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: P322734

Luminaire Tested: **GLEON-SA0C-830-U-T4FT-HSS**

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: | P322734 |
| | TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-17) |
| Test Lab: | INNOVATION CENTER |
| Issue Date: | 3/3/2020 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS (FORMERLY EATON) |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | GLEON-SA0C-830-U-T4FT-HSS |
| Description: | GALLEON AREA AND ROADWAY LUMINAIRE |
| | (10) 80 CRI, 3000K, 1050mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE IV FORWARD THROW OPTICS WITH HOUSE SIDE SHIELD |
| Light Source: | - |
| Ballast/Driver: | ELECTRONIC DRIVER |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 39507 lumens |
| Efficiency: | N/A |
| Efficacy: | 70.8 lumens/watt |
| Luminous Opening: | Rectangular (W 2.5' x L: 1' x H: 0') |
| IES Classification: | Type IV - Short |
| BUG Rating: | B3 - U0 - G5 |

| | |
|---|---|
| Input Watts (W): | 558 |
| 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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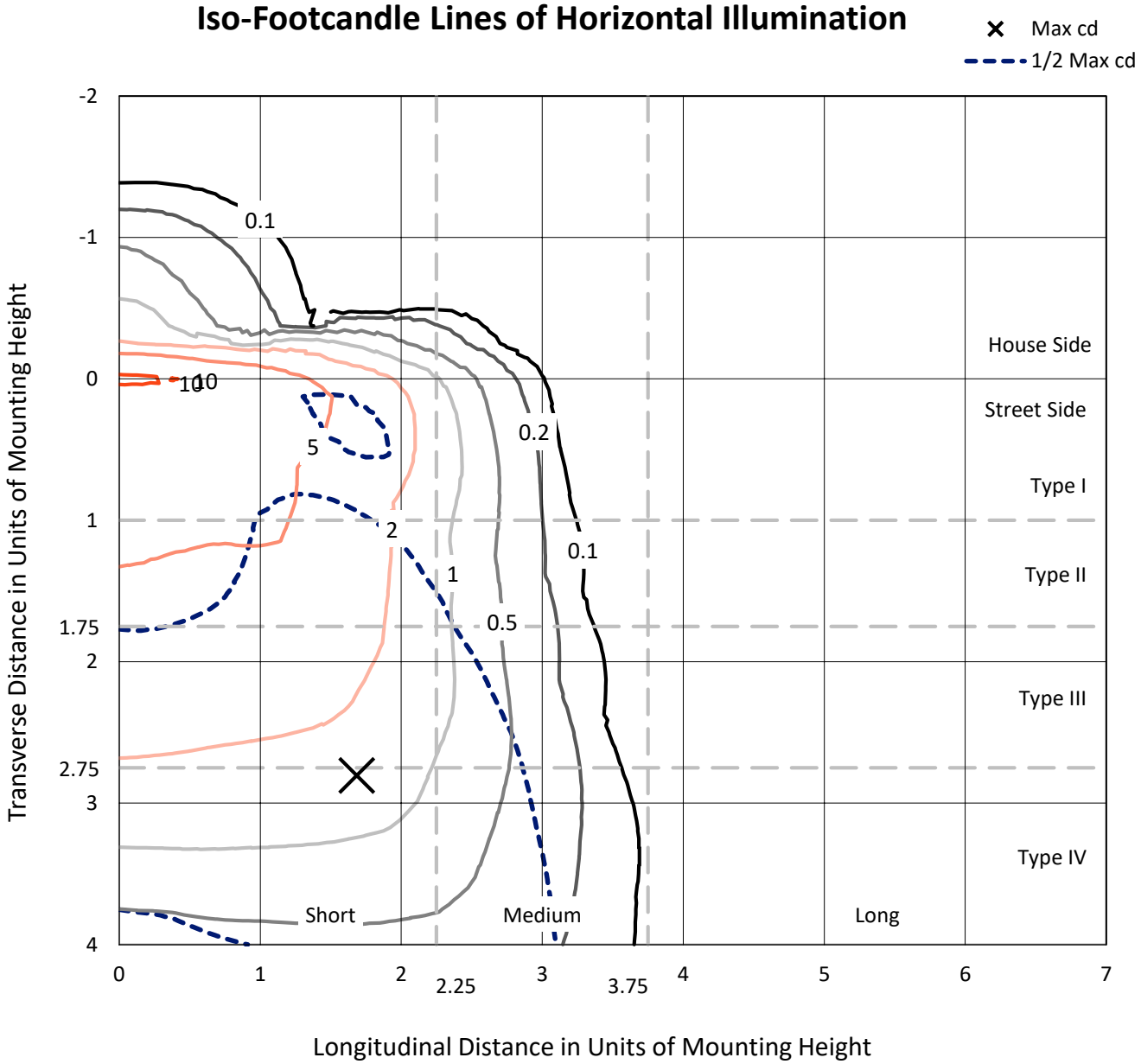
Scaled Data Report

REPORT NUMBER: P322734
CATALOG NUMBER: GLEON-SA0C-830-U-T4FT-HSS

## Iso-Footcandle Lines of Horizontal Illumination




Based on 25 foot mounting height. Maximum calculated value = 10.9 fc
Type IV - Short - N/A

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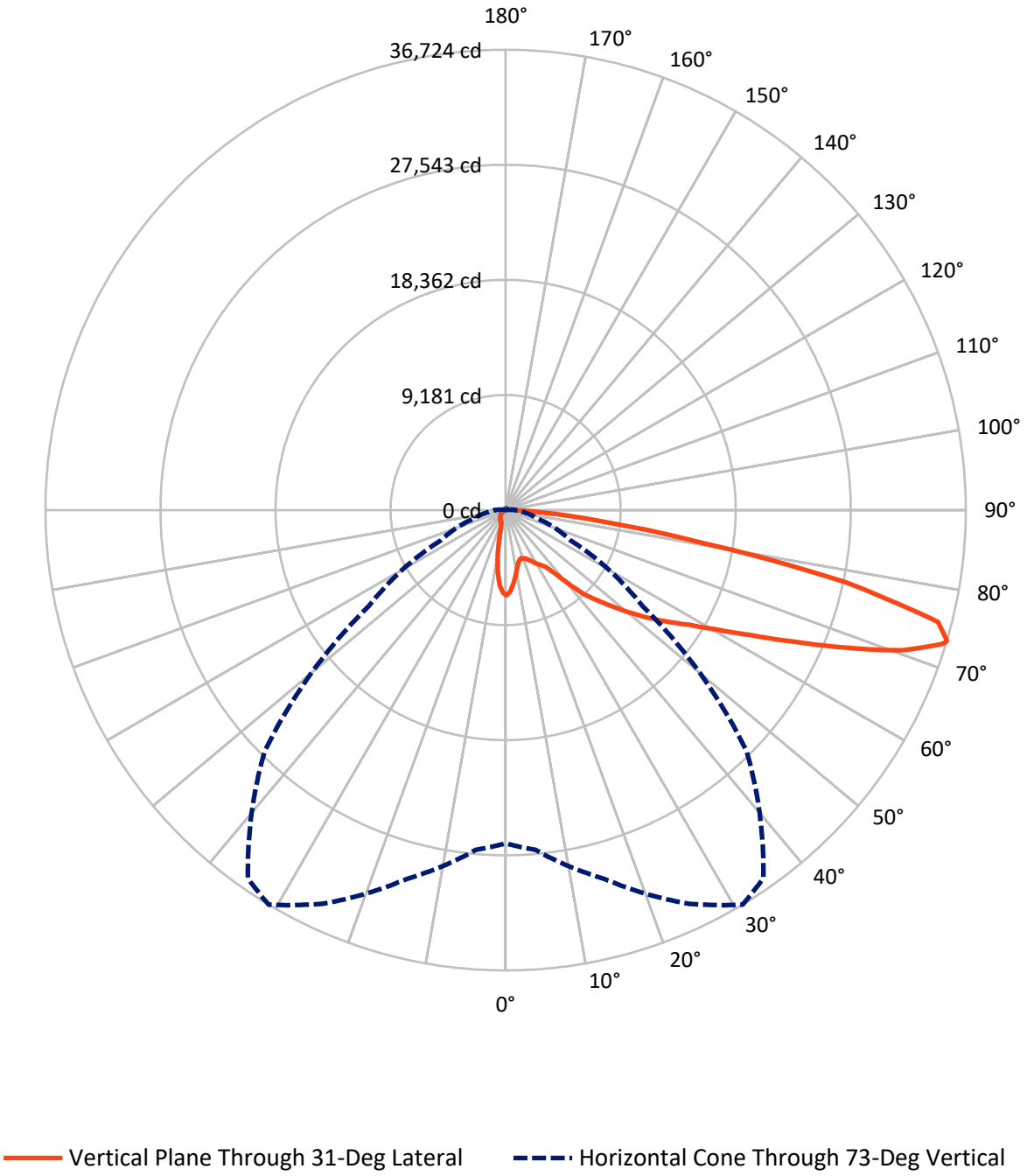
## Luminous Intensity Polar Plot



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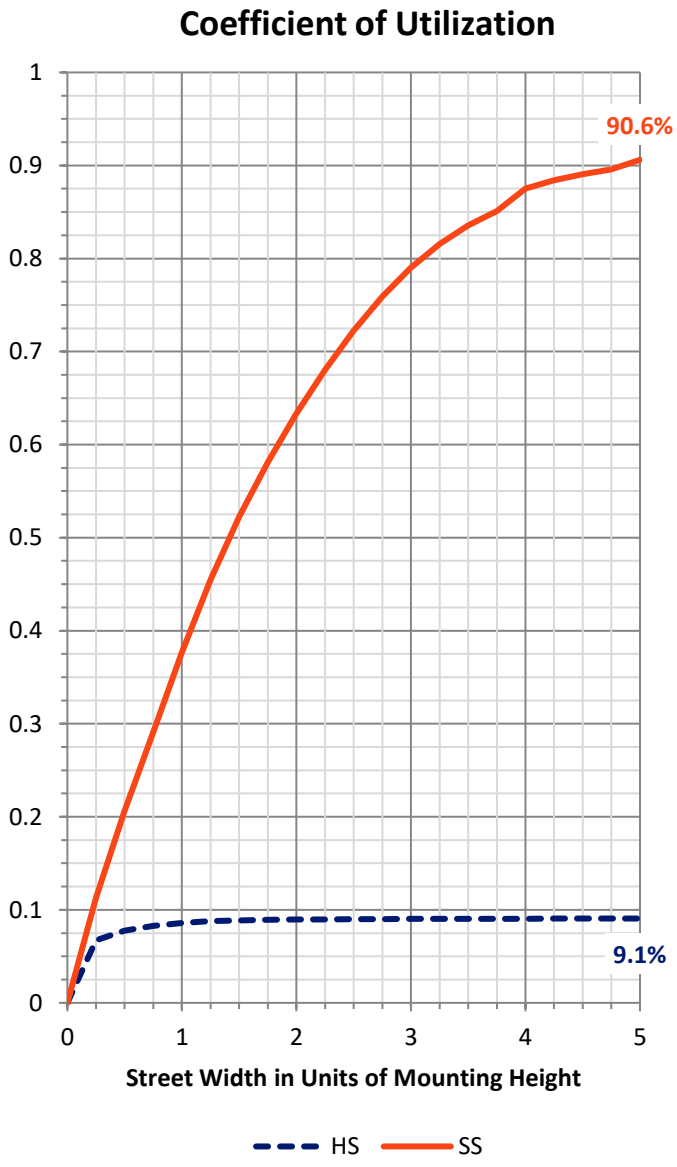
CATALOG NUMBER: GLEON-SA0C-830-U-T4FT-HSS

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 3601.2 | 0.0 | 3601.2 |
| | % Fixture | 9.1 | 0.0 | 9.1 |
| **Street Side** | Lumens | 35905.8 | 0.0 | 35905.8 |
| | % Fixture | 90.9 | 0.0 | 90.9 |
| **Total** | Lumens | 39507.0 | 0.0 | 39507.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 563.6 | 1.4 |
| 10°-20° | 1223.7 | 3.1 |
| 20°-30° | 1833.5 | 4.6 |
| 30°-40° | 2917.1 | 7.4 |
| 40°-50° | 5209.1 | 13.2 |
| 50°-60° | 8083.0 | 20.5 |
| 60°-70° | 10745.2 | 27.2 |
| 70°-80° | 8082.6 | 20.5 |
| 80°-90° | 849.3 | 2.1 |
| 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° | 39507.0 | 100.0 |
| 0°-180° | 39507.0 | 100.0 |



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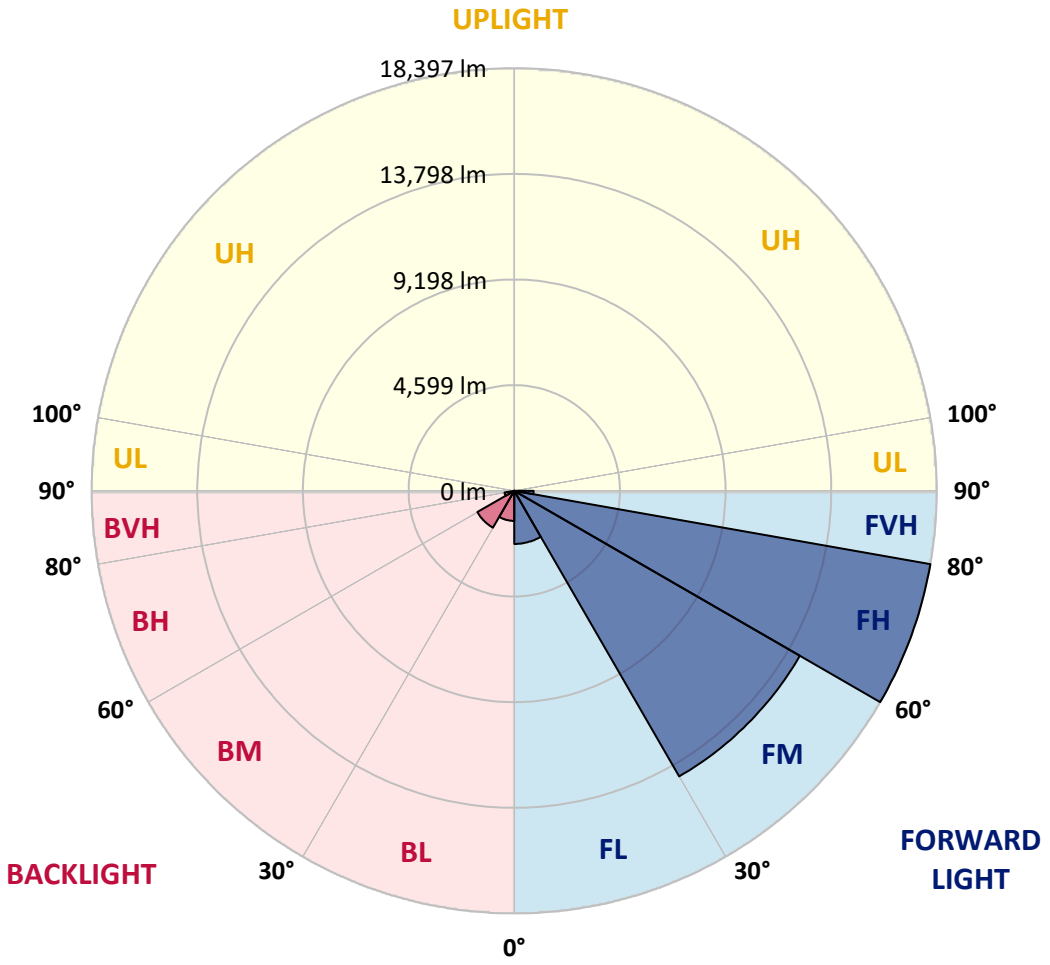
REPORT NUMBER: P322734
CATALOG NUMBER: GLEON-SA0C-830-U-T4FT-HSS

## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 2311.2 | 5.9 | | | |
| FM | (30°-60°) | 14355.5 | 36.3 | | | |
| FH | (60°-80°) | 18396.9 | 46.6 | | | G5 |
| FVH | (80°-90°) | 842.2 | 2.1 | | | G5 |
| BL | (0°-30°) | 1309.6 | 3.3 | B3/2500 | | |
| BM | (30°-60°) | 1853.6 | 4.7 | B2/2500 | | |
| BH | (60°-80°) | 430.9 | 1.1 | B1/500 | | G1/500 |
| BVH | (80°-90°) | 7.1 | 0.0 | | | G0/10 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

**BUG Rating: B3-U0-G5**
Type IV Short



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REPORT NUMBER: P322734
CATALOG NUMBER: GLEON-SA0C-830-U-T4FT-HSS

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 31° | 35° | 45° | 55° | 65° | 75° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 6797.3 | 6797.3 | 6797.3 | 6797.3 | *6797.3* | 6797.3 | 6797.3 | 6797.3 | 6797.3 | 6797.3 | 6797.3 |
| 2.5° | 6441.5 | 6468.6 | 6497.6 | 6503.4 | *6551.7* | 6553.7 | 6623.3 | 6675.5 | 6727.7 | 6777.9 | 6795.3 |
| 5° | 5780.4 | 5824.8 | 5877.0 | 5929.2 | *6031.7* | 6072.3 | 6242.4 | 6416.4 | 6582.7 | 6741.2 | 6818.5 |
| 7.5° | 5074.7 | 5125.0 | 5198.5 | 5328.0 | *5442.1* | 5521.3 | 5790.0 | 6099.4 | 6408.7 | 6700.6 | 6868.8 |
| 10° | 4431.0 | 4477.4 | 4554.7 | 4692.0 | *4867.9* | 4976.2 | 5337.7 | 5766.8 | 6221.2 | 6663.9 | 6944.2 |
| 12.5° | 4021.1 | 4046.3 | 4088.8 | 4235.7 | *4394.2* | 4516.0 | 4941.4 | 5473.0 | 6066.5 | 6661.9 | 7066.0 |
| 15° | 3945.7 | 3953.5 | 3918.7 | 3984.4 | *4108.1* | 4226.1 | 4657.2 | 5235.2 | 5948.6 | 6692.9 | 7224.5 |
| 17.5° | 4065.6 | 4061.7 | 3945.7 | 3938.0 | *4036.6* | 4133.3 | 4518.0 | 5070.9 | 5865.4 | 6764.4 | 7429.4 |
| 20° | 4247.3 | 4233.8 | 4032.7 | 3996.0 | *4100.4* | 4191.3 | 4508.3 | 5009.0 | 5834.5 | 6884.3 | 7678.8 |
| 22.5° | 4489.0 | 4465.8 | 4150.7 | 4112.0 | *4224.1* | 4318.9 | 4628.2 | 5068.9 | 5861.6 | 7044.7 | 7968.8 |
| 25° | 4788.6 | 4753.8 | 4353.6 | 4311.1 | *4425.2* | 4519.9 | 4842.8 | 5241.0 | 5942.8 | 7240.0 | 8336.1 |
| 27.5° | 5126.9 | 5076.7 | 4678.4 | 4568.2 | *4697.8* | 4796.4 | 5128.9 | 5503.9 | 6070.4 | 7446.8 | 8786.6 |
| 30° | 5445.9 | 5380.2 | 5020.6 | 4838.9 | *4997.4* | 5107.6 | 5438.2 | 5817.1 | 6275.3 | 7765.8 | 9403.3 |
| 32.5° | 5766.8 | 5693.4 | 5326.1 | 5109.5 | *5252.6* | 5372.5 | 5757.2 | 6248.2 | 6660.0 | 8253.0 | 10223.0 |
| 35° | 6505.3 | 6428.0 | 5977.6 | 5619.9 | *5618.0* | 5685.6 | 6203.8 | 6837.9 | 7168.4 | 8931.6 | 11201.2 |
| 37.5° | 7748.4 | 7703.9 | 7274.8 | 6596.2 | *6414.5* | 6339.1 | 6812.7 | 7541.6 | 7899.2 | 9865.3 | 12305.1 |
| 40° | 9109.4 | 9070.7 | 8589.4 | 7974.6 | *7698.1* | 7512.6 | 7686.5 | 8521.7 | 8931.6 | 11005.9 | 13432.1 |
| 42.5° | 10646.3 | 10462.7 | 9604.3 | 9420.7 | *9173.2* | 9032.1 | 8875.5 | 9730.0 | 10199.8 | 12247.1 | 14549.5 |
| 45° | 12042.1 | 11732.8 | 10619.3 | 10340.9 | *10284.8* | 10319.6 | 10406.6 | 11353.9 | 11626.5 | 13722.1 | 15663.1 |
| 47.5° | 12873.4 | 12629.8 | 11775.3 | 11508.6 | *11493.1* | 11723.1 | 12380.4 | 13188.5 | 13047.4 | 15007.7 | 16643.2 |
| 50° | 13664.1 | 13443.7 | 12734.2 | 12800.0 | *12871.5* | 13184.7 | 14621.1 | 15075.4 | 14344.6 | 16173.5 | 17542.2 |
| 52.5° | 14304.0 | 13967.6 | 13596.5 | 13965.7 | *14317.6* | 14822.1 | 16933.2 | 16768.9 | 15264.8 | 17101.4 | 18311.6 |
| 55° | 14673.3 | 14520.5 | 14700.3 | 15071.5 | *15732.7* | 16552.4 | 19115.8 | 18178.2 | 15937.6 | 17948.2 | 18823.9 |
| 57.5° | 16026.5 | 15726.9 | 16084.5 | 16405.4 | *17267.7* | 18414.1 | 20985.3 | 19228.0 | 16422.8 | 18472.1 | 18941.9 |
| 60° | 17664.0 | 17422.3 | 17633.1 | 18166.6 | *19330.4* | 20677.9 | 22732.9 | 20084.4 | 16676.1 | 18808.5 | 18636.4 |
| 62.5° | 20270.0 | 19951.0 | 19819.5 | 20416.9 | *21959.6* | 23430.8 | 24059.1 | 20677.9 | 16620.0 | 18659.6 | 17588.6 |
| 65° | 23761.4 | 23430.8 | 22843.1 | 23384.4 | *25346.7* | 26384.8 | 25541.9 | 20803.6 | 16233.4 | 17455.2 | 14940.1 |
| 67.5° | 27337.9 | 27098.2 | 26595.5 | 27508.0 | *29278.9* | 29613.3 | 27109.8 | 20498.1 | 14988.4 | 14153.2 | 10555.5 |
| 70° | 29700.3 | 29597.9 | 29924.6 | 31942.9 | *33522.3* | 33425.7 | 28548.1 | 18856.8 | 11682.5 | 8703.4 | 5221.7 |
| 72.5° | 27997.1 | 28488.2 | 30900.9 | 34560.5 | *36489.8* | 35701.1 | 27809.6 | 14479.9 | 6677.4 | 3348.4 | 1509.9 |
| 73° | *26585.9* | *27214.2* | *30462.0* | *34659.1* | *36723.8* | *35859.6* | *27189.0* | *13291.0* | *5691.4* | *2642.7* | *1144.5* |
| 75° | 18495.3 | 19266.6 | 25219.1 | 32279.3 | *35629.6* | 34166.1 | 22663.3 | 8135.1 | 2636.9 | 1171.5 | 462.0 |
| 77.5° | 8979.9 | 9550.2 | 13886.4 | 23322.6 | *27709.1* | 26694.1 | 14108.8 | 3031.3 | 1190.9 | 732.7 | 212.7 |
| 80° | 3352.2 | 3727.3 | 6027.8 | 11870.1 | *16013.0* | 16432.5 | 6205.7 | 1146.4 | 792.6 | 589.6 | 108.3 |
| 82.5° | 877.7 | 978.2 | 2223.2 | 5293.2 | *8206.6* | 8589.4 | 1956.4 | 578.0 | 580.0 | 485.2 | 65.7 |
| 85° | 280.3 | 320.9 | 694.0 | 2375.9 | *3866.5* | 3394.8 | 510.4 | 280.3 | 421.4 | 361.5 | 36.7 |
| 87.5° | 34.8 | 44.5 | 220.4 | 558.7 | *852.6* | 473.6 | 79.3 | 83.1 | 179.8 | 201.1 | 21.3 |
| 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: P322734
CATALOG NUMBER: GLEON-SA0C-830-U-T4FT-HSS

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 6797.3 | 6797.3 | 6797.3 | 6797.3 | 6797.3 | 6797.3 | 6797.3 | 6797.3 | 6797.3 | 6797.3 | 6797.3 |
| 2.5° | 6812.7 | 6803.1 | 6805.0 | 6754.7 | 6721.9 | 6656.1 | 6588.5 | 6557.5 | 6524.7 | 6511.1 | 6524.7 |
| 5° | 6847.5 | 6830.1 | 6779.9 | 6625.2 | 6460.9 | 6248.2 | 6049.1 | 5898.3 | 5708.8 | 5656.7 | 5710.8 |
| 7.5° | 6901.7 | 6866.9 | 6719.9 | 6404.8 | 6039.4 | 5633.5 | 5177.2 | 4844.7 | 4572.1 | 4396.2 | 4460.0 |
| 10° | 6980.9 | 6915.2 | 6619.4 | 6083.9 | 5430.5 | 4711.3 | 4063.7 | 3559.1 | 3201.4 | 3054.5 | 3048.7 |
| 12.5° | 7114.3 | 6990.6 | 6495.7 | 5666.3 | 4686.2 | 3727.3 | 2878.6 | 2331.5 | 2041.5 | 1854.0 | 1850.1 |
| 15° | 7261.2 | 7079.5 | 6339.1 | 5165.6 | 3820.1 | 2669.8 | 1854.0 | 1438.3 | 1250.8 | 1190.9 | 1183.1 |
| 17.5° | 7441.0 | 7182.0 | 6136.1 | 4548.9 | 2913.4 | 1768.9 | 1210.2 | 1090.3 | 1082.6 | 1076.8 | 1076.8 |
| 20° | 7667.2 | 7303.8 | 5875.1 | 3843.3 | 2066.6 | 1181.2 | 1028.5 | 1036.2 | 1040.1 | 1032.3 | 1034.3 |
| 22.5° | 7930.1 | 7427.5 | 5563.9 | 3085.4 | 1397.7 | 987.9 | 984.0 | 993.7 | 997.6 | 993.7 | 995.6 |
| 25° | 8235.6 | 7570.6 | 5184.9 | 2290.9 | 1009.1 | 937.6 | 947.3 | 960.8 | 970.5 | 970.5 | 970.5 |
| 27.5° | 8614.5 | 7744.5 | 4728.7 | 1598.8 | 871.9 | 885.4 | 912.5 | 937.6 | 951.2 | 955.0 | 955.0 |
| 30° | 9107.5 | 7961.1 | 4181.6 | 1096.1 | 792.6 | 815.8 | 866.1 | 914.4 | 939.6 | 943.4 | 945.4 |
| 32.5° | 9730.0 | 8204.7 | 3547.5 | 810.0 | 725.0 | 742.4 | 796.5 | 877.7 | 926.0 | 933.8 | 933.8 |
| 35° | 10443.3 | 8486.9 | 2865.1 | 705.6 | 676.6 | 682.4 | 725.0 | 817.8 | 902.8 | 924.1 | 926.0 |
| 37.5° | 11224.4 | 8765.3 | 2178.8 | 659.2 | 636.0 | 636.0 | 667.0 | 746.2 | 846.8 | 912.5 | 920.2 |
| 40° | 11953.2 | 8933.5 | 1527.3 | 622.5 | 599.3 | 599.3 | 626.4 | 684.4 | 779.1 | 877.7 | 899.0 |
| 42.5° | 12626.0 | 8991.5 | 1063.3 | 587.7 | 564.5 | 570.3 | 593.5 | 639.9 | 711.4 | 810.0 | 829.4 |
| 45° | 13318.1 | 8981.8 | 775.2 | 547.1 | 529.7 | 547.1 | 564.5 | 599.3 | 651.5 | 707.6 | 711.4 |
| 47.5° | 13840.0 | 8900.6 | 614.8 | 508.4 | 496.8 | 520.0 | 535.5 | 558.7 | 587.7 | 583.8 | 583.8 |
| 50° | 14329.2 | 8703.4 | 494.9 | 456.2 | 464.0 | 491.0 | 498.8 | 506.5 | 508.4 | 471.7 | 467.8 |
| 52.5° | 14700.3 | 8396.0 | 396.3 | 400.2 | 431.1 | 458.2 | 450.4 | 438.8 | 419.5 | 375.0 | 367.3 |
| 55° | 14824.1 | 7804.5 | 311.3 | 330.6 | 382.8 | 417.6 | 388.6 | 363.4 | 326.7 | 290.0 | 282.3 |
| 57.5° | 14599.8 | 7040.8 | 253.3 | 257.1 | 322.9 | 351.8 | 319.0 | 290.0 | 249.4 | 218.5 | 212.7 |
| 60° | 14124.2 | 6192.2 | 208.8 | 193.3 | 249.4 | 274.5 | 253.3 | 224.3 | 187.5 | 164.3 | 162.4 |
| 62.5° | 13180.8 | 5287.4 | 172.1 | 150.8 | 189.5 | 210.7 | 197.2 | 175.9 | 145.0 | 129.5 | 127.6 |
| 65° | 11197.3 | 4229.9 | 139.2 | 121.8 | 146.9 | 164.3 | 152.7 | 137.3 | 114.1 | 102.5 | 100.5 |
| 67.5° | 7816.1 | 2859.3 | 114.1 | 100.5 | 116.0 | 129.5 | 119.9 | 112.1 | 90.9 | 88.9 | 90.9 |
| 70° | 3769.8 | 1378.4 | 94.7 | 81.2 | 90.9 | 100.5 | 96.7 | 90.9 | 87.0 | 100.5 | 116.0 |
| 72.5° | 1080.7 | 462.0 | 75.4 | 67.7 | 73.5 | 79.3 | 83.1 | 81.2 | 94.7 | 121.8 | 141.1 |
| 73° | *831.3* | *373.1* | *71.5* | *63.8* | *69.6* | *77.3* | *81.2* | *79.3* | *96.7* | *123.7* | *141.1* |
| 75° | 355.7 | 179.8 | 54.1 | 52.2 | 58.0 | 67.7 | 71.5 | 71.5 | 96.7 | 125.7 | 135.3 |
| 77.5° | 160.5 | 96.7 | 34.8 | 40.6 | 50.3 | 54.1 | 59.9 | 59.9 | 77.3 | 96.7 | 96.7 |
| 80° | 90.9 | 52.2 | 27.1 | 30.9 | 36.7 | 36.7 | 36.7 | 32.9 | 34.8 | 38.7 | 42.5 |
| 82.5° | 58.0 | 34.8 | 21.3 | 25.1 | 23.2 | 19.3 | 15.5 | 15.5 | 13.5 | 15.5 | 19.3 |
| 85° | 32.9 | 19.3 | 19.3 | 15.5 | 9.7 | 7.7 | 9.7 | 7.7 | 1.9 | 0.0 | 1.9 |
| 87.5° | 19.3 | 11.6 | 5.8 | 0.0 | 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 |

Cooper Lighting Solutions Photometric Lab
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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: SP1-2408-195-9

Test Date: 08/07/2024

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

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

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

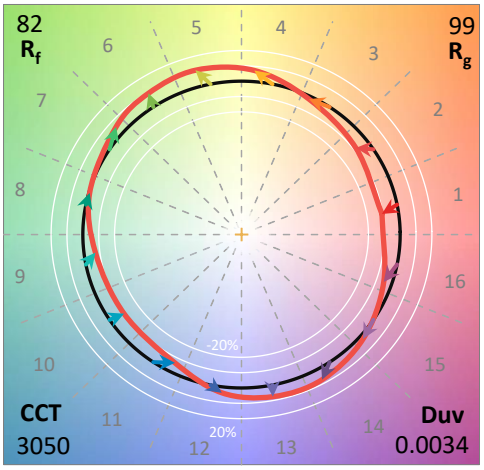
## Test Information

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | SP1-2408-195-9 |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Photometer: | SP1 - 76IN SPHERE |
| Measurement Geometry: | 4π |
| Issue Date: | 08/07/2024 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | MCGRAW EDISON |
| Catalog Number: | **GALN-SB1A-830-U-5WQ** |
| Description: | GALLEON AREA AND ROADWAY LUMINAIRE. (1) 80 CRI, 3000K, 350MA HIGH DENSITY LIGHTSQUARE WITH 26 LEDS AND TYPE V WIDE OPTICS |

## Spectral Parameters

| | | | | | |
|---|---|---|---|---|---|
| CCT (K): | 3050 | CRI (Ra): | 81.0 | | |
| CIE u': | 0.2476 | R1: | 79.6 | R9: | 7.1 |
| CIE v': | 0.5251 | R2: | 85.6 | R10: | 67.0 |
| Duv: | 0.0034 | R3: | 92.0 | R11: | 82.7 |
| CIE x: | 0.4383 | R4: | 82.6 | R12: | 63.2 |
| CIE y: | 0.4131 | R5: | 78.9 | R13: | 80.3 |
| CIE z: | 0.1487 | R6: | 81.7 | R14: | 95.0 |
| Peak Wavelength (nm): | 603 | R7: | 85.2 | R15: | 71.7 |
| Dominant Wavelength (nm): | 581 | R8: | 62.0 | | |
| Purity: | 55.55201 | | | | |

| | |
|---|---|
| Rf: | 81.5 |
| Rg: | 99.2 |




## Test Conditions

| | |
|---|---|
| Stabilization Time: | 20M |
| Operation Time: | 1H 20M |
| Sphere Temperature (°C): | 24.2 |

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| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 | 2/8/2024 | 2/8/2025 |
| AC Power Source | IN0063 | 10/24/2023 | 10/24/2024 |
| DC Power Source | IN0208 | 10/24/2023 | 10/24/2024 |
| Sphere Thermometer | IN0085 | 10/24/2023 | 10/24/2024 |
| Room Thermometer | IN0046 | 10/24/2023 | 10/24/2024 |

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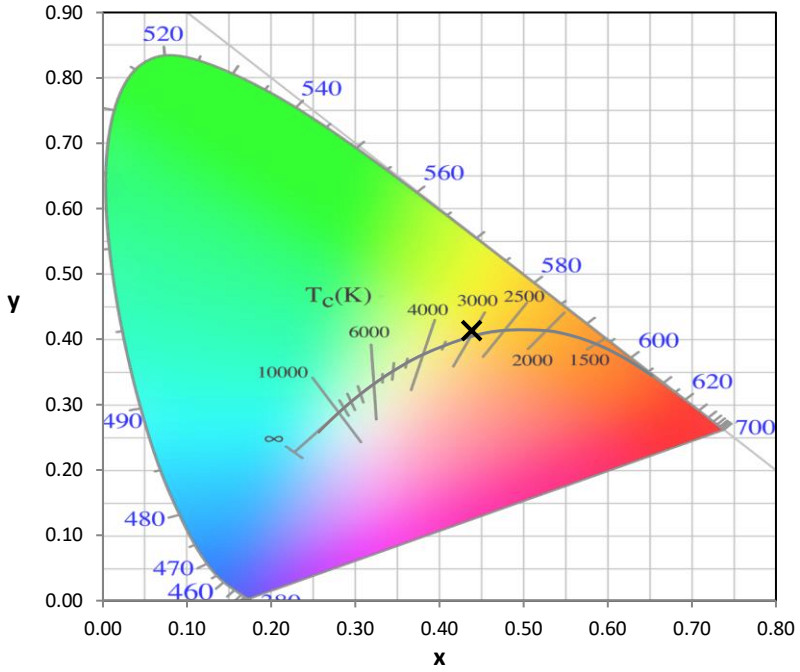
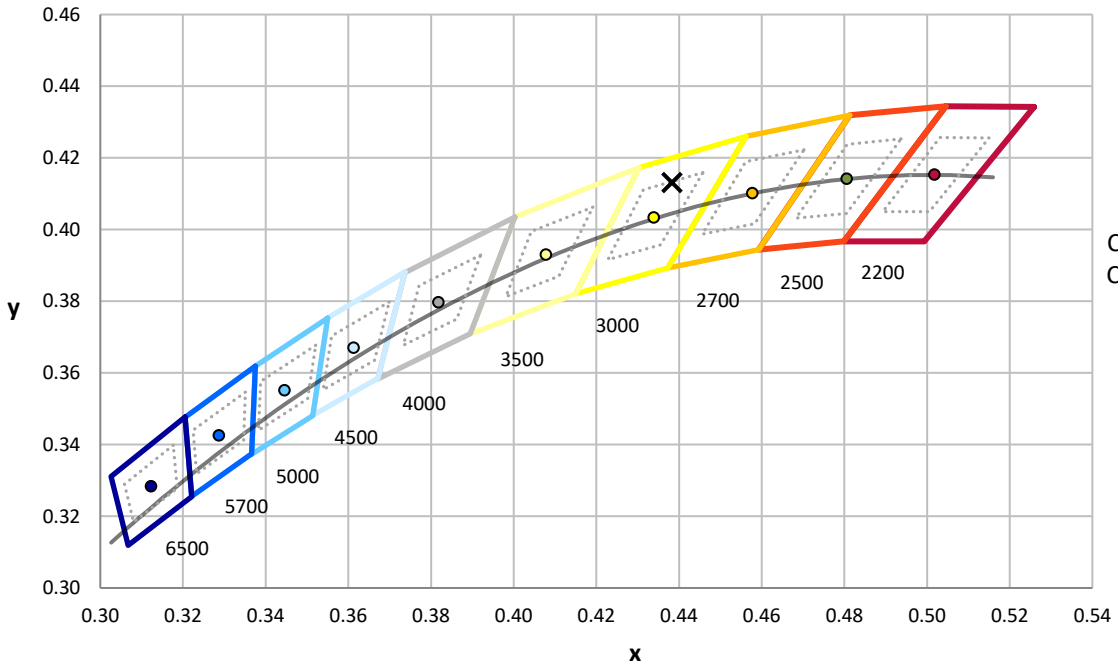
## CIE 1931 Chromaticity Diagram




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




CCT = 3050K
CIE x = 0.4383
CIE y = 0.4131
Duv = 0.0034

Point lies inside the ANSI 3000K 4-step quadrangle

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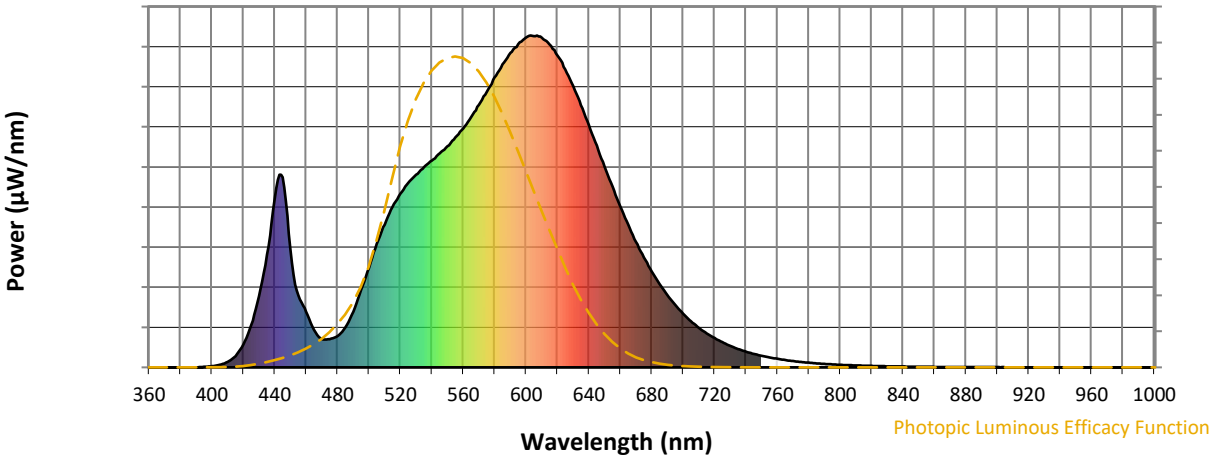
## Photopic Flux vs. Wavelength




## Photopic Lumens: NR

| λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 360 | 0 | NR | 490 | 168 | NR | 620 | 940 | NR | 750 | 35 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 233 | NR | 625 | 897 | NR | 755 | 30 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 300 | NR | 630 | 847 | NR | 760 | 26 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 372 | NR | 635 | 790 | NR | 765 | 22 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 430 | NR | 640 | 730 | NR | 770 | 19 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 483 | NR | 645 | 668 | NR | 775 | 16 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 524 | NR | 650 | 605 | NR | 780 | 14 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 555 | NR | 655 | 545 | NR | 785 | 12 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 581 | NR | 660 | 485 | NR | 790 | 10 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 604 | NR | 665 | 430 | NR | 795 | 9 | NR | 925 | 0 | NR |
| 410 | 17 | NR | 540 | 623 | NR | 670 | 378 | NR | 800 | 8 | NR | 930 | 0 | NR |
| 415 | 34 | NR | 545 | 645 | NR | 675 | 331 | NR | 805 | 7 | NR | 935 | 0 | NR |
| 420 | 68 | NR | 550 | 667 | NR | 680 | 290 | NR | 810 | 6 | NR | 940 | 0 | NR |
| 425 | 128 | NR | 555 | 693 | NR | 685 | 251 | NR | 815 | 5 | NR | 945 | 0 | NR |
| 430 | 214 | NR | 560 | 719 | NR | 690 | 218 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 339 | NR | 565 | 754 | NR | 695 | 188 | NR | 825 | 4 | NR | 955 | 0 | NR |
| 440 | 507 | NR | 570 | 791 | NR | 700 | 162 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 573 | NR | 575 | 830 | NR | 705 | 139 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 356 | NR | 580 | 873 | NR | 710 | 119 | NR | 840 | 3 | NR | 970 | 0 | NR |
| 455 | 217 | NR | 585 | 913 | NR | 715 | 102 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 168 | NR | 590 | 948 | NR | 720 | 88 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 113 | NR | 595 | 974 | NR | 725 | 76 | NR | 855 | 2 | NR | 985 | 0 | NR |
| 470 | 85 | NR | 600 | 994 | NR | 730 | 65 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 85 | NR | 605 | 998 | NR | 735 | 55 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 94 | NR | 610 | 994 | NR | 740 | 47 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 120 | NR | 615 | 973 | NR | 745 | 41 | NR | 875 | 1 | NR | | | |

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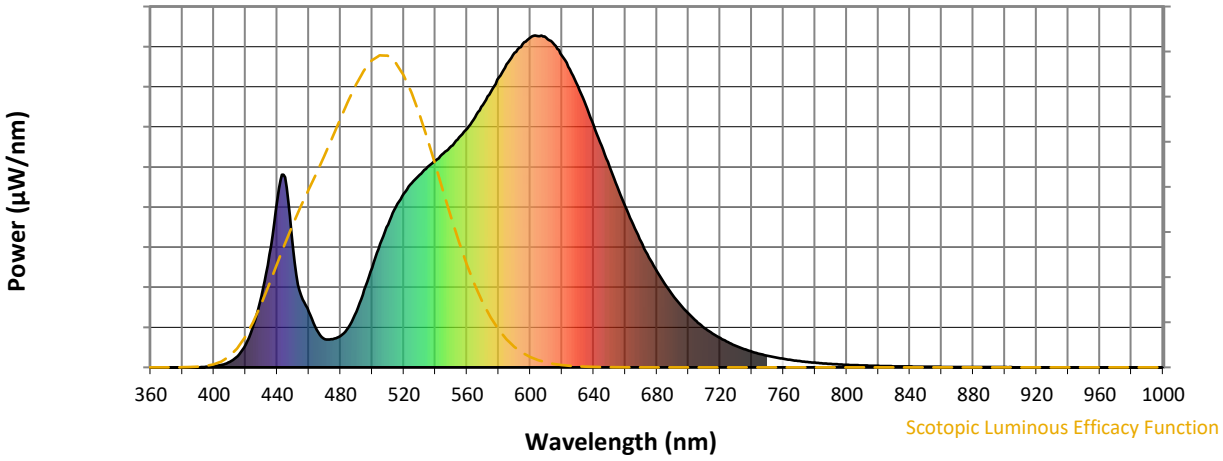
## Scotopic Flux vs. Wavelength




**Scotopic Lumens: NR** **S/P: 1.27**

| 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 | 168 | NR | 620 | 940 | NR | 750 | 35 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 233 | NR | 625 | 897 | NR | 755 | 30 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 300 | NR | 630 | 847 | NR | 760 | 26 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 372 | NR | 635 | 790 | NR | 765 | 22 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 430 | NR | 640 | 730 | NR | 770 | 19 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 483 | NR | 645 | 668 | NR | 775 | 16 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 524 | NR | 650 | 605 | NR | 780 | 14 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 555 | NR | 655 | 545 | NR | 785 | 12 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 581 | NR | 660 | 485 | NR | 790 | 10 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 604 | NR | 665 | 430 | NR | 795 | 9 | NR | 925 | 0 | NR |
| 410 | 17 | NR | 540 | 623 | NR | 670 | 378 | NR | 800 | 8 | NR | 930 | 0 | NR |
| 415 | 34 | NR | 545 | 645 | NR | 675 | 331 | NR | 805 | 7 | NR | 935 | 0 | NR |
| 420 | 68 | NR | 550 | 667 | NR | 680 | 290 | NR | 810 | 6 | NR | 940 | 0 | NR |
| 425 | 128 | NR | 555 | 693 | NR | 685 | 251 | NR | 815 | 5 | NR | 945 | 0 | NR |
| 430 | 214 | NR | 560 | 719 | NR | 690 | 218 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 339 | NR | 565 | 754 | NR | 695 | 188 | NR | 825 | 4 | NR | 955 | 0 | NR |
| 440 | 507 | NR | 570 | 791 | NR | 700 | 162 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 573 | NR | 575 | 830 | NR | 705 | 139 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 356 | NR | 580 | 873 | NR | 710 | 119 | NR | 840 | 3 | NR | 970 | 0 | NR |
| 455 | 217 | NR | 585 | 913 | NR | 715 | 102 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 168 | NR | 590 | 948 | NR | 720 | 88 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 113 | NR | 595 | 974 | NR | 725 | 76 | NR | 855 | 2 | NR | 985 | 0 | NR |
| 470 | 85 | NR | 600 | 994 | NR | 730 | 65 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 85 | NR | 605 | 998 | NR | 735 | 55 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 94 | NR | 610 | 994 | NR | 740 | 47 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 120 | NR | 615 | 973 | NR | 745 | 41 | NR | 875 | 1 | NR | | | |

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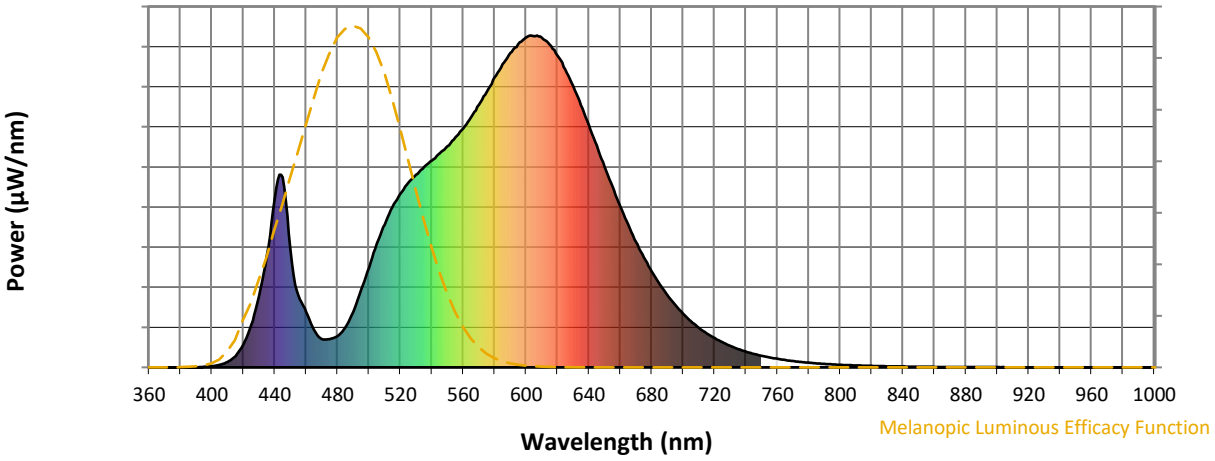
## Melanopic Flux vs. Wavelength




**Melanopic Lumens: NR** **M/P: 2.32**

| 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 | 168 | NR | 620 | 940 | NR | 750 | 35 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 233 | NR | 625 | 897 | NR | 755 | 30 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 300 | NR | 630 | 847 | NR | 760 | 26 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 372 | NR | 635 | 790 | NR | 765 | 22 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 430 | NR | 640 | 730 | NR | 770 | 19 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 483 | NR | 645 | 668 | NR | 775 | 16 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 524 | NR | 650 | 605 | NR | 780 | 14 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 555 | NR | 655 | 545 | NR | 785 | 12 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 581 | NR | 660 | 485 | NR | 790 | 10 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 604 | NR | 665 | 430 | NR | 795 | 9 | NR | 925 | 0 | NR |
| 410 | 17 | NR | 540 | 623 | NR | 670 | 378 | NR | 800 | 8 | NR | 930 | 0 | NR |
| 415 | 34 | NR | 545 | 645 | NR | 675 | 331 | NR | 805 | 7 | NR | 935 | 0 | NR |
| 420 | 68 | NR | 550 | 667 | NR | 680 | 290 | NR | 810 | 6 | NR | 940 | 0 | NR |
| 425 | 128 | NR | 555 | 693 | NR | 685 | 251 | NR | 815 | 5 | NR | 945 | 0 | NR |
| 430 | 214 | NR | 560 | 719 | NR | 690 | 218 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 339 | NR | 565 | 754 | NR | 695 | 188 | NR | 825 | 4 | NR | 955 | 0 | NR |
| 440 | 507 | NR | 570 | 791 | NR | 700 | 162 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 573 | NR | 575 | 830 | NR | 705 | 139 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 356 | NR | 580 | 873 | NR | 710 | 119 | NR | 840 | 3 | NR | 970 | 0 | NR |
| 455 | 217 | NR | 585 | 913 | NR | 715 | 102 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 168 | NR | 590 | 948 | NR | 720 | 88 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 113 | NR | 595 | 974 | NR | 725 | 76 | NR | 855 | 2 | NR | 985 | 0 | NR |
| 470 | 85 | NR | 600 | 994 | NR | 730 | 65 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 85 | NR | 605 | 998 | NR | 735 | 55 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 94 | NR | 610 | 994 | NR | 740 | 47 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 120 | NR | 615 | 973 | NR | 745 | 41 | NR | 875 | 1 | NR | | | |

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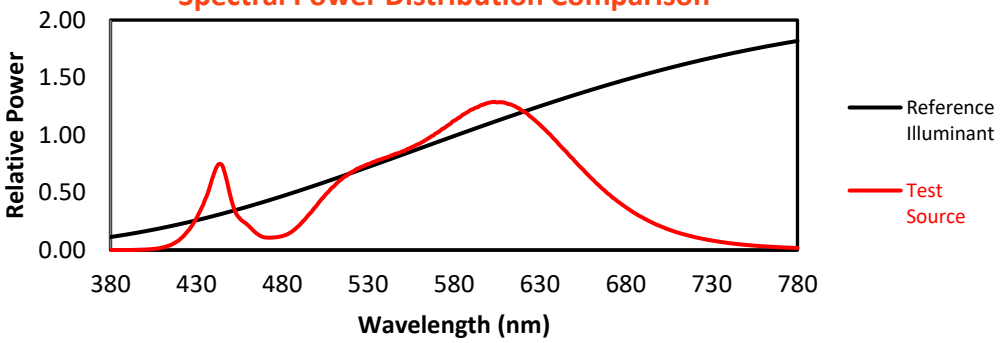
# TM-30-18

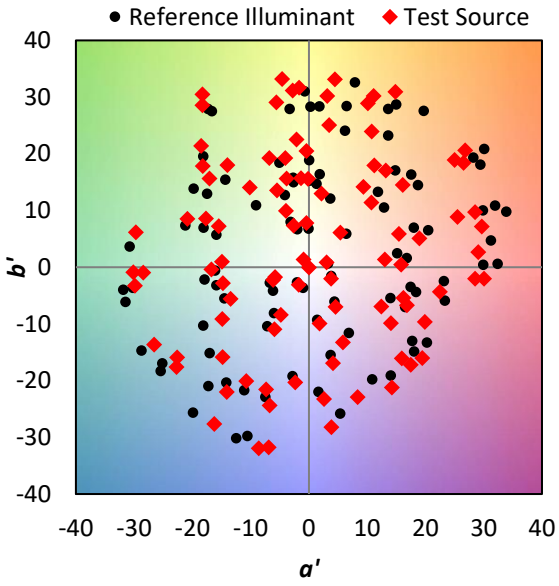
## Summary

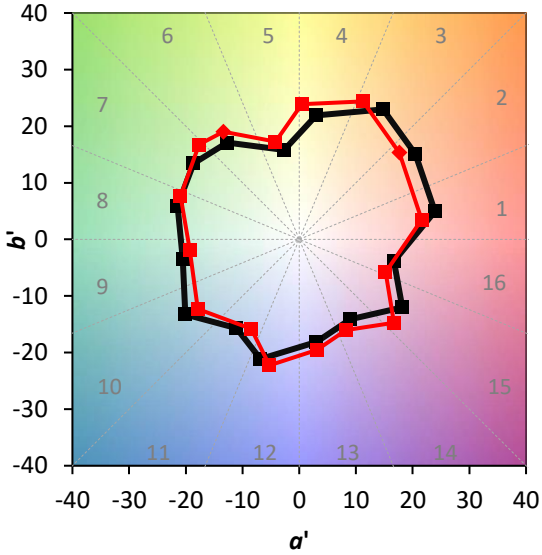
$R_f$ = 81.5
$R_g$ = 99.2
CIE $R_a$ = 81.0
$R_9$ = 7.1

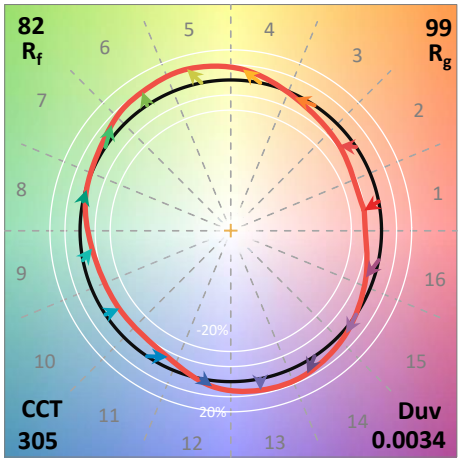
## Spectral Power Distribution Comparison

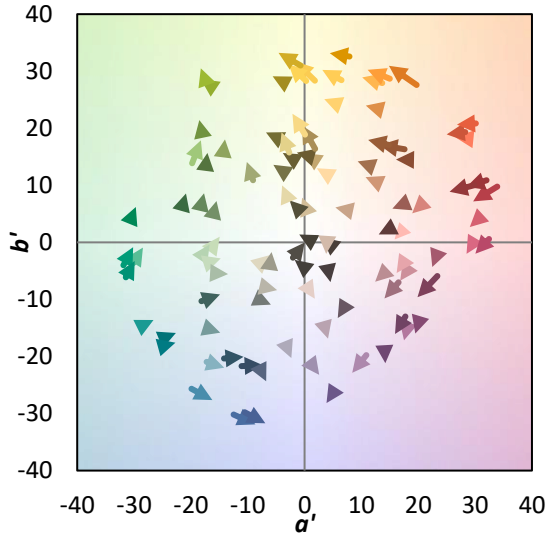



## Color Vector Graphics



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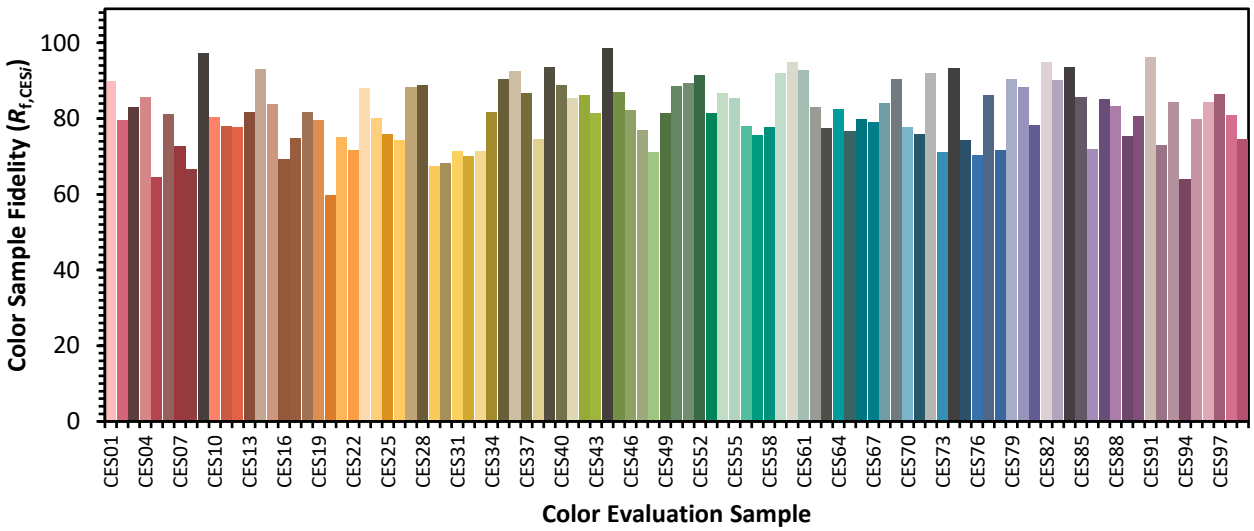
**Individual Sample Fidelity Index ($R_{f,i}$)**

| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 74 | CES51 = 89 | CES76 = 70 |
| CES02 = 63 | CES27 = 88 | CES52 = 92 | CES77 = 86 |
| CES03 = 31 | CES28 = 89 | CES53 = 81 | CES78 = 72 |
| CES04 = 70 | CES29 = 67 | CES54 = 87 | CES79 = 90 |
| CES05 = 50 | CES30 = 68 | CES55 = 85 | CES80 = 88 |
| CES06 = 51 | CES31 = 71 | CES56 = 78 | CES81 = 78 |
| CES07 = 42 | CES32 = 70 | CES57 = 76 | CES82 = 95 |
| CES08 = 41 | CES33 = 71 | CES58 = 78 | CES83 = 90 |
| CES09 = 29 | CES34 = 82 | CES59 = 92 | CES84 = 94 |
| CES10 = 76 | CES35 = 90 | CES60 = 95 | CES85 = 86 |
| CES11 = 59 | CES36 = 93 | CES61 = 93 | CES86 = 72 |
| CES12 = 65 | CES37 = 87 | CES62 = 83 | CES87 = 85 |
| CES13 = 43 | CES38 = 75 | CES63 = 77 | CES88 = 83 |
| CES14 = 74 | CES39 = 94 | CES64 = 83 | CES89 = 75 |
| CES15 = 71 | CES40 = 89 | CES65 = 77 | CES90 = 81 |
| CES16 = 47 | CES41 = 85 | CES66 = 80 | CES91 = 96 |
| CES17 = 50 | CES42 = 86 | CES67 = 79 | CES92 = 73 |
| CES18 = 56 | CES43 = 81 | CES68 = 84 | CES93 = 84 |
| CES19 = 72 | CES44 = 99 | CES69 = 91 | CES94 = 64 |
| CES20 = 66 | CES45 = 87 | CES70 = 78 | CES95 = 80 |
| CES21 = 87 | CES46 = 82 | CES71 = 76 | CES96 = 84 |
| CES22 = 79 | CES47 = 77 | CES72 = 92 | CES97 = 87 |
| CES23 = 92 | CES48 = 71 | CES73 = 71 | CES98 = 81 |
| CES24 = 91 | CES49 = 81 | CES74 = 93 | CES99 = 74 |
| CES25 = 72 | CES50 = 89 | CES75 = 74 | |



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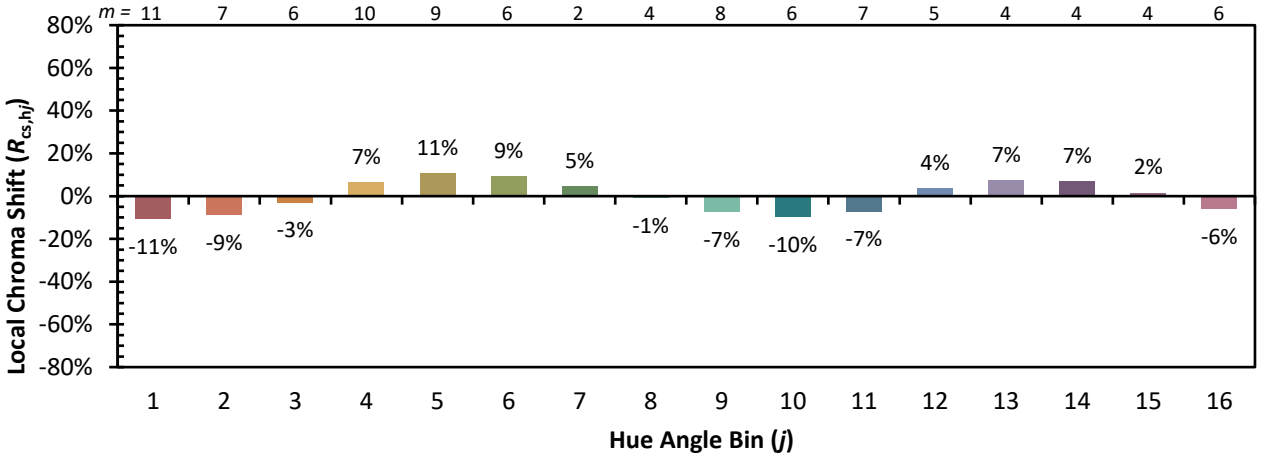
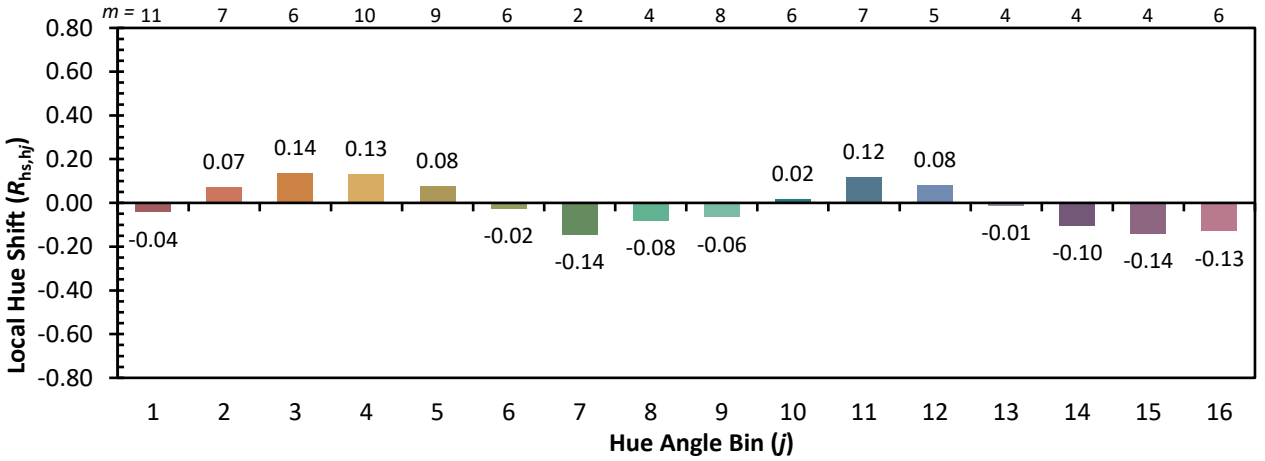
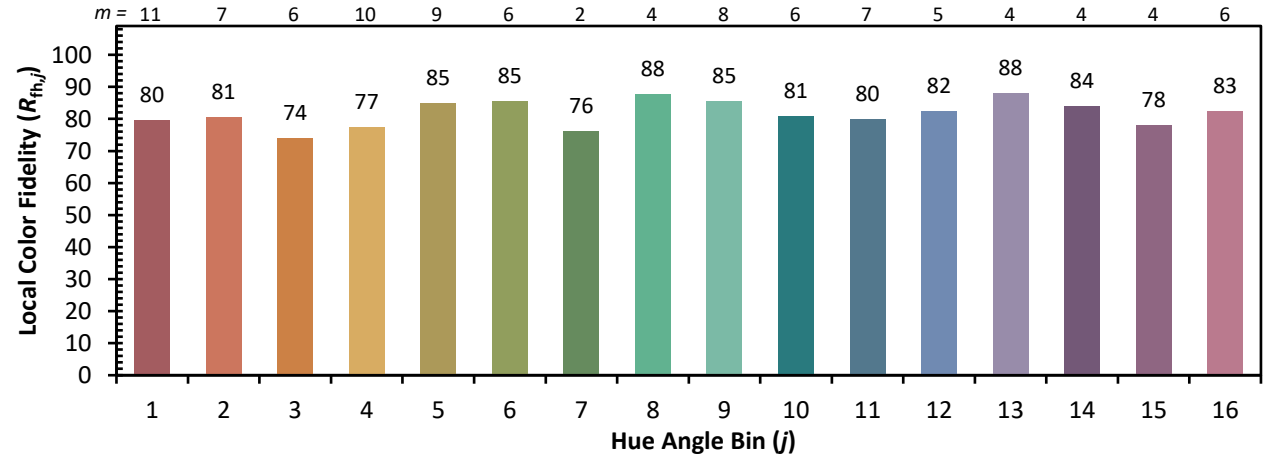
# TM-30-18

## Color Rendition by Hue-Angle Bin



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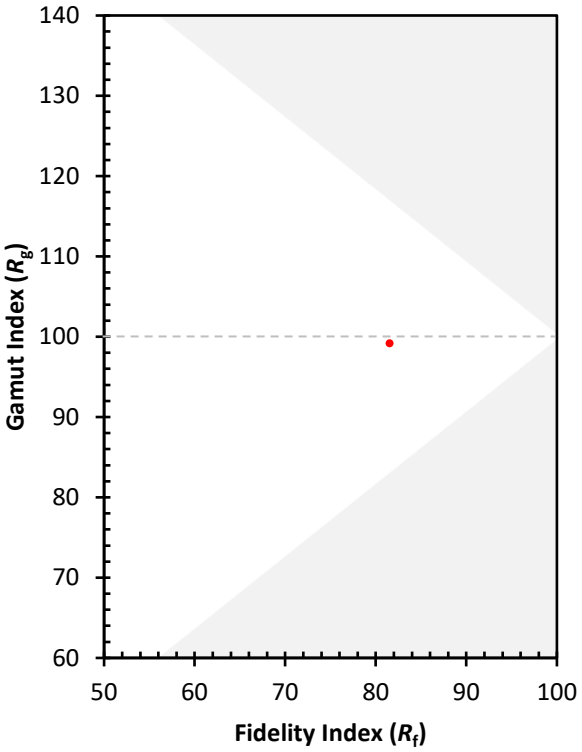
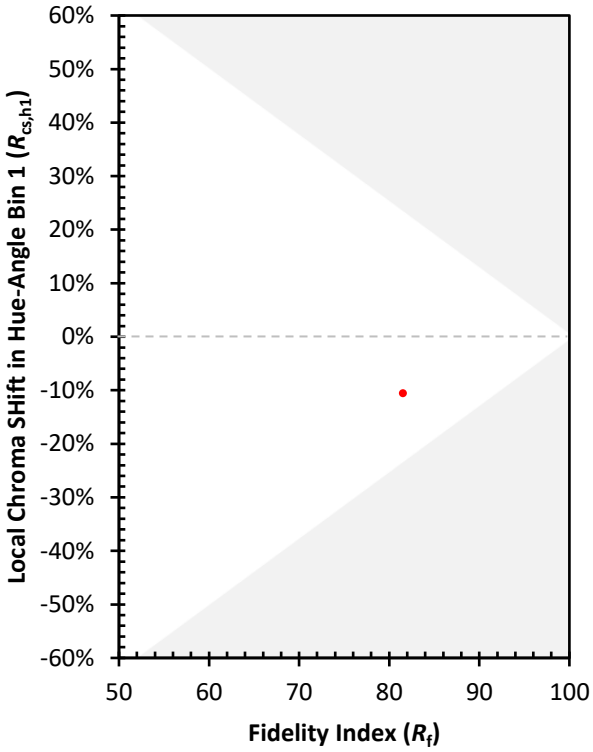
# TM-30-18

## Measure Comparisons




(END OF REPORT)