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: P321454

Luminaire Tested: **GLEON-SA0C-830-U-T2R-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: | P321454 |
| | 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 (FORMERLY EATON) |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | GLEON-SA0C-830-U-T2R-HSS |
| Description: | GALLEON AREA AND ROADWAY LUMINAIRE |
| | (10) 80 CRI, 3000K, 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: | 44904 lumens |
| Efficiency: | N/A |
| Efficacy: | 80.5 lumens/watt |
| Luminous Opening: | Rectangular (W 2.5' x L: 1' x H: 0') |
| IES Classification: | Type II - Medium |
| BUG Rating: | B2 - U0 - G4 |

| | |
|---|---|
| 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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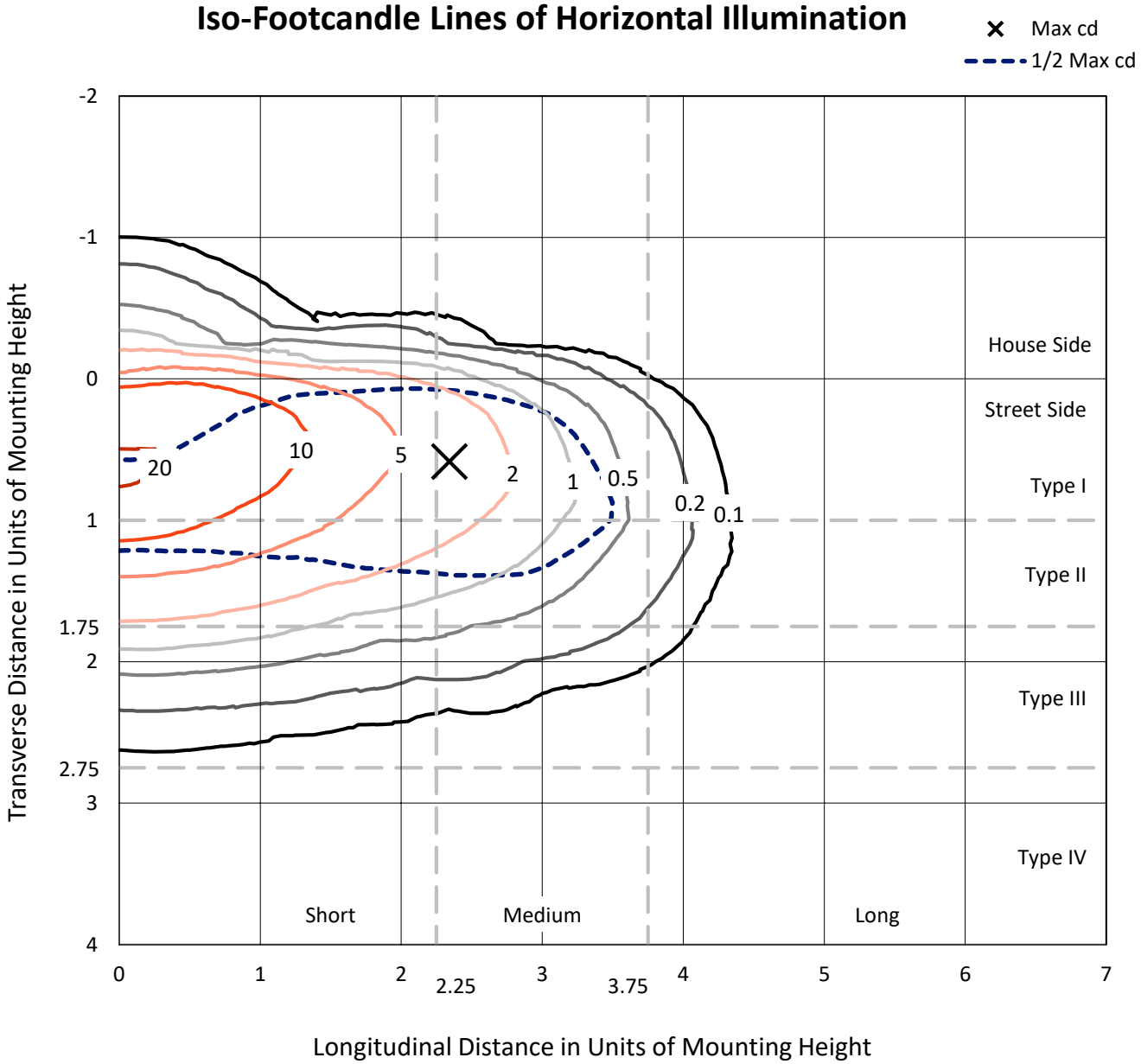
Scaled Data Report

REPORT NUMBER: P321454
CATALOG NUMBER: GLEON-SA0C-830-U-T2R-HSS

## Iso-Footcandle Lines of Horizontal Illumination




Based on 25 foot mounting height. Maximum calculated value = 21.5 fc
Type II - Medium - N/A

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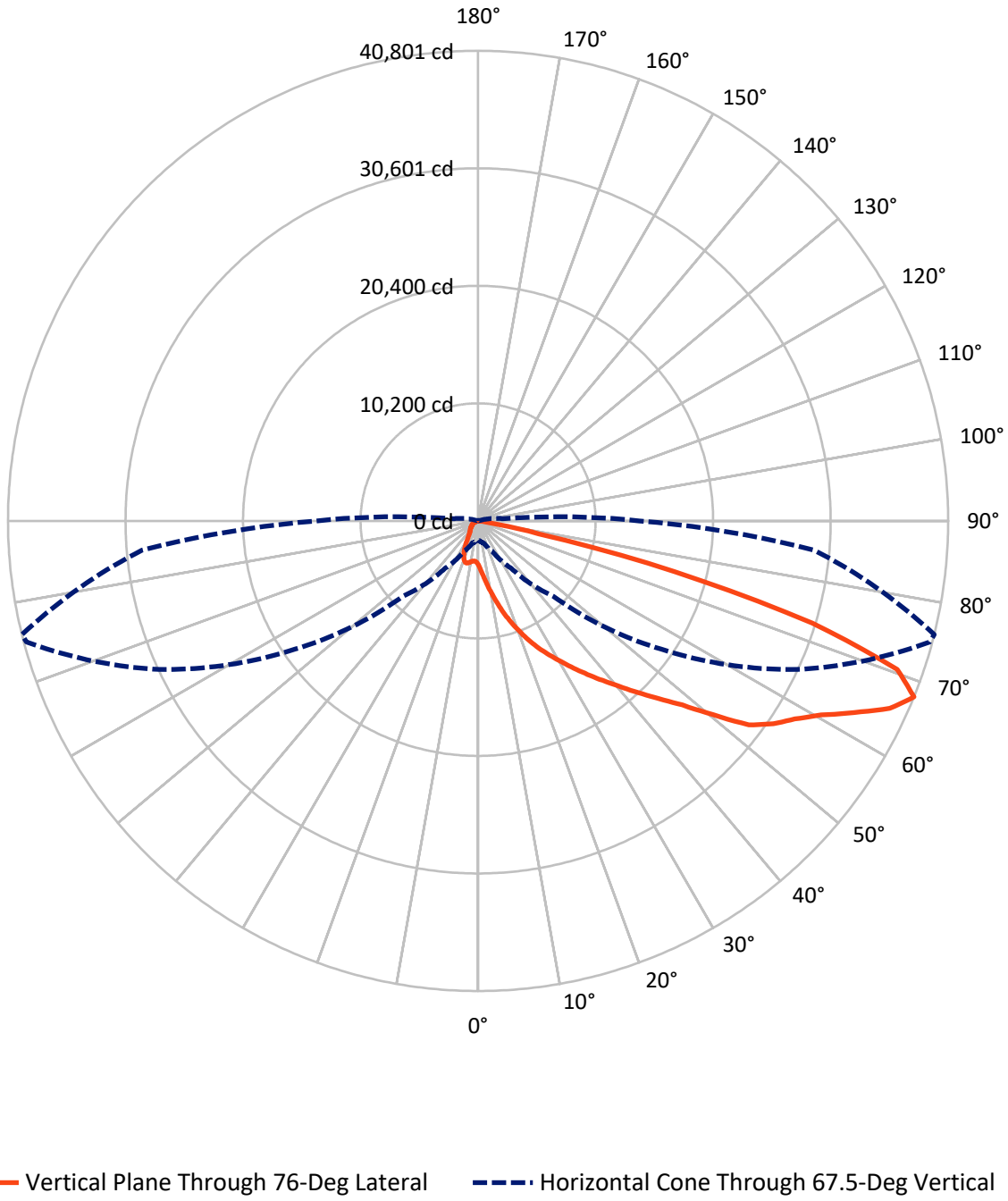
## Luminous Intensity Polar Plot



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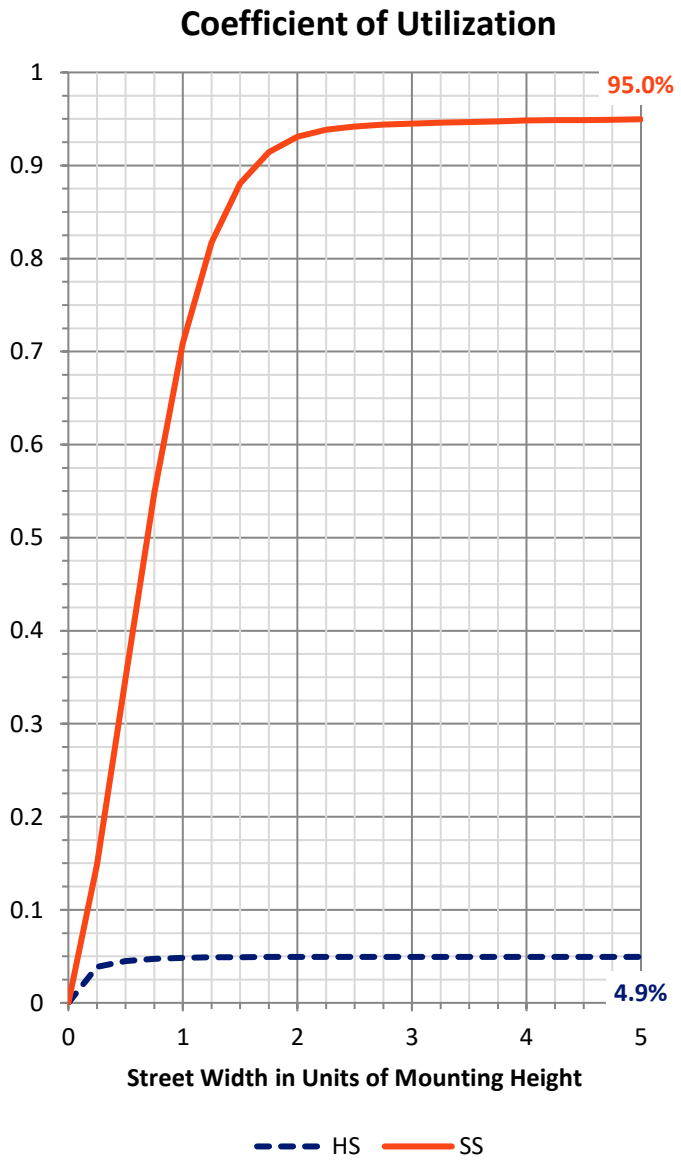
REPORT NUMBER: P321454
CATALOG NUMBER: GLEON-SA0C-830-U-T2R-HSS

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 2229.8 | 0.0 | 2229.8 |
| | % Fixture | 5.0 | 0.0 | 5.0 |
| **Street Side** | Lumens | 42674.2 | 0.0 | 42674.2 |
| | % Fixture | 95.0 | 0.0 | 95.0 |
| **Total** | Lumens | 44904.0 | 0.0 | 44904.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 473.7 | 1.1 |
| 10°-20° | 1877.7 | 4.2 |
| 20°-30° | 3820.4 | 8.5 |
| 30°-40° | 6631.0 | 14.8 |
| 40°-50° | 9368.8 | 20.9 |
| 50°-60° | 10624.7 | 23.7 |
| 60°-70° | 8812.2 | 19.6 |
| 70°-80° | 3192.0 | 7.1 |
| 80°-90° | 103.5 | 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° | 44904.0 | 100.0 |
| 0°-180° | 44904.0 | 100.0 |



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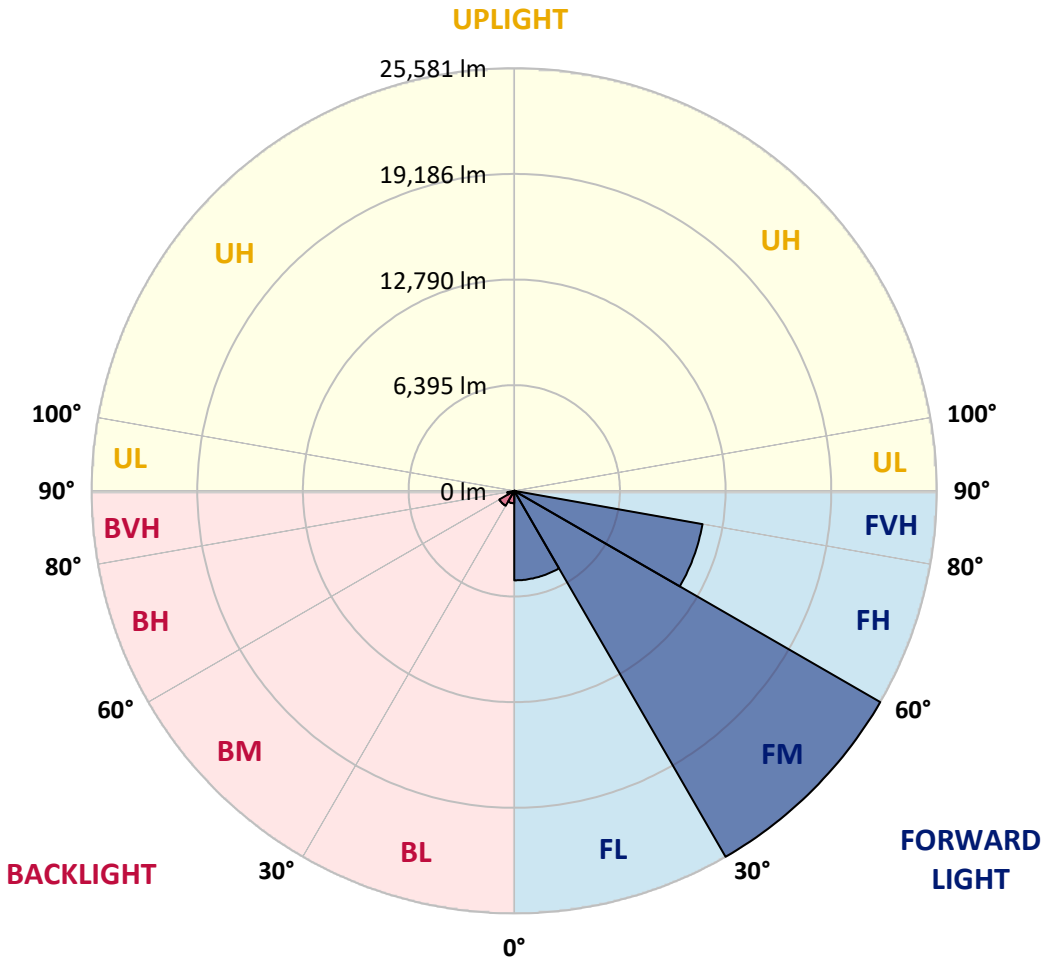
## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 5419.8 | 12.1 | | | |
| FM | (30°-60°) | 25580.9 | 57.0 | | | |
| FH | (60°-80°) | 11573.3 | 25.8 | | | G4/12000 |
| FVH | (80°-90°) | 100.3 | 0.2 | | | G2/225 |
| BL | (0°-30°) | 752.0 | 1.7 | B2/1000 | | |
| BM | (30°-60°) | 1043.6 | 2.3 | B2/2500 | | |
| BH | (60°-80°) | 430.9 | 1.0 | B1/500 | | G1/500 |
| 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: B2-U0-G4**
Type II Medium



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**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 76° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 3809.2 | 3809.2 | 3809.2 | 3809.2 | 3809.2 | 3809.2 | 3809.2 | 3809.2 | 3809.2 | *3809.2* | 3809.2 |
| 2.5° | 5686.2 | 5558.3 | 5587.8 | 5505.2 | 5355.6 | 5048.7 | 4787.0 | 4539.1 | 4249.9 | *4240.1* | 4002.0 |
| 5° | 7667.5 | 7559.3 | 7545.5 | 7378.3 | 7106.8 | 6585.4 | 6077.7 | 5499.3 | 4853.9 | *4806.7* | 4301.0 |
| 7.5° | 9465.8 | 9379.3 | 9347.8 | 9149.1 | 8643.4 | 8135.8 | 7474.7 | 6624.7 | 5615.4 | *5528.8* | 4704.4 |
| 10° | 10847.1 | 10805.7 | 10813.6 | 10671.9 | 10239.1 | 9766.9 | 8899.2 | 7815.1 | 6479.1 | *6345.3* | 5188.4 |
| 12.5° | 11893.8 | 11903.6 | 11974.5 | 11887.9 | 11645.9 | 11295.7 | 10368.9 | 9084.1 | 7435.3 | *7252.4* | 5741.3 |
| 15° | 12663.1 | 12712.3 | 12842.1 | 12950.4 | 12932.6 | 12629.6 | 11779.7 | 10372.9 | 8450.6 | *8247.9* | 6357.1 |
| 17.5° | 13160.9 | 13216.0 | 13404.9 | 13644.9 | 13865.3 | 13794.4 | 13141.2 | 11616.4 | 9477.6 | *9243.5* | 7016.3 |
| 20° | 13597.7 | 13662.6 | 13865.3 | 14182.0 | 14593.3 | 14681.8 | 14252.9 | 12822.5 | 10502.7 | *10217.4* | 7697.0 |
| 22.5° | 14544.1 | 14542.1 | 14666.1 | 14851.0 | 15242.5 | 15470.8 | 15199.3 | 13942.0 | 11516.0 | *11218.9* | 8391.6 |
| 25° | 16255.8 | 16190.9 | 16147.6 | 16002.0 | 16088.6 | 16230.2 | 16078.7 | 14988.7 | 12535.2 | *12234.2* | 9095.9 |
| 27.5° | 18290.3 | 18329.6 | 17979.4 | 17587.9 | 17284.8 | 17139.3 | 16891.3 | 15958.7 | 13515.0 | *13184.5* | 9784.6 |
| 30° | 20436.9 | 20448.7 | 20035.5 | 19535.7 | 18868.7 | 18315.8 | 17886.9 | 16885.4 | 14522.4 | *14162.4* | 10453.5 |
| 32.5° | 22372.9 | 22296.2 | 21886.9 | 21206.2 | 20364.1 | 19742.3 | 18851.0 | 17920.4 | 15588.8 | *15240.6* | 11197.3 |
| 35° | 23907.6 | 23817.1 | 23319.3 | 22699.5 | 21825.9 | 21200.3 | 20127.9 | 18953.3 | 16710.3 | *16369.9* | 11943.0 |
| 37.5° | 25029.1 | 24922.8 | 24411.3 | 23773.8 | 23020.2 | 22656.2 | 21609.5 | 20076.8 | 17934.1 | *17568.2* | 12728.0 |
| 40° | 25418.7 | 25326.2 | 25005.5 | 24539.2 | 23933.2 | 23850.5 | 23181.6 | 21369.5 | 19266.2 | *18876.6* | 13617.4 |
| 42.5° | 25186.5 | 25096.0 | 24981.9 | 24824.5 | 24572.6 | 24651.3 | 24665.1 | 22843.2 | 20745.8 | *20362.1* | 14599.2 |
| 45° | 24265.7 | 24185.0 | 24303.1 | 24533.3 | 24846.1 | 25235.7 | 26018.8 | 24427.0 | 22398.5 | *21989.2* | 15734.4 |
| 47.5° | 22910.0 | 22851.0 | 23177.6 | 23752.2 | 24667.1 | 25741.3 | 27256.3 | 26091.6 | 24253.9 | *23874.1* | 17151.1 |
| 50° | 20981.9 | 20972.0 | 21625.2 | 22673.9 | 24080.7 | 25985.3 | 28535.2 | 27984.3 | 26831.4 | *26431.9* | 19120.6 |
| 52.5° | 17979.4 | 17999.1 | 19283.9 | 20962.2 | 23051.7 | 25820.0 | 29357.7 | 30416.2 | 29829.9 | *29414.7* | 20826.4 |
| 55° | 15120.6 | 15238.6 | 16149.6 | 18569.7 | 21473.7 | 25206.2 | 29641.0 | 31551.5 | 31484.6 | *31091.1* | 21774.8 |
| 57.5° | 12320.7 | 12535.2 | 13412.7 | 15673.4 | 19169.8 | 23791.5 | 29485.6 | 32043.4 | 32716.3 | *32415.2* | 23026.1 |
| 60° | 9286.8 | 9385.2 | 10396.5 | 12509.6 | 16212.5 | 21210.1 | 28358.2 | 32311.0 | 34400.5 | *34191.9* | 24842.2 |
| 62.5° | 5908.5 | 6154.5 | 7051.7 | 9090.0 | 12623.7 | 17625.2 | 26457.5 | 32307.0 | 36507.7 | *36621.8* | 27185.5 |
| 65° | 3112.7 | 3399.9 | 3876.1 | 5633.1 | 8674.9 | 13621.3 | 23598.7 | 32004.0 | 39093.1 | *39252.4* | 29017.3 |
| 67.5° | *1678.3* | *1760.9* | *2012.8* | *2923.8* | *5031.0* | *9227.8* | *19398.0* | *30508.7* | *40590.4* | *40800.9* | *29273.1* |
| 70° | 1227.7 | 1273.0 | 1367.4 | 1617.3 | 2532.2 | 5359.6 | 14154.5 | 27118.6 | 38660.2 | *38581.5* | 26008.9 |
| 72.5° | 942.5 | 1013.3 | 1084.1 | 1184.5 | 1456.0 | 2860.8 | 8812.6 | 21235.7 | 30847.1 | *30327.7* | 19441.3 |
| 75° | 743.7 | 755.5 | 855.9 | 946.4 | 1092.0 | 1629.1 | 3913.4 | 12368.0 | 18827.4 | *17597.7* | 10081.7 |
| 77.5° | 594.2 | 602.1 | 661.1 | 739.8 | 877.5 | 1070.3 | 1212.0 | 4865.7 | 6010.8 | *5363.5* | 2187.9 |
| 80° | 352.2 | 371.9 | 491.9 | 570.6 | 728.0 | 674.9 | 442.7 | 1056.6 | 938.5 | *850.0* | 367.9 |
| 82.5° | 196.8 | 212.5 | 277.4 | 450.6 | 507.6 | 322.7 | 220.4 | 285.3 | 220.4 | *214.5* | 104.3 |
| 85° | 0.0 | 9.8 | 179.0 | 279.4 | 206.6 | 70.8 | 92.5 | 94.4 | 64.9 | *61.0* | 41.3 |
| 87.5° | 0.0 | 0.0 | 55.1 | 53.1 | 7.9 | 11.8 | 21.6 | 31.5 | 25.6 | *25.6* | 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: P321454
CATALOG NUMBER: GLEON-SA0C-830-U-T2R-HSS

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 3809.2 | 3809.2 | 3809.2 | 3809.2 | 3809.2 | 3809.2 | 3809.2 | 3809.2 | 3809.2 | 3809.2 | 3809.2 |
| 2.5° | 3883.9 | 3777.7 | 3577.0 | 3380.2 | 3215.0 | 3079.2 | 2957.2 | 2908.0 | 2868.7 | 2862.8 | 2831.3 |
| 5° | 4057.1 | 3842.6 | 3458.9 | 3144.1 | 2933.6 | 2784.1 | 2656.2 | 2577.5 | 2516.5 | 2492.9 | 2471.2 |
| 7.5° | 4318.8 | 3994.1 | 3443.2 | 3081.2 | 2829.3 | 2577.5 | 2341.4 | 2085.6 | 1926.2 | 1865.2 | 1829.8 |
| 10° | 4637.5 | 4194.8 | 3502.2 | 3063.5 | 2622.7 | 2091.5 | 1700.0 | 1375.3 | 1243.5 | 1200.2 | 1188.4 |
| 12.5° | 5009.4 | 4444.7 | 3604.5 | 2953.3 | 2182.0 | 1485.5 | 1172.7 | 1062.5 | 1033.0 | 1019.2 | 1019.2 |
| 15° | 5436.3 | 4718.2 | 3677.3 | 2634.5 | 1613.4 | 1123.5 | 1015.3 | 964.1 | 932.6 | 914.9 | 916.9 |
| 17.5° | 5873.1 | 4985.7 | 3641.9 | 2172.2 | 1190.4 | 999.5 | 918.8 | 863.8 | 820.5 | 802.8 | 798.8 |
| 20° | 6313.8 | 5233.7 | 3445.2 | 1617.3 | 1007.4 | 907.0 | 816.5 | 755.5 | 712.2 | 694.5 | 690.6 |
| 22.5° | 6770.3 | 5444.2 | 3098.9 | 1186.4 | 905.1 | 804.7 | 716.2 | 655.2 | 613.9 | 598.1 | 590.3 |
| 25° | 7215.0 | 5615.4 | 2614.9 | 960.2 | 808.7 | 708.3 | 623.7 | 566.7 | 529.3 | 513.5 | 511.6 |
| 27.5° | 7630.1 | 5723.6 | 2054.1 | 848.0 | 724.1 | 621.7 | 545.0 | 493.9 | 462.4 | 450.6 | 448.6 |
| 30° | 8004.0 | 5733.4 | 1518.9 | 765.4 | 649.3 | 547.0 | 476.1 | 430.9 | 403.3 | 391.5 | 387.6 |
| 32.5° | 8381.7 | 5650.8 | 1105.8 | 690.6 | 580.4 | 482.0 | 413.2 | 377.8 | 358.1 | 348.3 | 348.3 |
| 35° | 8737.9 | 5459.9 | 861.8 | 625.7 | 513.5 | 419.1 | 364.0 | 338.4 | 326.6 | 316.8 | 316.8 |
| 37.5° | 9086.1 | 5186.4 | 731.9 | 568.6 | 450.6 | 366.0 | 320.7 | 305.0 | 295.1 | 285.3 | 285.3 |
| 40° | 9440.3 | 4842.1 | 665.0 | 515.5 | 399.4 | 324.6 | 285.3 | 271.5 | 261.7 | 253.8 | 251.8 |
| 42.5° | 9875.1 | 4444.7 | 621.7 | 466.3 | 354.2 | 287.3 | 251.8 | 236.1 | 228.2 | 220.4 | 216.4 |
| 45° | 10378.8 | 4102.3 | 586.3 | 417.1 | 316.8 | 255.8 | 218.4 | 202.7 | 190.9 | 181.0 | 179.0 |
| 47.5° | 11104.8 | 3854.4 | 539.1 | 364.0 | 281.4 | 222.3 | 188.9 | 171.2 | 153.5 | 143.6 | 141.7 |
| 50° | 12031.5 | 3649.8 | 478.1 | 316.8 | 245.9 | 188.9 | 157.4 | 135.8 | 120.0 | 110.2 | 110.2 |
| 52.5° | 12491.9 | 3382.2 | 423.0 | 275.5 | 206.6 | 159.4 | 127.9 | 102.3 | 94.4 | 84.6 | 84.6 |
| 55° | 12676.9 | 3177.6 | 367.9 | 234.1 | 171.2 | 131.8 | 100.3 | 78.7 | 72.8 | 66.9 | 64.9 |
| 57.5° | 13196.3 | 3118.6 | 320.7 | 198.7 | 141.7 | 104.3 | 76.7 | 59.0 | 55.1 | 47.2 | 47.2 |
| 60° | 14032.5 | 3148.1 | 277.4 | 169.2 | 114.1 | 80.7 | 57.1 | 45.3 | 41.3 | 33.4 | 33.4 |
| 62.5° | 14935.6 | 3110.7 | 234.1 | 145.6 | 88.5 | 59.0 | 39.4 | 33.4 | 33.4 | 19.7 | 17.7 |
| 65° | 15108.7 | 2770.3 | 200.7 | 120.0 | 68.9 | 43.3 | 25.6 | 21.6 | 29.5 | 3.9 | 0.0 |
| 67.5° | *14022.7* | *2148.6* | *173.1* | *92.5* | *51.2* | *33.4* | *19.7* | *9.8* | *25.6* | *0.0* | *0.0* |
| 70° | 11213.0 | 1365.5 | 139.7 | 66.9 | 39.4 | 27.5 | 15.7 | 3.9 | 19.7 | 0.0 | 0.0 |
| 72.5° | 7929.2 | 792.9 | 110.2 | 47.2 | 33.4 | 21.6 | 11.8 | 0.0 | 11.8 | 0.0 | 0.0 |
| 75° | 4009.8 | 423.0 | 68.9 | 35.4 | 25.6 | 15.7 | 7.9 | 0.0 | 2.0 | 0.0 | 0.0 |
| 77.5° | 867.7 | 196.8 | 43.3 | 25.6 | 17.7 | 9.8 | 3.9 | 0.0 | 0.0 | 0.0 | 0.0 |
| 80° | 188.9 | 86.6 | 27.5 | 15.7 | 9.8 | 5.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 82.5° | 68.9 | 45.3 | 13.8 | 7.9 | 3.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85° | 37.4 | 23.6 | 7.9 | 3.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87.5° | 19.7 | 7.9 | 2.0 | 2.0 | 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-79-2019: 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

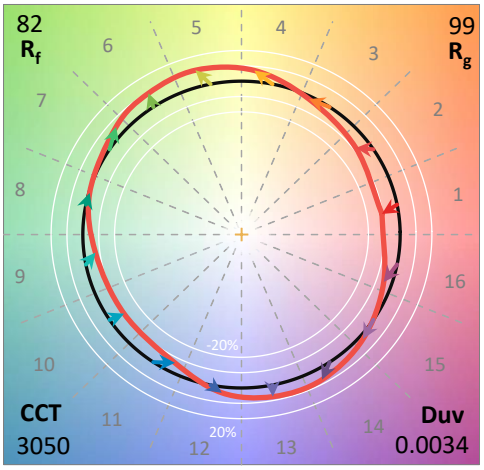
## Test Information

| | |
|---|---|
| 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 |

REPORT NUMBER: SP1-2408-195-9

| 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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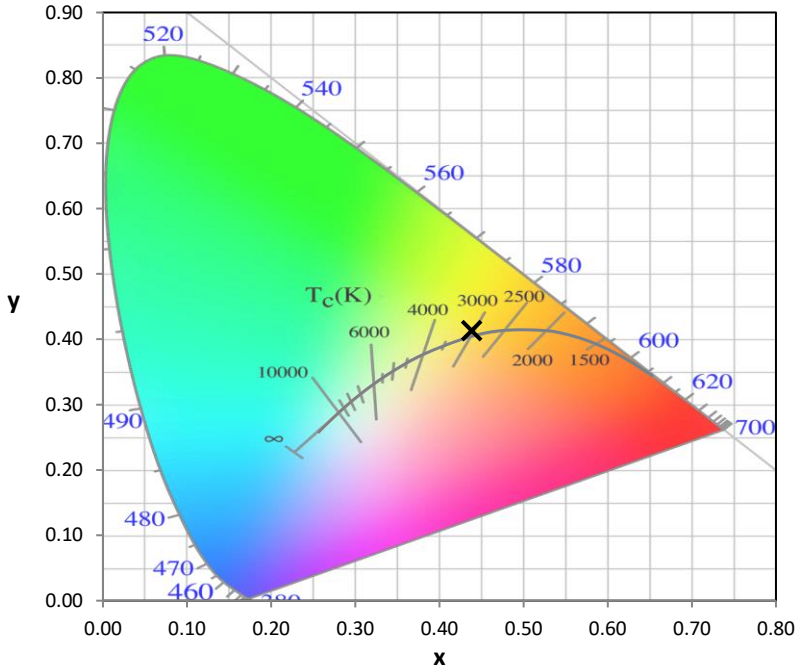
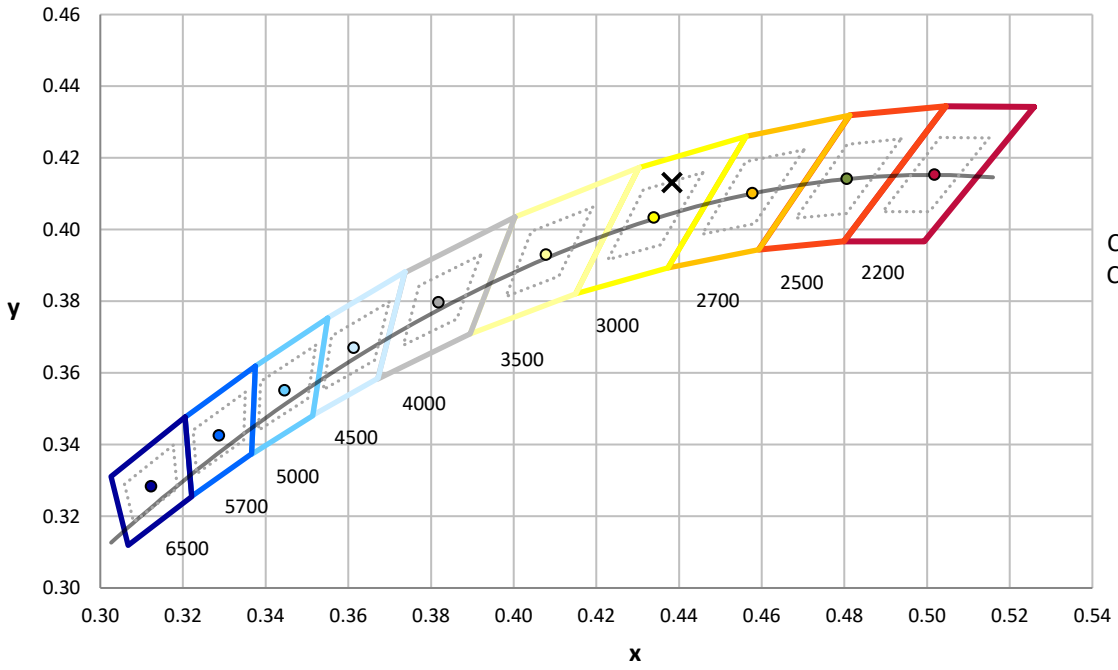
## CIE 1931 Chromaticity Diagram




## 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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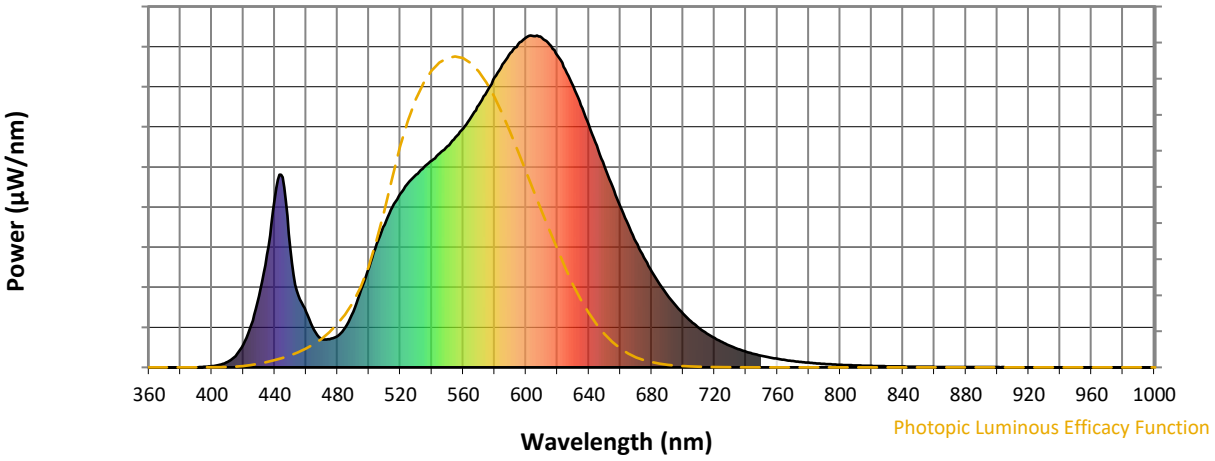
## Photopic Flux vs. Wavelength




## 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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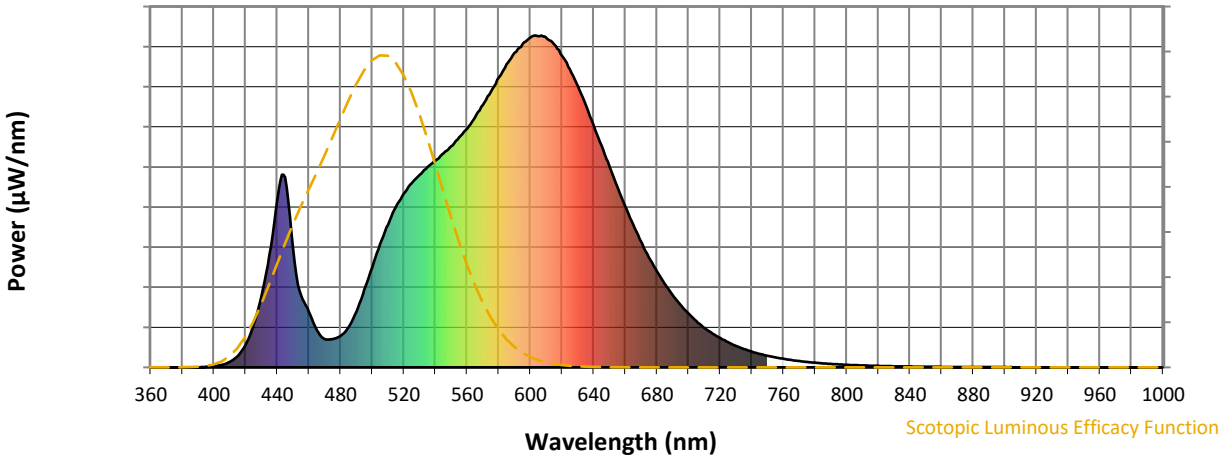
## Scotopic Flux vs. Wavelength




**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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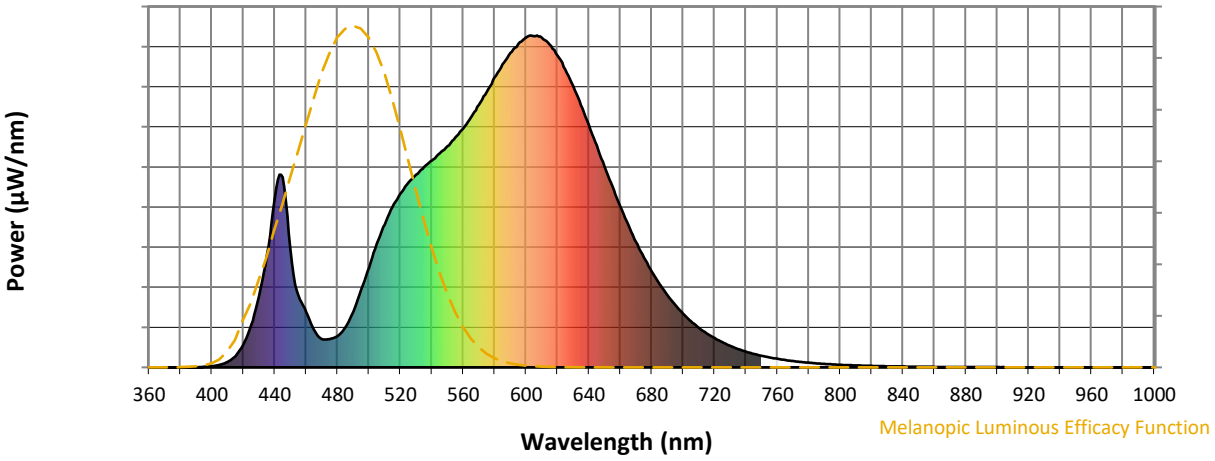
## Melanopic Flux vs. Wavelength




**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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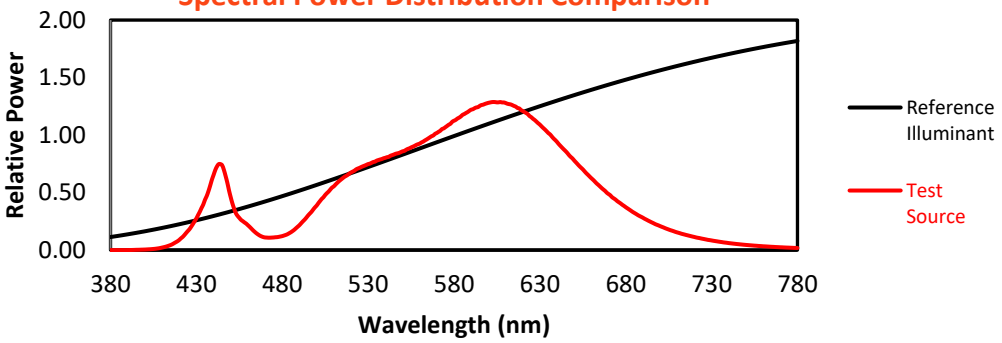
# TM-30-18

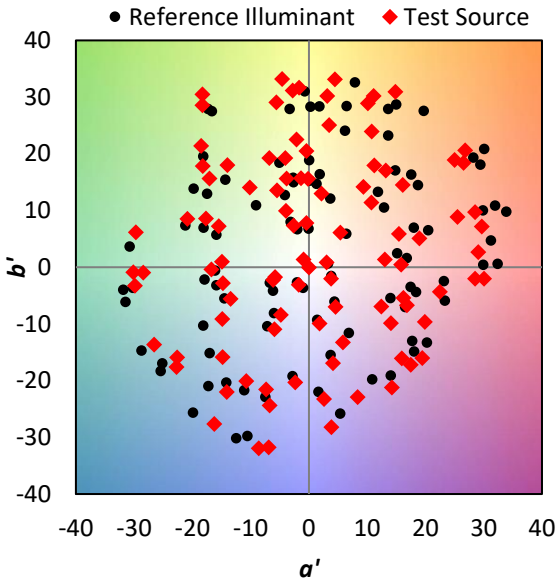
## Summary

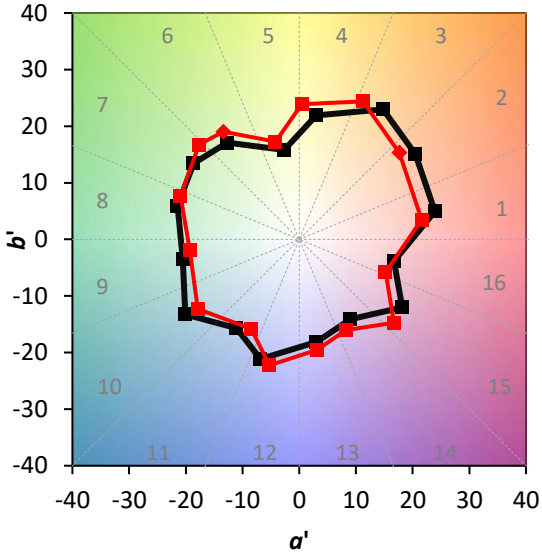
$R_f$ = 81.5
$R_g$ = 99.2
CIE $R_a$ = 81.0
$R_9$ = 7.1

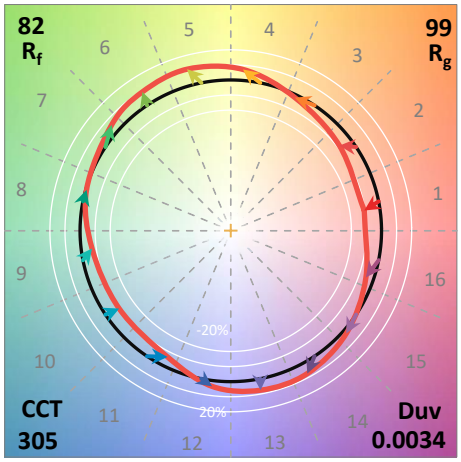
## Spectral Power Distribution Comparison

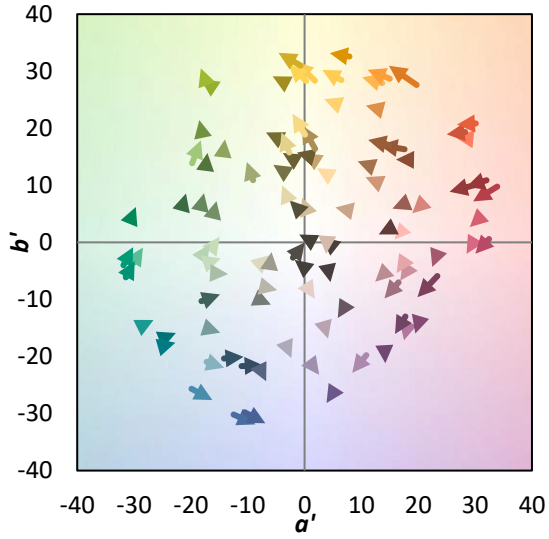



## Color Vector Graphics



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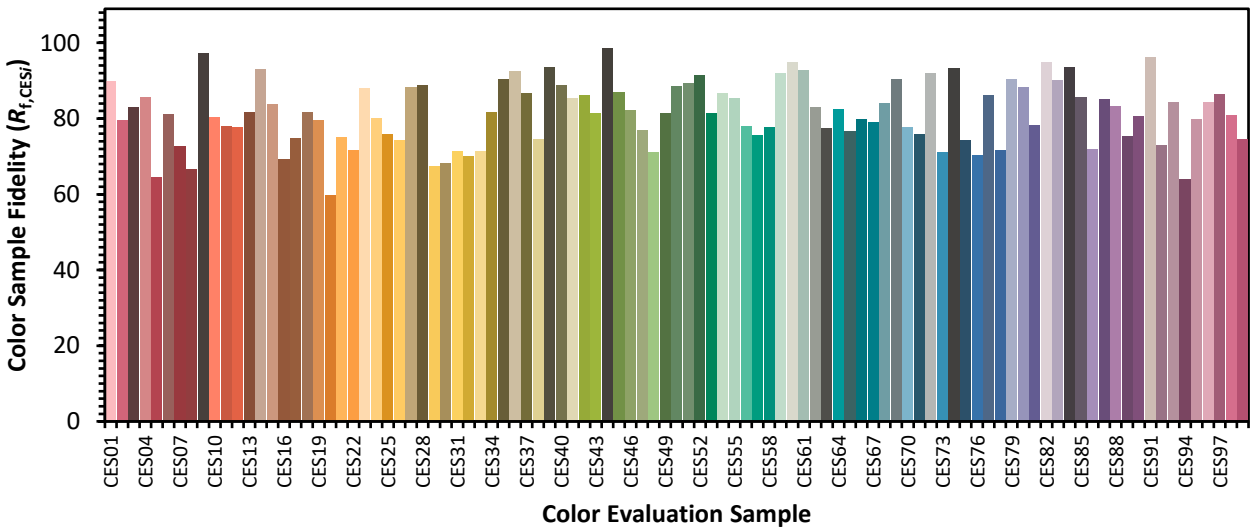
## Individual Sample Fidelity Index ($R_{f,i}$)

| | | | |
|---|---|---|---|
| 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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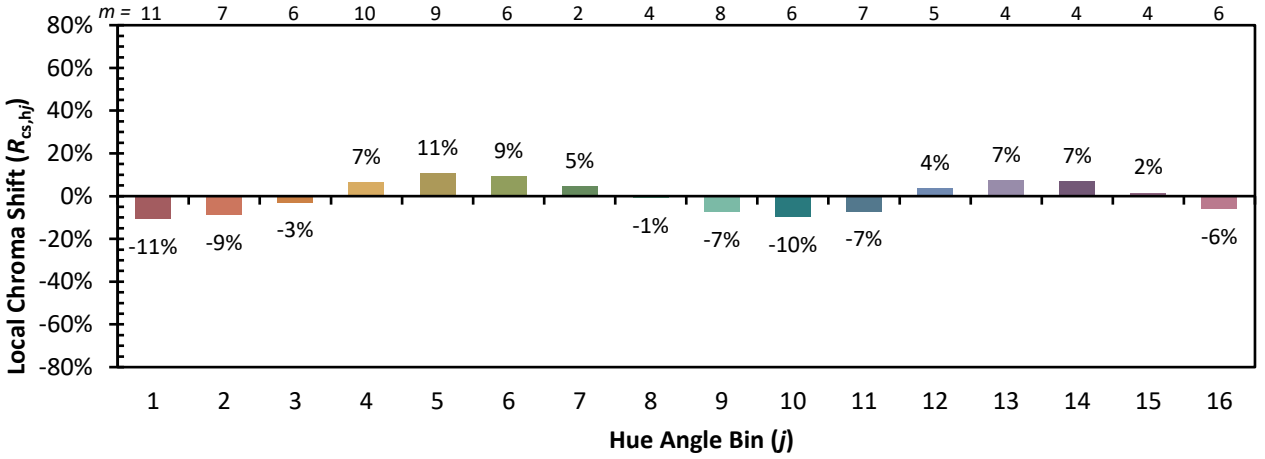
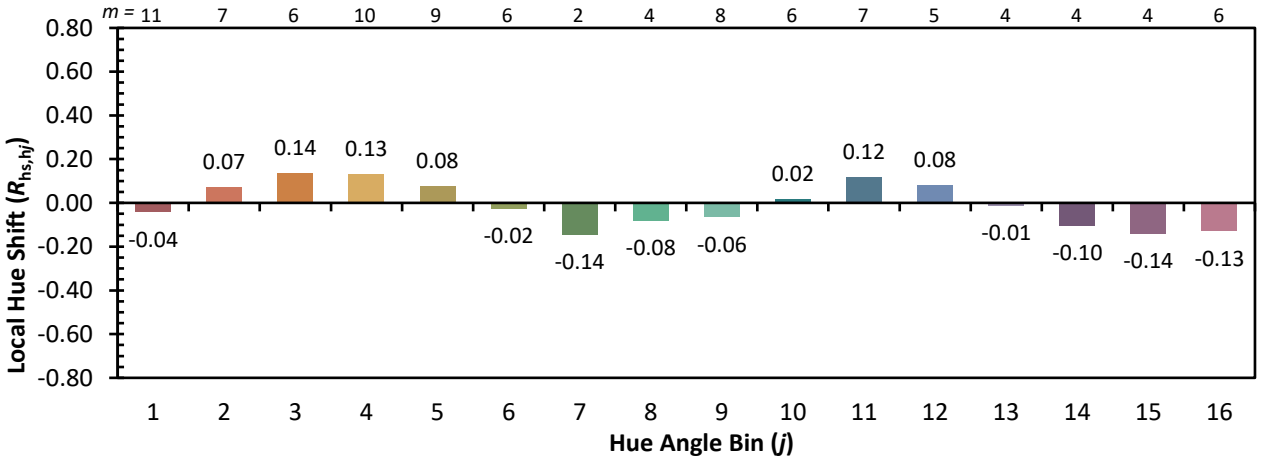
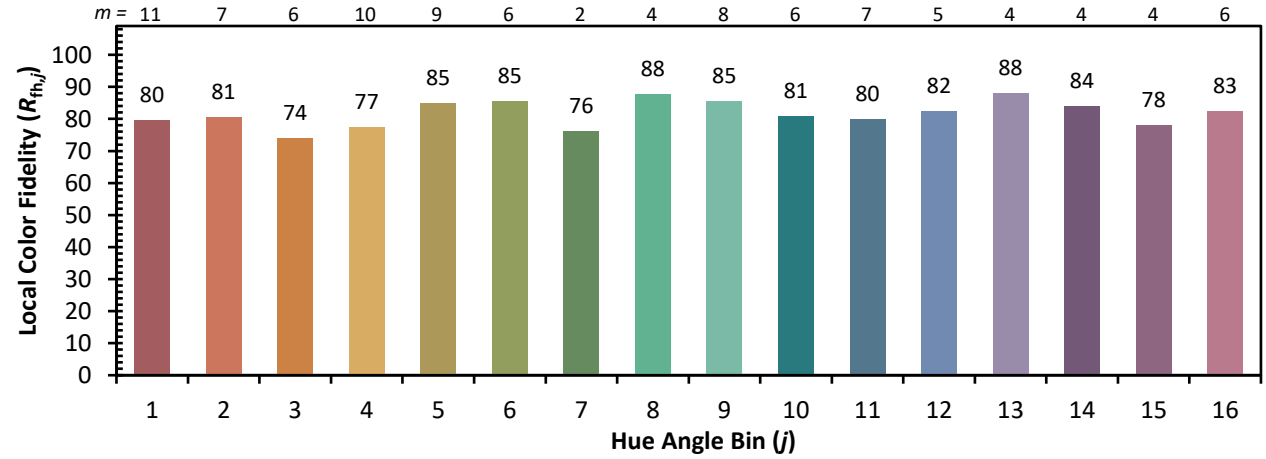
## Color Rendition by Hue-Angle Bin



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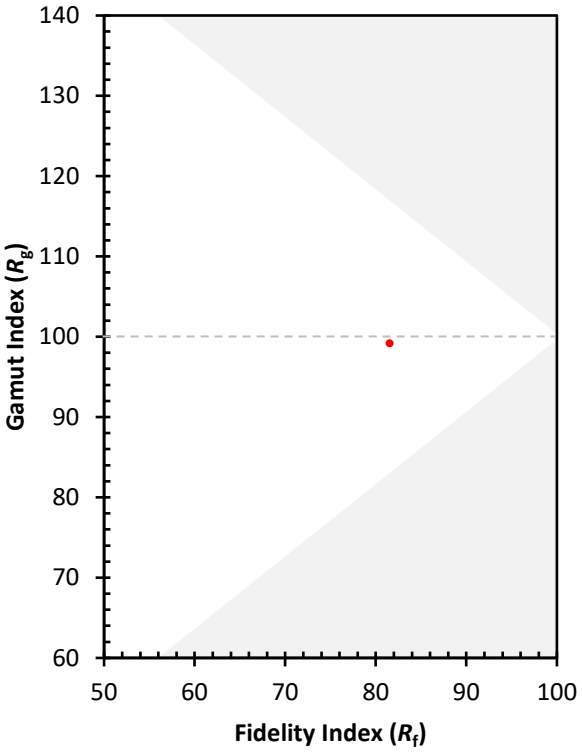
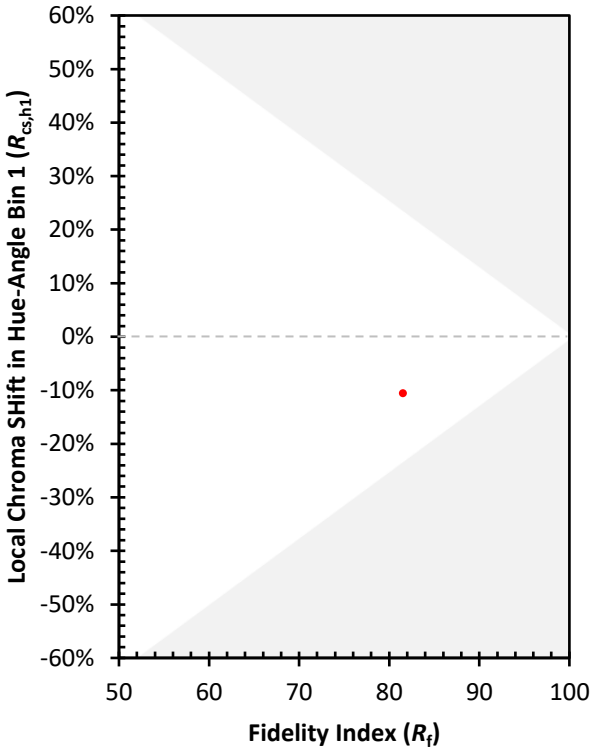
## Measure Comparisons




(END OF REPORT)