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: McGRAW-EDISON

Report Number: P642076

Luminaire Tested: GWS-SA6C-727-U-T3R-W-GRSWH

Issue Date: 1/10/2023

Report Generated By 670246102 / DESKTOP-G35701P

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: | P642076 |
| | TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-17) |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Issue Date: | 1/10/2023 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | GWS-SA6C-727-U-T3R-W-GRSWH |
| Description: | GALLEON WALL SLIM LUMINAIRE. (6) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III ROADWAY OPTICS W/ FACTORY INSTALLED GLARE SHIELD, WH |
| Light Source: | (96) 2700K CCT, 70 CRI LEDS |
| Ballast/Driver: | - |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 20819.3 lumens |
| Efficiency: | N/A |
| Efficacy: | 110.0 lumens/watt |
| Luminous Opening: | Rectangular (W 2' x L: 1' x H: 0') |
| IES Classification: | Type II - Short |
| BUG Rating: | B3 - U0 - G3 |

| | |
|---|---|
| Input Watts (W): | 189.2 |
| Input Voltage (V): | 120 |
| Input Current (Ain): | NR |
| Voltage Rise (V): | NR |
| Power Factor: | NR |
| Total Harmonic Distortion (THDi): | NR |
| Frequency (hertz): | 0 |
| Stabilization Time: | NR |
| Operation Time: | NR |
| Ambient Temperature (°C): | NR |
| Test Distance: | 28.75 FT |

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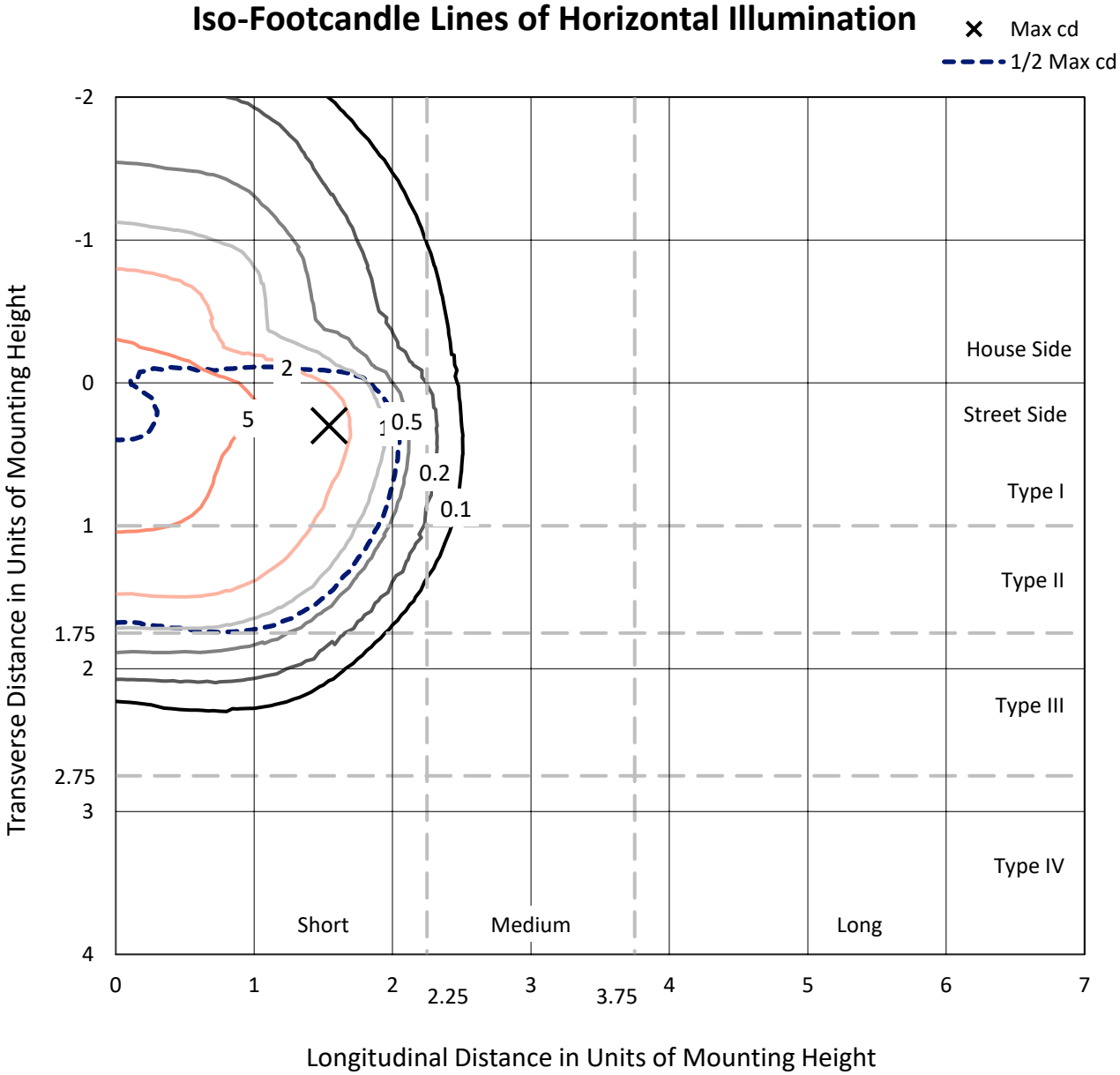
Scaled Data Report

REPORT NUMBER: P642076
CATALOG NUMBER: GWS-SA6C-727-U-T3R-W-GRSWH

## Iso-Footcandle Lines of Horizontal Illumination




Based on 25 foot mounting height. Maximum calculated value = 8.3 fc
Type II - Short - N/A

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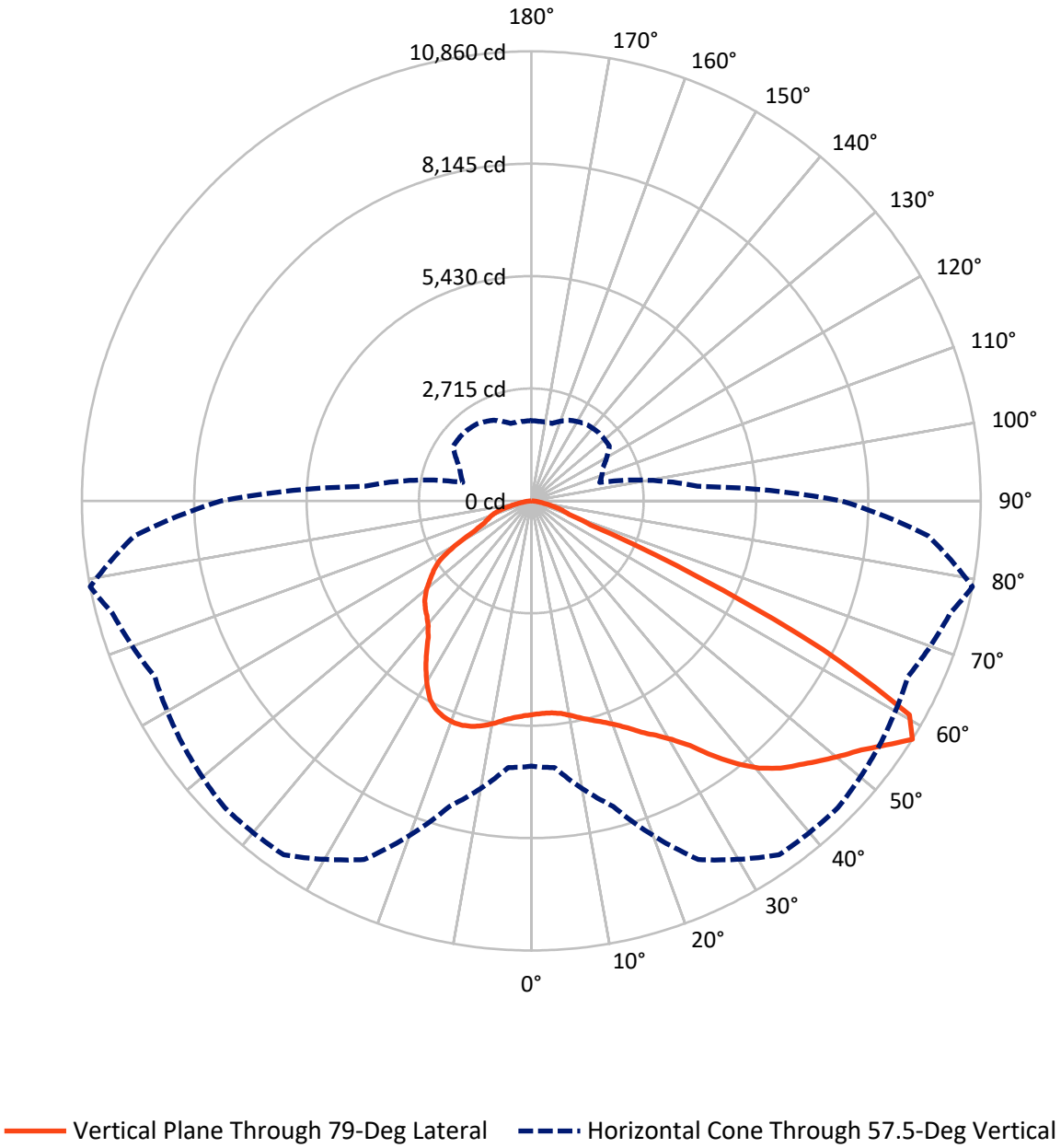
## Luminous Intensity Polar Plot



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REPORT NUMBER: P642076
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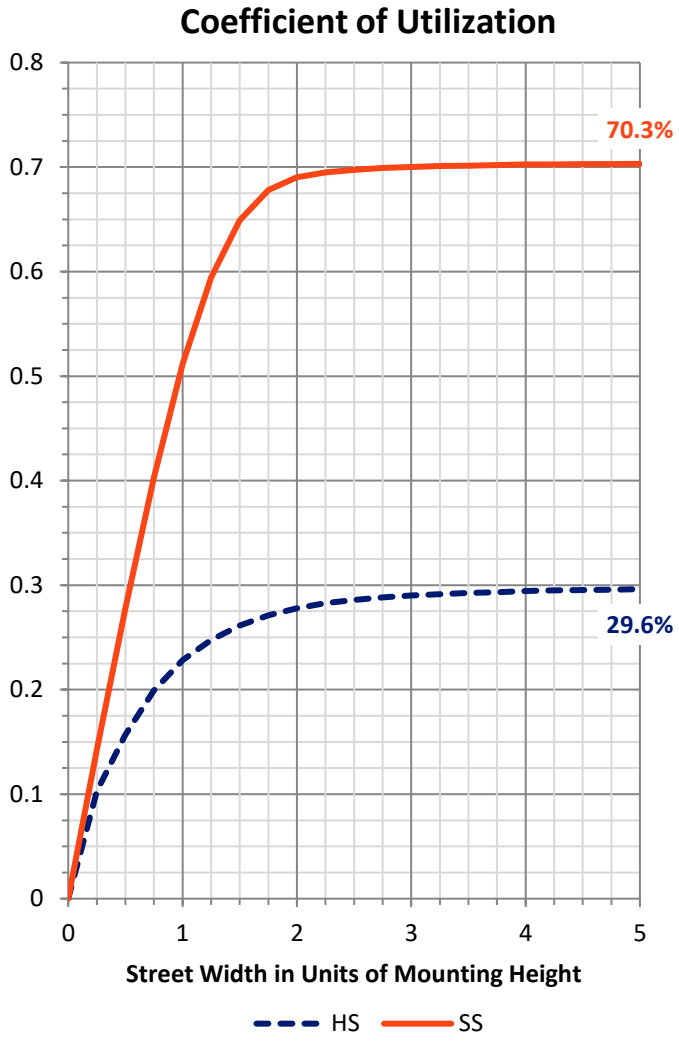
**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 6188.6 | 0.0 | 6188.6 |
| | % Fixture | 29.7 | 0.0 | 29.7 |
| **Street Side** | Lumens | 14630.7 | 0.0 | 14630.7 |
| | % Fixture | 70.3 | 0.0 | 70.3 |
| **Total** | Lumens | 20819.3 | 0.0 | 20819.3 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 477.8 | 2.3 |
| 10°-20° | 1327.8 | 6.4 |
| 20°-30° | 2250.8 | 10.8 |
| 30°-40° | 3445.1 | 16.5 |
| 40°-50° | 4593.7 | 22.1 |
| 50°-60° | 5305.3 | 25.5 |
| 60°-70° | 2756.8 | 13.2 |
| 70°-80° | 586.0 | 2.8 |
| 80°-90° | 75.9 | 0.4 |
| 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° | 20819.3 | 100.0 |
| 0°-180° | 20819.3 | 100.0 |



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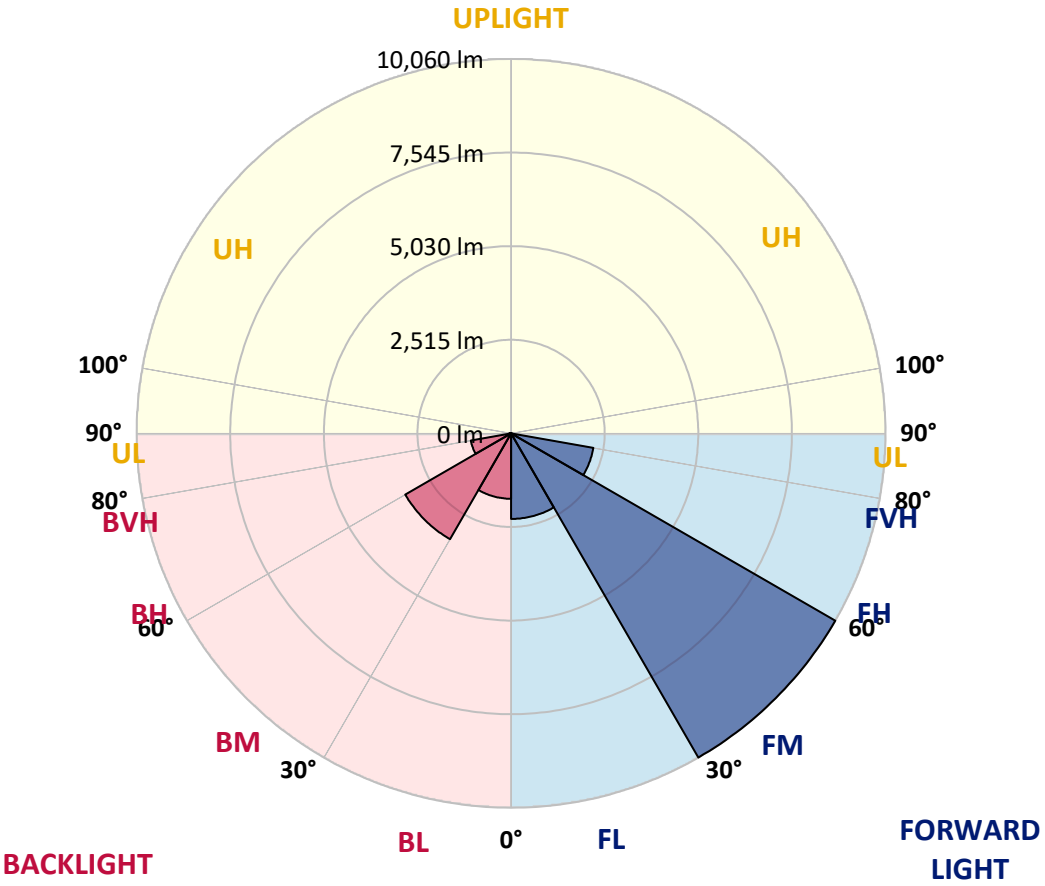
REPORT NUMBER: P642076
CATALOG NUMBER: GWS-SA6C-727-U-T3R-W-GRSWH

## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 2298.9 | 11.0 | | | |
| FM | (30°-60°) | 10060.5 | 48.3 | | | |
| FH | (60°-80°) | 2244.8 | 10.8 | | | G2/5000 |
| FVH | (80°-90°) | 26.5 | 0.1 | | | G1/100 |
| BL | (0°-30°) | 1757.5 | 8.4 | B3/2500 | | |
| BM | (30°-60°) | 3283.6 | 15.8 | B3/5000 | | |
| BH | (60°-80°) | 1098.0 | 5.3 | B3/2500 | | G3/2500 |
| BVH | (80°-90°) | 49.4 | 0.2 | | | G1/100 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

**BUG Rating: B3-U0-G3**
Type II Short



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REPORT NUMBER: P642076
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**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 79° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 5159.5 | 5159.5 | 5159.5 | 5159.5 | 5159.5 | 5159.5 | 5159.5 | 5159.5 | 5159.5 | *5159.5* | 5159.5 |
| 2.5° | 4924.6 | 4914.4 | 4917.8 | 4931.4 | 4982.5 | 5019.9 | 5059.1 | 5094.8 | 5128.9 | *5139.1* | 5147.6 |
| 5° | 4749.3 | 4730.5 | 4735.6 | 4757.8 | 4817.4 | 4880.3 | 4950.1 | 5035.2 | 5116.9 | *5144.2* | 5179.9 |
| 7.5° | 4625.0 | 4621.6 | 4630.1 | 4664.2 | 4727.1 | 4786.7 | 4876.9 | 4997.8 | 5139.1 | *5185.0* | 5248.0 |
| 10° | 4459.9 | 4453.1 | 4487.1 | 4556.9 | 4660.7 | 4756.1 | 4863.3 | 5006.3 | 5203.8 | *5271.9* | 5368.9 |
| 12.5° | 4328.8 | 4325.4 | 4361.2 | 4458.2 | 4591.0 | 4742.5 | 4890.5 | 5050.6 | 5290.6 | *5384.2* | 5503.4 |
| 15° | 4405.4 | 4390.1 | 4391.8 | 4459.9 | 4579.0 | 4757.8 | 4958.6 | 5130.6 | 5377.4 | *5496.5* | 5649.8 |
| 17.5° | 4628.4 | 4601.2 | 4580.7 | 4592.7 | 4660.7 | 4846.3 | 5062.5 | 5237.8 | 5477.8 | *5617.4* | 5804.7 |
| 20° | 4936.5 | 4921.2 | 4865.0 | 4827.6 | 4842.9 | 5006.3 | 5225.9 | 5389.3 | 5608.9 | *5765.5* | 5966.4 |
| 22.5° | 5350.2 | 5312.7 | 5236.1 | 5176.5 | 5130.6 | 5258.2 | 5460.8 | 5602.1 | 5791.0 | *5954.5* | 6163.8 |
| 25° | 5862.5 | 5808.1 | 5687.2 | 5593.6 | 5494.8 | 5625.9 | 5806.4 | 5913.6 | 6041.3 | *6192.8* | 6391.9 |
| 27.5° | 6385.1 | 6339.2 | 6204.7 | 6078.7 | 5956.2 | 6037.9 | 6252.3 | 6313.6 | 6300.0 | *6410.7* | 6580.9 |
| 30° | 6941.8 | 6883.9 | 6756.2 | 6620.0 | 6461.7 | 6514.5 | 6706.8 | 6737.5 | 6592.8 | *6684.7* | 6800.5 |
| 32.5° | 7529.0 | 7472.9 | 7362.2 | 7203.9 | 7025.2 | 7045.6 | 7098.4 | 7127.3 | 6989.4 | *7042.2* | 7130.7 |
| 35° | 8126.5 | 8073.7 | 7961.4 | 7804.8 | 7673.7 | 7549.5 | 7416.7 | 7532.4 | 7452.4 | *7554.6* | 7547.8 |
| 37.5° | 8672.9 | 8620.2 | 8550.4 | 8429.5 | 8204.8 | 7959.7 | 7653.3 | 7796.3 | 7920.5 | *8049.9* | 8027.8 |
| 40° | 9042.3 | 9006.6 | 9023.6 | 9004.9 | 8715.5 | 8230.4 | 7769.0 | 7925.7 | 8264.4 | *8485.7* | 8473.8 |
| 42.5° | 9360.6 | 9324.9 | 9423.6 | 9495.1 | 9154.7 | 8480.6 | 7825.2 | 7975.0 | 8484.0 | *8829.5* | 8812.5 |
| 45° | 9501.9 | 9491.7 | 9655.1 | 9881.5 | 9556.4 | 8746.1 | 7969.9 | 8077.2 | 8650.8 | *9093.4* | 9028.7 |
| 47.5° | 9333.4 | 9369.2 | 9690.9 | 10073.9 | 9890.0 | 9061.0 | 8266.1 | 8293.3 | 8868.7 | *9379.4* | 9197.2 |
| 50° | 8998.1 | 9076.4 | 9510.4 | 10079.0 | 10133.5 | 9416.8 | 8676.3 | 8608.3 | 9161.5 | *9684.1* | 9285.7 |
| 52.5° | 8509.5 | 8591.2 | 9299.4 | 10039.8 | 10273.0 | 9828.8 | 9222.8 | 9125.7 | 9530.9 | *9988.8* | 9301.1 |
| 55° | 7387.7 | 7498.4 | 8815.9 | 9951.3 | 10409.2 | 10203.3 | 9839.0 | 9641.5 | 10007.5 | *10407.5* | 9452.6 |
| 57.5° | *6409.0* | *6466.8* | *7638.0* | *9558.1* | *10436.5* | *10479.0* | *10278.2* | *10043.2* | *10480.7* | *10860.3* | *9622.8* |
| 60° | 4703.3 | 4716.9 | 5770.6 | 7908.6 | 9600.7 | 10319.0 | 10242.4 | 9893.4 | 10256.0 | *10497.7* | 8843.2 |
| 62.5° | 2657.2 | 2658.9 | 3499.8 | 5278.7 | 7171.6 | 8410.8 | 8458.5 | 8150.3 | 7845.6 | *7917.1* | 6155.3 |
| 65° | 997.5 | 1091.1 | 1598.4 | 2594.2 | 4134.8 | 4965.4 | 5162.9 | 5234.4 | 4727.1 | *4412.2* | 3300.7 |
| 67.5° | 667.3 | 689.4 | 932.8 | 1334.6 | 1840.1 | 2124.4 | 2376.3 | 2383.1 | 1743.1 | *1554.1* | 1300.5 |
| 70° | 509.0 | 531.1 | 733.7 | 955.0 | 932.8 | 861.3 | 931.1 | 905.6 | 936.2 | *961.8* | 989.0 |
| 72.5° | 379.6 | 401.7 | 568.5 | 674.1 | 560.0 | 551.5 | 624.7 | 694.5 | 759.2 | *786.4* | 829.0 |
| 75° | 251.9 | 269.0 | 383.0 | 360.9 | 309.8 | 366.0 | 456.2 | 526.0 | 563.4 | *595.8* | 628.1 |
| 77.5° | 160.0 | 171.9 | 204.3 | 165.1 | 171.9 | 214.5 | 265.6 | 328.5 | 364.3 | *396.6* | 413.6 |
| 80° | 73.2 | 71.5 | 69.8 | 78.3 | 97.0 | 126.0 | 160.0 | 197.5 | 224.7 | *238.3* | 248.5 |
| 82.5° | 28.9 | 32.3 | 35.7 | 42.6 | 52.8 | 68.1 | 90.2 | 115.8 | 137.9 | *141.3* | 149.8 |
| 85° | 11.9 | 13.6 | 15.3 | 18.7 | 23.8 | 30.6 | 37.4 | 52.8 | 66.4 | *71.5* | 76.6 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 1.7 | 3.4 | 5.1 | 8.5 | 15.3 | *17.0* | 18.7 |
| 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: P642076
CATALOG NUMBER: GWS-SA6C-727-U-T3R-W-GRSWH

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 5159.5 | 5159.5 | 5159.5 | 5159.5 | 5159.5 | 5159.5 | 5159.5 | 5159.5 | 5159.5 | 5159.5 | 5159.5 |
| 2.5° | 5193.5 | 5171.4 | 5208.9 | 5234.4 | 5258.2 | 5232.7 | 5224.2 | 5202.1 | 5198.7 | 5198.7 | 5210.6 |
| 5° | 5241.2 | 5225.9 | 5265.0 | 5280.4 | 5278.7 | 5222.5 | 5188.4 | 5144.2 | 5122.1 | 5122.1 | 5125.5 |
| 7.5° | 5326.3 | 5317.8 | 5339.9 | 5316.1 | 5261.6 | 5147.6 | 5035.2 | 4941.6 | 4878.6 | 4846.3 | 4856.5 |
| 10° | 5467.6 | 5457.4 | 5438.7 | 5350.2 | 5193.5 | 4956.9 | 4727.1 | 4556.9 | 4454.8 | 4396.9 | 4400.3 |
| 12.5° | 5605.5 | 5588.5 | 5522.1 | 5326.3 | 5004.6 | 4628.4 | 4327.1 | 4136.5 | 4024.1 | 3956.0 | 3940.7 |
| 15° | 5757.0 | 5712.7 | 5569.7 | 5203.8 | 4696.5 | 4226.7 | 3911.8 | 3705.8 | 3584.9 | 3544.1 | 3542.4 |
| 17.5° | 5901.7 | 5823.4 | 5564.6 | 4985.9 | 4327.1 | 3806.2 | 3489.6 | 3361.9 | 3341.5 | 3360.2 | 3365.3 |
| 20° | 6048.1 | 5922.1 | 5508.5 | 4684.6 | 3887.9 | 3387.5 | 3224.1 | 3276.8 | 3353.4 | 3404.5 | 3416.4 |
| 22.5° | 6199.6 | 6003.8 | 5380.8 | 4296.5 | 3424.9 | 3104.9 | 3173.0 | 3288.7 | 3384.1 | 3452.2 | 3459.0 |
| 25° | 6369.8 | 6080.4 | 5190.1 | 3821.5 | 3053.8 | 3026.6 | 3161.1 | 3283.6 | 3385.8 | 3464.1 | 3477.7 |
| 27.5° | 6466.8 | 6082.1 | 4922.9 | 3333.0 | 2883.6 | 2996.0 | 3132.1 | 3247.9 | 3350.0 | 3435.1 | 3450.5 |
| 30° | 6562.2 | 6036.2 | 4499.0 | 2936.4 | 2834.2 | 2960.2 | 3082.8 | 3190.0 | 3287.0 | 3370.4 | 3389.2 |
| 32.5° | 6696.6 | 5993.6 | 4010.5 | 2708.3 | 2805.3 | 2926.2 | 3026.6 | 3121.9 | 3196.8 | 3234.3 | 3244.5 |
| 35° | 6863.5 | 5939.1 | 3491.3 | 2609.5 | 2786.6 | 2898.9 | 2987.4 | 3038.5 | 2941.5 | 2921.1 | 2943.2 |
| 37.5° | 7096.7 | 5888.1 | 2973.8 | 2567.0 | 2774.7 | 2888.7 | 2967.0 | 2835.9 | 2716.8 | 2669.1 | 2686.1 |
| 40° | 7348.6 | 5859.1 | 2623.2 | 2532.9 | 2779.8 | 2898.9 | 2881.9 | 2687.8 | 2515.9 | 2415.5 | 2412.1 |
| 42.5° | 7563.1 | 5814.9 | 2398.5 | 2510.8 | 2793.4 | 2938.1 | 2766.1 | 2556.8 | 2301.4 | 2241.9 | 2243.6 |
| 45° | 7707.8 | 5702.5 | 2279.3 | 2487.0 | 2805.3 | 2946.6 | 2711.7 | 2376.3 | 2194.2 | 2156.7 | 2155.0 |
| 47.5° | 7767.3 | 5498.3 | 2202.7 | 2449.5 | 2803.6 | 2876.8 | 2601.0 | 2301.4 | 2119.3 | 2109.1 | 2115.9 |
| 50° | 7728.2 | 5162.9 | 2124.4 | 2376.3 | 2762.7 | 2803.6 | 2473.4 | 2235.0 | 2068.2 | 2124.4 | 2165.3 |
| 52.5° | 7583.5 | 4728.8 | 2030.8 | 2275.9 | 2689.5 | 2720.2 | 2408.7 | 2194.2 | 2030.8 | 2105.7 | 2138.0 |
| 55° | 7546.1 | 4376.5 | 1911.6 | 2144.8 | 2580.6 | 2572.1 | 2340.6 | 2173.8 | 2005.2 | 1976.3 | 1981.4 |
| 57.5° | *7496.7* | *4032.6* | *1714.2* | *1909.9* | *2304.8* | *2318.5* | *2275.9* | *2149.9* | *1938.9* | *1930.3* | *1938.9* |
| 60° | 6512.8 | 3091.3 | 1528.6 | 1647.8 | 1892.9 | 1966.1 | 2202.7 | 2105.7 | 1831.6 | 1795.9 | 1794.2 |
| 62.5° | 4253.9 | 1872.5 | 1360.1 | 1436.7 | 1542.2 | 1627.3 | 2008.6 | 1978.0 | 1714.2 | 1692.0 | 1707.4 |
| 65° | 2287.8 | 1334.6 | 1237.5 | 1283.5 | 1341.4 | 1406.1 | 1664.8 | 1761.8 | 1549.0 | 1470.7 | 1472.4 |
| 67.5° | 1169.4 | 1135.4 | 1145.6 | 1178.0 | 1222.2 | 1254.6 | 1343.1 | 1428.2 | 1320.9 | 1254.6 | 1252.9 |
| 70° | 1000.9 | 1028.2 | 1043.5 | 1062.2 | 1091.1 | 1086.0 | 1094.5 | 1109.9 | 1101.4 | 1069.0 | 1067.3 |
| 72.5° | 852.8 | 895.4 | 898.8 | 902.2 | 912.4 | 888.6 | 873.3 | 847.7 | 849.4 | 854.5 | 856.2 |
| 75° | 648.6 | 689.4 | 699.6 | 694.5 | 704.7 | 674.1 | 653.7 | 628.1 | 597.5 | 592.4 | 595.8 |
| 77.5° | 422.2 | 454.5 | 469.8 | 466.4 | 471.5 | 447.7 | 437.5 | 410.2 | 374.5 | 360.9 | 360.9 |
| 80° | 255.3 | 274.1 | 286.0 | 289.4 | 294.5 | 277.5 | 260.4 | 236.6 | 221.3 | 206.0 | 206.0 |
| 82.5° | 154.9 | 166.8 | 175.3 | 175.3 | 180.4 | 161.7 | 148.1 | 131.1 | 124.3 | 110.6 | 110.6 |
| 85° | 78.3 | 86.8 | 90.2 | 88.5 | 85.1 | 69.8 | 64.7 | 56.2 | 52.8 | 46.0 | 46.0 |
| 87.5° | 18.7 | 23.8 | 23.8 | 17.0 | 17.0 | 8.5 | 5.1 | 1.7 | 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: SP1-1908-441-1-R4

Test Date: 08/20/2019

Luminaire Tested: SA1C-727-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

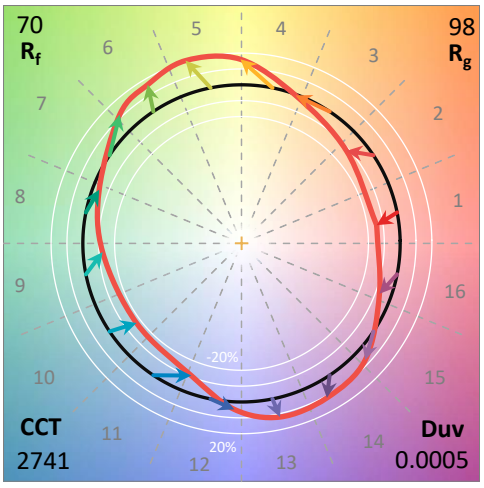
| | |
|---|---|
| Test Method: | LM-79-2008 |
| Report Number: | SP1-1908-441-1-R4 |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Photometer: | SP1 - 76IN SPHERE |
| Measurement Geometry: | 4π |
| Issue Date: | 10/28/2024 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | **SA1C-727-U-5WQ** |
| Description: | McGRAW EDISON ROADWAY AND AREA LUMINAIRE |

***THIS IS A REVISION OF SP1-1908-441-1-R3. TO UPDATE THE CATALOG NUMBER.***TESTED IN SITU. (1) 70 CRI, 2700K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

## Spectral Parameters

| | | | | | |
|---|---|---|---|---|---|
| CCT (K): | 2741 | CRI (Ra): | 71.5 | | |
| CIE u': | 0.2605 | R1: | 69.2 | R9: | -16.1 |
| CIE v': | 0.5272 | R2: | 79.4 | R10: | 51.4 |
| Duv: | 0.0005 | R3: | 87.8 | R11: | 63.1 |
| CIE x: | 0.4573 | R4: | 69.4 | R12: | 42.0 |
| CIE y: | 0.4113 | R5: | 66.4 | R13: | 70.2 |
| CIE z: | 0.1313 | R6: | 69.8 | R14: | 92.4 |
| Peak Wavelength (nm): | 602 | R7: | 79.8 | | |
| Dominant Wavelength (nm): | 583 | R8: | 50.1 | | |
| Purity: | 61.2 | | | | |

| | |
|---|---|
| Rf: | 69.9 |
| Rg: | 98.3 |




## Test Conditions

| | |
|---|---|
| Stabilization Time: | 56M |
| Operation Time: | 12H |
| Room Temperature (°C) / RH%: | 25.3./42% |
| Sphere Temperature (°C): | 25.7 |

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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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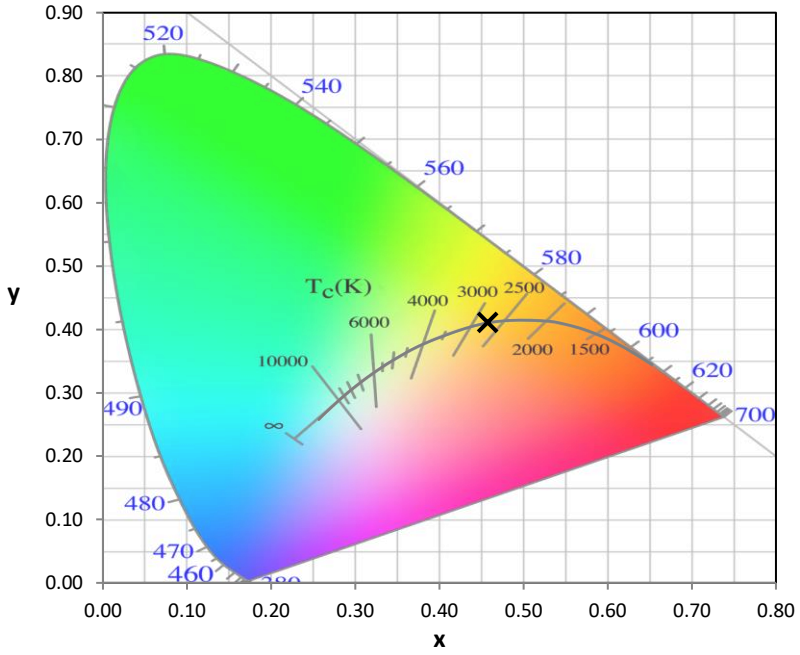
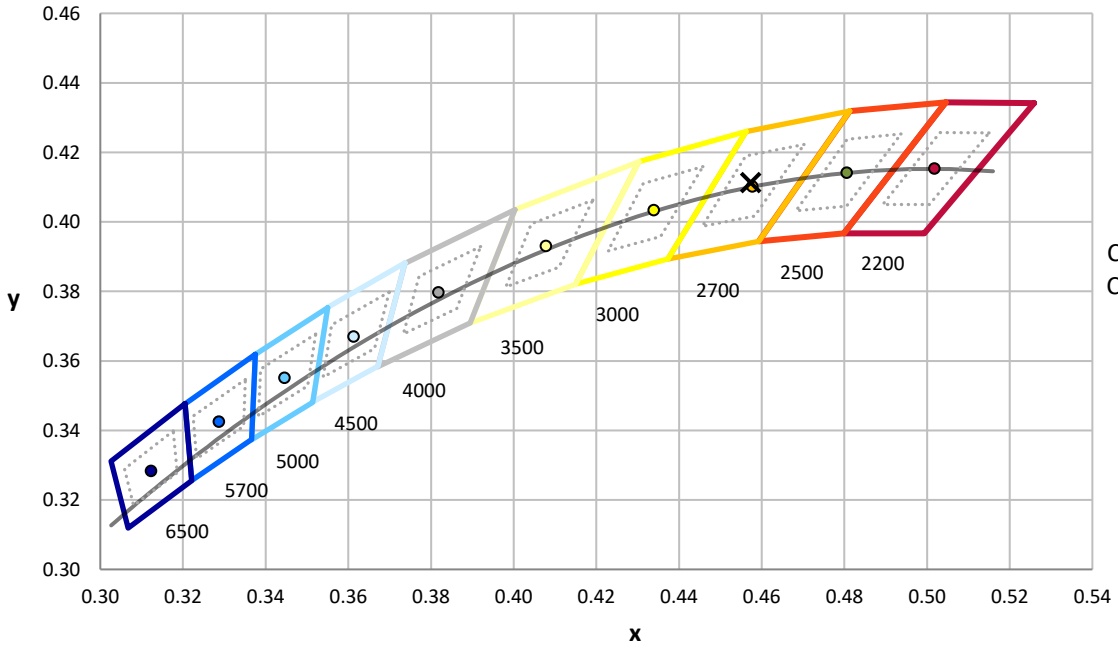
## CIE 1931 Chromaticity Diagram




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




CCT = 2741K
CIE x = 0.4573
CIE y = 0.4113
Duv = 0.0005

Point lies inside the ANSI 2700K 4-step quadrangle

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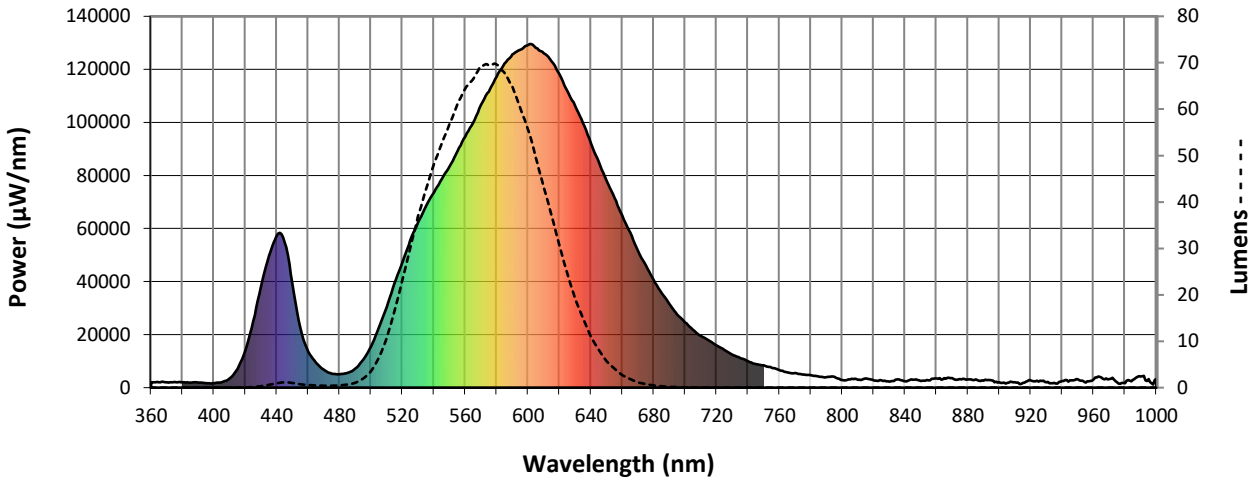
## Photopic Flux vs. Wavelength




**Photopic Lumens: 6211.7**

| 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 | 2044 | 0.0 | 490 | 7179 | 1.0 | 620 | 118034 | 30.7 | 750 | 8362 | 0.0 | 880 | 3128 | 0.0 |
| 365 | 2016 | 0.0 | 495 | 10476 | 1.9 | 625 | 111884 | 24.7 | 755 | 7635 | 0.0 | 885 | 3110 | 0.0 |
| 370 | 2020 | 0.0 | 500 | 15549 | 3.4 | 630 | 106119 | 19.2 | 760 | 6582 | 0.0 | 890 | 2632 | 0.0 |
| 375 | 2137 | 0.0 | 505 | 22477 | 6.3 | 635 | 99706 | 15.0 | 765 | 5777 | 0.0 | 895 | 2709 | 0.0 |
| 380 | 2046 | 0.0 | 510 | 30417 | 10.4 | 640 | 92142 | 11.0 | 770 | 5474 | 0.0 | 900 | 2016 | 0.0 |
| 385 | 1925 | 0.0 | 515 | 39274 | 16.3 | 645 | 84987 | 8.2 | 775 | 4977 | 0.0 | 905 | 1748 | 0.0 |
| 390 | 1893 | 0.0 | 520 | 47282 | 22.9 | 650 | 78016 | 5.7 | 780 | 4723 | 0.0 | 910 | 2046 | 0.0 |
| 395 | 1695 | 0.0 | 525 | 55413 | 29.7 | 655 | 71541 | 4.1 | 785 | 4219 | 0.0 | 915 | 1844 | 0.0 |
| 400 | 1633 | 0.0 | 530 | 62377 | 36.7 | 660 | 64863 | 2.7 | 790 | 3969 | 0.0 | 920 | 2734 | 0.0 |
| 405 | 2065 | 0.0 | 535 | 68520 | 42.5 | 665 | 58485 | 1.9 | 795 | 4122 | 0.0 | 925 | 2307 | 0.0 |
| 410 | 3449 | 0.0 | 540 | 73435 | 47.8 | 670 | 51641 | 1.1 | 800 | 2864 | 0.0 | 930 | 2039 | 0.0 |
| 415 | 7117 | 0.0 | 545 | 78677 | 52.4 | 675 | 46030 | 0.8 | 805 | 3151 | 0.0 | 935 | 1784 | 0.0 |
| 420 | 13992 | 0.0 | 550 | 83331 | 56.6 | 680 | 40590 | 0.5 | 810 | 3022 | 0.0 | 940 | 2464 | 0.0 |
| 425 | 25176 | 0.1 | 555 | 89120 | 60.9 | 685 | 35691 | 0.3 | 815 | 3471 | 0.0 | 945 | 2794 | 0.0 |
| 430 | 38151 | 0.3 | 560 | 94613 | 64.3 | 690 | 31631 | 0.2 | 820 | 2749 | 0.0 | 950 | 3090 | 0.0 |
| 435 | 49673 | 0.6 | 565 | 99818 | 66.4 | 695 | 27437 | 0.1 | 825 | 2729 | 0.0 | 955 | 1866 | 0.0 |
| 440 | 57273 | 0.9 | 570 | 106526 | 69.3 | 700 | 24589 | 0.1 | 830 | 2282 | 0.0 | 960 | 3110 | 0.0 |
| 445 | 54802 | 1.1 | 575 | 111610 | 69.4 | 705 | 21832 | 0.0 | 835 | 3140 | 0.0 | 965 | 3880 | 0.0 |
| 450 | 39184 | 1.0 | 580 | 117163 | 69.6 | 710 | 19500 | 0.0 | 840 | 2365 | 0.0 | 970 | 3243 | 0.0 |
| 455 | 22506 | 0.8 | 585 | 122201 | 67.9 | 715 | 17870 | 0.0 | 845 | 3024 | 0.0 | 975 | 2014 | 0.0 |
| 460 | 13692 | 0.6 | 590 | 125662 | 65.0 | 720 | 15924 | 0.0 | 850 | 2510 | 0.0 | 980 | 1688 | 0.0 |
| 465 | 9446 | 0.5 | 595 | 127415 | 60.4 | 725 | 14268 | 0.0 | 855 | 2739 | 0.0 | 985 | 2827 | 0.0 |
| 470 | 6698 | 0.4 | 600 | 129155 | 55.7 | 730 | 12438 | 0.0 | 860 | 3515 | 0.0 | 990 | 4172 | 0.0 |
| 475 | 5328 | 0.4 | 605 | 128057 | 49.6 | 735 | 11255 | 0.0 | 865 | 3600 | 0.0 | 995 | 3177 | 0.0 |
| 480 | 5081 | 0.5 | 610 | 126031 | 43.3 | 740 | 9951 | 0.0 | 870 | 3609 | 0.0 | 1000 | 3241 | 0.0 |
| 485 | 5579 | 0.7 | 615 | 123059 | 37.1 | 745 | 8870 | 0.0 | 875 | 3208 | 0.0 | | | |

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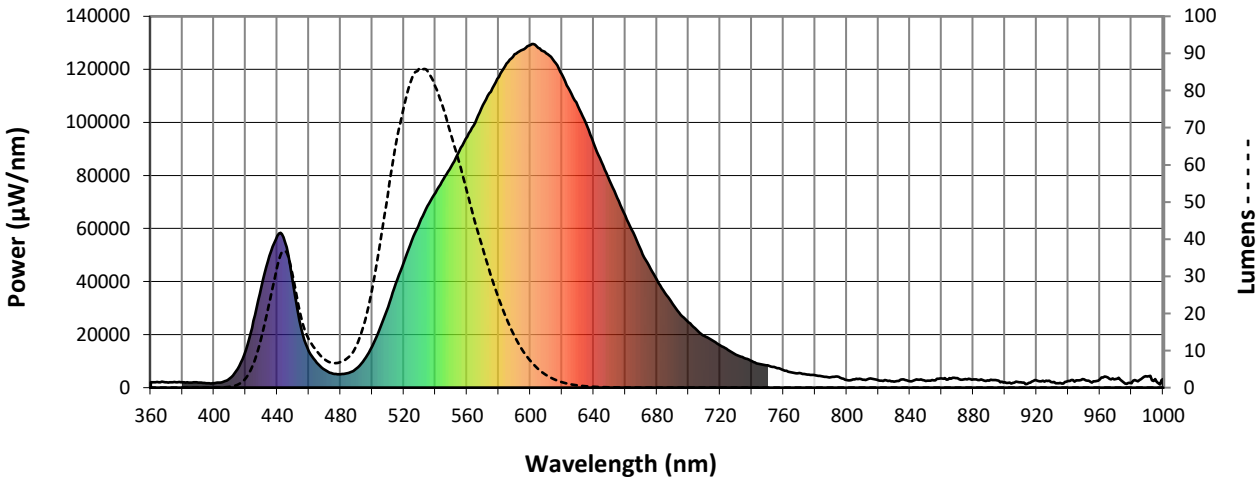
## Scotopic Flux vs. Wavelength




**Scotopic Lumens: 6474.3** **S/P: 1.04**

| 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 | 2044 | 0.0 | 490 | 7179 | 6.0 | 620 | 118034 | 0.1 | 750 | 8362 | 0.0 | 880 | 3128 | 0.0 |
| 365 | 2016 | 0.0 | 495 | 10476 | 8.6 | 625 | 111884 | 0.1 | 755 | 7635 | 0.0 | 885 | 3110 | 0.0 |
| 370 | 2020 | 0.0 | 500 | 15549 | 12.5 | 630 | 106119 | 0.0 | 760 | 6582 | 0.0 | 890 | 2632 | 0.0 |
| 375 | 2137 | 0.0 | 505 | 22477 | 17.3 | 635 | 99706 | 0.0 | 765 | 5777 | 0.0 | 895 | 2709 | 0.0 |
| 380 | 2046 | 0.0 | 510 | 30417 | 21.8 | 640 | 92142 | 0.0 | 770 | 5474 | 0.0 | 900 | 2016 | 0.0 |
| 385 | 1925 | 0.0 | 515 | 39274 | 25.7 | 645 | 84987 | 0.0 | 775 | 4977 | 0.0 | 905 | 1748 | 0.0 |
| 390 | 1893 | 0.0 | 520 | 47282 | 27.5 | 650 | 78016 | 0.0 | 780 | 4723 | 0.0 | 910 | 2046 | 0.0 |
| 395 | 1695 | 0.0 | 525 | 55413 | 28.1 | 655 | 71541 | 0.0 | 785 | 4219 | 0.0 | 915 | 1844 | 0.0 |
| 400 | 1633 | 0.0 | 530 | 62377 | 27.0 | 660 | 64863 | 0.0 | 790 | 3969 | 0.0 | 920 | 2734 | 0.0 |
| 405 | 2065 | 0.0 | 535 | 68520 | 24.7 | 665 | 58485 | 0.0 | 795 | 4122 | 0.0 | 925 | 2307 | 0.0 |
| 410 | 3449 | 0.1 | 540 | 73435 | 21.5 | 670 | 51641 | 0.0 | 800 | 2864 | 0.0 | 930 | 2039 | 0.0 |
| 415 | 7117 | 0.5 | 545 | 78677 | 18.3 | 675 | 46030 | 0.0 | 805 | 3151 | 0.0 | 935 | 1784 | 0.0 |
| 420 | 13992 | 1.6 | 550 | 83331 | 15.0 | 680 | 40590 | 0.0 | 810 | 3022 | 0.0 | 940 | 2464 | 0.0 |
| 425 | 25176 | 3.9 | 555 | 89120 | 12.0 | 685 | 35691 | 0.0 | 815 | 3471 | 0.0 | 945 | 2794 | 0.0 |
| 430 | 38151 | 8.1 | 560 | 94613 | 9.3 | 690 | 31631 | 0.0 | 820 | 2749 | 0.0 | 950 | 3090 | 0.0 |
| 435 | 49673 | 13.3 | 565 | 99818 | 7.0 | 695 | 27437 | 0.0 | 825 | 2729 | 0.0 | 955 | 1866 | 0.0 |
| 440 | 57273 | 19.1 | 570 | 106526 | 5.2 | 700 | 24589 | 0.0 | 830 | 2282 | 0.0 | 960 | 3110 | 0.0 |
| 445 | 54802 | 21.6 | 575 | 111610 | 3.7 | 705 | 21832 | 0.0 | 835 | 3140 | 0.0 | 965 | 3880 | 0.0 |
| 450 | 39184 | 18.1 | 580 | 117163 | 2.6 | 710 | 19500 | 0.0 | 840 | 2365 | 0.0 | 970 | 3243 | 0.0 |
| 455 | 22506 | 11.8 | 585 | 122201 | 1.8 | 715 | 17870 | 0.0 | 845 | 3024 | 0.0 | 975 | 2014 | 0.0 |
| 460 | 13692 | 8.1 | 590 | 125662 | 1.2 | 720 | 15924 | 0.0 | 850 | 2510 | 0.0 | 980 | 1688 | 0.0 |
| 465 | 9446 | 6.2 | 595 | 127415 | 0.8 | 725 | 14268 | 0.0 | 855 | 2739 | 0.0 | 985 | 2827 | 0.0 |
| 470 | 6698 | 4.8 | 600 | 129155 | 0.5 | 730 | 12438 | 0.0 | 860 | 3515 | 0.0 | 990 | 4172 | 0.0 |
| 475 | 5328 | 4.1 | 605 | 128057 | 0.4 | 735 | 11255 | 0.0 | 865 | 3600 | 0.0 | 995 | 3177 | 0.0 |
| 480 | 5081 | 4.1 | 610 | 126031 | 0.2 | 740 | 9951 | 0.0 | 870 | 3609 | 0.0 | 1000 | 3241 | 0.0 |
| 485 | 5579 | 4.6 | 615 | 123059 | 0.1 | 745 | 8870 | 0.0 | 875 | 3208 | 0.0 | | | |

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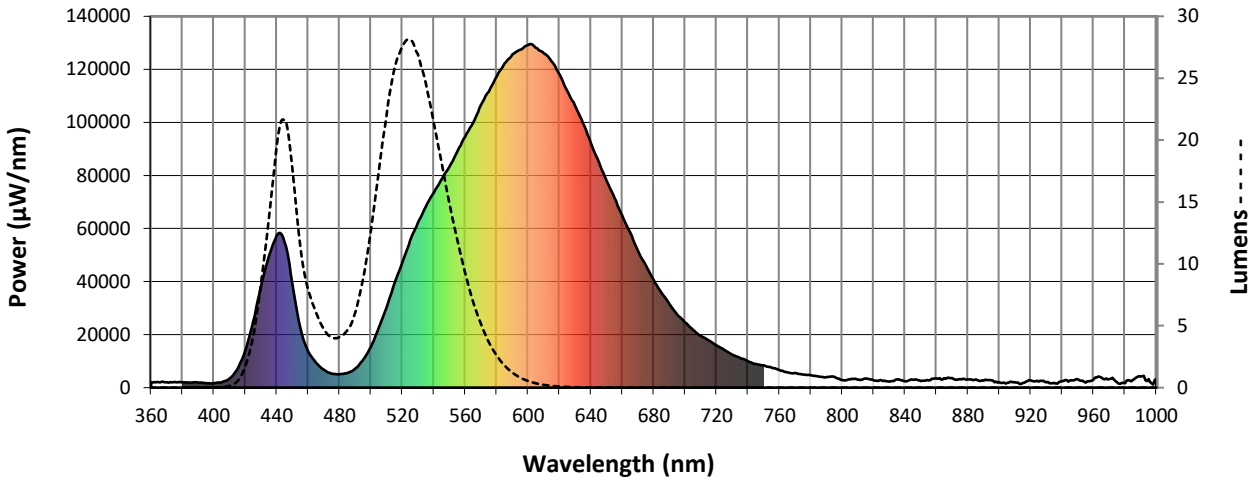
## Melanopic Flux vs. Wavelength




**Melanopic Lumens: 2145.7** **M/P: 0.35**

| 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 | 2044 | 0.0 | 490 | 7179 | 11.1 | 620 | 118034 | 1.5 | 750 | 8362 | 0.0 | 880 | 3128 | 0.0 |
| 365 | 2016 | 0.0 | 495 | 10476 | 16.9 | 625 | 111884 | 0.9 | 755 | 7635 | 0.0 | 885 | 3110 | 0.0 |
| 370 | 2020 | 0.0 | 500 | 15549 | 26.0 | 630 | 106119 | 0.6 | 760 | 6582 | 0.0 | 890 | 2632 | 0.0 |
| 375 | 2137 | 0.0 | 505 | 22477 | 38.2 | 635 | 99706 | 0.4 | 765 | 5777 | 0.0 | 895 | 2709 | 0.0 |
| 380 | 2046 | 0.0 | 510 | 30417 | 51.6 | 640 | 92142 | 0.2 | 770 | 5474 | 0.0 | 900 | 2016 | 0.0 |
| 385 | 1925 | 0.0 | 515 | 39274 | 65.1 | 645 | 84987 | 0.1 | 775 | 4977 | 0.0 | 905 | 1748 | 0.0 |
| 390 | 1893 | 0.0 | 520 | 47282 | 75.2 | 650 | 78016 | 0.1 | 780 | 4723 | 0.0 | 910 | 2046 | 0.0 |
| 395 | 1695 | 0.0 | 525 | 55413 | 82.9 | 655 | 71541 | 0.1 | 785 | 4219 | 0.0 | 915 | 1844 | 0.0 |
| 400 | 1633 | 0.0 | 530 | 62377 | 86.0 | 660 | 64863 | 0.0 | 790 | 3969 | 0.0 | 920 | 2734 | 0.0 |
| 405 | 2065 | 0.1 | 535 | 68520 | 85.4 | 665 | 58485 | 0.0 | 795 | 4122 | 0.0 | 925 | 2307 | 0.0 |
| 410 | 3449 | 0.2 | 540 | 73435 | 81.1 | 670 | 51641 | 0.0 | 800 | 2864 | 0.0 | 930 | 2039 | 0.0 |
| 415 | 7117 | 0.7 | 545 | 78677 | 75.4 | 675 | 46030 | 0.0 | 805 | 3151 | 0.0 | 935 | 1784 | 0.0 |
| 420 | 13992 | 2.3 | 550 | 83331 | 68.1 | 680 | 40590 | 0.0 | 810 | 3022 | 0.0 | 940 | 2464 | 0.0 |
| 425 | 25176 | 6.2 | 555 | 89120 | 60.9 | 685 | 35691 | 0.0 | 815 | 3471 | 0.0 | 945 | 2794 | 0.0 |
| 430 | 38151 | 13.0 | 560 | 94613 | 52.9 | 690 | 31631 | 0.0 | 820 | 2749 | 0.0 | 950 | 3090 | 0.0 |
| 435 | 49673 | 22.2 | 565 | 99818 | 44.8 | 695 | 27437 | 0.0 | 825 | 2729 | 0.0 | 955 | 1866 | 0.0 |
| 440 | 57273 | 32.0 | 570 | 106526 | 37.6 | 700 | 24589 | 0.0 | 830 | 2282 | 0.0 | 960 | 3110 | 0.0 |
| 445 | 54802 | 36.7 | 575 | 111610 | 30.4 | 705 | 21832 | 0.0 | 835 | 3140 | 0.0 | 965 | 3880 | 0.0 |
| 450 | 39184 | 30.4 | 580 | 117163 | 24.1 | 710 | 19500 | 0.0 | 840 | 2365 | 0.0 | 970 | 3243 | 0.0 |
| 455 | 22506 | 19.7 | 585 | 122201 | 18.7 | 715 | 17870 | 0.0 | 845 | 3024 | 0.0 | 975 | 2014 | 0.0 |
| 460 | 13692 | 13.2 | 590 | 125662 | 14.0 | 720 | 15924 | 0.0 | 850 | 2510 | 0.0 | 980 | 1688 | 0.0 |
| 465 | 9446 | 10.0 | 595 | 127415 | 10.2 | 725 | 14268 | 0.0 | 855 | 2739 | 0.0 | 985 | 2827 | 0.0 |
| 470 | 6698 | 7.7 | 600 | 129155 | 7.3 | 730 | 12438 | 0.0 | 860 | 3515 | 0.0 | 990 | 4172 | 0.0 |
| 475 | 5328 | 6.7 | 605 | 128057 | 5.0 | 735 | 11255 | 0.0 | 865 | 3600 | 0.0 | 995 | 3177 | 0.0 |
| 480 | 5081 | 6.9 | 610 | 126031 | 3.4 | 740 | 9951 | 0.0 | 870 | 3609 | 0.0 | 1000 | 3241 | 0.0 |
| 485 | 5579 | 8.1 | 615 | 123059 | 2.3 | 745 | 8870 | 0.0 | 875 | 3208 | 0.0 | | | |

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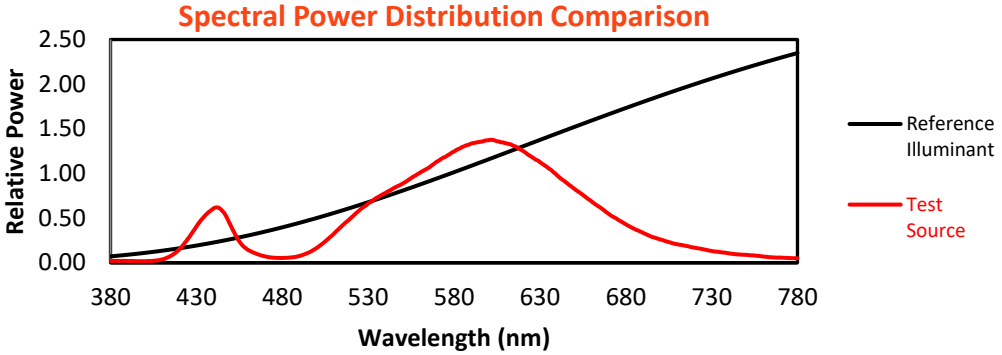
# TM-30-18

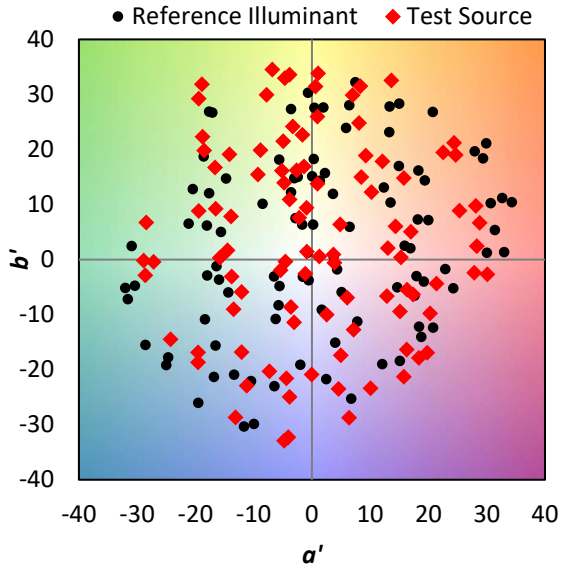
## Summary

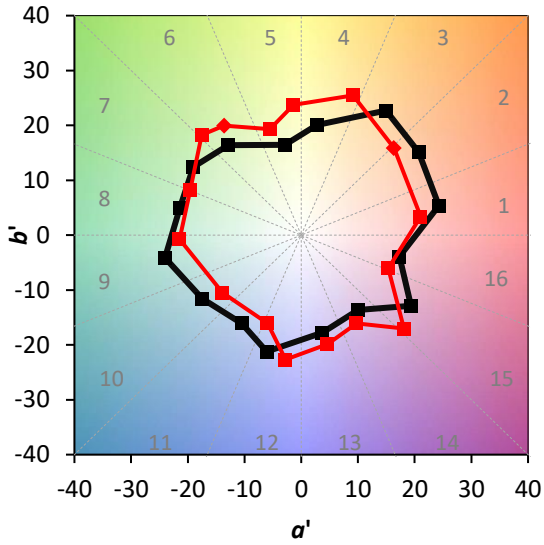
$R_f$ = 69.9
$R_g$ = 98.3
CIE $R_a$ = 71.5
$R_9$ = -16.1

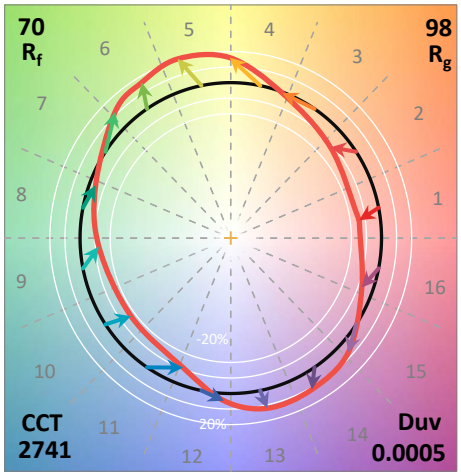
## Spectral Power Distribution Comparison

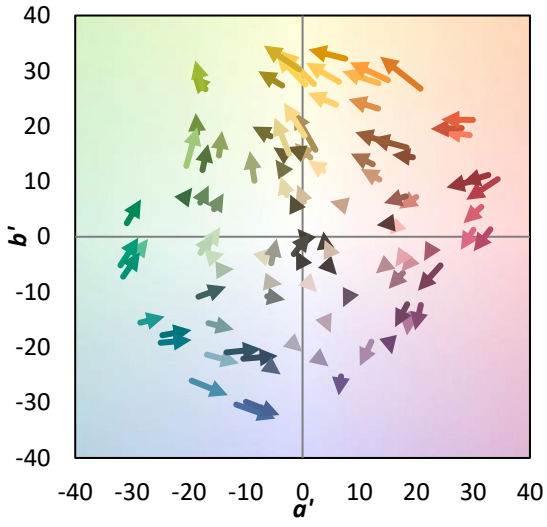



## Color Vector Graphics



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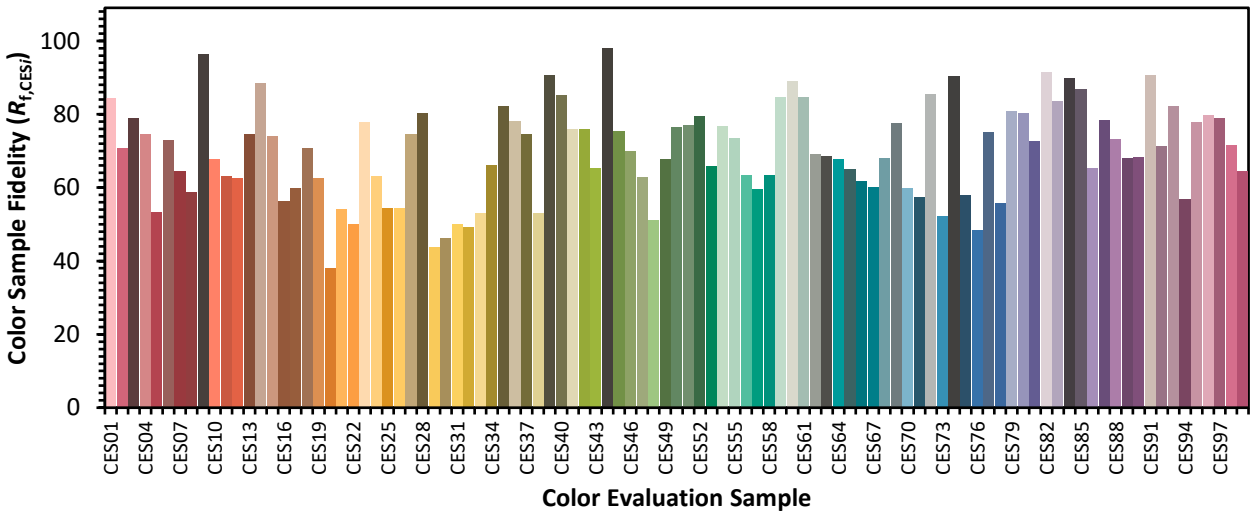
## TM-30-18

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

| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 54 | CES51 = 77 | CES76 = 48 |
| CES02 = 63 | CES27 = 74 | CES52 = 80 | CES77 = 75 |
| CES03 = 31 | CES28 = 80 | CES53 = 66 | CES78 = 56 |
| CES04 = 71 | CES29 = 44 | CES54 = 77 | CES79 = 81 |
| CES05 = 50 | CES30 = 46 | CES55 = 74 | CES80 = 80 |
| CES06 = 52 | CES31 = 50 | CES56 = 63 | CES81 = 73 |
| CES07 = 42 | CES32 = 49 | CES57 = 60 | CES82 = 91 |
| CES08 = 41 | CES33 = 53 | CES58 = 63 | CES83 = 84 |
| CES09 = 29 | CES34 = 66 | CES59 = 85 | CES84 = 90 |
| CES10 = 77 | CES35 = 82 | CES60 = 89 | CES85 = 87 |
| CES11 = 60 | CES36 = 78 | CES61 = 85 | CES86 = 65 |
| CES12 = 66 | CES37 = 75 | CES62 = 69 | CES87 = 78 |
| CES13 = 43 | CES38 = 53 | CES63 = 68 | CES88 = 73 |
| CES14 = 74 | CES39 = 91 | CES64 = 68 | CES89 = 68 |
| CES15 = 71 | CES40 = 85 | CES65 = 65 | CES90 = 68 |
| CES16 = 48 | CES41 = 76 | CES66 = 62 | CES91 = 91 |
| CES17 = 50 | CES42 = 76 | CES67 = 60 | CES92 = 71 |
| CES18 = 57 | CES43 = 65 | CES68 = 68 | CES93 = 82 |
| CES19 = 73 | CES44 = 98 | CES69 = 77 | CES94 = 57 |
| CES20 = 67 | CES45 = 75 | CES70 = 60 | CES95 = 78 |
| CES21 = 88 | CES46 = 70 | CES71 = 57 | CES96 = 80 |
| CES22 = 80 | CES47 = 63 | CES72 = 86 | CES97 = 79 |
| CES23 = 92 | CES48 = 51 | CES73 = 52 | CES98 = 71 |
| CES24 = 91 | CES49 = 68 | CES74 = 90 | CES99 = 64 |
| CES25 = 73 | CES50 = 77 | CES75 = 58 | |



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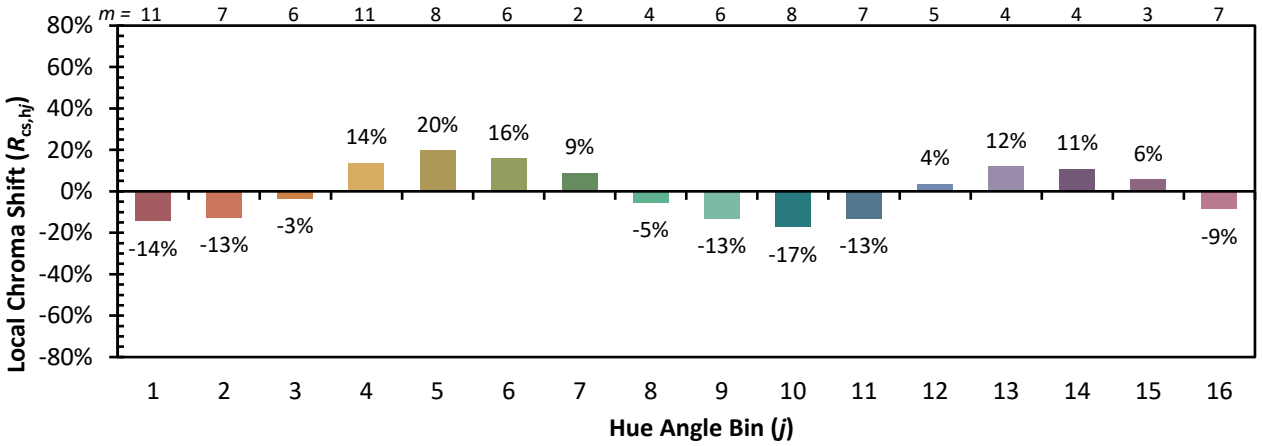
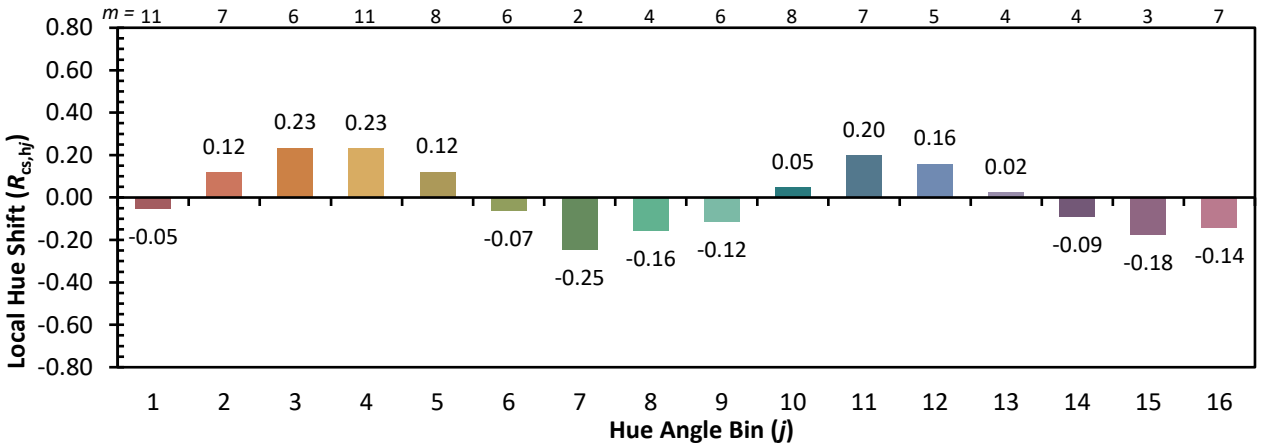
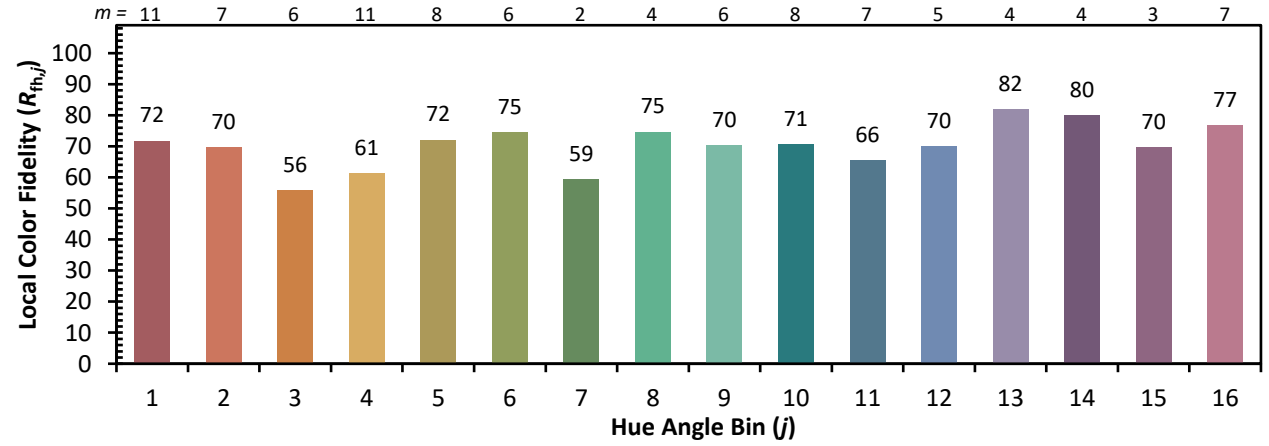
## TM-30-18

### Color Rendition by Hue-Angle Bin



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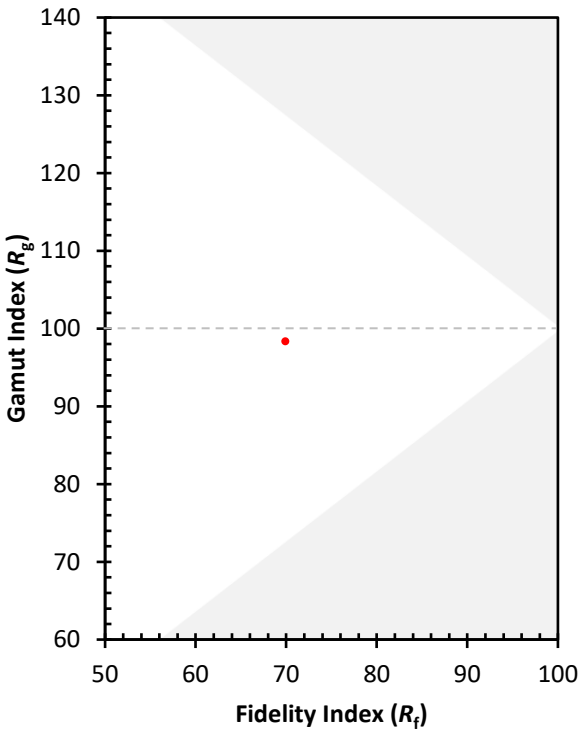
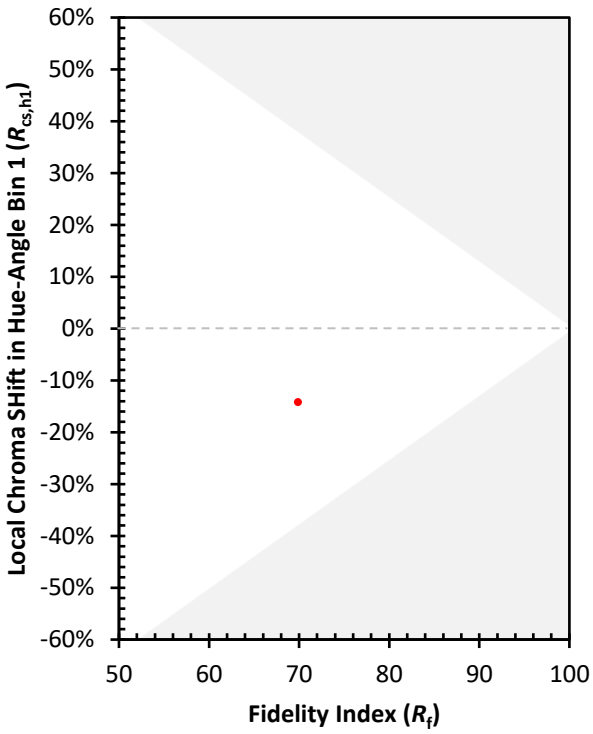
**TM-30-18**

## Measure Comparisons




(END OF REPORT)