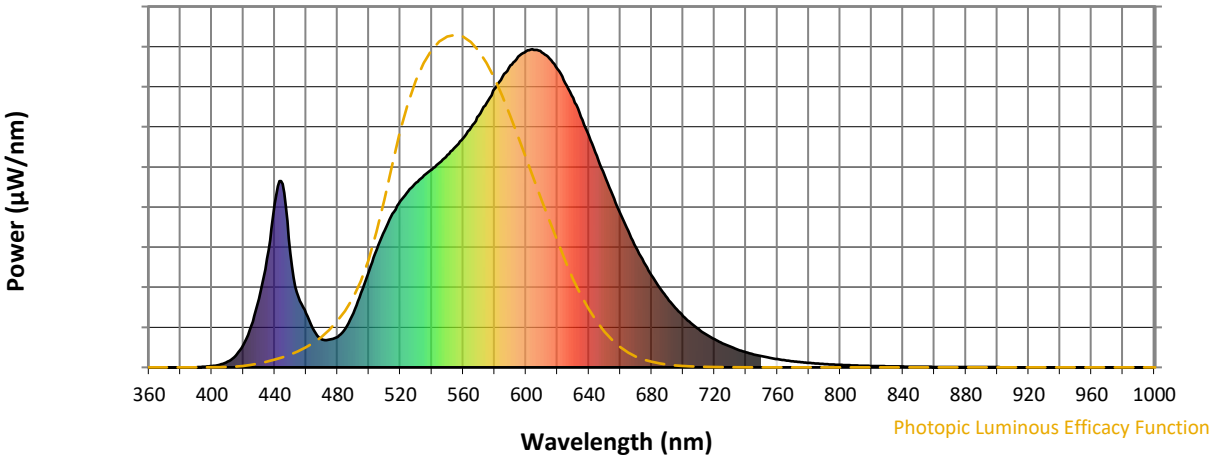



CCT = 3055K
CIE x = 0.4377
CIE y = 0.4124
Duv = 0.0032

Point lies inside the ANSI 3000K 4-step quadrangle

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## Photopic Flux vs. Wavelength

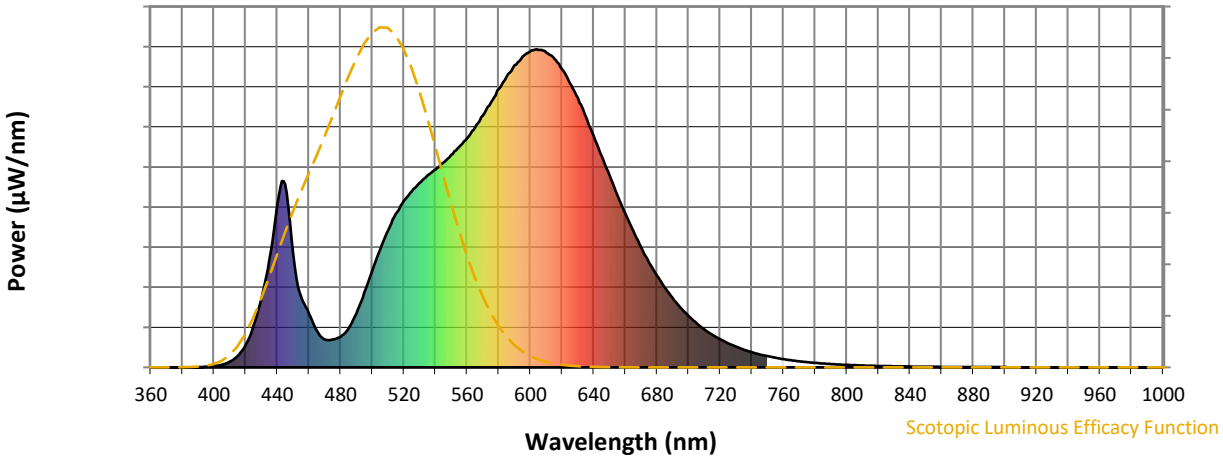



## Photopic Lumens: NR

| 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 | 170 | NR | 620 | 938 | NR | 750 | 35 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 234 | NR | 625 | 894 | NR | 755 | 30 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 302 | NR | 630 | 847 | NR | 760 | 26 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 371 | NR | 635 | 788 | NR | 765 | 22 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 431 | NR | 640 | 728 | NR | 770 | 19 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 482 | NR | 645 | 665 | NR | 775 | 16 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 523 | NR | 650 | 603 | NR | 780 | 14 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 553 | NR | 655 | 542 | NR | 785 | 12 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 580 | NR | 660 | 484 | NR | 790 | 11 | NR | 920 | 0 | NR |
| 405 | 8 | NR | 535 | 603 | NR | 665 | 430 | NR | 795 | 9 | NR | 925 | 0 | NR |
| 410 | 18 | NR | 540 | 622 | NR | 670 | 377 | NR | 800 | 8 | NR | 930 | 0 | NR |
| 415 | 36 | NR | 545 | 644 | NR | 675 | 330 | NR | 805 | 7 | NR | 935 | 0 | NR |
| 420 | 71 | NR | 550 | 668 | NR | 680 | 289 | NR | 810 | 6 | NR | 940 | 0 | NR |
| 425 | 131 | NR | 555 | 693 | NR | 685 | 250 | NR | 815 | 5 | NR | 945 | 0 | NR |
| 430 | 215 | NR | 560 | 720 | NR | 690 | 218 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 341 | NR | 565 | 754 | NR | 695 | 188 | NR | 825 | 4 | NR | 955 | 0 | NR |
| 440 | 514 | NR | 570 | 792 | NR | 700 | 161 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 576 | NR | 575 | 832 | NR | 705 | 139 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 358 | NR | 580 | 875 | NR | 710 | 119 | NR | 840 | 3 | NR | 970 | 0 | NR |
| 455 | 222 | NR | 585 | 913 | NR | 715 | 102 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 170 | NR | 590 | 950 | NR | 720 | 88 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 115 | NR | 595 | 977 | NR | 725 | 76 | NR | 855 | 2 | NR | 985 | 0 | NR |
| 470 | 88 | NR | 600 | 994 | NR | 730 | 65 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 87 | NR | 605 | 997 | NR | 735 | 56 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 96 | NR | 610 | 990 | NR | 740 | 47 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 122 | NR | 615 | 971 | NR | 745 | 41 | NR | 875 | 1 | NR | | | |

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## Scotopic Flux vs. Wavelength

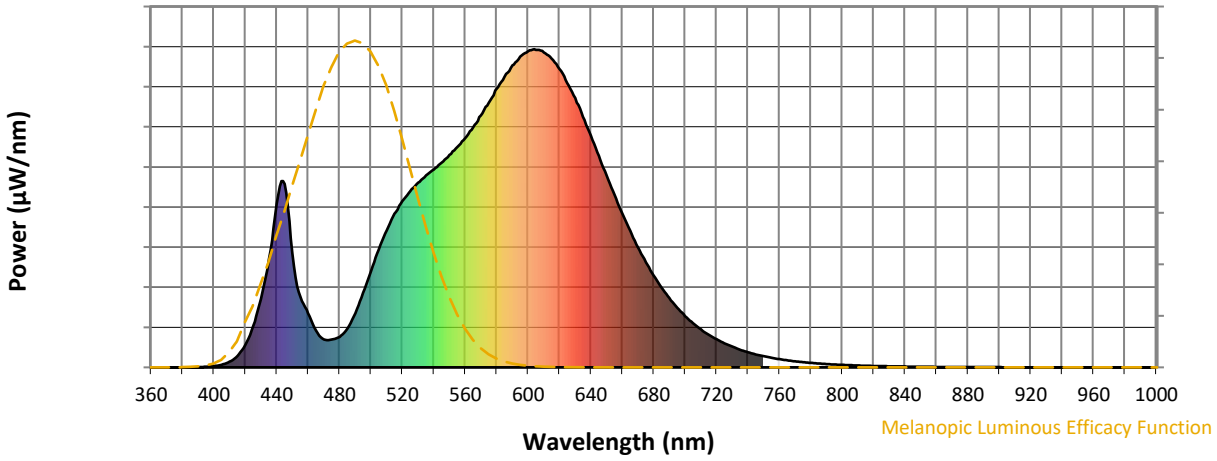



**Scotopic Lumens: NR** **S/P: 1.28**

| 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 | 170 | NR | 620 | 938 | NR | 750 | 35 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 234 | NR | 625 | 894 | NR | 755 | 30 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 302 | NR | 630 | 847 | NR | 760 | 26 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 371 | NR | 635 | 788 | NR | 765 | 22 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 431 | NR | 640 | 728 | NR | 770 | 19 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 482 | NR | 645 | 665 | NR | 775 | 16 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 523 | NR | 650 | 603 | NR | 780 | 14 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 553 | NR | 655 | 542 | NR | 785 | 12 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 580 | NR | 660 | 484 | NR | 790 | 11 | NR | 920 | 0 | NR |
| 405 | 8 | NR | 535 | 603 | NR | 665 | 430 | NR | 795 | 9 | NR | 925 | 0 | NR |
| 410 | 18 | NR | 540 | 622 | NR | 670 | 377 | NR | 800 | 8 | NR | 930 | 0 | NR |
| 415 | 36 | NR | 545 | 644 | NR | 675 | 330 | NR | 805 | 7 | NR | 935 | 0 | NR |
| 420 | 71 | NR | 550 | 668 | NR | 680 | 289 | NR | 810 | 6 | NR | 940 | 0 | NR |
| 425 | 131 | NR | 555 | 693 | NR | 685 | 250 | NR | 815 | 5 | NR | 945 | 0 | NR |
| 430 | 215 | NR | 560 | 720 | NR | 690 | 218 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 341 | NR | 565 | 754 | NR | 695 | 188 | NR | 825 | 4 | NR | 955 | 0 | NR |
| 440 | 514 | NR | 570 | 792 | NR | 700 | 161 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 576 | NR | 575 | 832 | NR | 705 | 139 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 358 | NR | 580 | 875 | NR | 710 | 119 | NR | 840 | 3 | NR | 970 | 0 | NR |
| 455 | 222 | NR | 585 | 913 | NR | 715 | 102 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 170 | NR | 590 | 950 | NR | 720 | 88 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 115 | NR | 595 | 977 | NR | 725 | 76 | NR | 855 | 2 | NR | 985 | 0 | NR |
| 470 | 88 | NR | 600 | 994 | NR | 730 | 65 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 87 | NR | 605 | 997 | NR | 735 | 56 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 96 | NR | 610 | 990 | NR | 740 | 47 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 122 | NR | 615 | 971 | NR | 745 | 41 | NR | 875 | 1 | NR | | | |

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## Melanopic Flux vs. Wavelength




**Melanopic Lumens: NR** **M/P: 2.33**

| 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 | 170 | NR | 620 | 938 | NR | 750 | 35 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 234 | NR | 625 | 894 | NR | 755 | 30 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 302 | NR | 630 | 847 | NR | 760 | 26 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 371 | NR | 635 | 788 | NR | 765 | 22 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 431 | NR | 640 | 728 | NR | 770 | 19 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 482 | NR | 645 | 665 | NR | 775 | 16 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 523 | NR | 650 | 603 | NR | 780 | 14 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 553 | NR | 655 | 542 | NR | 785 | 12 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 580 | NR | 660 | 484 | NR | 790 | 11 | NR | 920 | 0 | NR |
| 405 | 8 | NR | 535 | 603 | NR | 665 | 430 | NR | 795 | 9 | NR | 925 | 0 | NR |
| 410 | 18 | NR | 540 | 622 | NR | 670 | 377 | NR | 800 | 8 | NR | 930 | 0 | NR |
| 415 | 36 | NR | 545 | 644 | NR | 675 | 330 | NR | 805 | 7 | NR | 935 | 0 | NR |
| 420 | 71 | NR | 550 | 668 | NR | 680 | 289 | NR | 810 | 6 | NR | 940 | 0 | NR |
| 425 | 131 | NR | 555 | 693 | NR | 685 | 250 | NR | 815 | 5 | NR | 945 | 0 | NR |
| 430 | 215 | NR | 560 | 720 | NR | 690 | 218 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 341 | NR | 565 | 754 | NR | 695 | 188 | NR | 825 | 4 | NR | 955 | 0 | NR |
| 440 | 514 | NR | 570 | 792 | NR | 700 | 161 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 576 | NR | 575 | 832 | NR | 705 | 139 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 358 | NR | 580 | 875 | NR | 710 | 119 | NR | 840 | 3 | NR | 970 | 0 | NR |
| 455 | 222 | NR | 585 | 913 | NR | 715 | 102 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 170 | NR | 590 | 950 | NR | 720 | 88 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 115 | NR | 595 | 977 | NR | 725 | 76 | NR | 855 | 2 | NR | 985 | 0 | NR |
| 470 | 88 | NR | 600 | 994 | NR | 730 | 65 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 87 | NR | 605 | 997 | NR | 735 | 56 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 96 | NR | 610 | 990 | NR | 740 | 47 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 122 | NR | 615 | 971 | NR | 745 | 41 | NR | 875 | 1 | NR | | | |

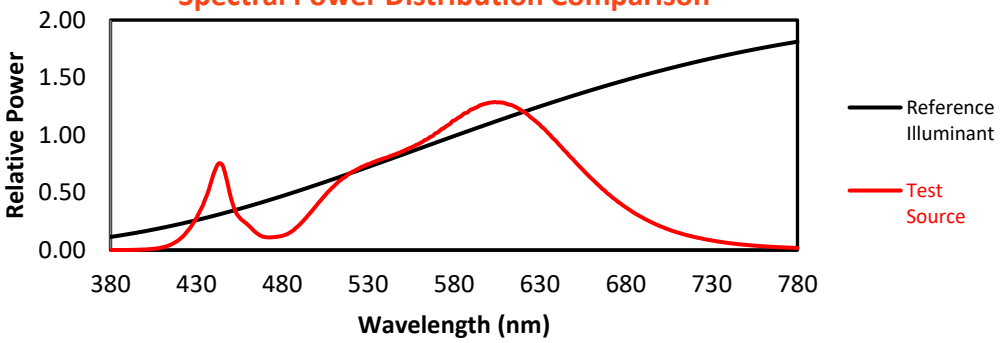
REPORT NUMBER: SP1-2407-184-9

# TM-30-18

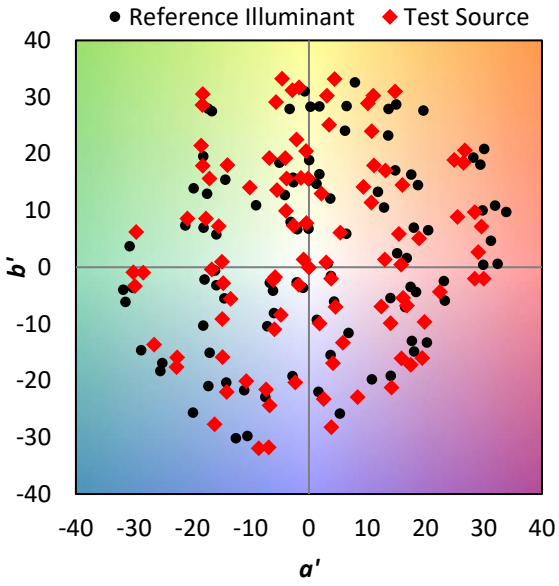
## Summary

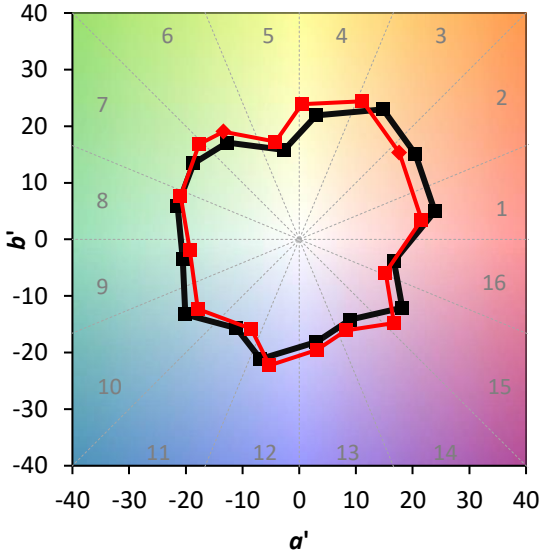
$R_f$ = 81.5
$R_g$ = 99.2
CIE $R_a$ = 80.9
$R_9$ = 6.8

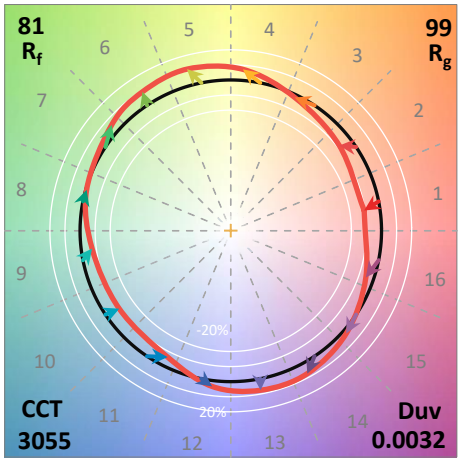
## Spectral Power Distribution Comparison

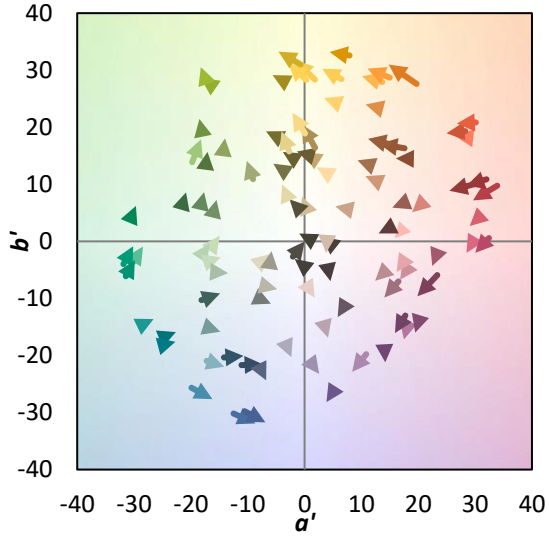



## Color Vector Graphics



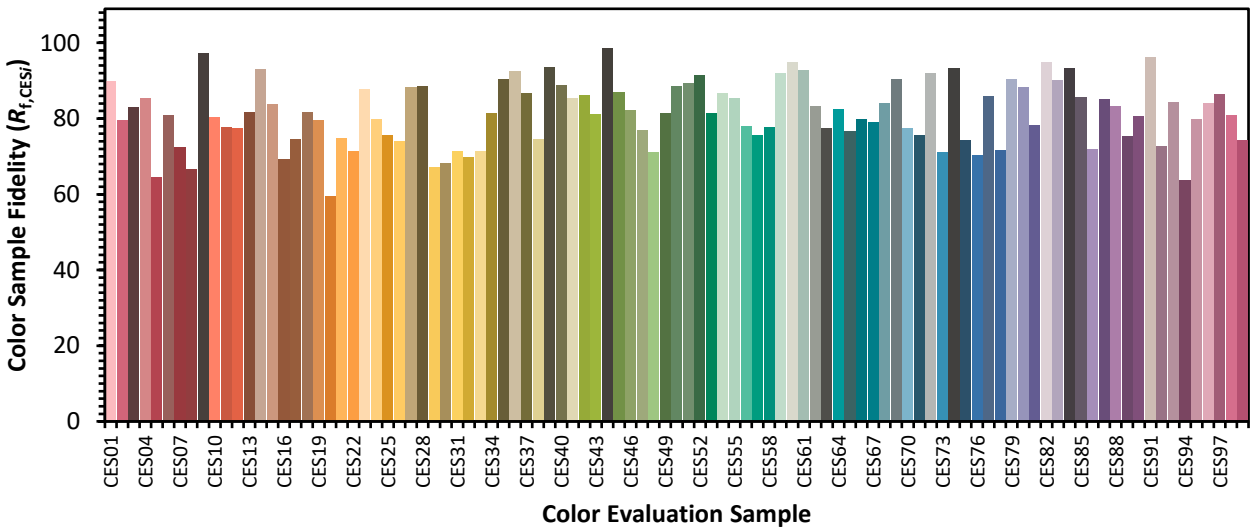



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## Individual Sample Fidelity Index ($R_{f,i}$)

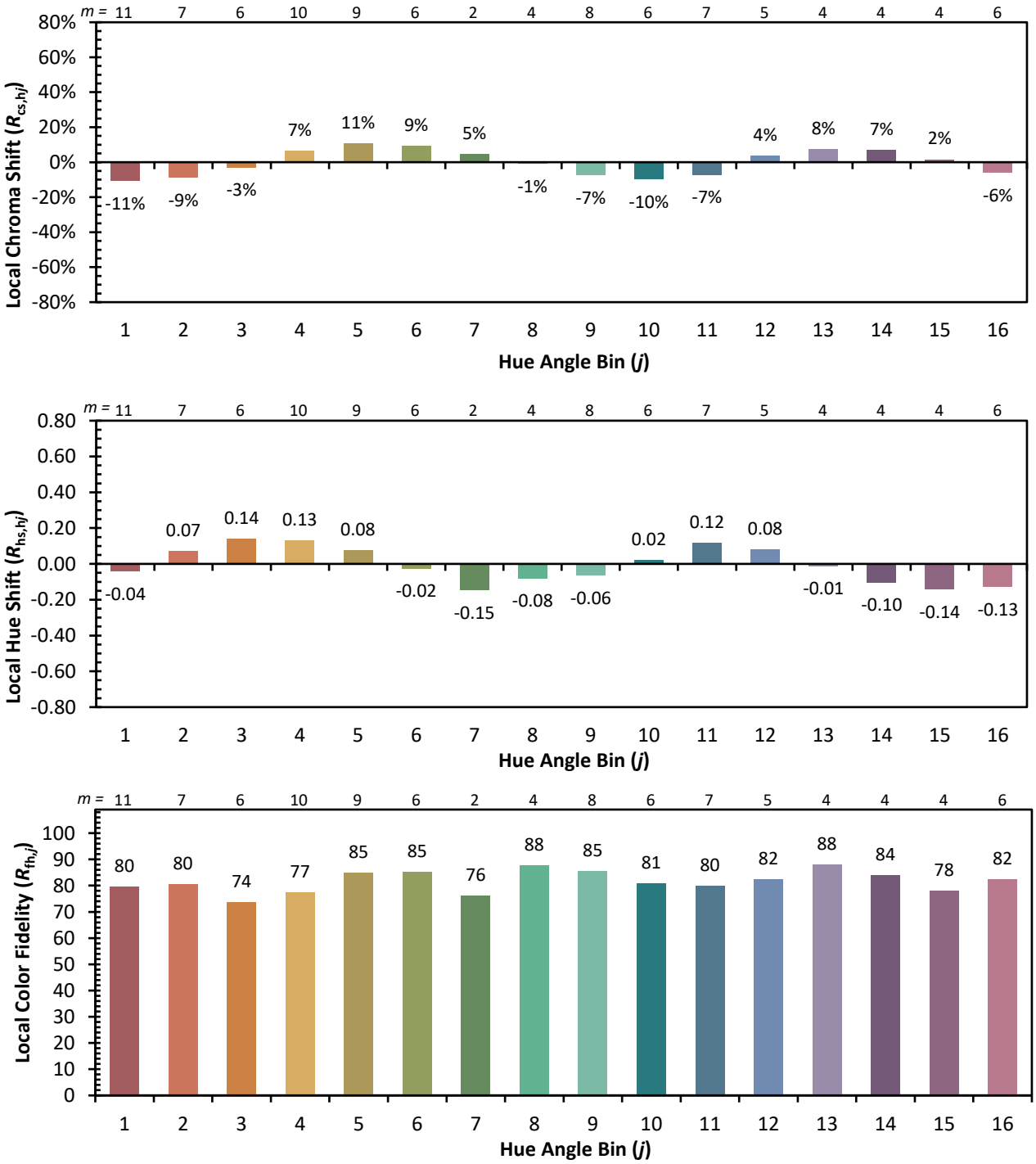
| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 74 | CES51 = 89 | CES76 = 70 |
| CES02 = 63 | CES27 = 88 | CES52 = 91 | CES77 = 86 |
| CES03 = 31 | CES28 = 89 | CES53 = 81 | CES78 = 72 |
| CES04 = 70 | CES29 = 67 | CES54 = 87 | CES79 = 90 |
| CES05 = 50 | CES30 = 68 | CES55 = 85 | CES80 = 88 |
| CES06 = 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 = 93 |
| 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 = 90 | CES94 = 64 |
| CES20 = 66 | CES45 = 87 | CES70 = 77 | 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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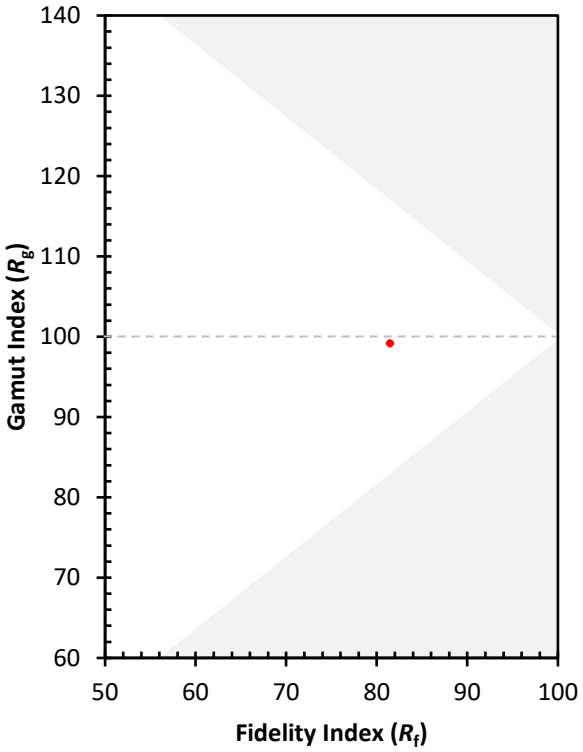
## Color Rendition by Hue-Angle Bin

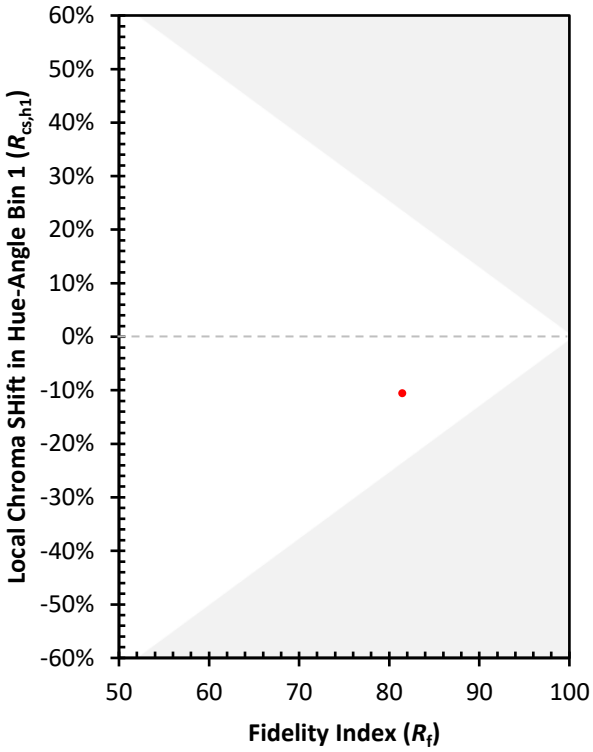


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## Measure Comparisons




(END OF REPORT)