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

Scaled data based on original data using

LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

Brand: STREETWORKS

Report Number: P362636

Luminaire Tested: NVN-SA4C-760-U-T2R-HSS

Issue Date: 3/3/2020

Report Generated By 670295436 / DESKTOP-CAGE97P

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

Scaled Data Report

**Test Information**

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | P362636 |
| | TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-9) |
| Test Lab: | INNOVATION CENTER |
| Issue Date: | 3/3/2020 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | STREETWORKS |
| Catalog Number: | NVN-SA4C-760-U-T2R-HSS |
| Description: | NAVION ROADWAY AND AREA LUMINAIRE |
| | (4) 70 CRI, 5700K, 1050mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II ROADWAY OPTICS WITH HOUSE SIDE SHIELD |
| Light Source: | - |
| Ballast/Driver: | ELECTRONIC DRIVER |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 23537 lumens |
| Efficiency: | N/A |
| Efficacy: | 104.6 lumens/watt |
| Luminous Opening: | Rectangular (W 1' x L: 1.5' x H: 0') |
| IES Classification: | Type II - Medium |
| BUG Rating: | B1 - U0 - G3 |

| | |
|---|---|
| Input Watts (W): | 225 |
| 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: | 28.75 FT |

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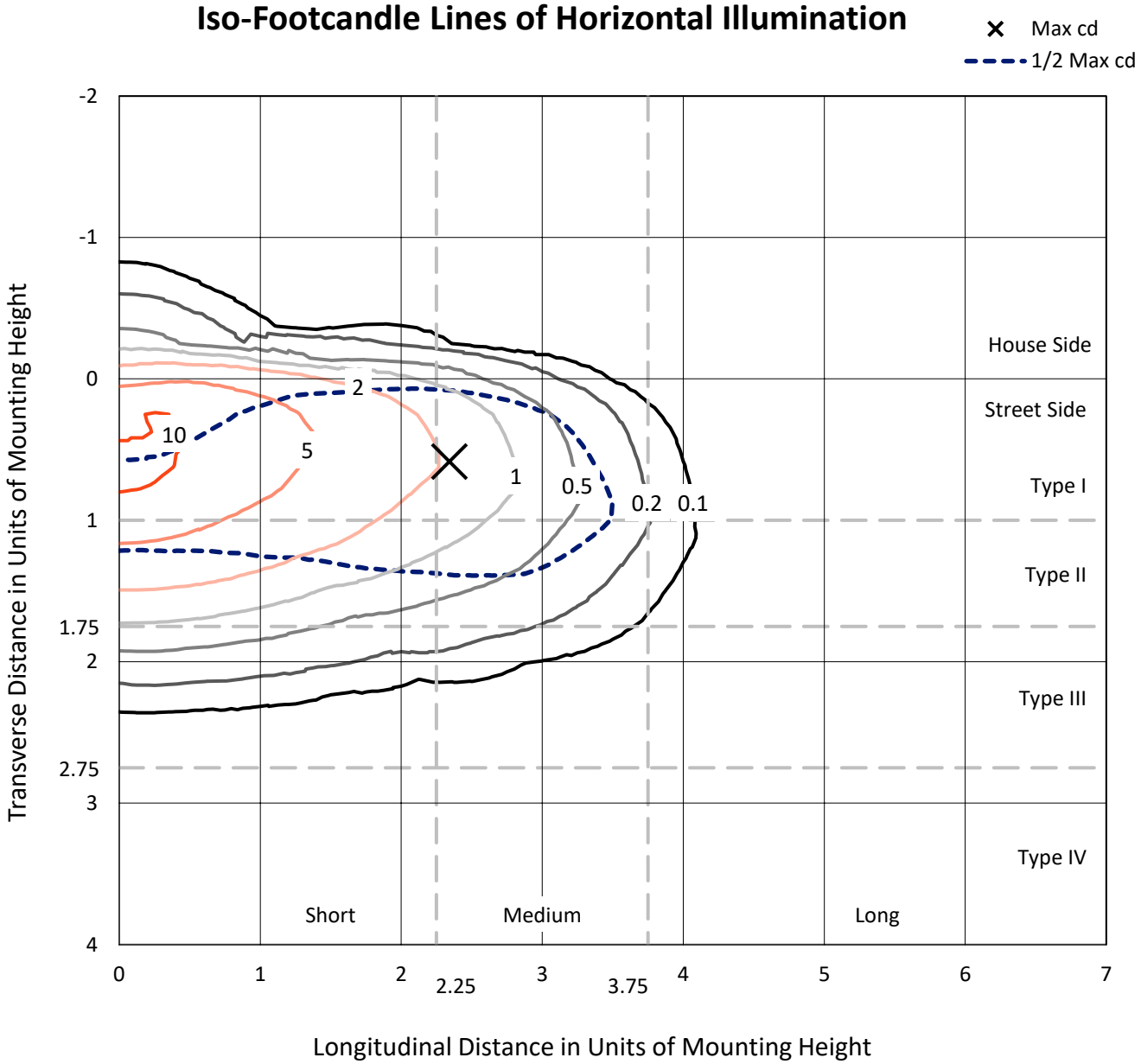
Scaled Data Report

REPORT NUMBER: P362636
CATALOG NUMBER: NVN-SA4C-760-U-T2R-HSS

## Iso-Footcandle Lines of Horizontal Illumination




Based on 25 foot mounting height. Maximum calculated value = 11.2 fc
Type II - Medium - N/A

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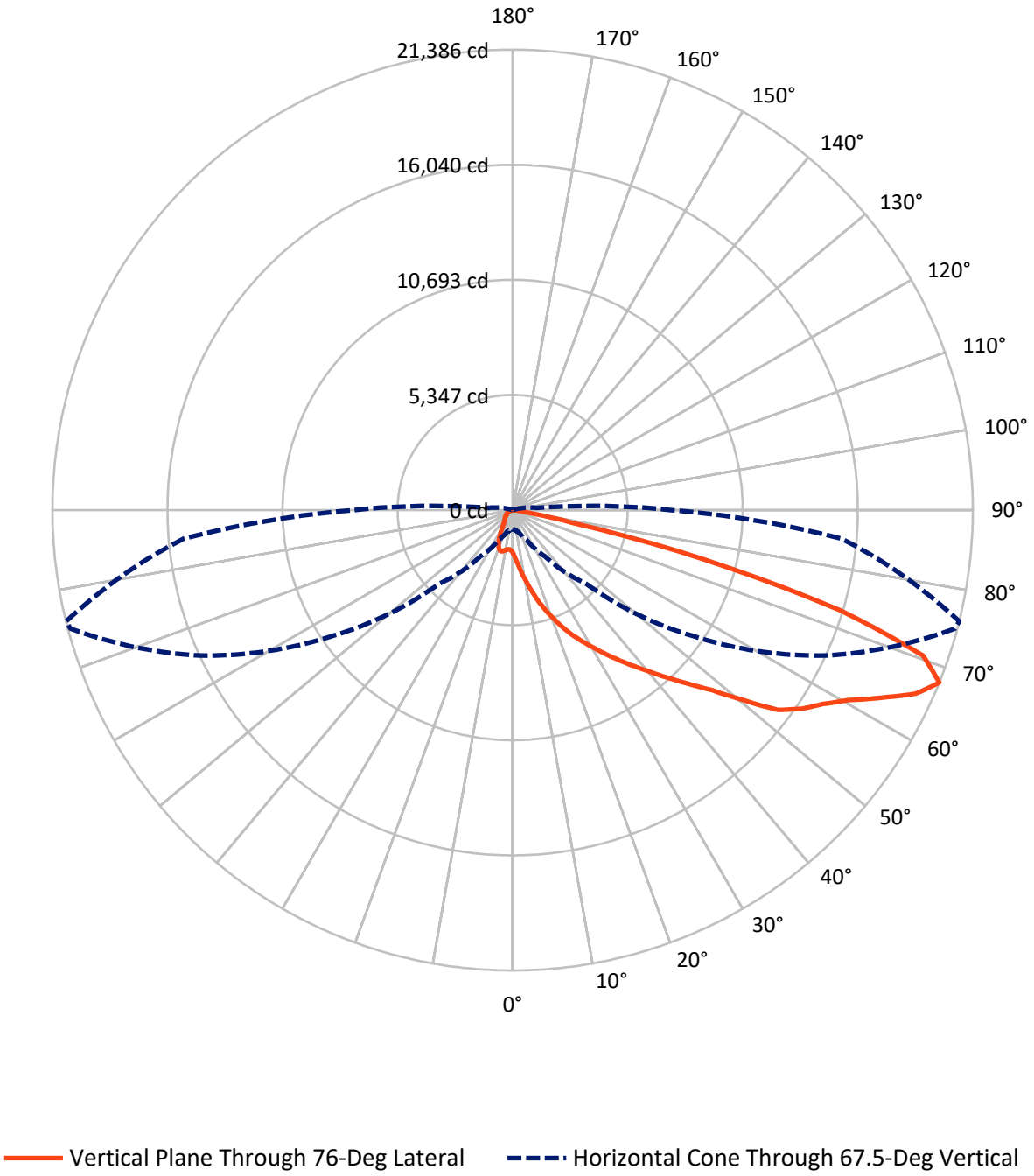
## Luminous Intensity Polar Plot



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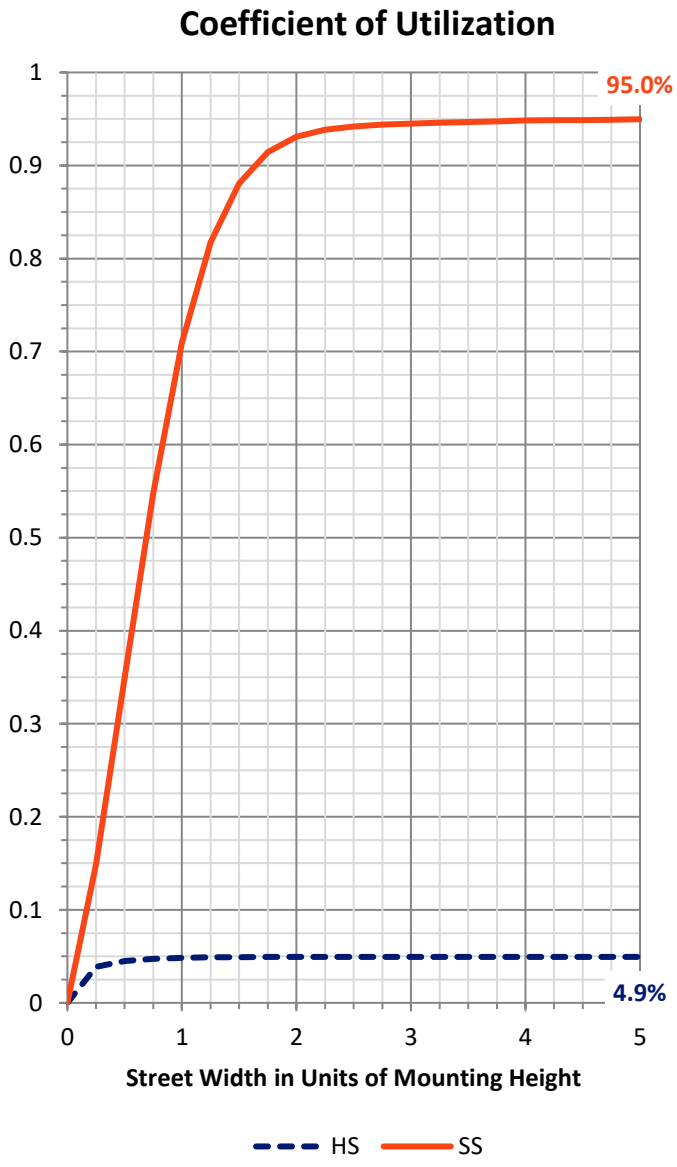
REPORT NUMBER: P362636
CATALOG NUMBER: NVN-SA4C-760-U-T2R-HSS

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 1168.8 | 0.0 | 1168.8 |
| | % Fixture | 5.0 | 0.0 | 5.0 |
| **Street Side** | Lumens | 22368.2 | 0.0 | 22368.2 |
| | % Fixture | 95.0 | 0.0 | 95.0 |
| **Total** | Lumens | 23537.0 | 0.0 | 23537.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 248.3 | 1.1 |
| 10°-20° | 984.2 | 4.2 |
| 20°-30° | 2002.5 | 8.5 |
| 30°-40° | 3475.7 | 14.8 |
| 40°-50° | 4910.8 | 20.9 |
| 50°-60° | 5569.1 | 23.7 |
| 60°-70° | 4619.0 | 19.6 |
| 70°-80° | 1673.1 | 7.1 |
| 80°-90° | 54.3 | 0.2 |
| 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° | 23537.0 | 100.0 |
| 0°-180° | 23537.0 | 100.0 |



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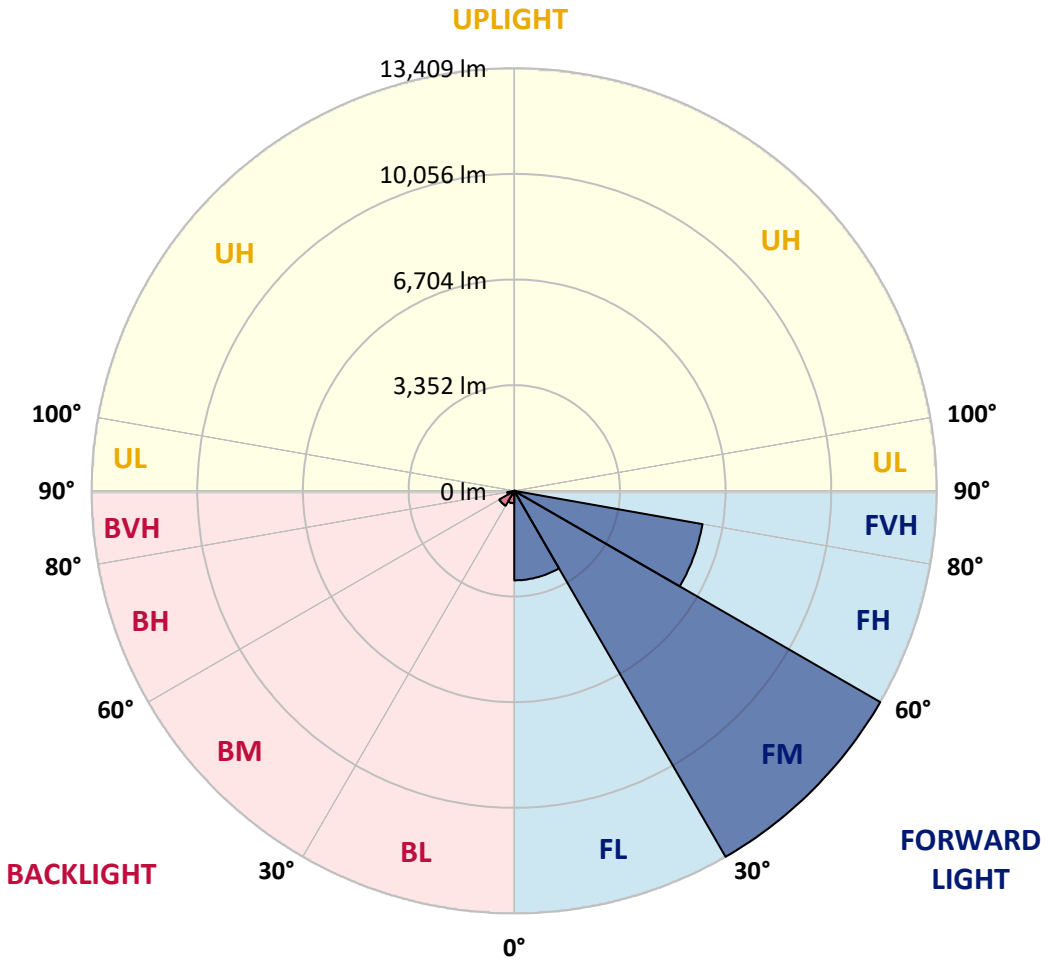
## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 2840.8 | 12.1 | | | |
| FM | (30°-60°) | 13408.5 | 57.0 | | | |
| FH | (60°-80°) | 6066.3 | 25.8 | | | G3/7500 |
| FVH | (80°-90°) | 52.5 | 0.2 | | | G1/100 |
| BL | (0°-30°) | 394.2 | 1.7 | B1/500 | | |
| BM | (30°-60°) | 547.0 | 2.3 | B1/1000 | | |
| BH | (60°-80°) | 225.9 | 1.0 | B1/500 | | G1/500 |
| BVH | (80°-90°) | 1.7 | 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-G3**
Type II Medium



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REPORT NUMBER: P362636
CATALOG NUMBER: NVN-SA4C-760-U-T2R-HSS

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 76° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 1996.6 | 1996.6 | 1996.6 | 1996.6 | 1996.6 | 1996.6 | 1996.6 | 1996.6 | 1996.6 | *1996.6* | 1996.6 |
| 2.5° | 2980.5 | 2913.5 | 2928.9 | 2885.6 | 2807.2 | 2646.3 | 2509.2 | 2379.2 | 2227.6 | *2222.5* | 2097.7 |
| 5° | 4019.0 | 3962.3 | 3955.1 | 3867.4 | 3725.1 | 3451.8 | 3185.7 | 2882.5 | 2544.2 | *2519.5* | 2254.4 |
| 7.5° | 4961.6 | 4916.3 | 4899.8 | 4795.6 | 4530.6 | 4264.5 | 3918.0 | 3472.4 | 2943.4 | *2898.0* | 2465.9 |
| 10° | 5685.6 | 5664.0 | 5668.1 | 5593.8 | 5366.9 | 5119.4 | 4664.6 | 4096.4 | 3396.1 | *3326.0* | 2719.6 |
| 12.5° | 6234.3 | 6239.4 | 6276.6 | 6231.2 | 6104.3 | 5920.8 | 5435.0 | 4761.6 | 3897.3 | *3801.4* | 3009.4 |
| 15° | 6637.5 | 6663.3 | 6731.4 | 6788.1 | 6778.8 | 6620.0 | 6174.5 | 5437.1 | 4429.5 | *4323.3* | 3332.2 |
| 17.5° | 6898.4 | 6927.3 | 7026.3 | 7152.1 | 7267.7 | 7230.5 | 6888.1 | 6088.9 | 4967.8 | *4845.1* | 3677.7 |
| 20° | 7127.4 | 7161.4 | 7267.7 | 7433.7 | 7649.2 | 7695.6 | 7470.8 | 6721.1 | 5505.1 | *5355.6* | 4034.5 |
| 22.5° | 7623.5 | 7622.4 | 7687.4 | 7784.3 | 7989.6 | 8109.2 | 7966.9 | 7307.9 | 6036.3 | *5880.5* | 4398.5 |
| 25° | 8520.7 | 8486.7 | 8464.0 | 8387.7 | 8433.0 | 8507.3 | 8427.9 | 7856.5 | 6570.5 | *6412.7* | 4767.8 |
| 27.5° | 9587.1 | 9607.7 | 9424.1 | 9218.9 | 9060.1 | 8983.8 | 8853.8 | 8365.0 | 7084.1 | *6910.8* | 5128.7 |
| 30° | 10712.2 | 10718.4 | 10501.8 | 10239.9 | 9890.3 | 9600.5 | 9375.7 | 8850.7 | 7612.1 | *7423.4* | 5479.4 |
| 32.5° | 11727.0 | 11686.8 | 11472.3 | 11115.5 | 10674.1 | 10348.2 | 9881.0 | 9393.2 | 8171.1 | *7988.5* | 5869.2 |
| 35° | 12531.5 | 12484.0 | 12223.1 | 11898.2 | 11440.3 | 11112.4 | 10550.3 | 9934.6 | 8758.9 | *8580.5* | 6260.1 |
| 37.5° | 13119.3 | 13063.6 | 12795.5 | 12461.3 | 12066.3 | 11875.6 | 11326.9 | 10523.5 | 9400.4 | *9208.6* | 6671.6 |
| 40° | 13323.5 | 13275.0 | 13106.9 | 12862.5 | 12544.9 | 12501.6 | 12150.9 | 11201.1 | 10098.6 | *9894.4* | 7137.7 |
| 42.5° | 13201.8 | 13154.4 | 13094.6 | 13012.1 | 12880.1 | 12921.3 | 12928.5 | 11973.5 | 10874.1 | *10673.0* | 7652.3 |
| 45° | 12719.2 | 12676.9 | 12738.8 | 12859.4 | 13023.4 | 13227.6 | 13638.1 | 12803.7 | 11740.5 | *11525.9* | 8247.4 |
| 47.5° | 12008.6 | 11977.7 | 12148.9 | 12450.0 | 12929.6 | 13492.6 | 14286.8 | 13676.2 | 12713.0 | *12513.9* | 8989.9 |
| 50° | 10997.9 | 10992.8 | 11335.1 | 11884.8 | 12622.2 | 13620.5 | 14957.1 | 14668.3 | 14064.0 | *13854.6* | 10022.3 |
| 52.5° | 9424.1 | 9434.4 | 10107.9 | 10987.6 | 12082.8 | 13533.9 | 15388.2 | 15943.0 | 15635.7 | *15418.1* | 10916.4 |
| 55° | 7925.6 | 7987.5 | 8465.0 | 9733.5 | 11255.7 | 13212.1 | 15536.7 | 16538.1 | 16503.0 | *16296.8* | 11413.5 |
| 57.5° | 6458.1 | 6570.5 | 7030.5 | 8215.4 | 10048.1 | 12470.6 | 15455.2 | 16795.9 | 17148.6 | *16990.9* | 12069.4 |
| 60° | 4867.8 | 4919.4 | 5449.5 | 6557.1 | 8498.0 | 11117.5 | 14864.3 | 16936.2 | 18031.5 | *17922.1* | 13021.3 |
| 62.5° | 3097.0 | 3225.9 | 3696.2 | 4764.7 | 6616.9 | 9238.5 | 13868.0 | 16934.1 | 19136.0 | *19195.8* | 14249.6 |
| 65° | 1631.5 | 1782.1 | 2031.7 | 2952.6 | 4547.1 | 7139.8 | 12369.6 | 16775.3 | 20491.1 | *20574.7* | 15209.8 |
| 67.5° | *879.7* | *923.0* | *1055.0* | *1532.5* | *2637.1* | *4836.9* | *10167.7* | *15991.5* | *21276.0* | *21386.3* | *15343.9* |
| 70° | 643.5 | 667.3 | 716.8 | 847.7 | 1327.3 | 2809.3 | 7419.3 | 14214.6 | 20264.2 | *20223.0* | 13632.9 |
| 72.5° | 494.0 | 531.1 | 568.3 | 620.8 | 763.2 | 1499.5 | 4619.2 | 11130.9 | 16168.9 | *15896.6* | 10190.4 |
| 75° | 389.8 | 396.0 | 448.6 | 496.1 | 572.4 | 853.9 | 2051.3 | 6482.8 | 9868.6 | *9224.1* | 5284.4 |
| 77.5° | 311.5 | 315.6 | 346.5 | 387.8 | 460.0 | 561.0 | 635.3 | 2550.4 | 3150.7 | *2811.4* | 1146.8 |
| 80° | 184.6 | 194.9 | 257.8 | 299.1 | 381.6 | 353.7 | 232.0 | 553.8 | 491.9 | *445.5* | 192.9 |
| 82.5° | 103.1 | 111.4 | 145.4 | 236.2 | 266.1 | 169.1 | 115.5 | 149.5 | 115.5 | *112.4* | 54.7 |
| 85° | 0.0 | 5.2 | 93.8 | 146.4 | 108.3 | 37.1 | 48.5 | 49.5 | 34.0 | *32.0* | 21.7 |
| 87.5° | 0.0 | 0.0 | 28.9 | 27.8 | 4.1 | 6.2 | 11.3 | 16.5 | 13.4 | *13.4* | 11.3 |
| 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: P362636
CATALOG NUMBER: NVN-SA4C-760-U-T2R-HSS

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 1996.6 | 1996.6 | 1996.6 | 1996.6 | 1996.6 | 1996.6 | 1996.6 | 1996.6 | 1996.6 | 1996.6 | 1996.6 |
| 2.5° | 2035.8 | 1980.1 | 1874.9 | 1771.8 | 1685.2 | 1614.0 | 1550.1 | 1524.3 | 1503.7 | 1500.6 | 1484.1 |
| 5° | 2126.6 | 2014.2 | 1813.0 | 1648.0 | 1537.7 | 1459.3 | 1392.3 | 1351.0 | 1319.0 | 1306.7 | 1295.3 |
| 7.5° | 2263.7 | 2093.6 | 1804.8 | 1615.0 | 1483.0 | 1351.0 | 1227.3 | 1093.2 | 1009.7 | 977.7 | 959.1 |
| 10° | 2430.8 | 2198.8 | 1835.7 | 1605.8 | 1374.7 | 1096.3 | 891.1 | 720.9 | 651.8 | 629.1 | 622.9 |
| 12.5° | 2625.7 | 2329.7 | 1889.4 | 1548.0 | 1143.7 | 778.6 | 614.7 | 556.9 | 541.4 | 534.2 | 534.2 |
| 15° | 2849.5 | 2473.1 | 1927.5 | 1380.9 | 845.7 | 588.9 | 532.2 | 505.3 | 488.8 | 479.6 | 480.6 |
| 17.5° | 3078.5 | 2613.3 | 1909.0 | 1138.6 | 623.9 | 523.9 | 481.6 | 452.7 | 430.1 | 420.8 | 418.7 |
| 20° | 3309.5 | 2743.3 | 1805.8 | 847.7 | 528.0 | 475.4 | 428.0 | 396.0 | 373.3 | 364.1 | 362.0 |
| 22.5° | 3548.7 | 2853.6 | 1624.3 | 621.9 | 474.4 | 421.8 | 375.4 | 343.4 | 321.8 | 313.5 | 309.4 |
| 25° | 3781.8 | 2943.4 | 1370.6 | 503.3 | 423.9 | 371.3 | 326.9 | 297.0 | 277.4 | 269.2 | 268.1 |
| 27.5° | 3999.4 | 3000.1 | 1076.7 | 444.5 | 379.5 | 325.9 | 285.7 | 258.9 | 242.4 | 236.2 | 235.1 |
| 30° | 4195.4 | 3005.2 | 796.2 | 401.2 | 340.3 | 286.7 | 249.6 | 225.9 | 211.4 | 205.2 | 203.2 |
| 32.5° | 4393.4 | 2961.9 | 579.6 | 362.0 | 304.2 | 252.7 | 216.6 | 198.0 | 187.7 | 182.5 | 182.5 |
| 35° | 4580.1 | 2861.9 | 451.7 | 328.0 | 269.2 | 219.7 | 190.8 | 177.4 | 171.2 | 166.0 | 166.0 |
| 37.5° | 4762.6 | 2718.5 | 383.6 | 298.0 | 236.2 | 191.8 | 168.1 | 159.9 | 154.7 | 149.5 | 149.5 |
| 40° | 4948.2 | 2538.1 | 348.6 | 270.2 | 209.4 | 170.2 | 149.5 | 142.3 | 137.2 | 133.0 | 132.0 |
| 42.5° | 5176.2 | 2329.7 | 325.9 | 244.4 | 185.6 | 150.6 | 132.0 | 123.8 | 119.6 | 115.5 | 113.4 |
| 45° | 5440.2 | 2150.3 | 307.3 | 218.6 | 166.0 | 134.1 | 114.5 | 106.2 | 100.0 | 94.9 | 93.8 |
| 47.5° | 5820.7 | 2020.3 | 282.6 | 190.8 | 147.5 | 116.5 | 99.0 | 89.7 | 80.4 | 75.3 | 74.3 |
| 50° | 6306.5 | 1913.1 | 250.6 | 166.0 | 128.9 | 99.0 | 82.5 | 71.2 | 62.9 | 57.8 | 57.8 |
| 52.5° | 6547.8 | 1772.8 | 221.7 | 144.4 | 108.3 | 83.5 | 67.0 | 53.6 | 49.5 | 44.3 | 44.3 |
| 55° | 6644.7 | 1665.6 | 192.9 | 122.7 | 89.7 | 69.1 | 52.6 | 41.3 | 38.2 | 35.1 | 34.0 |
| 57.5° | 6917.0 | 1634.6 | 168.1 | 104.2 | 74.3 | 54.7 | 40.2 | 30.9 | 28.9 | 24.8 | 24.8 |
| 60° | 7355.3 | 1650.1 | 145.4 | 88.7 | 59.8 | 42.3 | 29.9 | 23.7 | 21.7 | 17.5 | 17.5 |
| 62.5° | 7828.7 | 1630.5 | 122.7 | 76.3 | 46.4 | 30.9 | 20.6 | 17.5 | 17.5 | 10.3 | 9.3 |
| 65° | 7919.4 | 1452.1 | 105.2 | 62.9 | 36.1 | 22.7 | 13.4 | 11.3 | 15.5 | 2.1 | 0.0 |
| 67.5° | *7350.2* | *1126.2* | *90.8* | *48.5* | *26.8* | *17.5* | *10.3* | *5.2* | *13.4* | *0.0* | *0.0* |
| 70° | 5877.4 | 715.7 | 73.2 | 35.1 | 20.6 | 14.4 | 8.3 | 2.1 | 10.3 | 0.0 | 0.0 |
| 72.5° | 4156.2 | 415.6 | 57.8 | 24.8 | 17.5 | 11.3 | 6.2 | 0.0 | 6.2 | 0.0 | 0.0 |
| 75° | 2101.8 | 221.7 | 36.1 | 18.6 | 13.4 | 8.3 | 4.1 | 0.0 | 1.0 | 0.0 | 0.0 |
| 77.5° | 454.8 | 103.1 | 22.7 | 13.4 | 9.3 | 5.2 | 2.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| 80° | 99.0 | 45.4 | 14.4 | 8.3 | 5.2 | 3.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 82.5° | 36.1 | 23.7 | 7.2 | 4.1 | 2.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85° | 19.6 | 12.4 | 4.1 | 2.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87.5° | 10.3 | 4.1 | 1.0 | 1.0 | 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-79-2008: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

Report Number: SP1-1908-441-9-R4

Test Date: 10/23/2019

Luminaire Tested: SA1C-760-U-5WQ

Data in this report applies to families of products SA1C-760-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

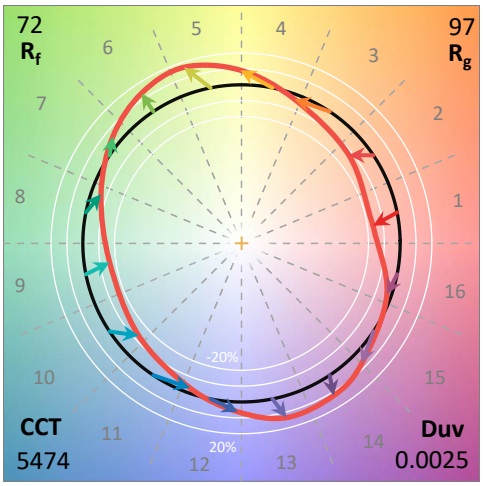
| | |
|---|---|
| Test Method: | LM-79-2008 |
| Report Number: | SP1-1908-441-9-R4 |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Photometer: | SP1 - 76IN SPHERE |
| Measurement Geometry: | 4π |
| Issue Date: | 10/28/2024 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | **SA1C-760-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): | 5474 | CRI (Ra): | 71.7 | | |
| CIE u': | 0.2052 | R1: | 70.6 | R9: | -27.1 |
| CIE v': | 0.4804 | R2: | 74.6 | R10: | 40.8 |
| Duv: | 0.0025 | R3: | 78.3 | R11: | 74.6 |
| CIE x: | 0.3330 | R4: | 73.8 | R12: | 50.4 |
| CIE y: | 0.3466 | R5: | 72.4 | R13: | 70.0 |
| CIE z: | 0.3204 | R6: | 67.5 | R14: | 87.8 |
| Peak Wavelength (nm): | 442 | R7: | 77.5 | | |
| Dominant Wavelength (nm): | 554 | R8: | 58.9 | | |
| Purity: | 4.1 | | | | |

| | |
|---|---|
| Rf: | 72.1 |
| Rg: | 97.2 |




## Test Conditions

| | |
|---|---|
| Stabilization Time: | 240M |
| Operation Time: | 12H |
| Room Temperature (°C) / RH%: | 24.6/31% |
| Sphere Temperature (°C): | 25.9 |

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

REPORT NUMBER: SP1-1908-441-9-R4

| 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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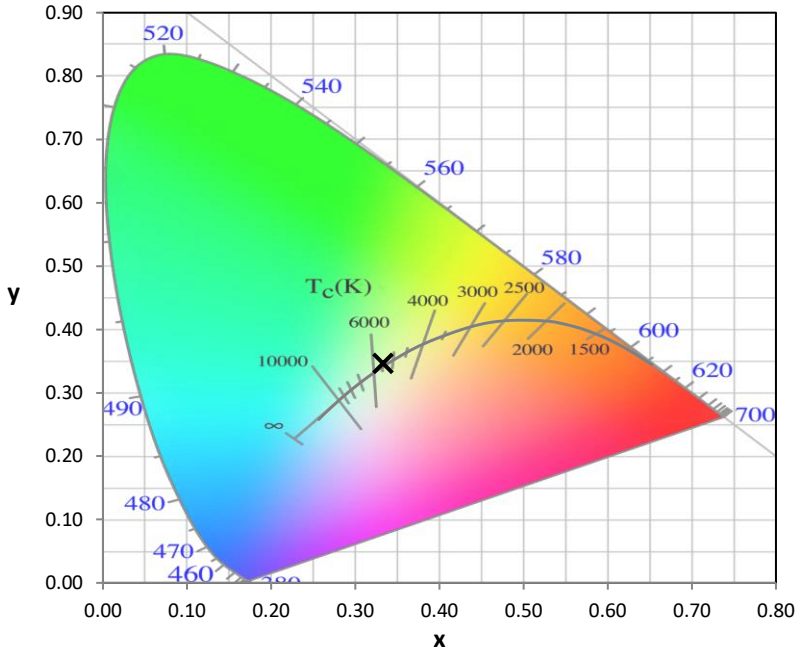
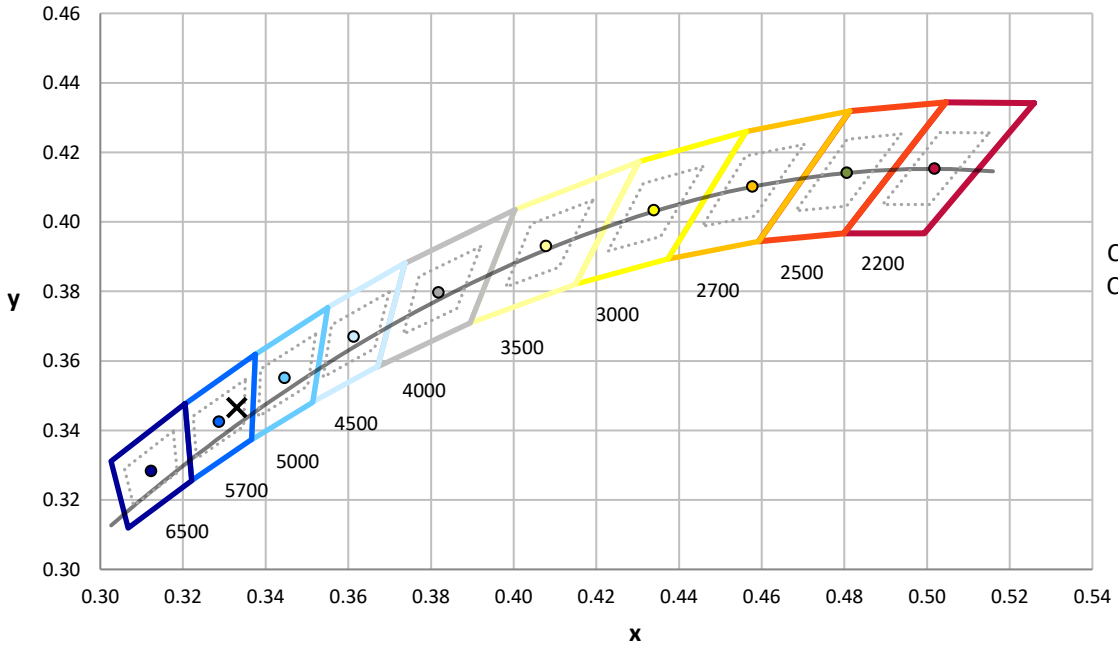
## CIE 1931 Chromaticity Diagram




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




CCT = 5474K
CIE x = 0.3330
CIE y = 0.3466
Duv = 0.0025

Point lies inside the ANSI 5700K 4-step quadrangle

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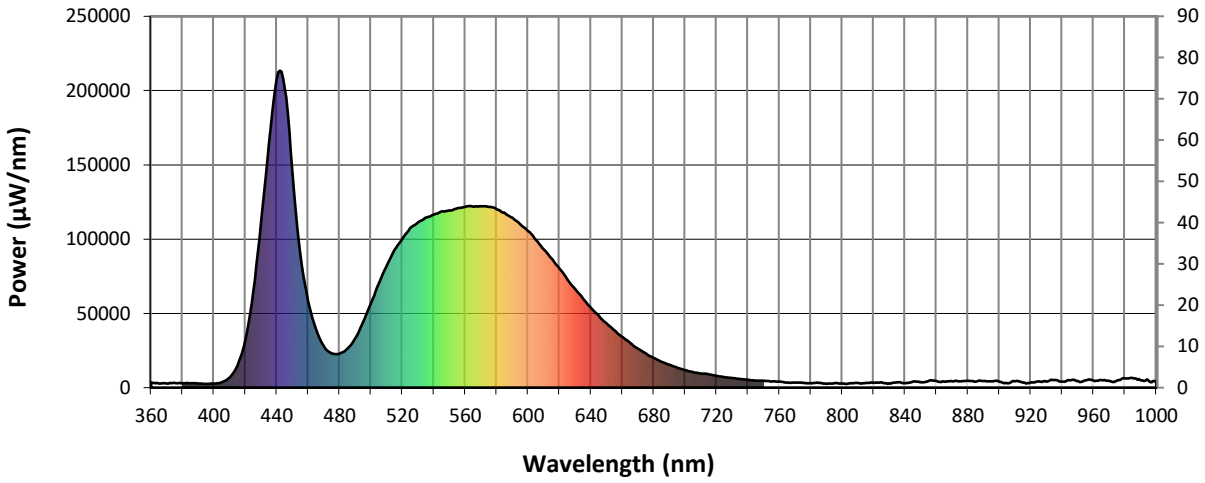
## Photopic Flux vs. Wavelength




######

| 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 | 3540 | NR | 490 | 33363 | NR | 620 | 80193 | NR | 750 | 4663 | NR | 880 | 4678 | NR |
| 365 | 2862 | NR | 495 | 44177 | NR | 625 | 73091 | NR | 755 | 4147 | NR | 885 | 4128 | NR |
| 370 | 2865 | NR | 500 | 57019 | NR | 630 | 66269 | NR | 760 | 4040 | NR | 890 | 4504 | NR |
| 375 | 3254 | NR | 505 | 70030 | NR | 635 | 60012 | NR | 765 | 3474 | NR | 895 | 4371 | NR |
| 380 | 3076 | NR | 510 | 81972 | NR | 640 | 53914 | NR | 770 | 3469 | NR | 900 | 4082 | NR |
| 385 | 2904 | NR | 515 | 92590 | NR | 645 | 48385 | NR | 775 | 3181 | NR | 905 | 2982 | NR |
| 390 | 2689 | NR | 520 | 100305 | NR | 650 | 43219 | NR | 780 | 2969 | NR | 910 | 4351 | NR |
| 395 | 2619 | NR | 525 | 107452 | NR | 655 | 38562 | NR | 785 | 3132 | NR | 915 | 3365 | NR |
| 400 | 2679 | NR | 530 | 111373 | NR | 660 | 34110 | NR | 790 | 2507 | NR | 920 | 3430 | NR |
| 405 | 3515 | NR | 535 | 114505 | NR | 665 | 30085 | NR | 795 | 2968 | NR | 925 | 4264 | NR |
| 410 | 6934 | NR | 540 | 116408 | NR | 670 | 26205 | NR | 800 | 2758 | NR | 930 | 4095 | NR |
| 415 | 14943 | NR | 545 | 118700 | NR | 675 | 22906 | NR | 805 | 2872 | NR | 935 | 5048 | NR |
| 420 | 31939 | NR | 550 | 119209 | NR | 680 | 20058 | NR | 810 | 3094 | NR | 940 | 4074 | NR |
| 425 | 64701 | NR | 555 | 120742 | NR | 685 | 17413 | NR | 815 | 3222 | NR | 945 | 4949 | NR |
| 430 | 110939 | NR | 560 | 121594 | NR | 690 | 15447 | NR | 820 | 3238 | NR | 950 | 4387 | NR |
| 435 | 164597 | NR | 565 | 121913 | NR | 695 | 13398 | NR | 825 | 3524 | NR | 955 | 4978 | NR |
| 440 | 207696 | NR | 570 | 122147 | NR | 700 | 11777 | NR | 830 | 2921 | NR | 960 | 4706 | NR |
| 445 | 201830 | NR | 575 | 121605 | NR | 705 | 10412 | NR | 835 | 3595 | NR | 965 | 5083 | NR |
| 450 | 145410 | NR | 580 | 120248 | NR | 710 | 9544 | NR | 840 | 3016 | NR | 970 | 4522 | NR |
| 455 | 89594 | NR | 585 | 117717 | NR | 715 | 8940 | NR | 845 | 4032 | NR | 975 | 4740 | NR |
| 460 | 58321 | NR | 590 | 114359 | NR | 720 | 7897 | NR | 850 | 3579 | NR | 980 | 6122 | NR |
| 465 | 39318 | NR | 595 | 109974 | NR | 725 | 7045 | NR | 855 | 4571 | NR | 985 | 6450 | NR |
| 470 | 27693 | NR | 600 | 105269 | NR | 730 | 6483 | NR | 860 | 4485 | NR | 990 | 4875 | NR |
| 475 | 23081 | NR | 605 | 99453 | NR | 735 | 5838 | NR | 865 | 3978 | NR | 995 | 4764 | NR |
| 480 | 23002 | NR | 610 | 92921 | NR | 740 | 5261 | NR | 870 | 4298 | NR | 1000 | 3640 | NR |
| 485 | 26201 | NR | 615 | 86989 | NR | 745 | 4760 | NR | 875 | 4356 | NR | | | |

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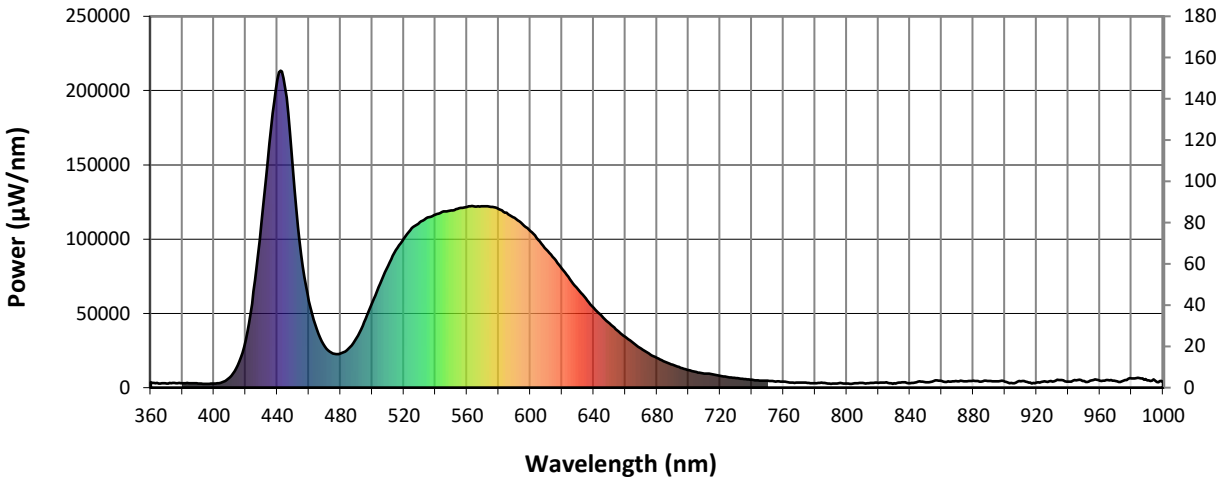
## Scotopic Flux vs. Wavelength




**Scotopic Lumens: 13759.3** **S/P: 1.85**

| 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 | 3540 | NR | 490 | 33363 | NR | 620 | 80193 | NR | 750 | 4663 | NR | 880 | 4678 | NR |
| 365 | 2862 | NR | 495 | 44177 | NR | 625 | 73091 | NR | 755 | 4147 | NR | 885 | 4128 | NR |
| 370 | 2865 | NR | 500 | 57019 | NR | 630 | 66269 | NR | 760 | 4040 | NR | 890 | 4504 | NR |
| 375 | 3254 | NR | 505 | 70030 | NR | 635 | 60012 | NR | 765 | 3474 | NR | 895 | 4371 | NR |
| 380 | 3076 | NR | 510 | 81972 | NR | 640 | 53914 | NR | 770 | 3469 | NR | 900 | 4082 | NR |
| 385 | 2904 | NR | 515 | 92590 | NR | 645 | 48385 | NR | 775 | 3181 | NR | 905 | 2982 | NR |
| 390 | 2689 | NR | 520 | 100305 | NR | 650 | 43219 | NR | 780 | 2969 | NR | 910 | 4351 | NR |
| 395 | 2619 | NR | 525 | 107452 | NR | 655 | 38562 | NR | 785 | 3132 | NR | 915 | 3365 | NR |
| 400 | 2679 | NR | 530 | 111373 | NR | 660 | 34110 | NR | 790 | 2507 | NR | 920 | 3430 | NR |
| 405 | 3515 | NR | 535 | 114505 | NR | 665 | 30085 | NR | 795 | 2968 | NR | 925 | 4264 | NR |
| 410 | 6934 | NR | 540 | 116408 | NR | 670 | 26205 | NR | 800 | 2758 | NR | 930 | 4095 | NR |
| 415 | 14943 | NR | 545 | 118700 | NR | 675 | 22906 | NR | 805 | 2872 | NR | 935 | 5048 | NR |
| 420 | 31939 | NR | 550 | 119209 | NR | 680 | 20058 | NR | 810 | 3094 | NR | 940 | 4074 | NR |
| 425 | 64701 | NR | 555 | 120742 | NR | 685 | 17413 | NR | 815 | 3222 | NR | 945 | 4949 | NR |
| 430 | 110939 | NR | 560 | 121594 | NR | 690 | 15447 | NR | 820 | 3238 | NR | 950 | 4387 | NR |
| 435 | 164597 | NR | 565 | 121913 | NR | 695 | 13398 | NR | 825 | 3524 | NR | 955 | 4978 | NR |
| 440 | 207696 | NR | 570 | 122147 | NR | 700 | 11777 | NR | 830 | 2921 | NR | 960 | 4706 | NR |
| 445 | 201830 | NR | 575 | 121605 | NR | 705 | 10412 | NR | 835 | 3595 | NR | 965 | 5083 | NR |
| 450 | 145410 | NR | 580 | 120248 | NR | 710 | 9544 | NR | 840 | 3016 | NR | 970 | 4522 | NR |
| 455 | 89594 | NR | 585 | 117717 | NR | 715 | 8940 | NR | 845 | 4032 | NR | 975 | 4740 | NR |
| 460 | 58321 | NR | 590 | 114359 | NR | 720 | 7897 | NR | 850 | 3579 | NR | 980 | 6122 | NR |
| 465 | 39318 | NR | 595 | 109974 | NR | 725 | 7045 | NR | 855 | 4571 | NR | 985 | 6450 | NR |
| 470 | 27693 | NR | 600 | 105269 | NR | 730 | 6483 | NR | 860 | 4485 | NR | 990 | 4875 | NR |
| 475 | 23081 | NR | 605 | 99453 | NR | 735 | 5838 | NR | 865 | 3978 | NR | 995 | 4764 | NR |
| 480 | 23002 | NR | 610 | 92921 | NR | 740 | 5261 | NR | 870 | 4298 | NR | 1000 | 3640 | NR |
| 485 | 26201 | NR | 615 | 86989 | NR | 745 | 4760 | NR | 875 | 4356 | NR | | | |

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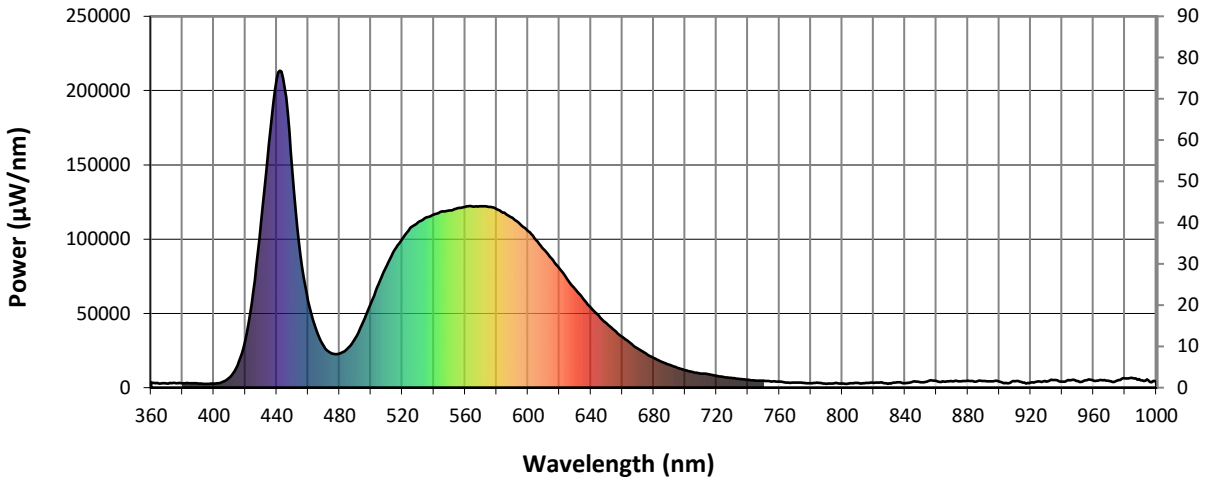
## Melanopic Flux vs. Wavelength




**Melanopic Lumens: 5527.6** **M/P: 0.74**

| 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 | 3540 | NR | 490 | 33363 | NR | 620 | 80193 | NR | 750 | 4663 | NR | 880 | 4678 | NR |
| 365 | 2862 | NR | 495 | 44177 | NR | 625 | 73091 | NR | 755 | 4147 | NR | 885 | 4128 | NR |
| 370 | 2865 | NR | 500 | 57019 | NR | 630 | 66269 | NR | 760 | 4040 | NR | 890 | 4504 | NR |
| 375 | 3254 | NR | 505 | 70030 | NR | 635 | 60012 | NR | 765 | 3474 | NR | 895 | 4371 | NR |
| 380 | 3076 | NR | 510 | 81972 | NR | 640 | 53914 | NR | 770 | 3469 | NR | 900 | 4082 | NR |
| 385 | 2904 | NR | 515 | 92590 | NR | 645 | 48385 | NR | 775 | 3181 | NR | 905 | 2982 | NR |
| 390 | 2689 | NR | 520 | 100305 | NR | 650 | 43219 | NR | 780 | 2969 | NR | 910 | 4351 | NR |
| 395 | 2619 | NR | 525 | 107452 | NR | 655 | 38562 | NR | 785 | 3132 | NR | 915 | 3365 | NR |
| 400 | 2679 | NR | 530 | 111373 | NR | 660 | 34110 | NR | 790 | 2507 | NR | 920 | 3430 | NR |
| 405 | 3515 | NR | 535 | 114505 | NR | 665 | 30085 | NR | 795 | 2968 | NR | 925 | 4264 | NR |
| 410 | 6934 | NR | 540 | 116408 | NR | 670 | 26205 | NR | 800 | 2758 | NR | 930 | 4095 | NR |
| 415 | 14943 | NR | 545 | 118700 | NR | 675 | 22906 | NR | 805 | 2872 | NR | 935 | 5048 | NR |
| 420 | 31939 | NR | 550 | 119209 | NR | 680 | 20058 | NR | 810 | 3094 | NR | 940 | 4074 | NR |
| 425 | 64701 | NR | 555 | 120742 | NR | 685 | 17413 | NR | 815 | 3222 | NR | 945 | 4949 | NR |
| 430 | 110939 | NR | 560 | 121594 | NR | 690 | 15447 | NR | 820 | 3238 | NR | 950 | 4387 | NR |
| 435 | 164597 | NR | 565 | 121913 | NR | 695 | 13398 | NR | 825 | 3524 | NR | 955 | 4978 | NR |
| 440 | 207696 | NR | 570 | 122147 | NR | 700 | 11777 | NR | 830 | 2921 | NR | 960 | 4706 | NR |
| 445 | 201830 | NR | 575 | 121605 | NR | 705 | 10412 | NR | 835 | 3595 | NR | 965 | 5083 | NR |
| 450 | 145410 | NR | 580 | 120248 | NR | 710 | 9544 | NR | 840 | 3016 | NR | 970 | 4522 | NR |
| 455 | 89594 | NR | 585 | 117717 | NR | 715 | 8940 | NR | 845 | 4032 | NR | 975 | 4740 | NR |
| 460 | 58321 | NR | 590 | 114359 | NR | 720 | 7897 | NR | 850 | 3579 | NR | 980 | 6122 | NR |
| 465 | 39318 | NR | 595 | 109974 | NR | 725 | 7045 | NR | 855 | 4571 | NR | 985 | 6450 | NR |
| 470 | 27693 | NR | 600 | 105269 | NR | 730 | 6483 | NR | 860 | 4485 | NR | 990 | 4875 | NR |
| 475 | 23081 | NR | 605 | 99453 | NR | 735 | 5838 | NR | 865 | 3978 | NR | 995 | 4764 | NR |
| 480 | 23002 | NR | 610 | 92921 | NR | 740 | 5261 | NR | 870 | 4298 | NR | 1000 | 3640 | NR |
| 485 | 26201 | NR | 615 | 86989 | NR | 745 | 4760 | NR | 875 | 4356 | NR | | | |

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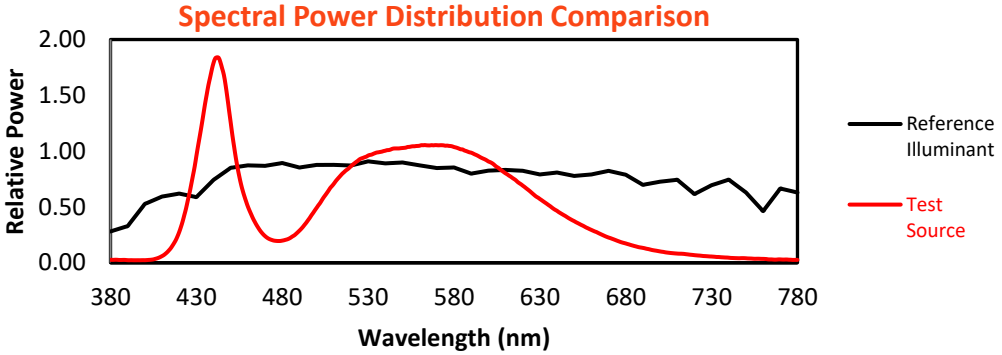
# TM-30-18

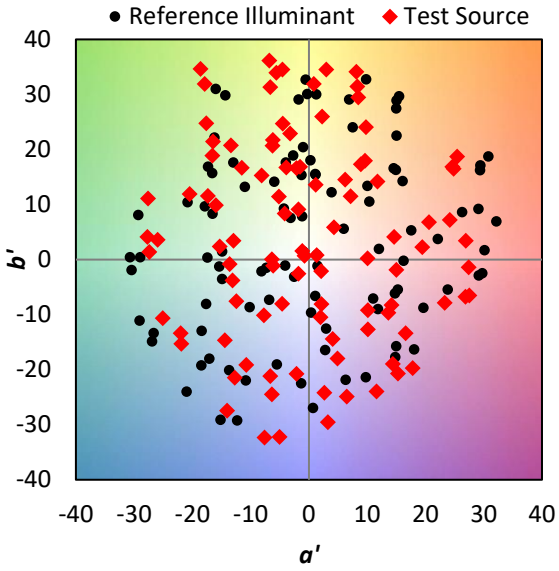
## Summary

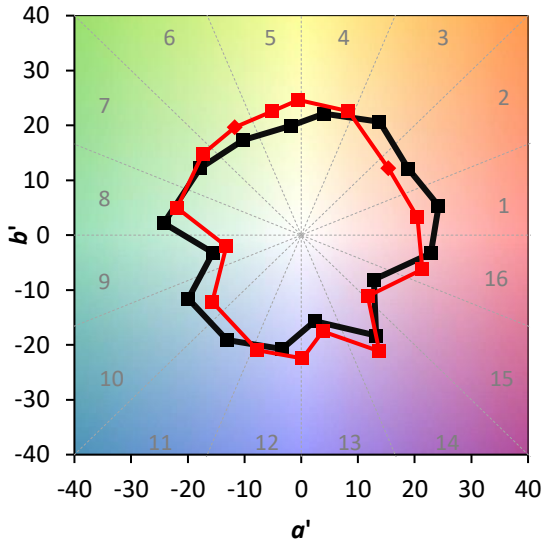
$R_f$ = 72.1
$R_g$ = 97.2
CIE $R_a$ = 71.7
$R_9$ = -27.1

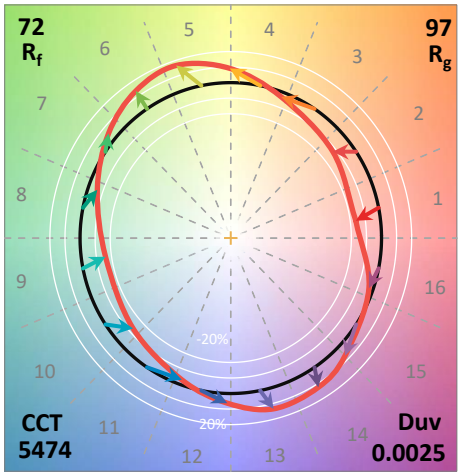
## Spectral Power Distribution Comparison

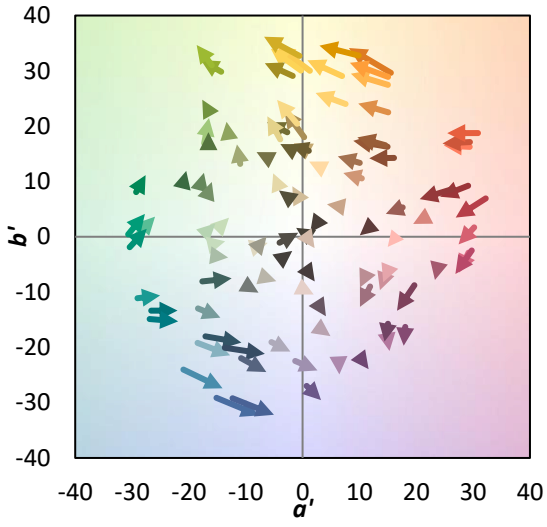



## Color Vector Graphics



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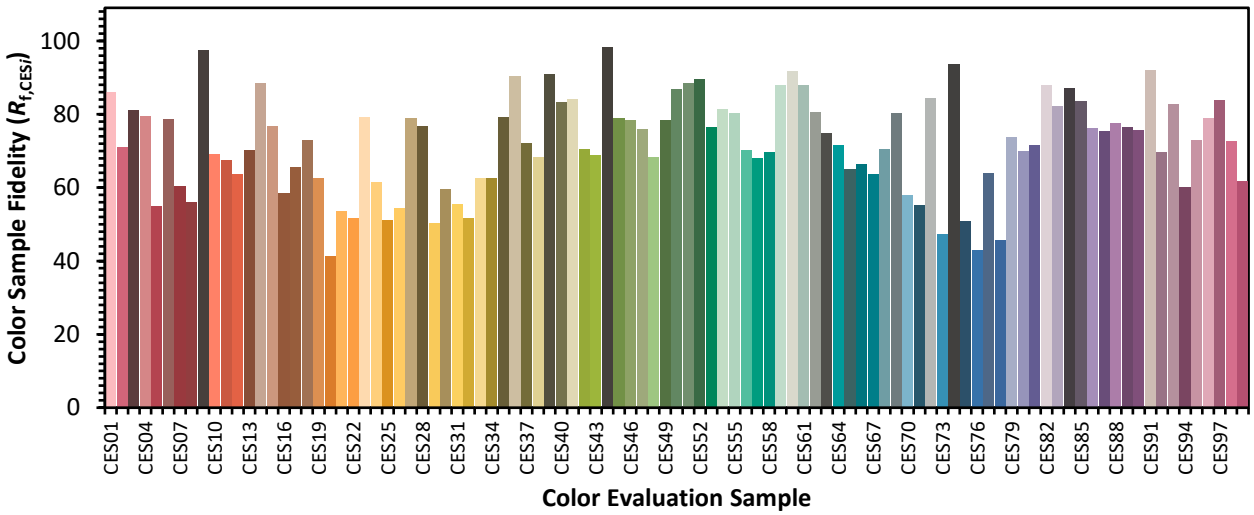
**Individual Sample Fidelity Index ($R_{f,i}$)**

| | | | |
|---|---|---|---|
| CES01 = 85 | CES26 = 54 | CES51 = 88 | CES76 = 43 |
| CES02 = 59 | CES27 = 79 | CES52 = 90 | CES77 = 64 |
| CES03 = 30 | CES28 = 77 | CES53 = 77 | CES78 = 46 |
| CES04 = 69 | CES29 = 50 | CES54 = 81 | CES79 = 74 |
| CES05 = 46 | CES30 = 59 | CES55 = 80 | CES80 = 70 |
| CES06 = 50 | CES31 = 55 | CES56 = 70 | CES81 = 71 |
| CES07 = 38 | CES32 = 52 | CES57 = 68 | CES82 = 88 |
| CES08 = 38 | CES33 = 63 | CES58 = 70 | CES83 = 82 |
| CES09 = 29 | CES34 = 63 | CES59 = 88 | CES84 = 87 |
| CES10 = 72 | CES35 = 79 | CES60 = 92 | CES85 = 84 |
| CES11 = 55 | CES36 = 90 | CES61 = 88 | CES86 = 76 |
| CES12 = 61 | CES37 = 72 | CES62 = 81 | CES87 = 75 |
| CES13 = 41 | CES38 = 68 | CES63 = 75 | CES88 = 77 |
| CES14 = 74 | CES39 = 91 | CES64 = 72 | CES89 = 76 |
| CES15 = 70 | CES40 = 83 | CES65 = 65 | CES90 = 76 |
| CES16 = 46 | CES41 = 84 | CES66 = 66 | CES91 = 92 |
| CES17 = 48 | CES42 = 70 | CES67 = 64 | CES92 = 70 |
| CES18 = 55 | CES43 = 69 | CES68 = 71 | CES93 = 83 |
| CES19 = 70 | CES44 = 98 | CES69 = 80 | CES94 = 60 |
| CES20 = 64 | CES45 = 79 | CES70 = 58 | CES95 = 73 |
| CES21 = 85 | CES46 = 78 | CES71 = 55 | CES96 = 79 |
| CES22 = 77 | CES47 = 76 | CES72 = 84 | CES97 = 84 |
| CES23 = 91 | CES48 = 68 | CES73 = 47 | CES98 = 73 |
| CES24 = 90 | CES49 = 78 | CES74 = 94 | CES99 = 62 |
| CES25 = 71 | CES50 = 87 | CES75 = 51 | |



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Peachtree City, GA 30269

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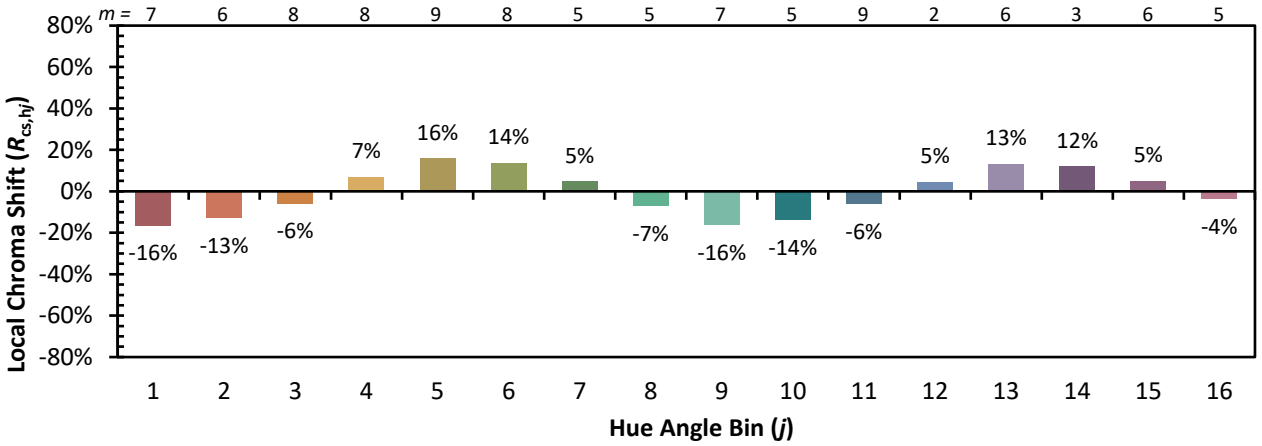
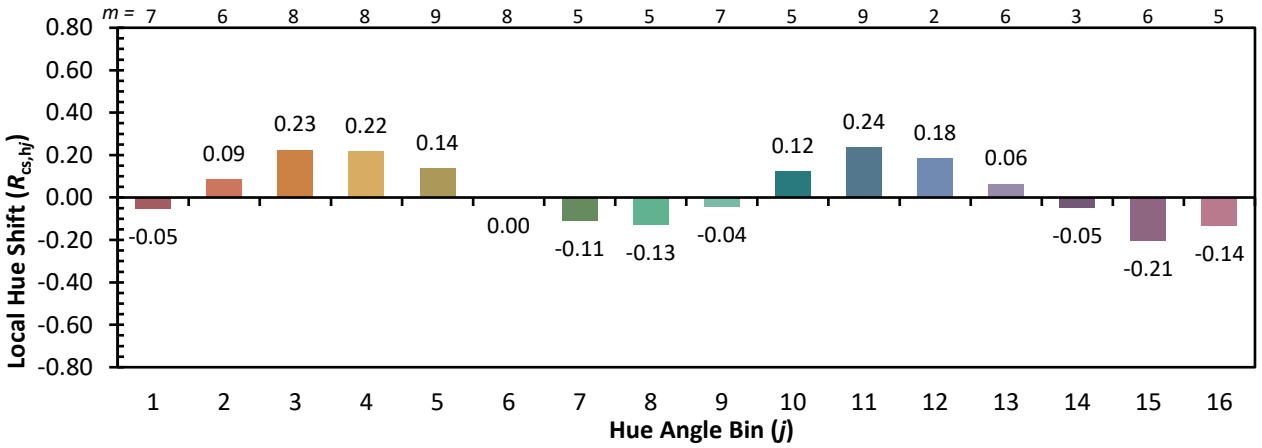
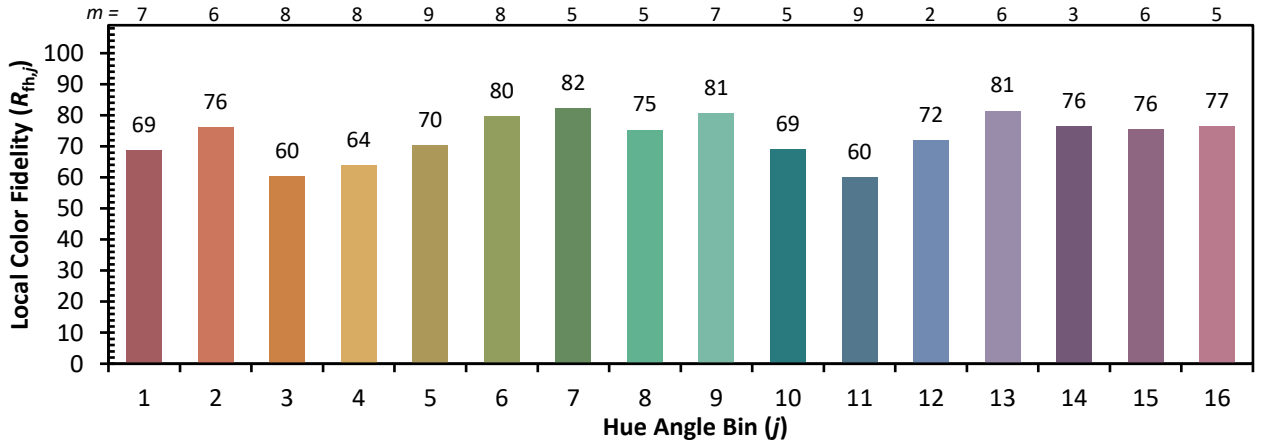
**TM-30-18**

## Color Rendition by Hue-Angle Bin



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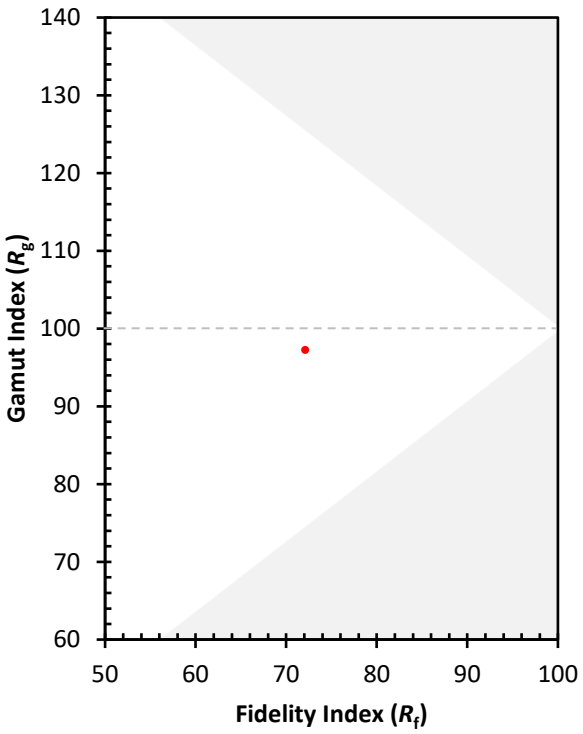
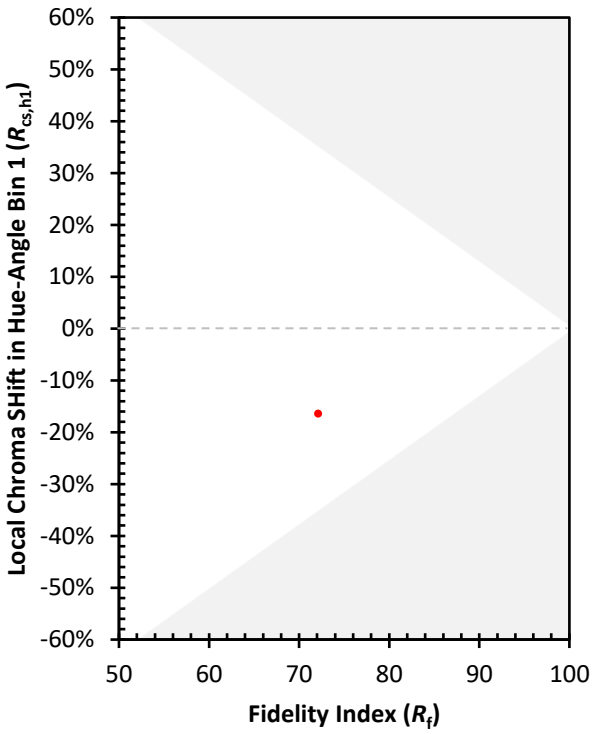
**TM-30-18**

**Measure Comparisons**




(END OF REPORT)