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: P319579

Luminaire Tested: **GLEON-SA5D-722-U-SL2**

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: | P319579 |
| | TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-20) |
| Test Lab: | INNOVATION CENTER |
| Issue Date: | 3/3/2020 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS (FORMERLY EATON) |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | GLEON-SA5D-722-U-SL2 |
| Description: | GALLEON AREA AND ROADWAY LUMINAIRE |
| | (5) 70 CRI, 2200K, 1200mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II SPILL LIGHT ELIMINATOR OPTICS |
| Light Source: | - |
| Ballast/Driver: | ELECTRONIC DRIVER |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 27926 lumens |
| Efficiency: | N/A |
| Efficacy: | 87.3 lumens/watt |
| Luminous Opening: | Rectangular (W 1.5' x L: 1' x H: 0') |
| IES Classification: | Type III - Medium |
| BUG Rating: | B3 - U0 - G5 |

| | |
|---|---|
| Input Watts (W): | 320 |
| 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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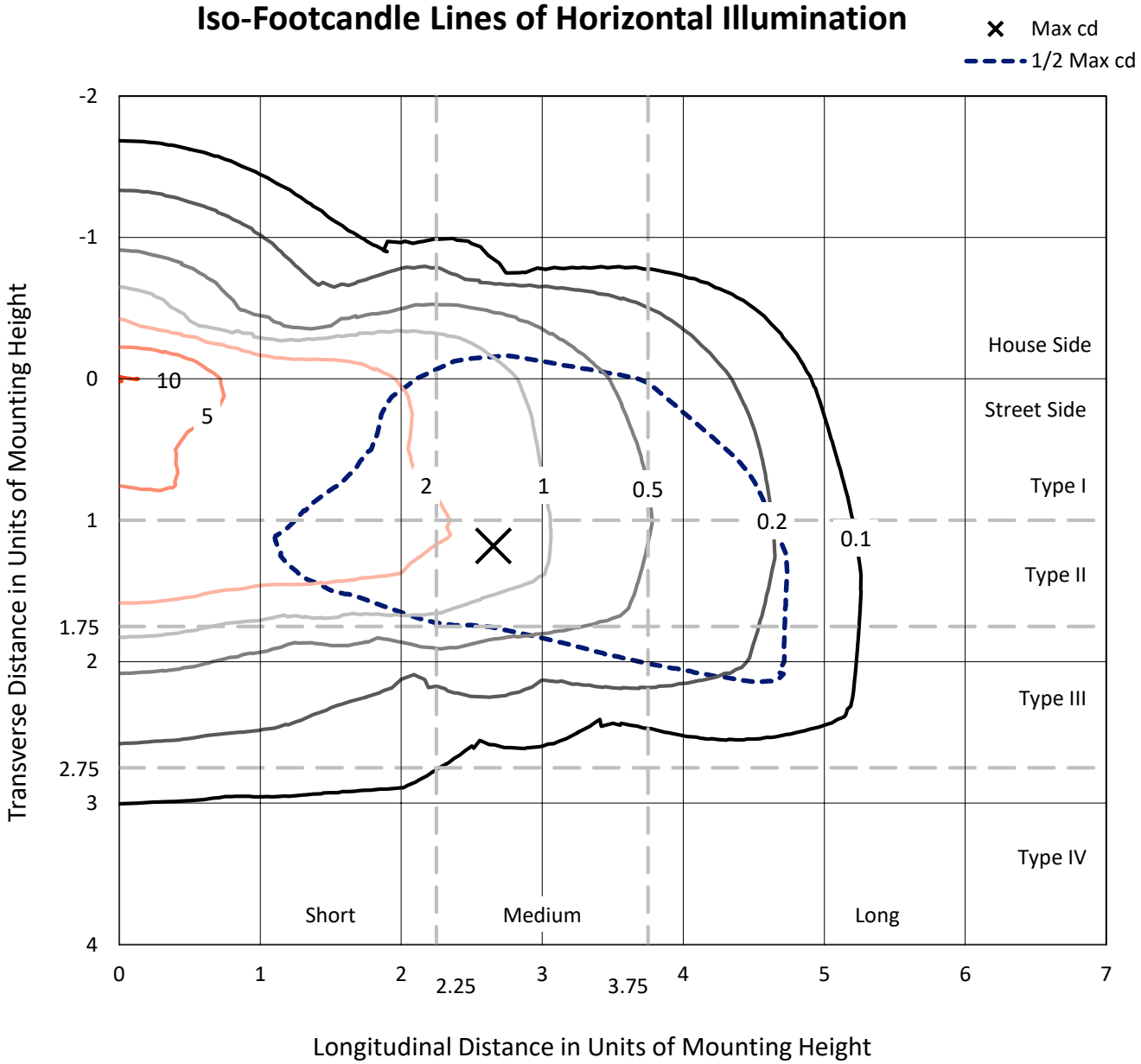
Scaled Data Report

REPORT NUMBER: P319579
CATALOG NUMBER: GLEON-SA5D-722-U-SL2

## Iso-Footcandle Lines of Horizontal Illumination




Based on 25 foot mounting height. Maximum calculated value = 10.2 fc
Type III - Medium - N/A

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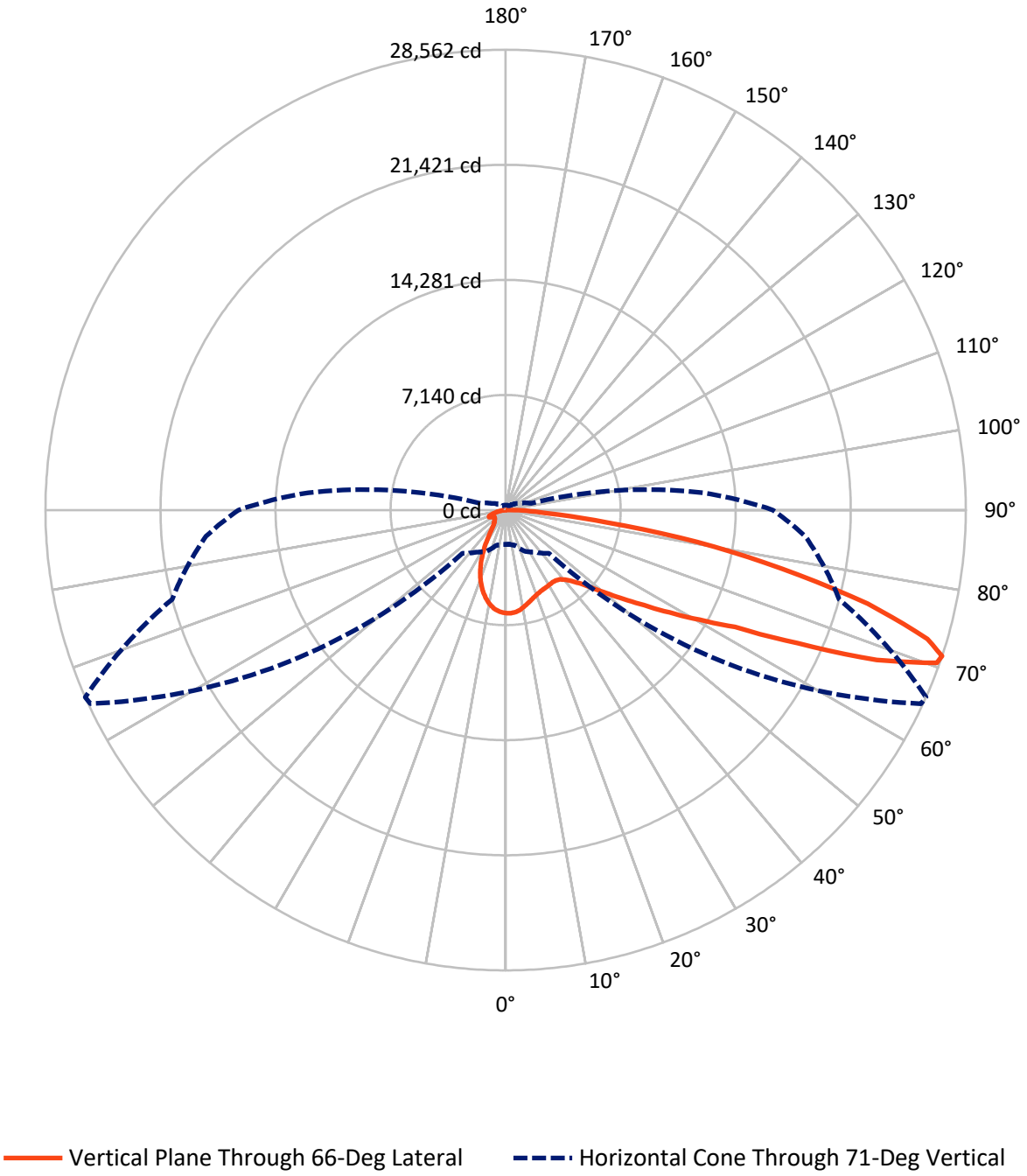
## Luminous Intensity Polar Plot



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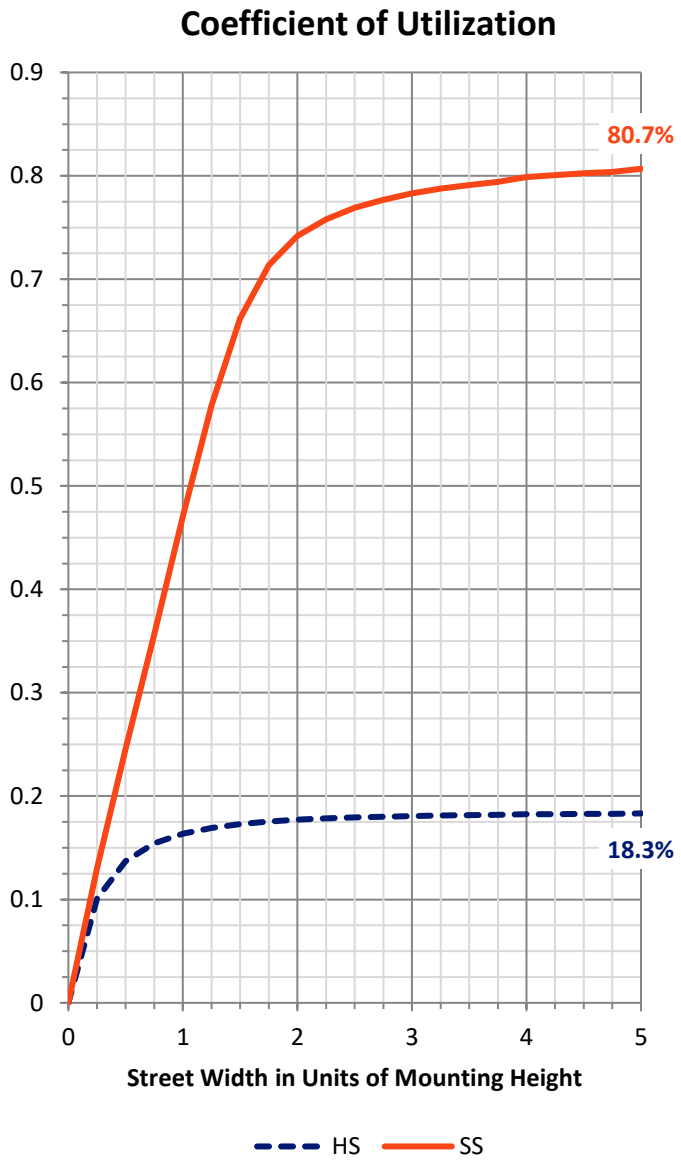
REPORT NUMBER: P319579
CATALOG NUMBER: GLEON-SA5D-722-U-SL2

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 5175.4 | 0.0 | 5175.4 |
| | % Fixture | 18.5 | 0.0 | 18.5 |
| **Street Side** | Lumens | 22750.6 | 0.0 | 22750.6 |
| | % Fixture | 81.5 | 0.0 | 81.5 |
| **Total** | Lumens | 27926.0 | 0.0 | 27926.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 563.1 | 2.0 |
| 10°-20° | 1350.6 | 4.8 |
| 20°-30° | 1814.2 | 6.5 |
| 30°-40° | 2386.5 | 8.5 |
| 40°-50° | 3471.8 | 12.4 |
| 50°-60° | 5423.3 | 19.4 |
| 60°-70° | 6793.6 | 24.3 |
| 70°-80° | 5182.0 | 18.6 |
| 80°-90° | 941.0 | 3.4 |
| 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° | 27926.0 | 100.0 |
| 0°-180° | 27926.0 | 100.0 |



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REPORT NUMBER: P319579
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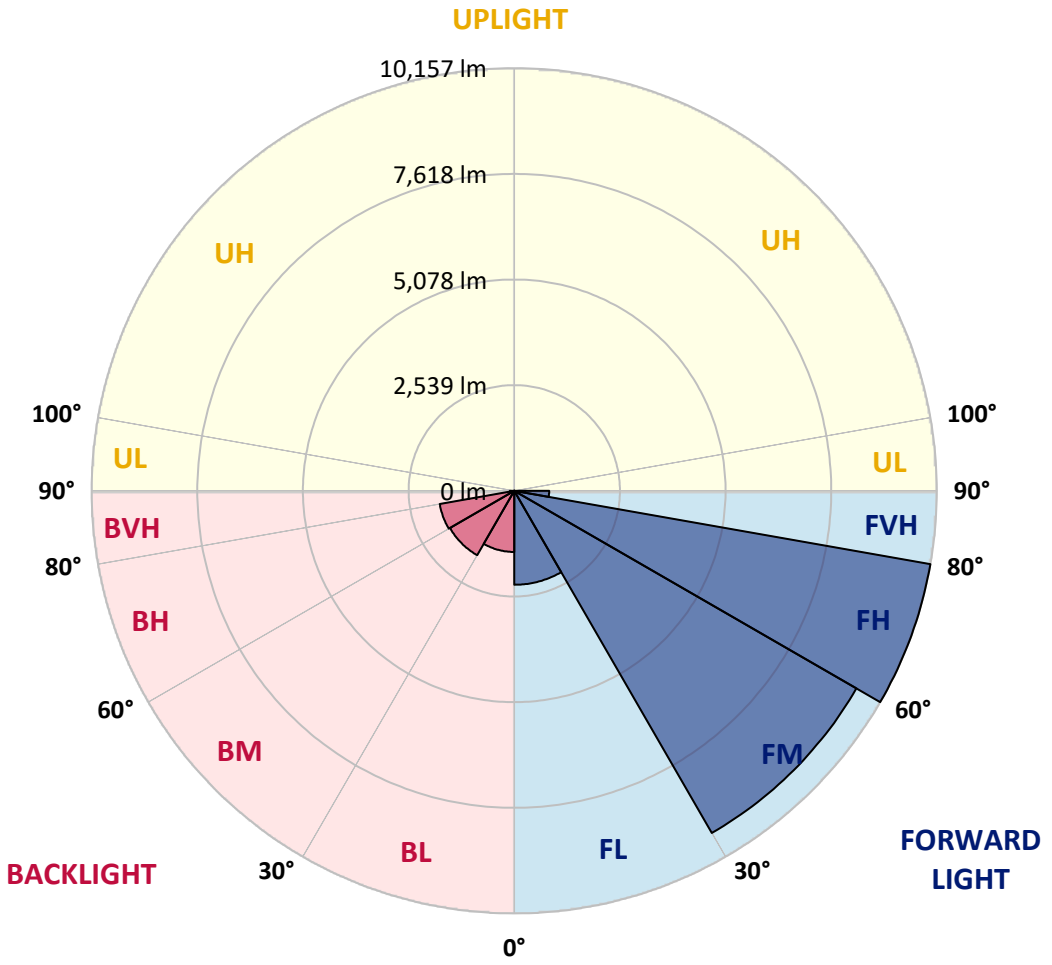
## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 2258.2 | 8.1 | | | |
| FM | (30°-60°) | 9496.2 | 34.0 | | | |
| FH | (60°-80°) | 10157.0 | 36.4 | | | G4/12000 |
| FVH | (80°-90°) | 839.1 | 3.0 | | | G5 |
| BL | (0°-30°) | 1469.7 | 5.3 | B3/2500 | | |
| BM | (30°-60°) | 1785.4 | 6.4 | B2/2500 | | |
| BH | (60°-80°) | 1818.5 | 6.5 | B3/2500 | | G3/2500 |
| BVH | (80°-90°) | 101.9 | 0.4 | | | G2/225 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

**BUG Rating: B3-U0-G5**
Type III Medium



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Scaled Data Report

REPORT NUMBER: P319579
CATALOG NUMBER: GLEON-SA5D-722-U-SL2

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 66° | 75° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 6397.3 | 6397.3 | 6397.3 | 6397.3 | 6397.3 | 6397.3 | 6397.3 | 6397.3 | *6397.3* | 6397.3 | 6397.3 |
| 2.5° | 6278.7 | 6269.1 | 6298.0 | 6327.9 | 6339.5 | 6358.7 | 6387.7 | 6404.1 | *6403.1* | 6406.0 | 6396.3 |
| 5° | 5862.2 | 5849.7 | 5907.5 | 5954.7 | 6045.4 | 6147.6 | 6272.0 | 6360.7 | *6362.6* | 6412.7 | 6426.2 |
| 7.5° | 5467.8 | 5459.2 | 5525.7 | 5601.9 | 5707.0 | 5863.2 | 6064.7 | 6255.6 | *6267.1* | 6403.1 | 6450.3 |
| 10° | 5151.6 | 5149.7 | 5214.3 | 5297.2 | 5419.6 | 5594.1 | 5825.5 | 6105.2 | *6122.5* | 6356.8 | 6454.2 |
| 12.5° | 4904.8 | 4908.6 | 4964.5 | 5059.0 | 5188.2 | 5370.5 | 5621.1 | 5936.4 | *5964.4* | 6283.5 | 6432.0 |
| 15° | 4722.5 | 4738.0 | 4783.3 | 4878.7 | 5006.0 | 5191.1 | 5448.6 | 5780.2 | *5822.7* | 6201.6 | 6419.5 |
| 17.5° | 4618.4 | 4635.8 | 4667.6 | 4746.6 | 4866.2 | 5044.6 | 5288.5 | 5652.0 | *5690.6* | 6138.9 | 6420.4 |
| 20° | 4587.5 | 4602.0 | 4620.3 | 4668.5 | 4769.8 | 4931.8 | 5162.2 | 5536.3 | *5577.8* | 6088.8 | 6430.1 |
| 22.5° | 4648.3 | 4658.9 | 4660.8 | 4657.0 | 4718.7 | 4850.8 | 5070.6 | 5451.4 | *5495.8* | 6056.0 | 6436.8 |
| 25° | 4778.5 | 4792.9 | 4782.3 | 4746.6 | 4726.4 | 4807.4 | 5023.4 | 5395.5 | *5439.9* | 6031.9 | 6423.3 |
| 27.5° | 4974.2 | 4976.1 | 4967.4 | 4921.2 | 4825.7 | 4812.2 | 5008.9 | 5362.7 | *5405.2* | 6003.9 | 6395.4 |
| 30° | 5240.3 | 5252.8 | 5237.4 | 5174.7 | 5018.5 | 4889.3 | 5026.2 | 5330.9 | *5369.5* | 5968.2 | 6350.1 |
| 32.5° | 5551.7 | 5582.6 | 5581.6 | 5516.0 | 5292.4 | 5061.9 | 5097.6 | 5311.6 | *5341.5* | 5930.6 | 6295.1 |
| 35° | 5874.7 | 5917.1 | 5996.2 | 5968.2 | 5691.5 | 5334.8 | 5234.5 | 5342.5 | *5362.7* | 5925.8 | 6256.5 |
| 37.5° | 6210.3 | 6252.7 | 6415.6 | 6490.8 | 6166.9 | 5725.3 | 5450.5 | 5451.4 | *5461.1* | 5984.6 | 6253.6 |
| 40° | 6561.2 | 6606.5 | 6851.4 | 7047.2 | 6783.0 | 6219.9 | 5798.6 | 5679.0 | *5668.4* | 6129.3 | 6310.5 |
| 42.5° | 7052.9 | 7093.4 | 7387.5 | 7637.2 | 7466.6 | 6853.4 | 6279.7 | 6030.0 | *6007.8* | 6412.7 | 6492.8 |
| 45° | 7674.8 | 7709.5 | 8021.9 | 8289.0 | 8201.3 | 7576.5 | 6884.2 | 6513.0 | *6509.2* | 6885.2 | 6862.0 |
| 47.5° | 8414.4 | 8441.4 | 8721.9 | 8980.3 | 9012.2 | 8408.6 | 7644.0 | 7258.3 | *7195.6* | 7533.1 | 7433.8 |
| 50° | 9184.7 | 9214.6 | 9405.5 | 9683.2 | 9919.4 | 9522.2 | 8621.7 | 8171.4 | *8087.5* | 8388.3 | 8243.7 |
| 52.5° | 9694.8 | 9734.3 | 9900.2 | 10252.1 | 10939.5 | 10742.8 | 9777.7 | 9278.3 | *9151.0* | 9424.8 | 9313.9 |
| 55° | 9467.2 | 9555.9 | 9809.5 | 10373.6 | 11755.2 | 12607.6 | 11203.7 | 10569.3 | *10425.6* | 10653.2 | 10587.6 |
| 57.5° | 8432.7 | 8554.2 | 8900.3 | 9771.0 | 11870.0 | 14250.5 | 13359.6 | 12089.8 | *11988.6* | 11923.0 | 11952.9 |
| 60° | 6541.9 | 6658.6 | 7087.7 | 8222.5 | 11070.7 | 15450.0 | 16604.1 | 13964.2 | *13817.6* | 13197.6 | 13224.6 |
| 62.5° | 4630.0 | 4571.2 | 4865.2 | 5695.4 | 8995.8 | 15590.7 | 20295.9 | 16471.0 | *15988.9* | 14543.6 | 14425.0 |
| 65° | 3530.8 | 3517.3 | 3649.4 | 3913.6 | 5448.6 | 13906.3 | 22495.2 | 20684.5 | *19931.4* | 16126.8 | 15847.2 |
| 67.5° | 2901.2 | 2877.1 | 3007.3 | 3392.0 | 3508.6 | 8971.7 | 22543.4 | 25572.8 | *24833.3* | 18097.6 | 17492.1 |
| 70° | 2385.4 | 2358.4 | 2479.9 | 2976.4 | 3242.5 | 4549.9 | 18973.0 | 28435.5 | *28395.9* | 20592.9 | 18733.9 |
| 71° | *2138.5* | *2119.3* | *2264.8* | *2816.4* | *3185.6* | *3792.1* | *16381.3* | *28443.2* | *28561.8* | *21437.5* | *18660.7* |
| 72.5° | 1741.3 | 1748.1 | 1902.3 | 2506.9 | 3143.2 | 3348.6 | 12039.7 | 27117.4 | *27368.1* | 22242.6 | 17994.4 |
| 75° | 1157.0 | 1162.8 | 1365.3 | 1928.4 | 3047.8 | 3276.3 | 6617.1 | 22754.5 | *23215.4* | 21760.5 | 16419.9 |
| 77.5° | 777.1 | 775.2 | 913.1 | 1322.8 | 2655.3 | 3276.3 | 3879.8 | 17018.7 | *17524.9* | 17314.7 | 12658.7 |
| 80° | 535.1 | 531.3 | 628.6 | 913.1 | 2010.3 | 3315.8 | 2999.6 | 11926.9 | *12080.2* | 9350.6 | 5144.8 |
| 82.5° | 327.8 | 330.7 | 410.7 | 645.0 | 1368.2 | 2984.1 | 2831.8 | 6503.4 | *6336.6* | 2622.6 | 1285.2 |
| 85° | 188.0 | 187.1 | 262.3 | 436.8 | 878.4 | 2518.4 | 2761.4 | 2799.0 | *2567.6* | 789.7 | 464.7 |
| 87.5° | 67.5 | 72.3 | 140.8 | 242.0 | 503.3 | 1753.8 | 2342.9 | 1455.9 | *1312.2* | 356.7 | 210.2 |
| 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: P319579
CATALOG NUMBER: GLEON-SA5D-722-U-SL2

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 6397.3 | 6397.3 | 6397.3 | 6397.3 | 6397.3 | 6397.3 | 6397.3 | 6397.3 | 6397.3 | 6397.3 | 6397.3 |
| 2.5° | 6389.6 | 6395.4 | 6388.6 | 6350.1 | 6317.3 | 6264.2 | 6234.4 | 6192.9 | 6180.4 | 6174.6 | 6190.0 |
| 5° | 6413.7 | 6415.6 | 6358.7 | 6257.5 | 6143.7 | 6009.7 | 5913.3 | 5794.7 | 5738.8 | 5714.7 | 5730.1 |
| 7.5° | 6435.9 | 6427.2 | 6302.8 | 6109.0 | 5898.8 | 5665.5 | 5458.2 | 5268.3 | 5157.4 | 5112.1 | 5115.9 |
| 10° | 6438.8 | 6402.1 | 6202.5 | 5902.7 | 5576.8 | 5234.5 | 4916.3 | 4623.2 | 4438.1 | 4317.6 | 4354.2 |
| 12.5° | 6408.9 | 6347.2 | 6055.0 | 5635.6 | 5183.4 | 4716.7 | 4286.7 | 3847.1 | 3582.9 | 3460.4 | 3464.3 |
| 15° | 6385.7 | 6273.9 | 5873.8 | 5321.3 | 4713.9 | 4095.8 | 3508.6 | 2991.8 | 2710.3 | 2585.0 | 2526.1 |
| 17.5° | 6366.5 | 6194.8 | 5663.6 | 4967.4 | 4159.5 | 3375.6 | 2669.8 | 2208.9 | 2054.7 | 2018.0 | 2002.6 |
| 20° | 6339.5 | 6110.9 | 5429.3 | 4557.7 | 3527.9 | 2569.5 | 1949.6 | 1722.0 | 1723.0 | 1765.4 | 1771.2 |
| 22.5° | 6301.9 | 6015.5 | 5179.6 | 4097.7 | 2850.1 | 1871.5 | 1528.2 | 1462.7 | 1529.2 | 1610.2 | 1624.6 |
| 25° | 6245.9 | 5902.7 | 4901.9 | 3589.6 | 2173.3 | 1438.6 | 1305.5 | 1302.6 | 1383.6 | 1468.4 | 1481.0 |
| 27.5° | 6166.9 | 5755.2 | 4593.3 | 3043.9 | 1601.5 | 1222.6 | 1169.5 | 1189.8 | 1249.6 | 1311.3 | 1316.1 |
| 30° | 6060.8 | 5583.5 | 4253.0 | 2468.3 | 1255.4 | 1088.6 | 1082.8 | 1101.1 | 1137.7 | 1181.1 | 1185.0 |
| 32.5° | 5944.1 | 5409.0 | 3889.5 | 1911.0 | 1075.1 | 1016.2 | 1022.0 | 1030.7 | 1048.1 | 1065.4 | 1069.3 |
| 35° | 5838.1 | 5230.7 | 3517.3 | 1452.0 | 989.2 | 969.0 | 965.1 | 963.2 | 965.1 | 959.4 | 960.3 |
| 37.5° | 5769.6 | 5083.1 | 3129.7 | 1156.0 | 940.1 | 927.5 | 916.0 | 901.5 | 885.1 | 875.5 | 877.4 |
| 40° | 5744.6 | 4973.2 | 2737.3 | 998.9 | 899.6 | 890.9 | 868.7 | 837.9 | 818.6 | 812.8 | 812.8 |
| 42.5° | 5812.1 | 4916.3 | 2358.4 | 919.8 | 865.8 | 851.4 | 814.7 | 779.1 | 764.6 | 763.6 | 762.7 |
| 45° | 6018.4 | 4939.5 | 1997.8 | 876.4 | 835.0 | 807.0 | 758.8 | 728.9 | 719.3 | 721.2 | 720.2 |
| 47.5° | 6388.6 | 5085.1 | 1689.2 | 847.5 | 804.1 | 767.5 | 713.5 | 689.4 | 677.8 | 677.8 | 678.8 |
| 50° | 7018.2 | 5425.4 | 1443.4 | 823.4 | 778.1 | 730.8 | 680.7 | 650.8 | 635.4 | 634.4 | 634.4 |
| 52.5° | 7935.2 | 6034.8 | 1290.1 | 803.2 | 749.2 | 698.1 | 647.9 | 610.3 | 592.0 | 588.1 | 586.2 |
| 55° | 9084.5 | 6908.3 | 1247.6 | 789.7 | 710.6 | 662.4 | 608.4 | 570.8 | 550.5 | 541.9 | 540.9 |
| 57.5° | 10369.7 | 7970.8 | 1331.5 | 773.3 | 671.1 | 620.0 | 565.0 | 529.3 | 508.1 | 497.5 | 496.6 |
| 60° | 11670.4 | 9130.7 | 1673.8 | 750.1 | 638.3 | 573.7 | 520.7 | 487.9 | 466.7 | 455.1 | 453.2 |
| 62.5° | 12973.0 | 10353.3 | 2372.8 | 748.2 | 615.1 | 529.3 | 475.3 | 447.4 | 427.1 | 414.6 | 411.7 |
| 65° | 14442.4 | 11691.6 | 3167.3 | 799.3 | 607.4 | 488.8 | 429.1 | 406.9 | 389.5 | 378.0 | 377.0 |
| 67.5° | 16129.7 | 13202.5 | 3091.1 | 904.4 | 633.5 | 452.2 | 385.7 | 368.3 | 355.8 | 346.1 | 345.2 |
| 70° | 16921.3 | 12966.2 | 1921.6 | 978.6 | 670.1 | 416.5 | 344.2 | 331.7 | 322.0 | 315.3 | 312.4 |
| 71° | *16589.6* | *12311.6* | *1611.1* | *970.0* | *666.2* | *401.1* | *327.8* | *318.2* | *308.5* | *302.8* | *299.9* |
| 72.5° | 15685.2 | 11227.8 | 1344.1 | 902.5 | 622.9 | 373.1 | 306.6 | 297.0 | 288.3 | 281.5 | 279.6 |
| 75° | 14075.0 | 10027.4 | 1076.0 | 721.2 | 496.6 | 315.3 | 269.0 | 258.4 | 251.6 | 247.8 | 243.9 |
| 77.5° | 10346.6 | 7156.1 | 832.1 | 569.8 | 365.4 | 257.4 | 229.5 | 221.8 | 215.0 | 209.2 | 206.3 |
| 80° | 3963.7 | 2772.0 | 560.2 | 425.2 | 268.0 | 203.4 | 185.1 | 181.3 | 174.5 | 170.7 | 170.7 |
| 82.5° | 1067.3 | 828.2 | 298.9 | 257.4 | 179.3 | 148.5 | 141.7 | 139.8 | 134.0 | 126.3 | 127.3 |
| 85° | 432.0 | 365.4 | 167.8 | 141.7 | 109.9 | 87.7 | 95.5 | 96.4 | 89.7 | 80.0 | 81.0 |
| 87.5° | 189.9 | 155.2 | 93.5 | 62.7 | 48.2 | 33.7 | 43.4 | 43.4 | 39.5 | 32.8 | 29.9 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

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# LM-79-2008: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

Report Number: SP1-1908-441-10-R4

Test Date: 10/25/2019

Luminaire Tested: SA1C-722-U-5WQ

Data in this report applies to families of products SA1C-722-U-5WQ.

Report Generated By FNC07603 / LDUCLS01DT446
Version: v6.13

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

## Test Information

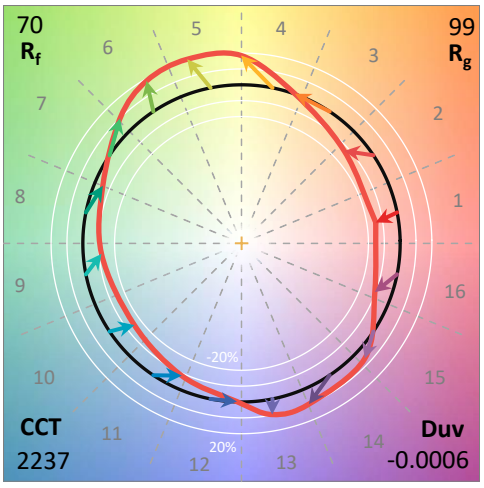
| | |
|---|---|
| Test Method: | LM-79-2008 Report |
| Number: | SP1-1908-441-10-R4 |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Photometer: | SP1 - 76IN SPHERE |
| Measurement Geometry: | 4π |
| Issue Date: | 10/28/2024 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | **SA1C-722-U-5WQ** |
| Description: | McGRAW EDISON ROADWAY AND AREA LUMINAIRE |

***THIS IS A REVISION OF SP1-1908-441-4-R3. TO UPDATE THE CATALOG INFORMATION.***TESTED IN SITU. ROADWAY AND AREA LUMINAIRE. (1) 70 CRI, 5000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

## Spectral Parameters

| | | | | | |
|---|---|---|---|---|---|
| CCT (K): | 2237 | CRI (Ra): | 72.0 | | |
| CIE u': | 0.2876 | R1: | 68.9 | R9: | -17.4 |
| CIE v': | 0.5346 | R2: | 83.0 | R10: | 61.3 |
| Duv: | -0.0006 | R3: | 95.2 | R11: | 59.8 |
| CIE x: | 0.5005 | R4: | 66.2 | R12: | 50.5 |
| CIE y: | 0.4134 | R5: | 65.9 | R13: | 71.1 |
| CIE z: | 0.0860 | R6: | 76.3 | R14: | 96.9 |
| Peak Wavelength (nm): | 603 | R7: | 76.7 | | |
| Dominant Wavelength (nm): | 587 | R8: | 43.8 | | |
| Purity: | 74.5 | | | | |

| | |
|---|---|
| Rf: | 69.8 |
| Rg: | 99.2 |




## Test Conditions

| | |
|---|---|
| Stabilization Time: | 71M |
| Operation Time: | 12H |
| Room Temperature (°C) / RH%: | 24.7/41% |
| Sphere Temperature (°C): | 25.6 |

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| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/28/2019 | 12/28/2019 |
| Power Meter | IN0071 | 12/5/2018 | 12/5/2019 |
| AC Power Source | IN0063 | 12/5/2018 | 12/5/2019 |
| DC Power Source | IN0208 | 12/5/2018 | 12/5/2019 |
| Sphere Thermometer | IN0085 | 12/5/2018 | 12/5/2019 |
| Room Thermometer | IN0046 | 12/5/2018 | 12/5/2019 |

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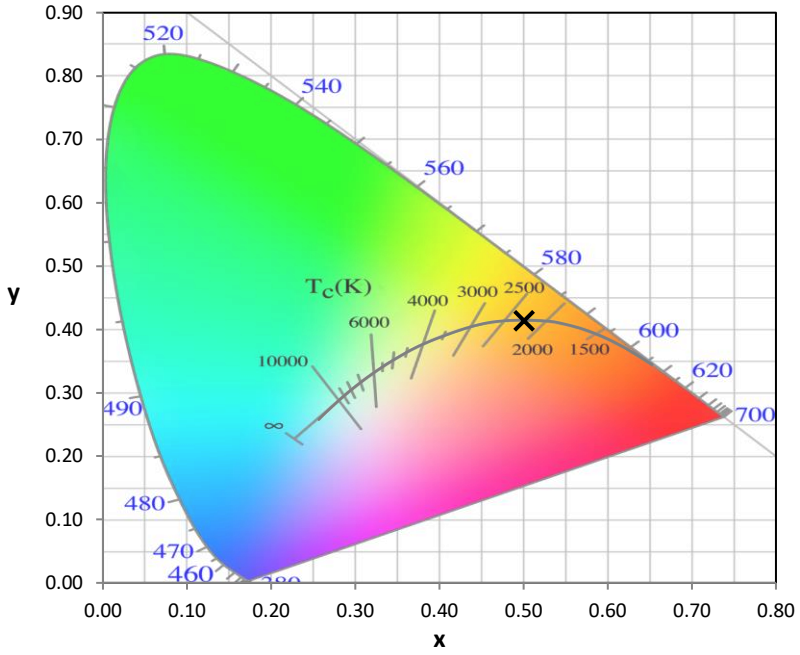
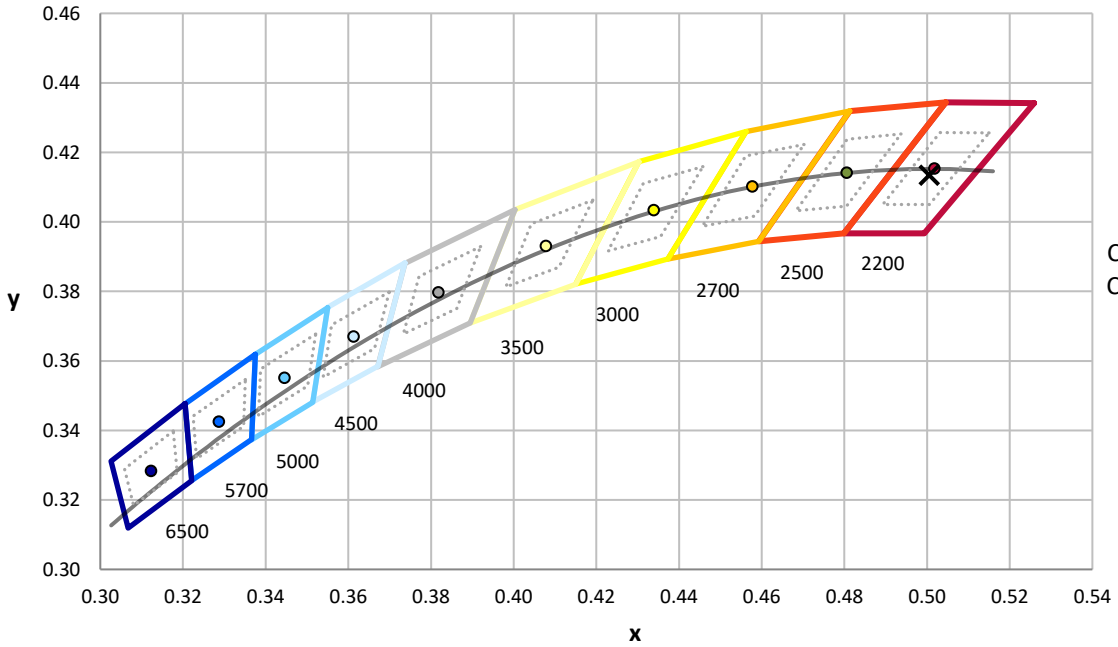
## CIE 1931 Chromaticity Diagram




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




CCT = 2237K
CIE x = 0.5005
CIE y = 0.4134
Duv = -0.0006

Point lies inside the ANSI 2200K 4-step quadrangle

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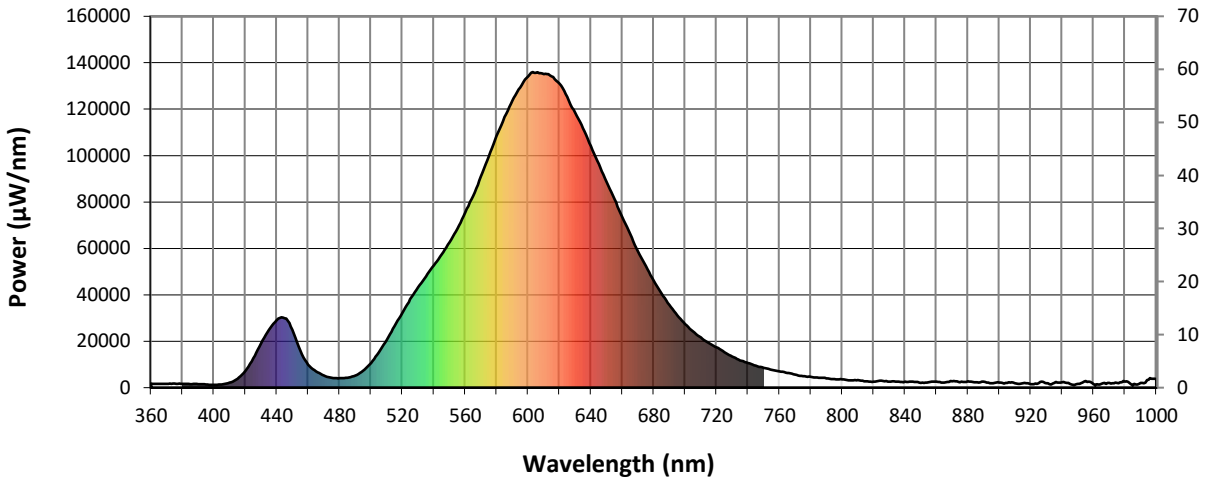
## Photopic Flux vs. Wavelength




######

| λ (nm) | Power (µW/nm) | Lumens (ϕ/nm) | λ (nm) | Power (µW/nm) | Lumens (ϕ/nm) | λ (nm) | Power (µW/nm) | Lumens (ϕ/nm) | λ (nm) | Power (µW/nm) | Lumens (ϕ/nm) | λ (nm) | Power (µW/nm) | Lumens (ϕ/nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 360 | 1768 | NR | 490 | 5206 | NR | 620 | 130919 | NR | 750 | 8553 | NR | 880 | 2713 | NR |
| 365 | 1569 | NR | 495 | 7286 | NR | 625 | 125335 | NR | 755 | 7696 | NR | 885 | 2316 | NR |
| 370 | 1594 | NR | 500 | 10654 | NR | 630 | 118388 | NR | 760 | 6978 | NR | 890 | 2539 | NR |
| 375 | 1744 | NR | 505 | 15189 | NR | 635 | 111855 | NR | 765 | 6377 | NR | 895 | 1933 | NR |
| 380 | 1659 | NR | 510 | 20541 | NR | 640 | 104062 | NR | 770 | 5600 | NR | 900 | 2216 | NR |
| 385 | 1504 | NR | 515 | 26492 | NR | 645 | 96365 | NR | 775 | 5000 | NR | 905 | 2067 | NR |
| 390 | 1541 | NR | 520 | 32294 | NR | 650 | 88651 | NR | 780 | 4709 | NR | 910 | 1959 | NR |
| 395 | 1355 | NR | 525 | 38123 | NR | 655 | 81152 | NR | 785 | 4305 | NR | 915 | 1874 | NR |
| 400 | 1243 | NR | 530 | 43232 | NR | 660 | 73523 | NR | 790 | 4040 | NR | 920 | 1484 | NR |
| 405 | 1417 | NR | 535 | 48012 | NR | 665 | 66123 | NR | 795 | 3642 | NR | 925 | 1914 | NR |
| 410 | 2147 | NR | 540 | 52623 | NR | 670 | 58677 | NR | 800 | 3594 | NR | 930 | 1948 | NR |
| 415 | 3837 | NR | 545 | 57516 | NR | 675 | 52349 | NR | 805 | 3190 | NR | 935 | 2079 | NR |
| 420 | 7159 | NR | 550 | 62613 | NR | 680 | 46159 | NR | 810 | 3241 | NR | 940 | 2263 | NR |
| 425 | 12599 | NR | 555 | 68554 | NR | 685 | 40525 | NR | 815 | 2732 | NR | 945 | 1688 | NR |
| 430 | 19019 | NR | 560 | 75325 | NR | 690 | 35615 | NR | 820 | 2612 | NR | 950 | 1560 | NR |
| 435 | 24875 | NR | 565 | 82533 | NR | 695 | 31158 | NR | 825 | 2966 | NR | 955 | 2826 | NR |
| 440 | 29103 | NR | 570 | 90909 | NR | 700 | 27409 | NR | 830 | 2574 | NR | 960 | 1477 | NR |
| 445 | 29901 | NR | 575 | 99621 | NR | 705 | 24204 | NR | 835 | 2633 | NR | 965 | 1568 | NR |
| 450 | 24862 | NR | 580 | 108484 | NR | 710 | 21558 | NR | 840 | 2526 | NR | 970 | 2030 | NR |
| 455 | 15942 | NR | 585 | 116679 | NR | 715 | 19222 | NR | 845 | 2631 | NR | 975 | 1986 | NR |
| 460 | 9916 | NR | 590 | 123752 | NR | 720 | 17310 | NR | 850 | 2079 | NR | 980 | 2540 | NR |
| 465 | 7051 | NR | 595 | 129324 | NR | 725 | 15280 | NR | 855 | 2309 | NR | 985 | 1139 | NR |
| 470 | 5227 | NR | 600 | 134082 | NR | 730 | 13282 | NR | 860 | 2528 | NR | 990 | 2018 | NR |
| 475 | 4257 | NR | 605 | 135698 | NR | 735 | 11753 | NR | 865 | 2121 | NR | 995 | 3445 | NR |
| 480 | 4052 | NR | 610 | 135144 | NR | 740 | 10654 | NR | 870 | 2751 | NR | 1000 | 3704 | NR |
| 485 | 4298 | NR | 615 | 134180 | NR | 745 | 9451 | NR | 875 | 2317 | NR | | | |

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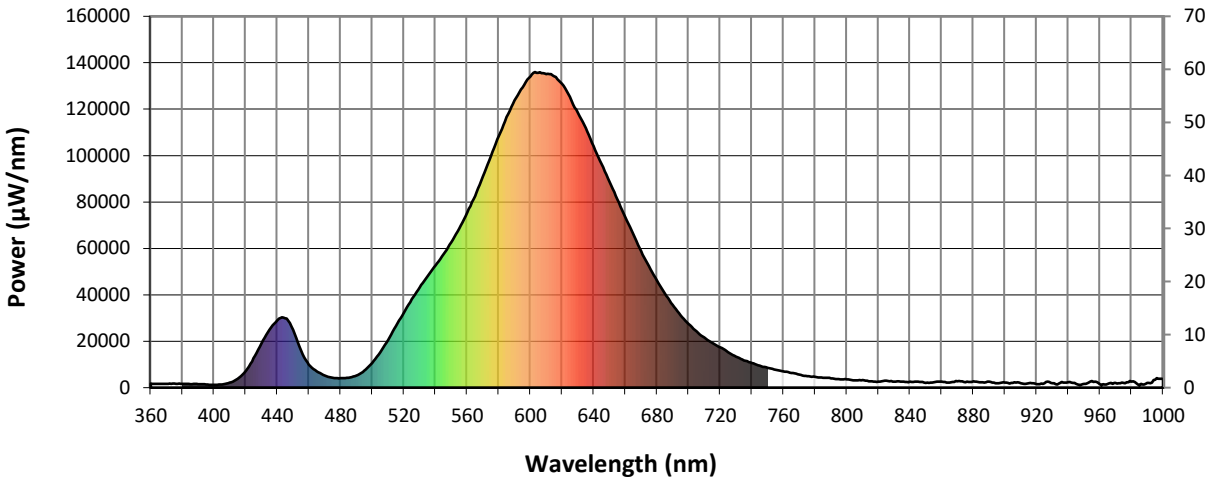
## Scotopic Flux vs. Wavelength




**Scotopic Lumens: 4696.9** **S/P: 0.85**

| λ (nm) | Power (µW/nm) | Lumens (ϕ/nm) | λ (nm) | Power (µW/nm) | Lumens (ϕ/nm) | λ (nm) | Power (µW/nm) | Lumens (ϕ/nm) | λ (nm) | Power (µW/nm) | Lumens (ϕ/nm) | λ (nm) | Power (µW/nm) | Lumens (ϕ/nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 360 | 1768 | NR | 490 | 5206 | NR | 620 | 130919 | NR | 750 | 8553 | NR | 880 | 2713 | NR |
| 365 | 1569 | NR | 495 | 7286 | NR | 625 | 125335 | NR | 755 | 7696 | NR | 885 | 2316 | NR |
| 370 | 1594 | NR | 500 | 10654 | NR | 630 | 118388 | NR | 760 | 6978 | NR | 890 | 2539 | NR |
| 375 | 1744 | NR | 505 | 15189 | NR | 635 | 111855 | NR | 765 | 6377 | NR | 895 | 1933 | NR |
| 380 | 1659 | NR | 510 | 20541 | NR | 640 | 104062 | NR | 770 | 5600 | NR | 900 | 2216 | NR |
| 385 | 1504 | NR | 515 | 26492 | NR | 645 | 96365 | NR | 775 | 5000 | NR | 905 | 2067 | NR |
| 390 | 1541 | NR | 520 | 32294 | NR | 650 | 88651 | NR | 780 | 4709 | NR | 910 | 1959 | NR |
| 395 | 1355 | NR | 525 | 38123 | NR | 655 | 81152 | NR | 785 | 4305 | NR | 915 | 1874 | NR |
| 400 | 1243 | NR | 530 | 43232 | NR | 660 | 73523 | NR | 790 | 4040 | NR | 920 | 1484 | NR |
| 405 | 1417 | NR | 535 | 48012 | NR | 665 | 66123 | NR | 795 | 3642 | NR | 925 | 1914 | NR |
| 410 | 2147 | NR | 540 | 52623 | NR | 670 | 58677 | NR | 800 | 3594 | NR | 930 | 1948 | NR |
| 415 | 3837 | NR | 545 | 57516 | NR | 675 | 52349 | NR | 805 | 3190 | NR | 935 | 2079 | NR |
| 420 | 7159 | NR | 550 | 62613 | NR | 680 | 46159 | NR | 810 | 3241 | NR | 940 | 2263 | NR |
| 425 | 12599 | NR | 555 | 68554 | NR | 685 | 40525 | NR | 815 | 2732 | NR | 945 | 1688 | NR |
| 430 | 19019 | NR | 560 | 75325 | NR | 690 | 35615 | NR | 820 | 2612 | NR | 950 | 1560 | NR |
| 435 | 24875 | NR | 565 | 82533 | NR | 695 | 31158 | NR | 825 | 2966 | NR | 955 | 2826 | NR |
| 440 | 29103 | NR | 570 | 90909 | NR | 700 | 27409 | NR | 830 | 2574 | NR | 960 | 1477 | NR |
| 445 | 29901 | NR | 575 | 99621 | NR | 705 | 24204 | NR | 835 | 2633 | NR | 965 | 1568 | NR |
| 450 | 24862 | NR | 580 | 108484 | NR | 710 | 21558 | NR | 840 | 2526 | NR | 970 | 2030 | NR |
| 455 | 15942 | NR | 585 | 116679 | NR | 715 | 19222 | NR | 845 | 2631 | NR | 975 | 1986 | NR |
| 460 | 9916 | NR | 590 | 123752 | NR | 720 | 17310 | NR | 850 | 2079 | NR | 980 | 2540 | NR |
| 465 | 7051 | NR | 595 | 129324 | NR | 725 | 15280 | NR | 855 | 2309 | NR | 985 | 1139 | NR |
| 470 | 5227 | NR | 600 | 134082 | NR | 730 | 13282 | NR | 860 | 2528 | NR | 990 | 2018 | NR |
| 475 | 4257 | NR | 605 | 135698 | NR | 735 | 11753 | NR | 865 | 2121 | NR | 995 | 3445 | NR |
| 480 | 4052 | NR | 610 | 135144 | NR | 740 | 10654 | NR | 870 | 2751 | NR | 1000 | 3704 | NR |
| 485 | 4298 | NR | 615 | 134180 | NR | 745 | 9451 | NR | 875 | 2317 | NR | | | |

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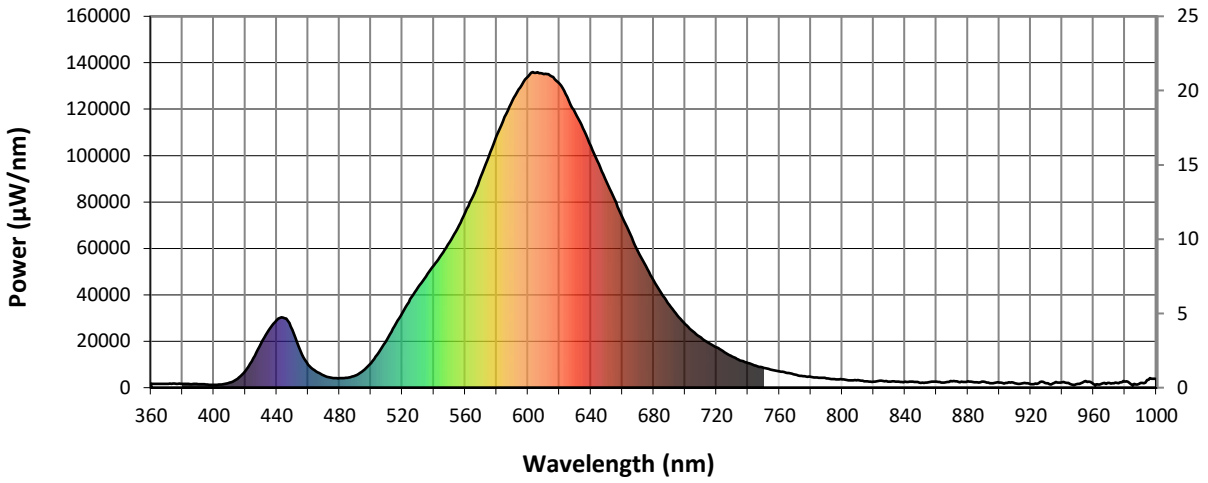
## Melanopic Flux vs. Wavelength




**Melanopic Lumens: 1470.8** **M/P: 0.27**

| λ (nm) | Power (µW/nm) | Lumens (ϕ/nm) | λ (nm) | Power (µW/nm) | Lumens (ϕ/nm) | λ (nm) | Power (µW/nm) | Lumens (ϕ/nm) | λ (nm) | Power (µW/nm) | Lumens (ϕ/nm) | λ (nm) | Power (µW/nm) | Lumens (ϕ/nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 360 | 1768 | NR | 490 | 5206 | NR | 620 | 130919 | NR | 750 | 8553 | NR | 880 | 2713 | NR |
| 365 | 1569 | NR | 495 | 7286 | NR | 625 | 125335 | NR | 755 | 7696 | NR | 885 | 2316 | NR |
| 370 | 1594 | NR | 500 | 10654 | NR | 630 | 118388 | NR | 760 | 6978 | NR | 890 | 2539 | NR |
| 375 | 1744 | NR | 505 | 15189 | NR | 635 | 111855 | NR | 765 | 6377 | NR | 895 | 1933 | NR |
| 380 | 1659 | NR | 510 | 20541 | NR | 640 | 104062 | NR | 770 | 5600 | NR | 900 | 2216 | NR |
| 385 | 1504 | NR | 515 | 26492 | NR | 645 | 96365 | NR | 775 | 5000 | NR | 905 | 2067 | NR |
| 390 | 1541 | NR | 520 | 32294 | NR | 650 | 88651 | NR | 780 | 4709 | NR | 910 | 1959 | NR |
| 395 | 1355 | NR | 525 | 38123 | NR | 655 | 81152 | NR | 785 | 4305 | NR | 915 | 1874 | NR |
| 400 | 1243 | NR | 530 | 43232 | NR | 660 | 73523 | NR | 790 | 4040 | NR | 920 | 1484 | NR |
| 405 | 1417 | NR | 535 | 48012 | NR | 665 | 66123 | NR | 795 | 3642 | NR | 925 | 1914 | NR |
| 410 | 2147 | NR | 540 | 52623 | NR | 670 | 58677 | NR | 800 | 3594 | NR | 930 | 1948 | NR |
| 415 | 3837 | NR | 545 | 57516 | NR | 675 | 52349 | NR | 805 | 3190 | NR | 935 | 2079 | NR |
| 420 | 7159 | NR | 550 | 62613 | NR | 680 | 46159 | NR | 810 | 3241 | NR | 940 | 2263 | NR |
| 425 | 12599 | NR | 555 | 68554 | NR | 685 | 40525 | NR | 815 | 2732 | NR | 945 | 1688 | NR |
| 430 | 19019 | NR | 560 | 75325 | NR | 690 | 35615 | NR | 820 | 2612 | NR | 950 | 1560 | NR |
| 435 | 24875 | NR | 565 | 82533 | NR | 695 | 31158 | NR | 825 | 2966 | NR | 955 | 2826 | NR |
| 440 | 29103 | NR | 570 | 90909 | NR | 700 | 27409 | NR | 830 | 2574 | NR | 960 | 1477 | NR |
| 445 | 29901 | NR | 575 | 99621 | NR | 705 | 24204 | NR | 835 | 2633 | NR | 965 | 1568 | NR |
| 450 | 24862 | NR | 580 | 108484 | NR | 710 | 21558 | NR | 840 | 2526 | NR | 970 | 2030 | NR |
| 455 | 15942 | NR | 585 | 116679 | NR | 715 | 19222 | NR | 845 | 2631 | NR | 975 | 1986 | NR |
| 460 | 9916 | NR | 590 | 123752 | NR | 720 | 17310 | NR | 850 | 2079 | NR | 980 | 2540 | NR |
| 465 | 7051 | NR | 595 | 129324 | NR | 725 | 15280 | NR | 855 | 2309 | NR | 985 | 1139 | NR |
| 470 | 5227 | NR | 600 | 134082 | NR | 730 | 13282 | NR | 860 | 2528 | NR | 990 | 2018 | NR |
| 475 | 4257 | NR | 605 | 135698 | NR | 735 | 11753 | NR | 865 | 2121 | NR | 995 | 3445 | NR |
| 480 | 4052 | NR | 610 | 135144 | NR | 740 | 10654 | NR | 870 | 2751 | NR | 1000 | 3704 | NR |
| 485 | 4298 | NR | 615 | 134180 | NR | 745 | 9451 | NR | 875 | 2317 | NR | | | |

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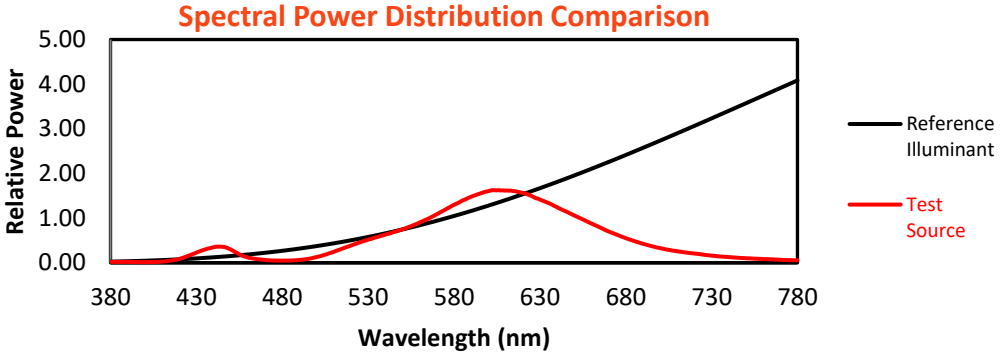
# TM-30-18

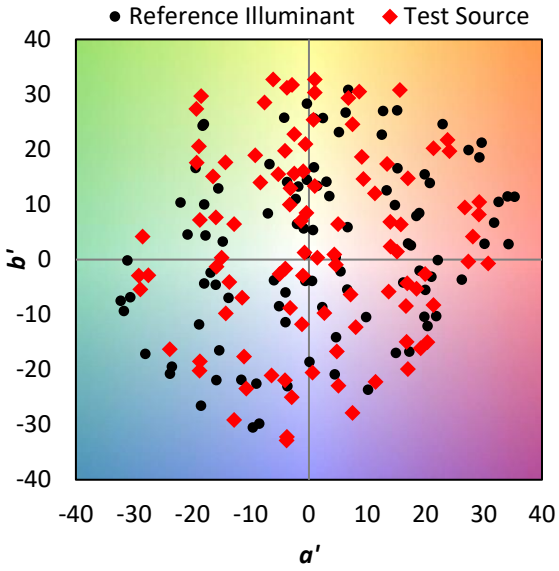
## Summary

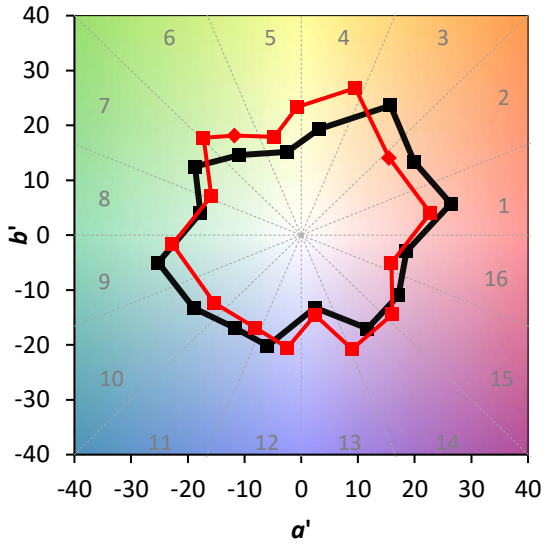
$R_f$ = 69.8
$R_g$ = 99.2
CIE $R_a$ = 72.0
$R_9$ = -17.4

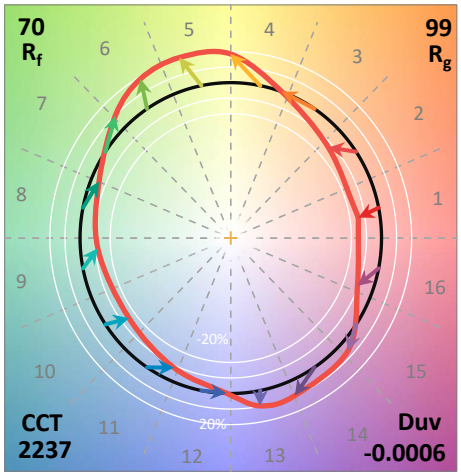
## Spectral Power Distribution Comparison

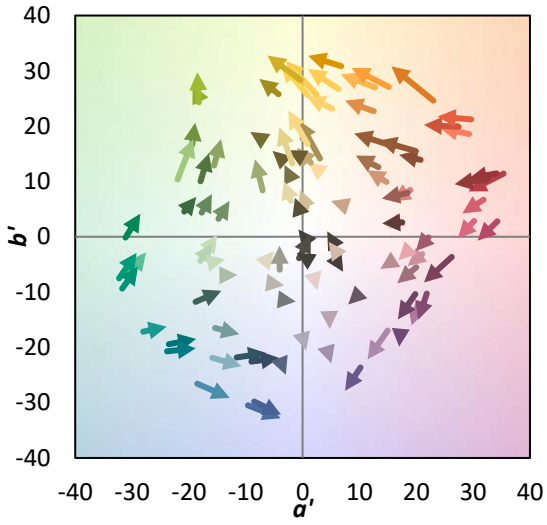



## Color Vector Graphics



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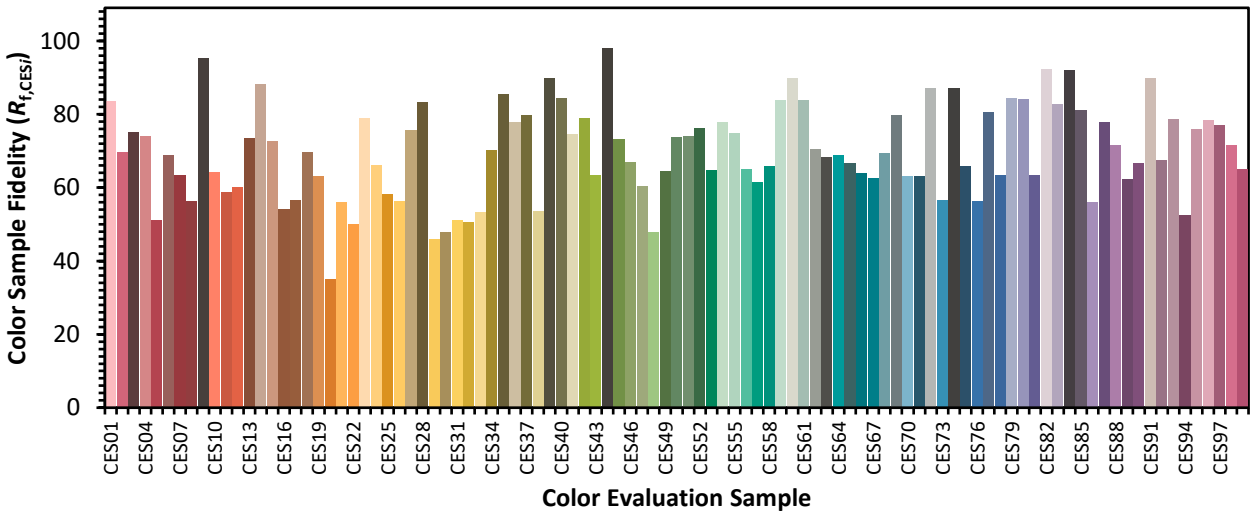
## Individual Sample Fidelity Index ($R_{f,i}$)

| | | | |
|---|---|---|---|
| CES01 = 87 | CES26 = 56 | CES51 = 74 | CES76 = 56 |
| CES02 = 65 | CES27 = 76 | CES52 = 76 | CES77 = 81 |
| CES03 = 32 | CES28 = 83 | CES53 = 65 | CES78 = 63 |
| CES04 = 72 | CES29 = 46 | CES54 = 78 | CES79 = 84 |
| CES05 = 52 | CES30 = 48 | CES55 = 75 | CES80 = 84 |
| CES06 = 52 | CES31 = 51 | CES56 = 65 | CES81 = 63 |
| CES07 = 44 | CES32 = 51 | CES57 = 62 | CES82 = 92 |
| CES08 = 42 | CES33 = 53 | CES58 = 66 | CES83 = 83 |
| CES09 = 29 | CES34 = 70 | CES59 = 84 | CES84 = 92 |
| CES10 = 78 | CES35 = 85 | CES60 = 90 | CES85 = 81 |
| CES11 = 61 | CES36 = 78 | CES61 = 84 | CES86 = 56 |
| CES12 = 68 | CES37 = 80 | CES62 = 70 | CES87 = 78 |
| CES13 = 45 | CES38 = 53 | CES63 = 68 | CES88 = 72 |
| CES14 = 75 | CES39 = 90 | CES64 = 69 | CES89 = 62 |
| CES15 = 72 | CES40 = 84 | CES65 = 67 | CES90 = 67 |
| CES16 = 49 | CES41 = 75 | CES66 = 64 | CES91 = 90 |
| CES17 = 51 | CES42 = 79 | CES67 = 63 | CES92 = 67 |
| CES18 = 57 | CES43 = 64 | CES68 = 69 | CES93 = 79 |
| CES19 = 74 | CES44 = 98 | CES69 = 80 | CES94 = 52 |
| CES20 = 68 | CES45 = 73 | CES70 = 63 | CES95 = 76 |
| CES21 = 89 | CES46 = 67 | CES71 = 63 | CES96 = 78 |
| CES22 = 81 | CES47 = 60 | CES72 = 87 | CES97 = 77 |
| CES23 = 92 | CES48 = 48 | CES73 = 56 | CES98 = 71 |
| CES24 = 92 | CES49 = 64 | CES74 = 87 | CES99 = 65 |
| CES25 = 74 | CES50 = 74 | CES75 = 66 | |



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Peachtree City, GA 30269

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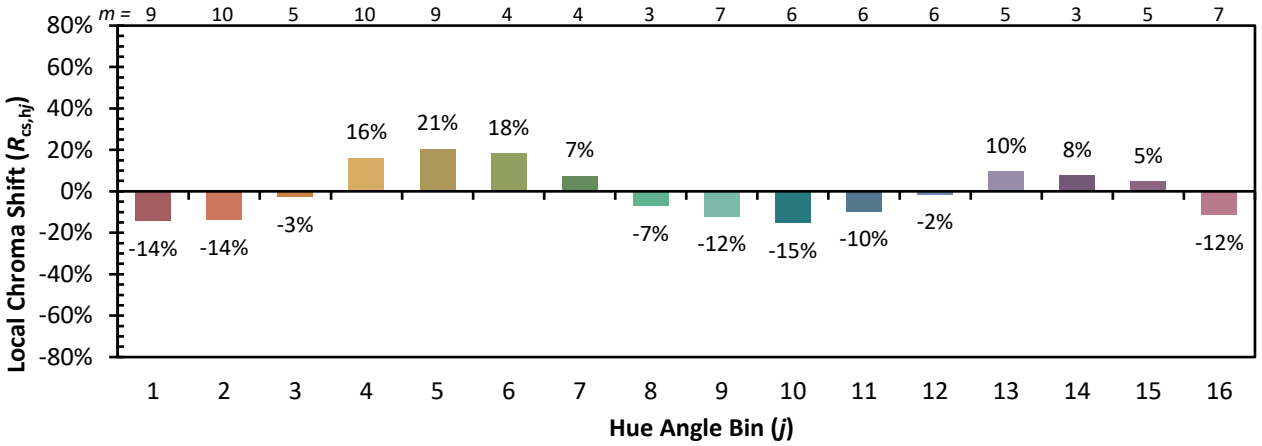
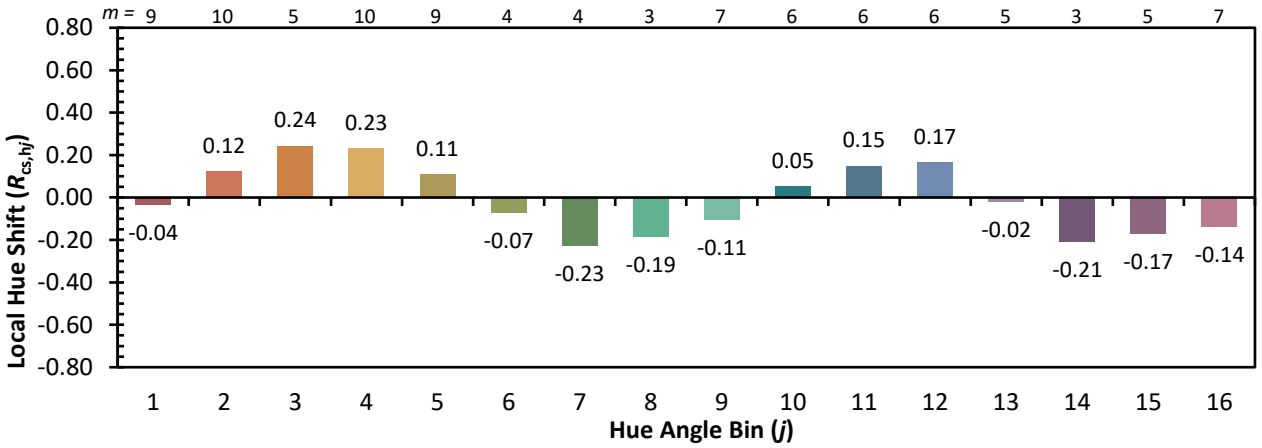
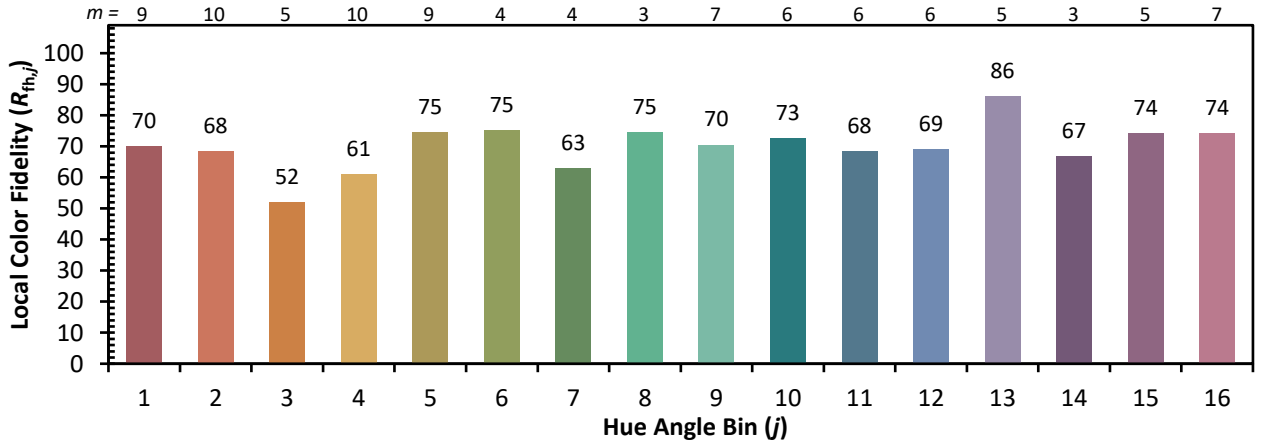
### Color Rendition by Hue-Angle Bin



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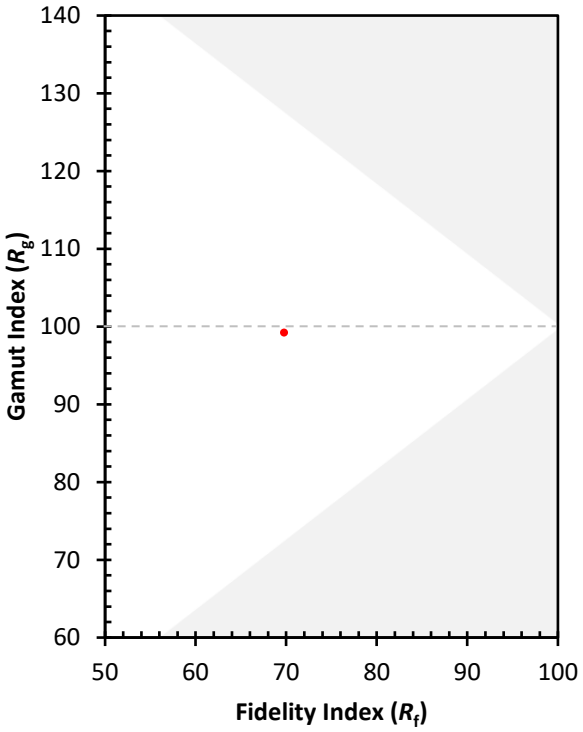
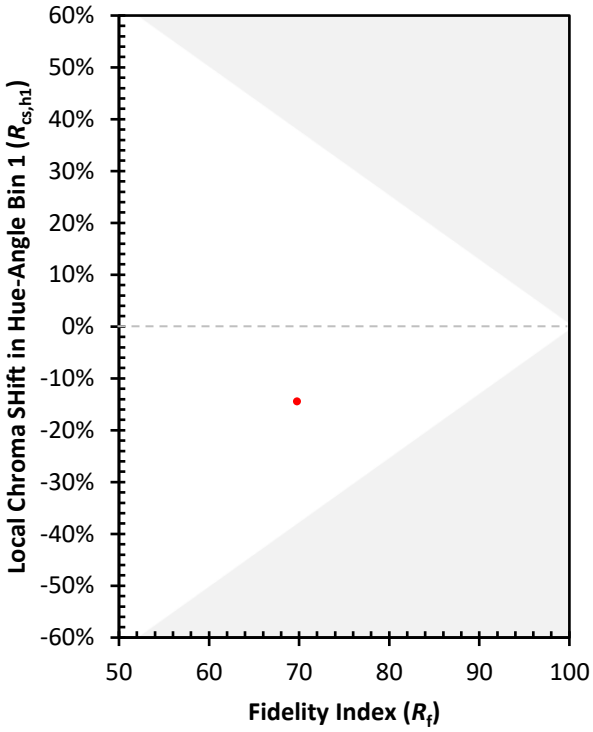
### Measure Comparisons




(END OF REPORT)