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: LUMARK

Report Number: P1066923

Luminaire Tested: **NAV-SA4C-740-U-T3BC**

Issue Date: 08/07/2025

Report Generated By 670347003

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: | P1066923 |
| Test Lab: | INNOVATION CENTER(G3) |
| Issue Date: | 08/07/2025 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS (FORMERLY EATON) |
| Product Line: | LUMARK |
| Catalog Number: | NAV-SA4C-740-U-T3BC |
| Description: | Navion AREA AND ROADWAY LUMINAIRE 1050mA 4xLight Square PACKAGE 70CRI 4000K FIXTURE w/ TYPE III ANGLED BACKLIGHT CONTROL |
| Light Source: | (56) 4000K CCT, 70 CRI LEDS |
| Ballast/Driver: | ELECTRONIC DRIVER |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 22945.1 lumens |
| Efficiency: | N/A |
| Efficacy: | 120.5 lumens/watt |
| Luminous Opening: | Rectangular (W 1' x L: 1' x H: 0') |
| IES Classification: | Type III - Short |
| BUG Rating: | B0 - U0 - G4 |

| | |
|---|---|
| Input Watts (W): | 190.4 |
| Input Voltage (V): | 120 |
| Input Current (Ain): | NR |
| Voltage Rise (V): | NR |
| Power Factor: | 0.97 |
| Total Harmonic Distortion (THDi): | NR |
| Frequency (hertz): | 60 |
| Stabilization Time: | NR |
| Operation Time: | NR |
| Ambient Temperature (°C): | NR |
| Test Distance: | 28.75 FT |

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REPORT NUMBER: P1066923
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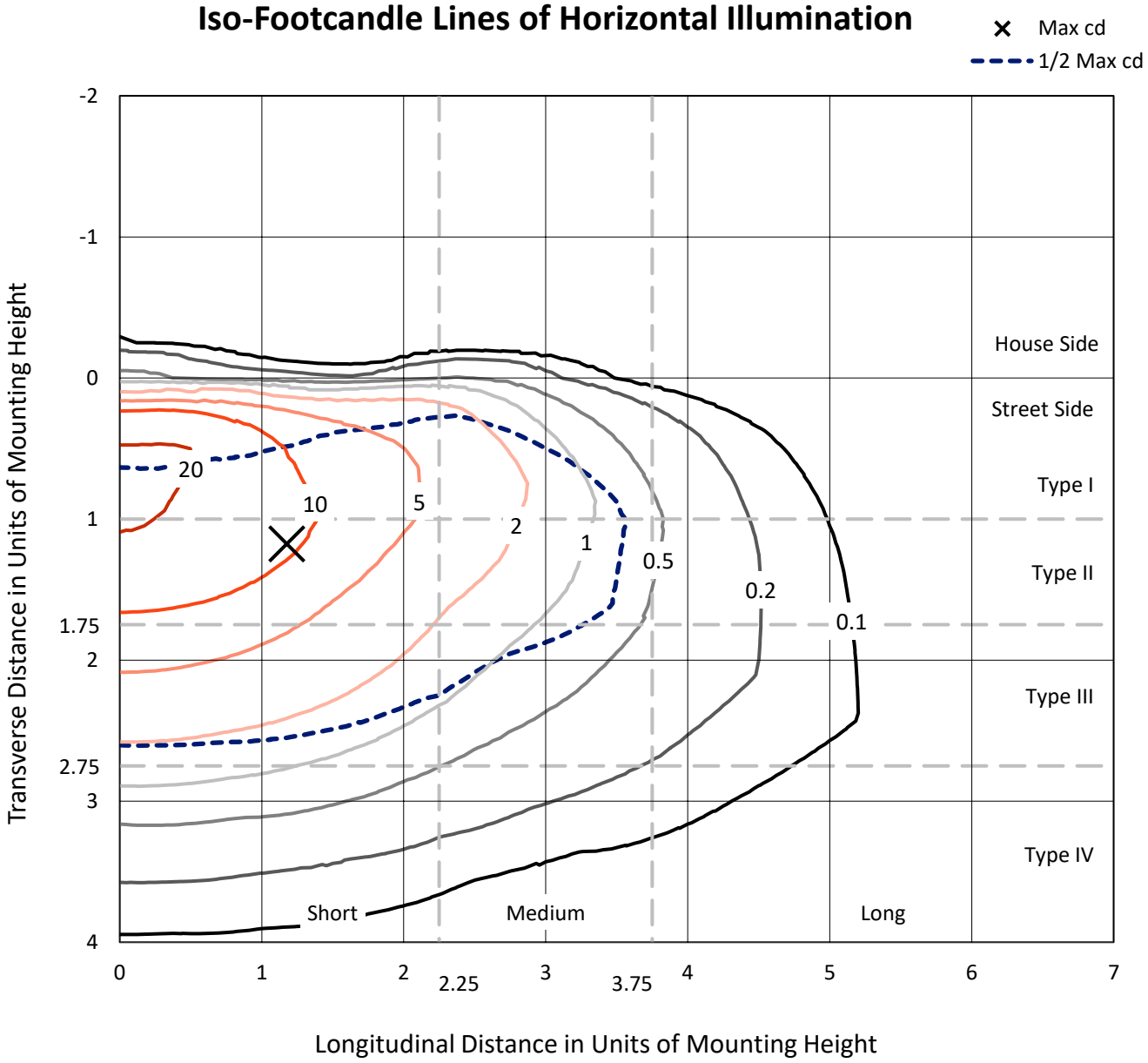
## Iso-Footcandle Lines of Horizontal Illumination




Based on 15 foot mounting height. Maximum calculated value = 25 fc
Type III - Short - N/A

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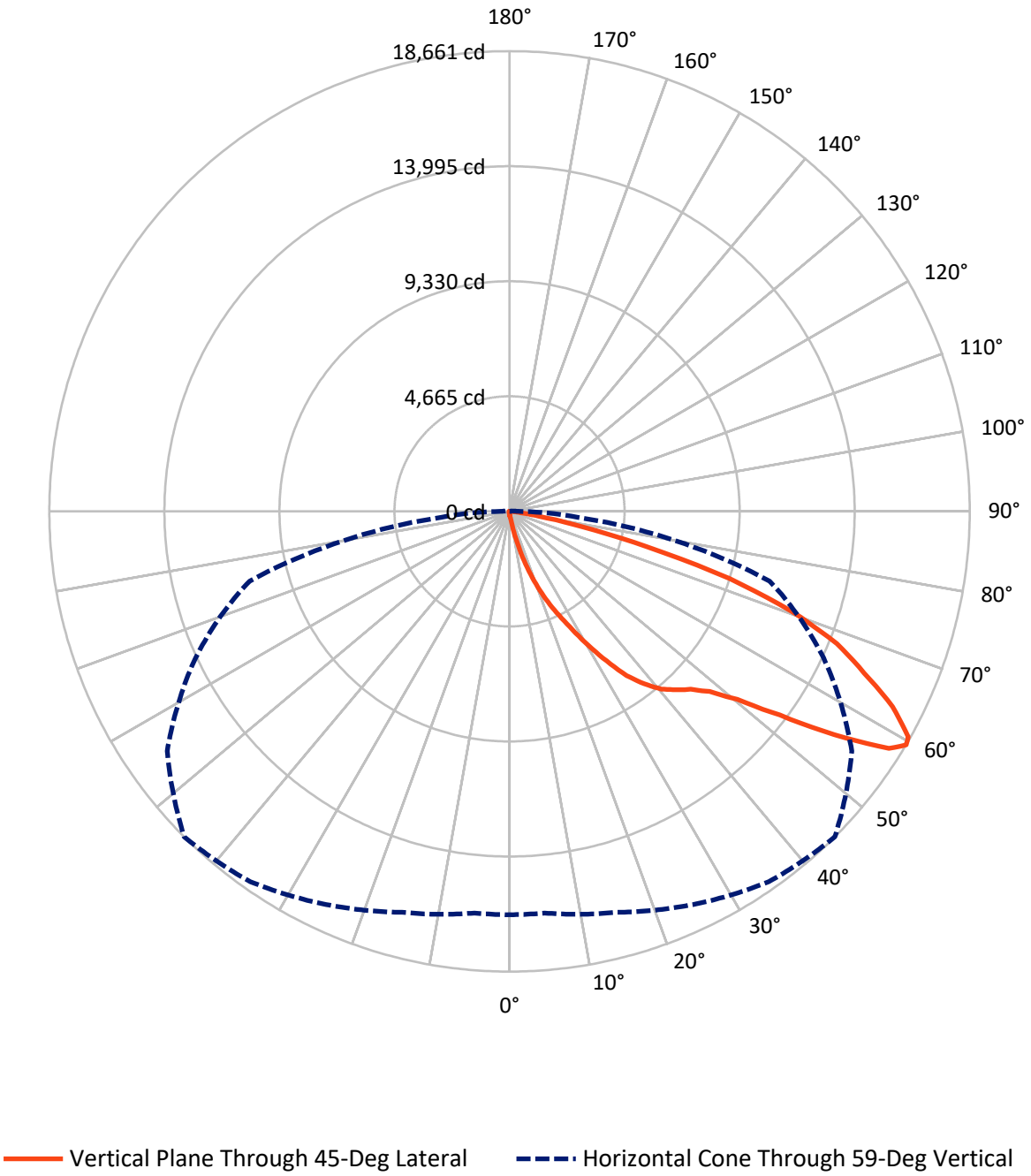
## Luminous Intensity Polar Plot



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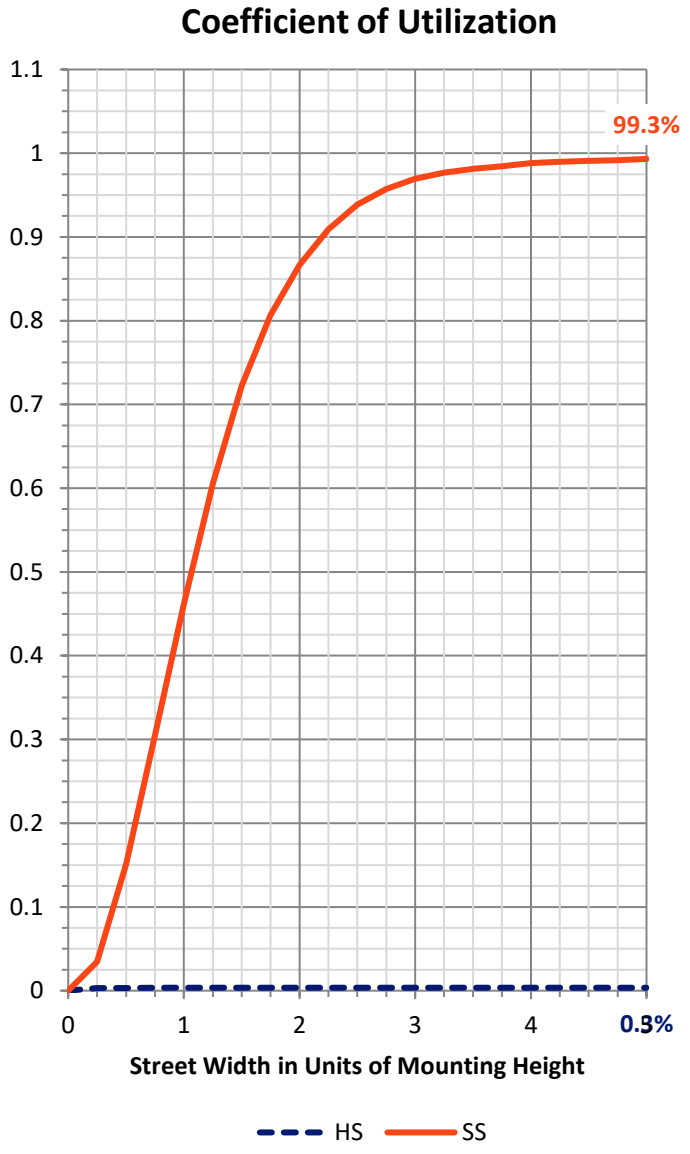
REPORT NUMBER: P1066923
CATALOG NUMBER: NAV-SA4C-740-U-T3BC

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 81.5 | 0.0 | 81.5 |
| | % Fixture | 0.4 | 0.0 | 0.4 |
| **Street Side** | Lumens | 22863.6 | 0.0 | 22863.6 |
| | % Fixture | 99.6 | 0.0 | 99.6 |
| **Total** | Lumens | 22945.1 | 0.0 | 22945.1 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 21.3 | 0.1 |
| 10°-20° | 253.6 | 1.1 |
| 20°-30° | 911.3 | 4.0 |
| 30°-40° | 2117.5 | 9.2 |
| 40°-50° | 3609.1 | 15.7 |
| 50°-60° | 5946.9 | 25.9 |
| 60°-70° | 6875.9 | 30.0 |
| 70°-80° | 2954.1 | 12.9 |
| 80°-90° | 255.3 | 1.1 |
| 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° | 22945.1 | 100.0 |
| 0°-180° | 22945.1 | 100.0 |



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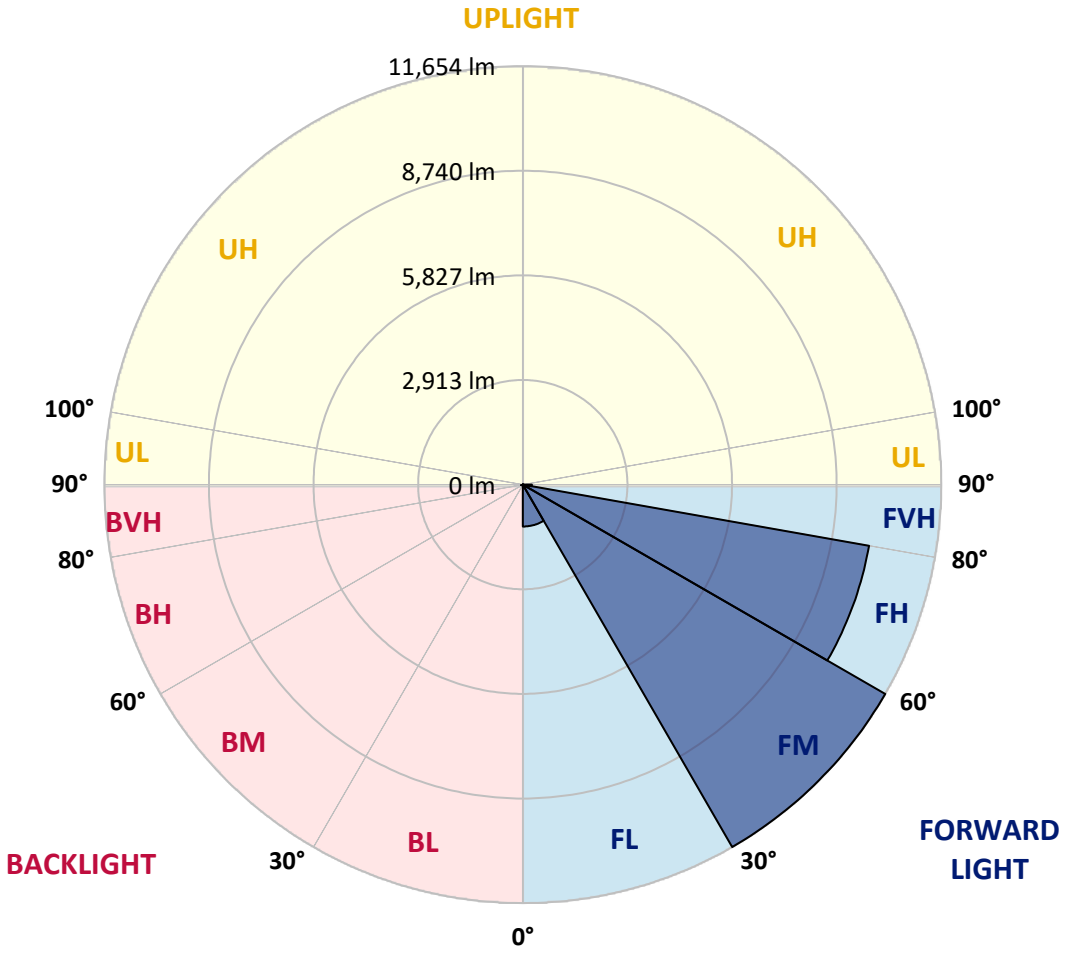
## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 1166.1 | 5.1 | | | |
| FM | (30°-60°) | 11653.8 | 50.8 | | | |
| FH | (60°-80°) | 9791.7 | 42.7 | | | G4/12000 |
| FVH | (80°-90°) | 252.0 | 1.1 | | | G3/500 |
| BL | (0°-30°) | 20.1 | 0.1 | B0/110 | | |
| BM | (30°-60°) | 19.7 | 0.1 | B0/220 | | |
| BH | (60°-80°) | 38.3 | 0.2 | B0/110 | | G0/110 |
| BVH | (80°-90°) | 3.3 | 0.0 | | | G0/10 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

**BUG Rating: B0-U0-G4**
Type III Short



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REPORT NUMBER: P1066923
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**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 44° | 45° | 55° | 65° | 75° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 145.0 | 145.0 | 145.0 | 145.0 | 145.0 | 145.0 | *145.0* | 145.0 | 145.0 | 145.0 | 145.0 |
| 2.5° | 188.2 | 188.2 | 183.6 | 177.4 | 175.9 | 171.3 | *171.3* | 166.6 | 160.5 | 155.8 | 149.7 |
| 5° | 273.1 | 271.5 | 259.2 | 243.8 | 223.7 | 211.4 | *211.4* | 194.4 | 179.0 | 165.1 | 152.7 |
| 7.5° | 597.1 | 583.2 | 538.4 | 464.4 | 367.2 | 302.4 | *297.8* | 242.2 | 205.2 | 177.4 | 154.3 |
| 10° | 1370.0 | 1322.2 | 1259.0 | 1081.5 | 799.2 | 558.5 | *547.7* | 353.3 | 245.3 | 191.3 | 157.4 |
| 12.5° | 2244.8 | 2283.4 | 2156.9 | 1877.6 | 1547.5 | 1151.0 | *1073.8* | 595.5 | 324.0 | 209.8 | 160.5 |
| 15° | 3040.9 | 3031.7 | 2960.7 | 2732.4 | 2351.3 | 1823.6 | *1775.8* | 1035.2 | 464.4 | 239.1 | 163.5 |
| 17.5° | 3636.5 | 3625.7 | 3557.8 | 3411.2 | 3118.1 | 2590.4 | *2548.8* | 1650.8 | 728.2 | 280.8 | 166.6 |
| 20° | 4264.4 | 4250.5 | 4154.8 | 4037.6 | 3781.5 | 3332.5 | *3283.1* | 2338.9 | 1140.2 | 348.7 | 166.6 |
| 22.5° | 5017.3 | 4991.1 | 4889.2 | 4690.2 | 4420.2 | 4029.9 | *3985.1* | 3042.5 | 1650.8 | 459.8 | 174.3 |
| 25° | 5927.6 | 5882.8 | 5742.4 | 5563.5 | 5237.9 | 4719.5 | *4671.7* | 3826.2 | 2266.4 | 627.9 | 182.1 |
| 27.5° | 6965.9 | 6973.6 | 6783.8 | 6481.4 | 6044.8 | 5515.6 | *5426.1* | 4528.2 | 2903.6 | 868.6 | 191.3 |
| 30° | 8198.6 | 8121.5 | 7854.6 | 7502.8 | 7078.5 | 6404.3 | *6317.9* | 5227.1 | 3619.5 | 1223.5 | 206.7 |
| 32.5° | 9352.6 | 9269.3 | 8909.9 | 8467.1 | 8011.9 | 7300.7 | *7229.7* | 6012.4 | 4270.6 | 1643.1 | 234.5 |
| 35° | 10343.1 | 10284.5 | 9781.6 | 9241.6 | 8837.3 | 8201.7 | *8180.1* | 6888.7 | 5035.8 | 2095.2 | 265.4 |
| 37.5° | 11214.8 | 11108.4 | 10461.9 | 9901.9 | 9491.5 | 8922.2 | *8875.9* | 7691.0 | 5773.3 | 2619.7 | 311.7 |
| 40° | 11958.5 | 11899.9 | 11111.5 | 10375.5 | 10042.3 | 9533.2 | *9474.5* | 8394.5 | 6535.4 | 3229.1 | 368.7 |
| 42.5° | 12754.6 | 12677.5 | 11912.2 | 11086.8 | 10472.7 | 9928.1 | *9889.6* | 8974.7 | 7214.3 | 3898.7 | 453.6 |
| 45° | 13654.1 | 13510.6 | 12839.4 | 12098.9 | 11165.5 | 10337.0 | *10293.8* | 9491.5 | 7910.1 | 4617.7 | 557.0 |
| 47.5° | 14615.2 | 14490.3 | 13947.2 | 13427.3 | 12353.5 | 11011.2 | *10918.6* | 9931.2 | 8601.3 | 5447.7 | 688.1 |
| 50° | 15593.4 | 15596.5 | 15189.2 | 14939.2 | 13805.3 | 12106.6 | *11975.5* | 10577.7 | 9328.0 | 6336.4 | 882.5 |
| 52.5° | 16732.0 | 16761.3 | 16755.2 | 16570.0 | 15690.6 | 13897.8 | *13721.9* | 11558.9 | 10171.9 | 7373.2 | 1151.0 |
| 55° | 17208.8 | 17261.2 | 17602.2 | 18012.6 | 17773.4 | 16168.9 | *15980.7* | 13251.4 | 11290.4 | 8528.8 | 1549.0 |
| 57.5° | 16818.4 | 16877.0 | 17347.6 | 18066.6 | 18615.8 | 18157.6 | *18136.0* | 15454.5 | 12763.9 | 9929.7 | 2200.1 |
| 59° | *16354.0* | *16346.3* | *16829.2* | *17591.4* | *18331.9* | *18629.7* | *18660.6* | *16944.9* | *14047.5* | *10912.5* | *2761.7* |
| 60° | 16045.5 | 16051.6 | 16372.5 | 17154.8 | 17941.6 | 18458.4 | *18578.8* | 17822.8 | 14797.3 | 11619.1 | 3243.0 |
| 62.5° | 14854.4 | 14925.4 | 15179.9 | 15906.6 | 16653.3 | 17230.3 | *17435.5* | 18605.0 | 16943.4 | 13288.4 | 4917.0 |
| 65° | 13560.0 | 13564.6 | 13927.1 | 14548.9 | 15264.8 | 15670.5 | *15800.1* | 17387.7 | 18376.7 | 14988.6 | 7112.5 |
| 67.5° | 11250.3 | 11344.4 | 11756.4 | 12763.9 | 13709.6 | 14223.4 | *14322.1* | 15135.2 | 17782.7 | 16096.4 | 8212.5 |
| 70° | 7873.1 | 7996.5 | 8584.3 | 9891.1 | 11299.7 | 12143.6 | *12137.5* | 12581.8 | 15650.5 | 15602.7 | 6962.8 |
| 72.5° | 3931.1 | 4144.0 | 4623.9 | 6023.2 | 7729.6 | 9054.9 | *9334.1* | 10121.0 | 12572.5 | 12959.8 | 5194.7 |
| 75° | 1737.2 | 1749.6 | 2022.7 | 2727.7 | 3841.7 | 5524.9 | *5774.8* | 8033.5 | 9645.8 | 9007.1 | 3752.2 |
| 77.5° | 1010.6 | 1019.8 | 1069.2 | 1225.0 | 1556.7 | 2707.7 | *2988.5* | 5268.8 | 6816.2 | 5234.8 | 2446.9 |
| 80° | 367.2 | 376.5 | 374.9 | 464.4 | 681.9 | 1066.1 | *1188.0* | 2553.4 | 4546.7 | 2757.0 | 1282.1 |
| 82.5° | 225.3 | 225.3 | 217.5 | 219.1 | 248.4 | 408.9 | *447.4* | 1087.7 | 2214.0 | 1357.7 | 367.2 |
| 85° | 111.1 | 117.3 | 125.0 | 140.4 | 166.6 | 202.1 | *214.5* | 311.7 | 745.2 | 328.6 | 87.9 |
| 87.5° | 66.3 | 67.9 | 74.1 | 89.5 | 111.1 | 145.0 | *154.3* | 211.4 | 266.9 | 220.6 | 21.6 |
| 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: P1066923
CATALOG NUMBER: NAV-SA4C-740-U-T3BC

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 145.0 | 145.0 | 145.0 | 145.0 | 145.0 | 145.0 | 145.0 | 145.0 | 145.0 | 145.0 | 145.0 |
| 2.5° | 146.6 | 145.0 | 137.3 | 131.1 | 125.0 | 118.8 | 114.2 | 109.5 | 109.5 | 111.1 | 109.5 |
| 5° | 146.6 | 140.4 | 128.1 | 117.3 | 108.0 | 100.3 | 92.6 | 86.4 | 84.9 | 84.9 | 86.4 |
| 7.5° | 145.0 | 137.3 | 120.3 | 106.5 | 94.1 | 83.3 | 75.6 | 67.9 | 66.3 | 67.9 | 66.3 |
| 10° | 143.5 | 134.2 | 114.2 | 97.2 | 80.2 | 69.4 | 58.6 | 50.9 | 50.9 | 50.9 | 52.5 |
| 12.5° | 143.5 | 129.6 | 108.0 | 87.9 | 69.4 | 57.1 | 46.3 | 38.6 | 37.0 | 37.0 | 37.0 |
| 15° | 141.9 | 126.5 | 101.8 | 77.1 | 58.6 | 43.2 | 33.9 | 26.2 | 26.2 | 26.2 | 26.2 |
| 17.5° | 138.9 | 121.9 | 94.1 | 67.9 | 46.3 | 32.4 | 23.1 | 15.4 | 15.4 | 18.5 | 18.5 |
| 20° | 135.8 | 117.3 | 84.9 | 55.5 | 38.6 | 24.7 | 15.4 | 9.3 | 9.3 | 13.9 | 15.4 |
| 22.5° | 137.3 | 117.3 | 78.7 | 49.4 | 30.9 | 18.5 | 12.3 | 7.7 | 6.2 | 10.8 | 13.9 |
| 25° | 138.9 | 114.2 | 71.0 | 43.2 | 23.1 | 13.9 | 9.3 | 3.1 | 1.5 | 3.1 | 4.6 |
| 27.5° | 138.9 | 111.1 | 61.7 | 33.9 | 17.0 | 10.8 | 4.6 | 0.0 | 0.0 | 0.0 | 0.0 |
| 30° | 137.3 | 106.5 | 54.0 | 27.8 | 12.3 | 6.2 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 |
| 32.5° | 135.8 | 101.8 | 49.4 | 21.6 | 10.8 | 3.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 35° | 137.3 | 95.7 | 43.2 | 17.0 | 6.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.1 |
| 37.5° | 141.9 | 89.5 | 37.0 | 13.9 | 4.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 40° | 148.1 | 84.9 | 30.9 | 10.8 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 42.5° | 160.5 | 84.9 | 27.8 | 7.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 45° | 175.9 | 84.9 | 23.1 | 6.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 47.5° | 195.9 | 86.4 | 20.1 | 6.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 50° | 220.6 | 89.5 | 18.5 | 4.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 52.5° | 239.1 | 86.4 | 17.0 | 4.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 55° | 271.5 | 83.3 | 15.4 | 3.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 57.5° | 314.7 | 78.7 | 15.4 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 59° | *357.9* | *72.5* | *15.4* | *1.5* | *0.0* | *0.0* | *0.0* | *0.0* | *0.0* | *0.0* | *0.0* |
| 60° | 407.3 | 69.4 | 13.9 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 62.5° | 672.7 | 61.7 | 12.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 65° | 1299.1 | 58.6 | 10.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 67.5° | 2099.8 | 58.6 | 7.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 70° | 2207.8 | 58.6 | 6.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 72.5° | 1468.8 | 47.8 | 4.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 75° | 786.8 | 43.2 | 4.6 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 77.5° | 424.3 | 40.1 | 6.2 | 3.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 80° | 186.7 | 29.3 | 7.7 | 4.6 | 3.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 82.5° | 74.1 | 20.1 | 9.3 | 7.7 | 6.2 | 3.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85° | 35.5 | 15.4 | 12.3 | 10.8 | 7.7 | 4.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87.5° | 17.0 | 15.4 | 13.9 | 12.3 | 10.8 | 7.7 | 1.5 | 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: SP1-2407-184-1

Test Date: 10/09/2024

Luminaire Tested: GSS-SB1A-740-U-5WQ

Data in this report applies to families of products including GSS-SB1A-740-U-5WQ

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

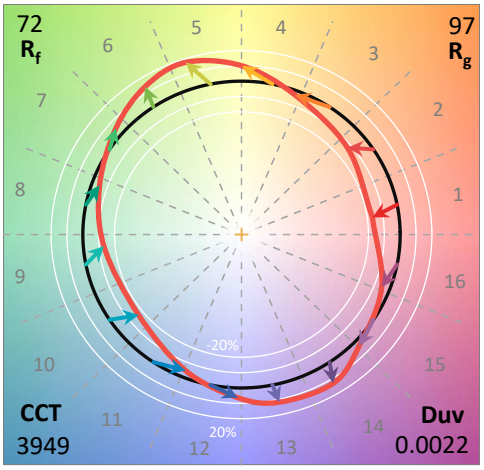
## Test Information

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | SP1-2407-184-1 |
| 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-740-U-5WQ** |
| Description: | GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 70 CRI 4000K CCT 26 LEDS |

## Spectral Parameters

| | |
|---|---|
| CCT (K): | 3949 |
| CIE u': | 0.2248 |
| CIE v': | 0.5053 |
| Duv: | 0.0022 |
| CIE x: | 0.3844 |
| CIE y: | 0.3840 |
| CIE z: | 0.2316 |
| Peak Wavelength (nm): | 440 |
| Dominant Wavelength (nm): | 578 |
| Purity: | 30.60026 |
| Rf: | 71.8 |
| Rg: | 96.5 |

| | |
|---|---|
| CRI (Ra): | 70.7 |
| R1: | 68.0 |
| R2: | 76.0 |
| R3: | 84.3 |
| R4: | 72.0 |
| R5: | 68.6 |
| R6: | 68.3 |
| R7: | 77.9 |
| R8: | 50.3 |
| R9: | -36.7 |
| R10: | 45.1 |
| R11: | 70.7 |
| R12: | 47.1 |
| R13: | 68.5 |
| R14: | 91.1 |
| R15: | 58.7 |




## Test Conditions

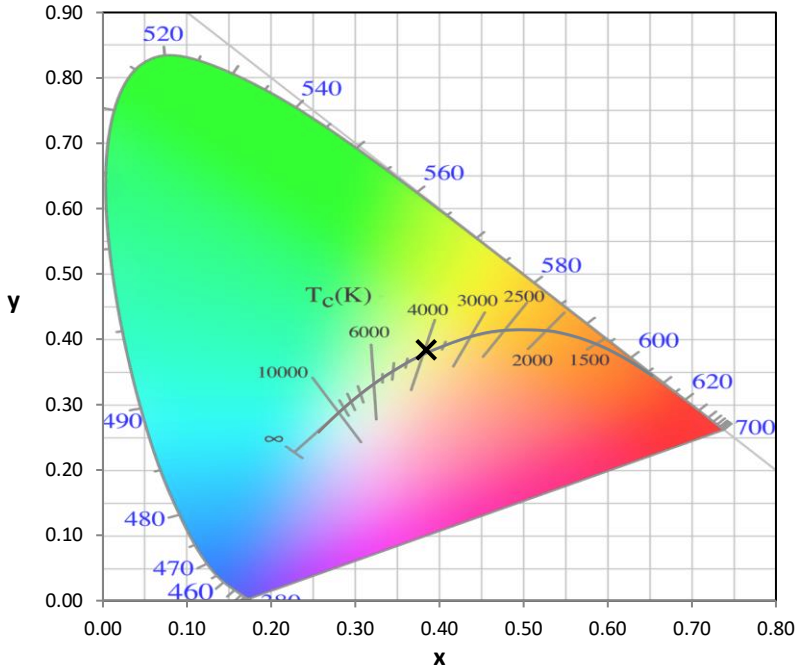
| | |
|---|---|
| Stabilization Time: | 34M |
| Operation Time: | 1H 34M |
| Sphere Temperature (°C): | 25.2 |

REPORT NUMBER: SP1-2407-184-1

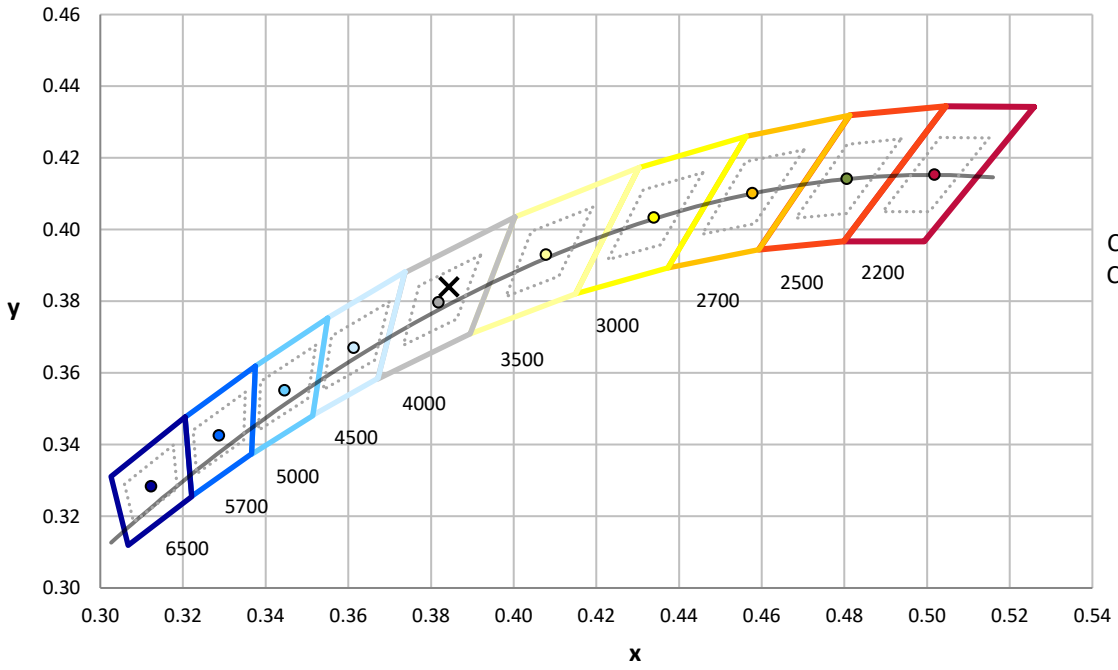
| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 | 2/8/2024 | 2/8/2025 |
| AC Power Source | IN0063 | 10/24/2023 | 10/24/2024 |
| DC 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: SP1-2407-184-1

## CIE 1931 Chromaticity Diagram




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




CCT = 3949K
CIE x = 0.3844
CIE y = 0.3840
Duv = 0.0022

Point lies inside the ANSI 4000K 4-step quadrangle

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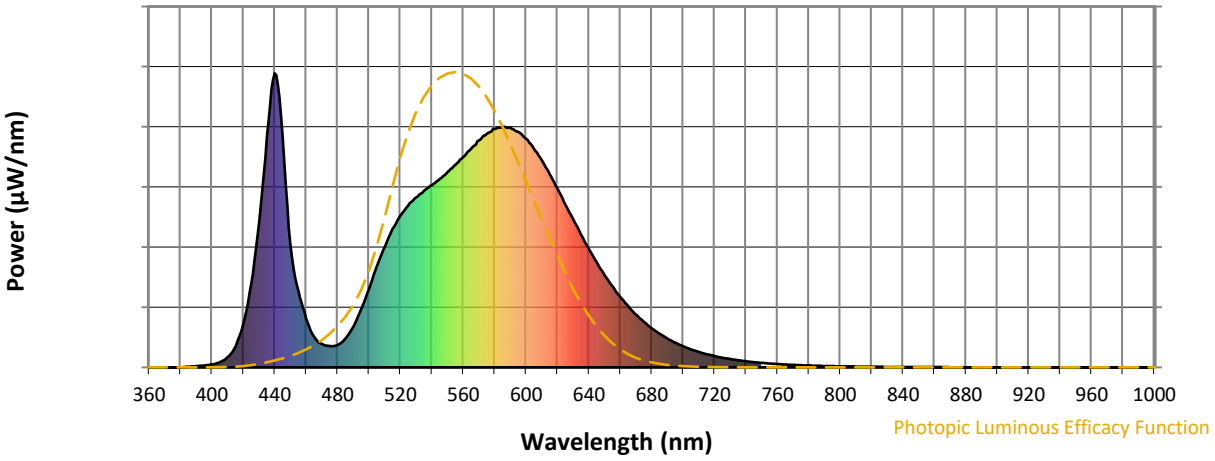
## Photopic Flux vs. Wavelength




## 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 | 139 | NR | 620 | 607 | NR | 750 | 15 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 198 | NR | 625 | 554 | NR | 755 | 13 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 267 | NR | 630 | 504 | NR | 760 | 11 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 343 | NR | 635 | 452 | NR | 765 | 10 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 410 | NR | 640 | 403 | NR | 770 | 8 | NR | 900 | 0 | NR |
| 385 | 2 | NR | 515 | 470 | NR | 645 | 357 | NR | 775 | 7 | NR | 905 | 0 | NR |
| 390 | 4 | NR | 520 | 516 | NR | 650 | 314 | NR | 780 | 6 | NR | 910 | 0 | NR |
| 395 | 7 | NR | 525 | 550 | NR | 655 | 275 | NR | 785 | 5 | NR | 915 | 0 | NR |
| 400 | 10 | NR | 530 | 578 | NR | 660 | 240 | NR | 790 | 5 | NR | 920 | 0 | NR |
| 405 | 17 | NR | 535 | 601 | NR | 665 | 208 | NR | 795 | 4 | NR | 925 | 0 | NR |
| 410 | 35 | NR | 540 | 620 | NR | 670 | 179 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 70 | NR | 545 | 641 | NR | 675 | 155 | NR | 805 | 3 | NR | 935 | 0 | NR |
| 420 | 147 | NR | 550 | 664 | NR | 680 | 133 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 285 | NR | 555 | 689 | NR | 685 | 114 | NR | 815 | 2 | NR | 945 | 0 | NR |
| 430 | 487 | NR | 560 | 715 | NR | 690 | 98 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 787 | NR | 565 | 743 | NR | 695 | 84 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 1000 | NR | 570 | 771 | NR | 700 | 72 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 783 | NR | 575 | 794 | NR | 705 | 61 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 417 | NR | 580 | 811 | NR | 710 | 52 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 261 | NR | 585 | 817 | NR | 715 | 45 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 167 | NR | 590 | 815 | NR | 720 | 39 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 104 | NR | 595 | 801 | NR | 725 | 33 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 79 | NR | 600 | 777 | NR | 730 | 28 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 73 | NR | 605 | 744 | NR | 735 | 24 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 76 | NR | 610 | 704 | NR | 740 | 21 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 98 | NR | 615 | 657 | NR | 745 | 18 | NR | 875 | 1 | NR | | | |

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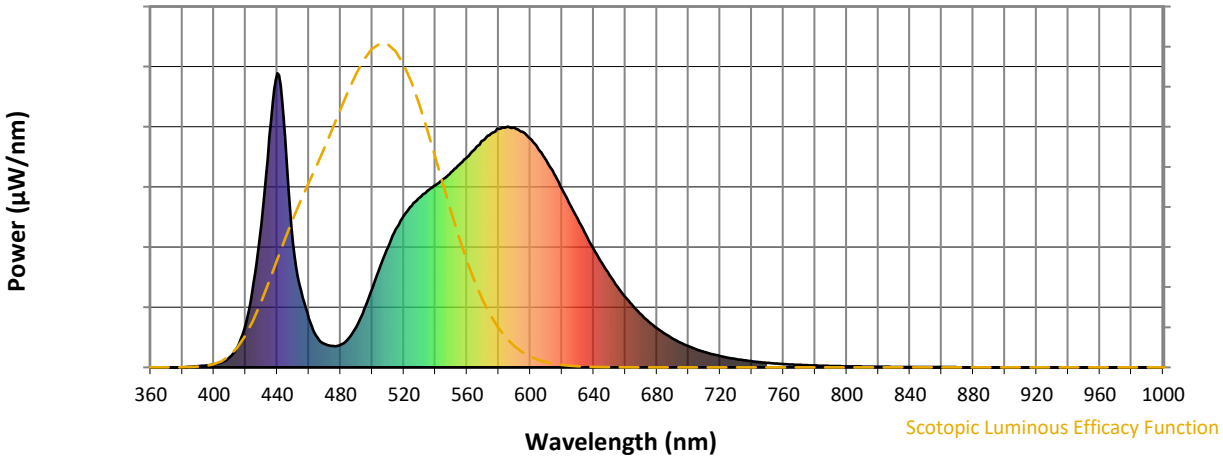
## Scotopic Flux vs. Wavelength




**Scotopic Lumens: NR** **S/P: 1.47**

| 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 | 139 | NR | 620 | 607 | NR | 750 | 15 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 198 | NR | 625 | 554 | NR | 755 | 13 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 267 | NR | 630 | 504 | NR | 760 | 11 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 343 | NR | 635 | 452 | NR | 765 | 10 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 410 | NR | 640 | 403 | NR | 770 | 8 | NR | 900 | 0 | NR |
| 385 | 2 | NR | 515 | 470 | NR | 645 | 357 | NR | 775 | 7 | NR | 905 | 0 | NR |
| 390 | 4 | NR | 520 | 516 | NR | 650 | 314 | NR | 780 | 6 | NR | 910 | 0 | NR |
| 395 | 7 | NR | 525 | 550 | NR | 655 | 275 | NR | 785 | 5 | NR | 915 | 0 | NR |
| 400 | 10 | NR | 530 | 578 | NR | 660 | 240 | NR | 790 | 5 | NR | 920 | 0 | NR |
| 405 | 17 | NR | 535 | 601 | NR | 665 | 208 | NR | 795 | 4 | NR | 925 | 0 | NR |
| 410 | 35 | NR | 540 | 620 | NR | 670 | 179 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 70 | NR | 545 | 641 | NR | 675 | 155 | NR | 805 | 3 | NR | 935 | 0 | NR |
| 420 | 147 | NR | 550 | 664 | NR | 680 | 133 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 285 | NR | 555 | 689 | NR | 685 | 114 | NR | 815 | 2 | NR | 945 | 0 | NR |
| 430 | 487 | NR | 560 | 715 | NR | 690 | 98 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 787 | NR | 565 | 743 | NR | 695 | 84 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 1000 | NR | 570 | 771 | NR | 700 | 72 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 783 | NR | 575 | 794 | NR | 705 | 61 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 417 | NR | 580 | 811 | NR | 710 | 52 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 261 | NR | 585 | 817 | NR | 715 | 45 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 167 | NR | 590 | 815 | NR | 720 | 39 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 104 | NR | 595 | 801 | NR | 725 | 33 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 79 | NR | 600 | 777 | NR | 730 | 28 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 73 | NR | 605 | 744 | NR | 735 | 24 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 76 | NR | 610 | 704 | NR | 740 | 21 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 98 | NR | 615 | 657 | NR | 745 | 18 | NR | 875 | 1 | NR | | | |

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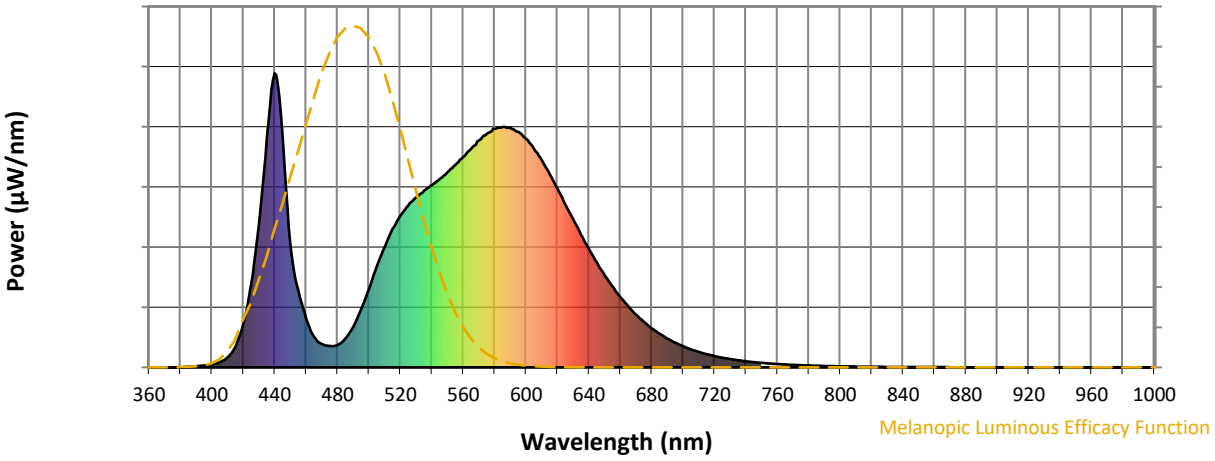
## Melanopic Flux vs. Wavelength




**Melanopic Lumens: NR** **M/P: 2.78**

| 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 | 139 | NR | 620 | 607 | NR | 750 | 15 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 198 | NR | 625 | 554 | NR | 755 | 13 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 267 | NR | 630 | 504 | NR | 760 | 11 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 343 | NR | 635 | 452 | NR | 765 | 10 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 410 | NR | 640 | 403 | NR | 770 | 8 | NR | 900 | 0 | NR |
| 385 | 2 | NR | 515 | 470 | NR | 645 | 357 | NR | 775 | 7 | NR | 905 | 0 | NR |
| 390 | 4 | NR | 520 | 516 | NR | 650 | 314 | NR | 780 | 6 | NR | 910 | 0 | NR |
| 395 | 7 | NR | 525 | 550 | NR | 655 | 275 | NR | 785 | 5 | NR | 915 | 0 | NR |
| 400 | 10 | NR | 530 | 578 | NR | 660 | 240 | NR | 790 | 5 | NR | 920 | 0 | NR |
| 405 | 17 | NR | 535 | 601 | NR | 665 | 208 | NR | 795 | 4 | NR | 925 | 0 | NR |
| 410 | 35 | NR | 540 | 620 | NR | 670 | 179 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 70 | NR | 545 | 641 | NR | 675 | 155 | NR | 805 | 3 | NR | 935 | 0 | NR |
| 420 | 147 | NR | 550 | 664 | NR | 680 | 133 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 285 | NR | 555 | 689 | NR | 685 | 114 | NR | 815 | 2 | NR | 945 | 0 | NR |
| 430 | 487 | NR | 560 | 715 | NR | 690 | 98 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 787 | NR | 565 | 743 | NR | 695 | 84 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 1000 | NR | 570 | 771 | NR | 700 | 72 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 783 | NR | 575 | 794 | NR | 705 | 61 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 417 | NR | 580 | 811 | NR | 710 | 52 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 261 | NR | 585 | 817 | NR | 715 | 45 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 167 | NR | 590 | 815 | NR | 720 | 39 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 104 | NR | 595 | 801 | NR | 725 | 33 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 79 | NR | 600 | 777 | NR | 730 | 28 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 73 | NR | 605 | 744 | NR | 735 | 24 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 76 | NR | 610 | 704 | NR | 740 | 21 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 98 | NR | 615 | 657 | NR | 745 | 18 | NR | 875 | 1 | NR | | | |

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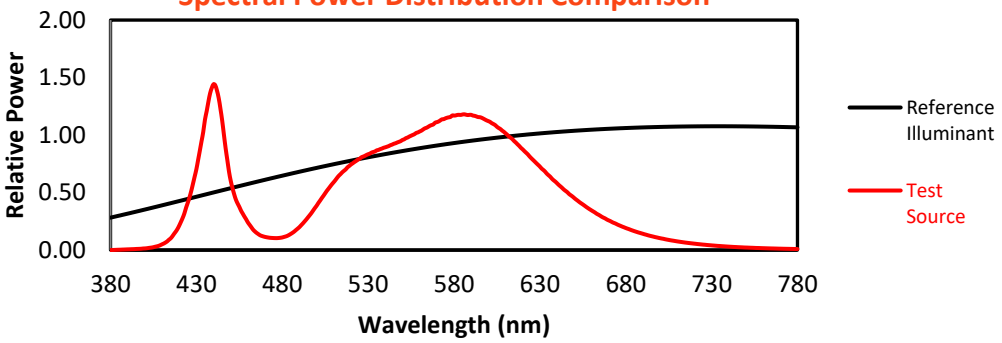
# TM-30-18

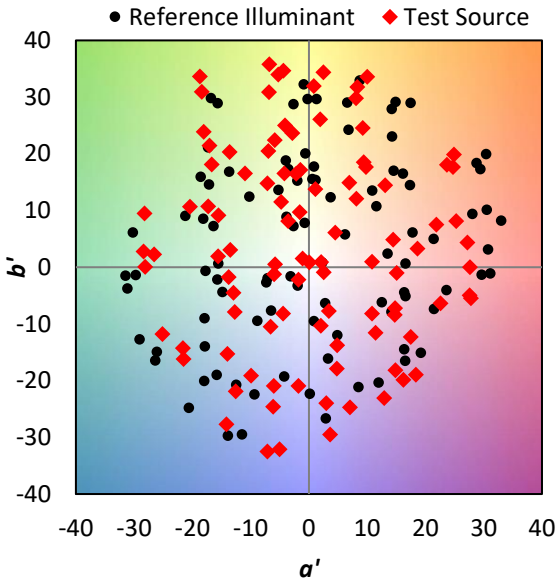
## Summary

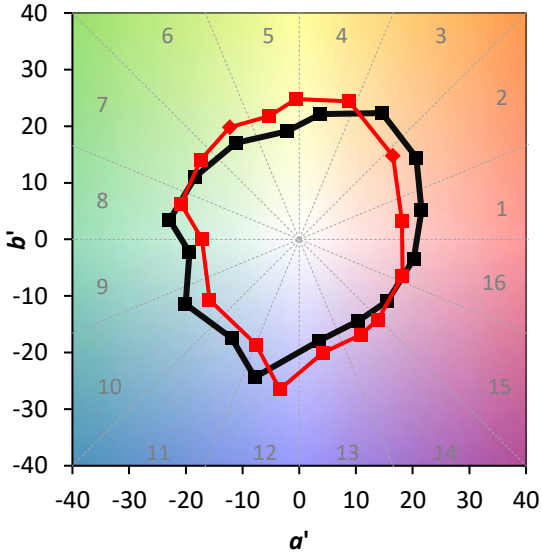
$R_f$ = 71.8
$R_g$ = 96.5
CIE $R_a$ = 70.7
$R_9$ = -36.7

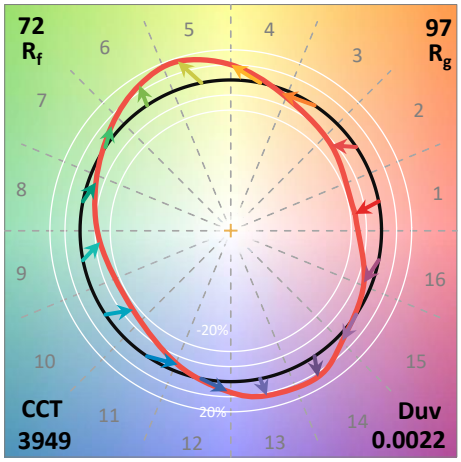
## Spectral Power Distribution Comparison

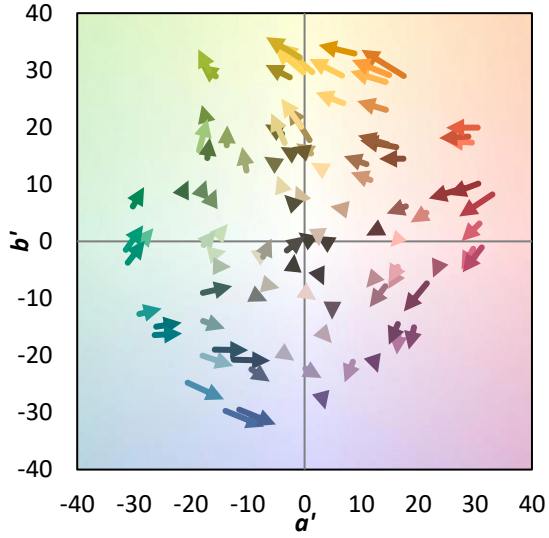



## Color Vector Graphics



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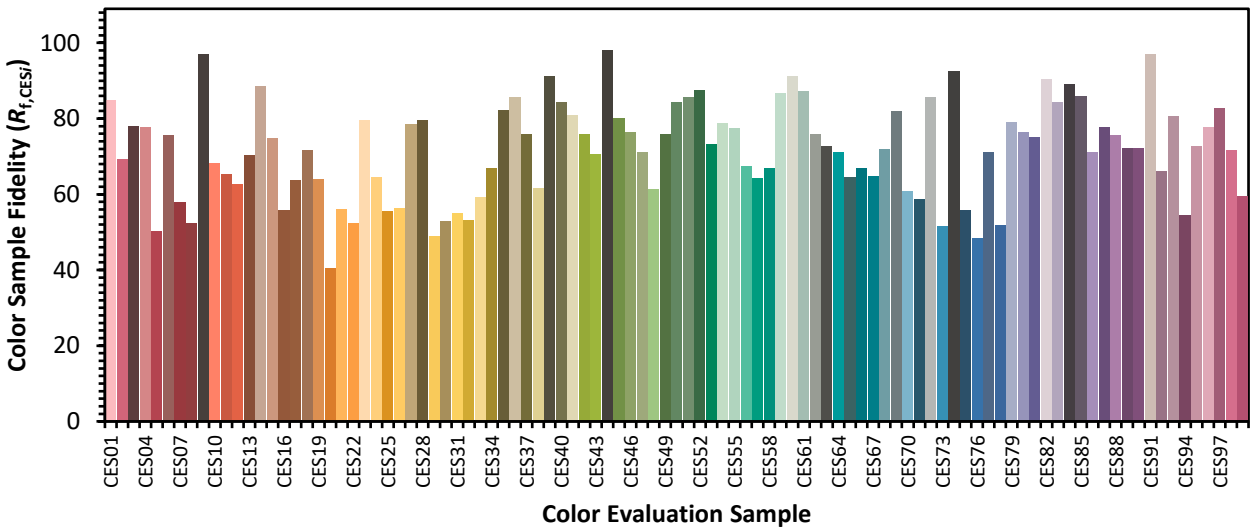
**Individual Sample Fidelity Index ($R_{f,i}$)**

| | | | |
|---|---|---|---|
| CES01 = 85 | CES26 = 56 | CES51 = 86 | CES76 = 48 |
| CES02 = 61 | CES27 = 79 | CES52 = 88 | CES77 = 71 |
| CES03 = 30 | CES28 = 80 | CES53 = 73 | CES78 = 52 |
| CES04 = 70 | CES29 = 49 | CES54 = 79 | CES79 = 79 |
| CES05 = 47 | CES30 = 53 | CES55 = 77 | CES80 = 77 |
| CES06 = 50 | CES31 = 55 | CES56 = 67 | CES81 = 75 |
| CES07 = 40 | CES32 = 53 | CES57 = 64 | CES82 = 90 |
| CES08 = 39 | CES33 = 59 | CES58 = 67 | CES83 = 84 |
| CES09 = 29 | CES34 = 67 | CES59 = 87 | CES84 = 89 |
| CES10 = 74 | CES35 = 82 | CES60 = 91 | CES85 = 86 |
| CES11 = 57 | CES36 = 86 | CES61 = 87 | CES86 = 71 |
| CES12 = 63 | CES37 = 76 | CES62 = 76 | CES87 = 78 |
| CES13 = 42 | CES38 = 62 | CES63 = 73 | CES88 = 76 |
| CES14 = 74 | CES39 = 91 | CES64 = 71 | CES89 = 72 |
| CES15 = 71 | CES40 = 84 | CES65 = 64 | CES90 = 72 |
| CES16 = 46 | CES41 = 81 | CES66 = 67 | CES91 = 97 |
| CES17 = 49 | CES42 = 76 | CES67 = 65 | CES92 = 66 |
| CES18 = 56 | CES43 = 71 | CES68 = 72 | CES93 = 81 |
| CES19 = 72 | CES44 = 98 | CES69 = 82 | CES94 = 55 |
| CES20 = 65 | CES45 = 80 | CES70 = 61 | CES95 = 73 |
| CES21 = 86 | CES46 = 76 | CES71 = 59 | CES96 = 78 |
| CES22 = 78 | CES47 = 71 | CES72 = 86 | CES97 = 83 |
| CES23 = 92 | CES48 = 61 | CES73 = 52 | CES98 = 72 |
| CES24 = 91 | CES49 = 76 | CES74 = 93 | CES99 = 60 |
| CES25 = 72 | CES50 = 84 | CES75 = 56 | |



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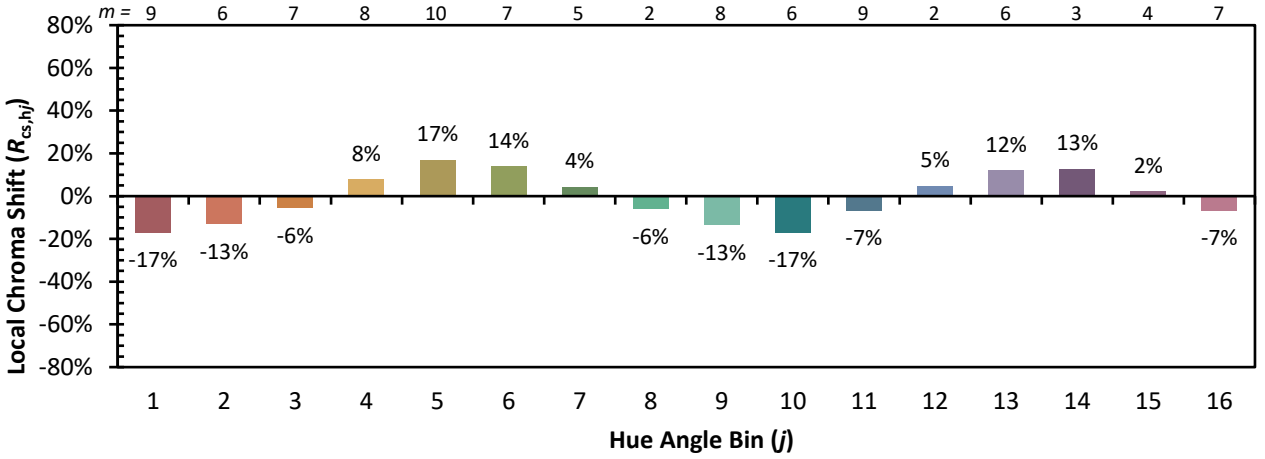
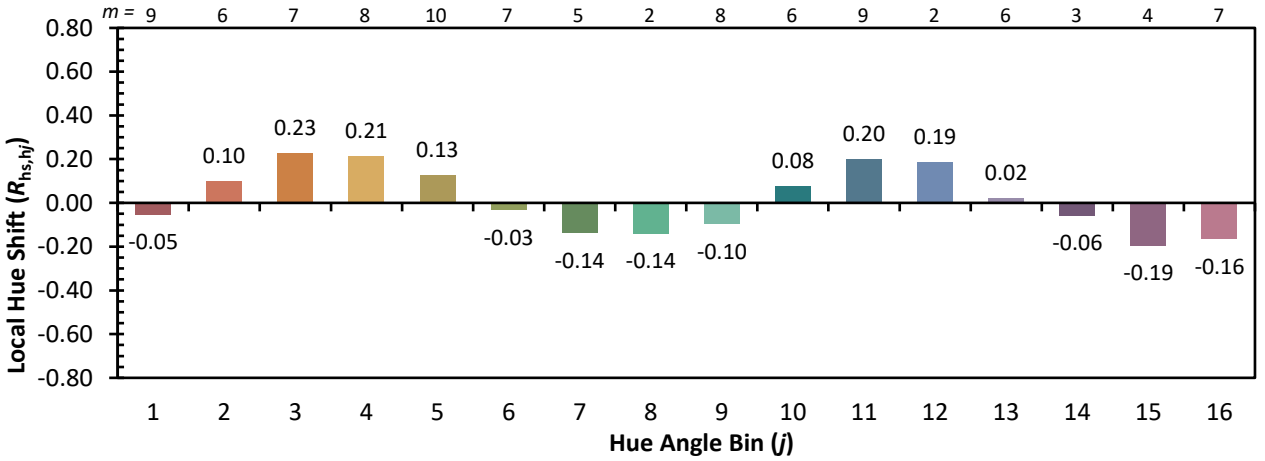
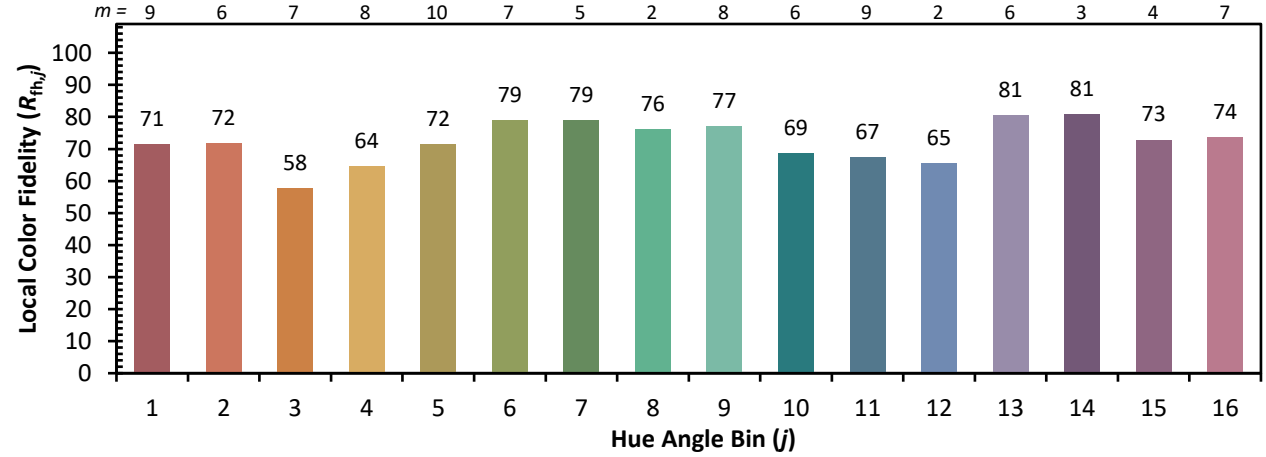
## Color Rendition by Hue-Angle Bin



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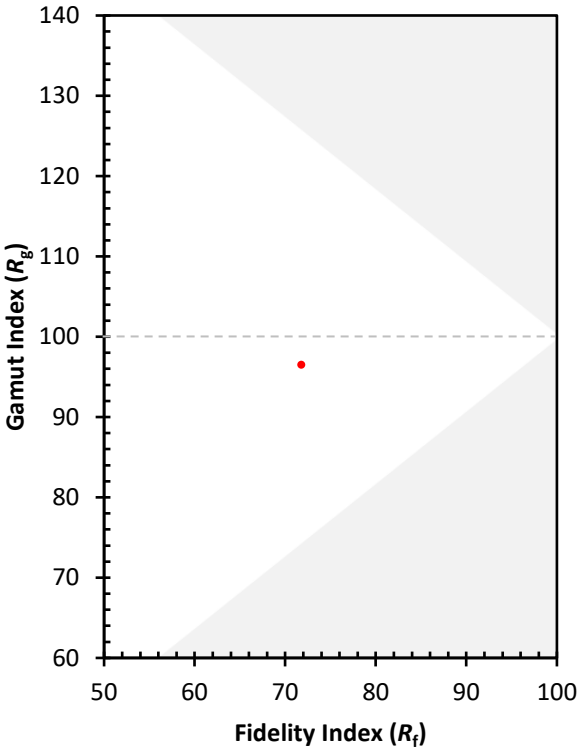
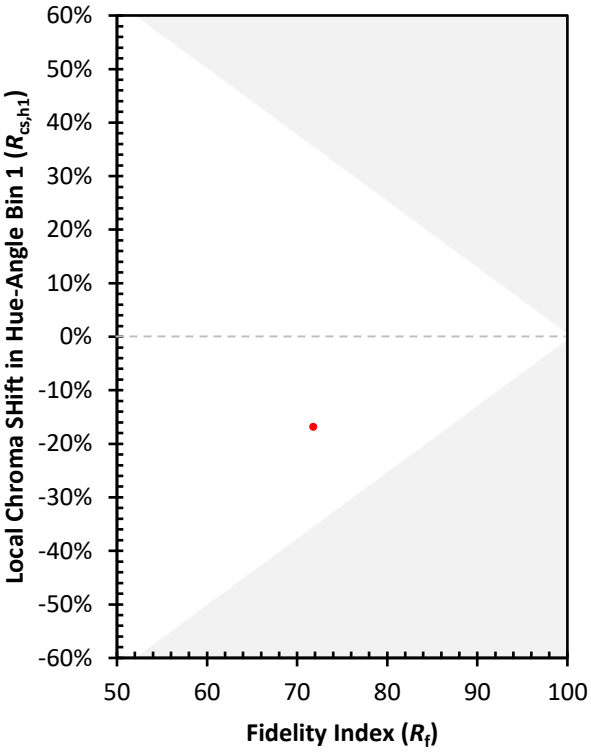
## Measure Comparisons

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