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: P321441

Luminaire Tested: **GLEON-SA7B-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: | P321441 |
| | 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-SA7B-830-U-T2R-HSS |
| Description: | GALLEON AREA AND ROADWAY LUMINAIRE |
| | (7) 80 CRI, 3000K, 800mA 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: | 25927 lumens |
| Efficiency: | N/A |
| Efficacy: | 87.9 lumens/watt |
| Luminous Opening: | Rectangular (W 2' x L: 1' x H: 0') |
| IES Classification: | Type II - Medium |
| BUG Rating: | B1 - U0 - G3 |

| | |
|---|---|
| Input Watts (W): | 295 |
| 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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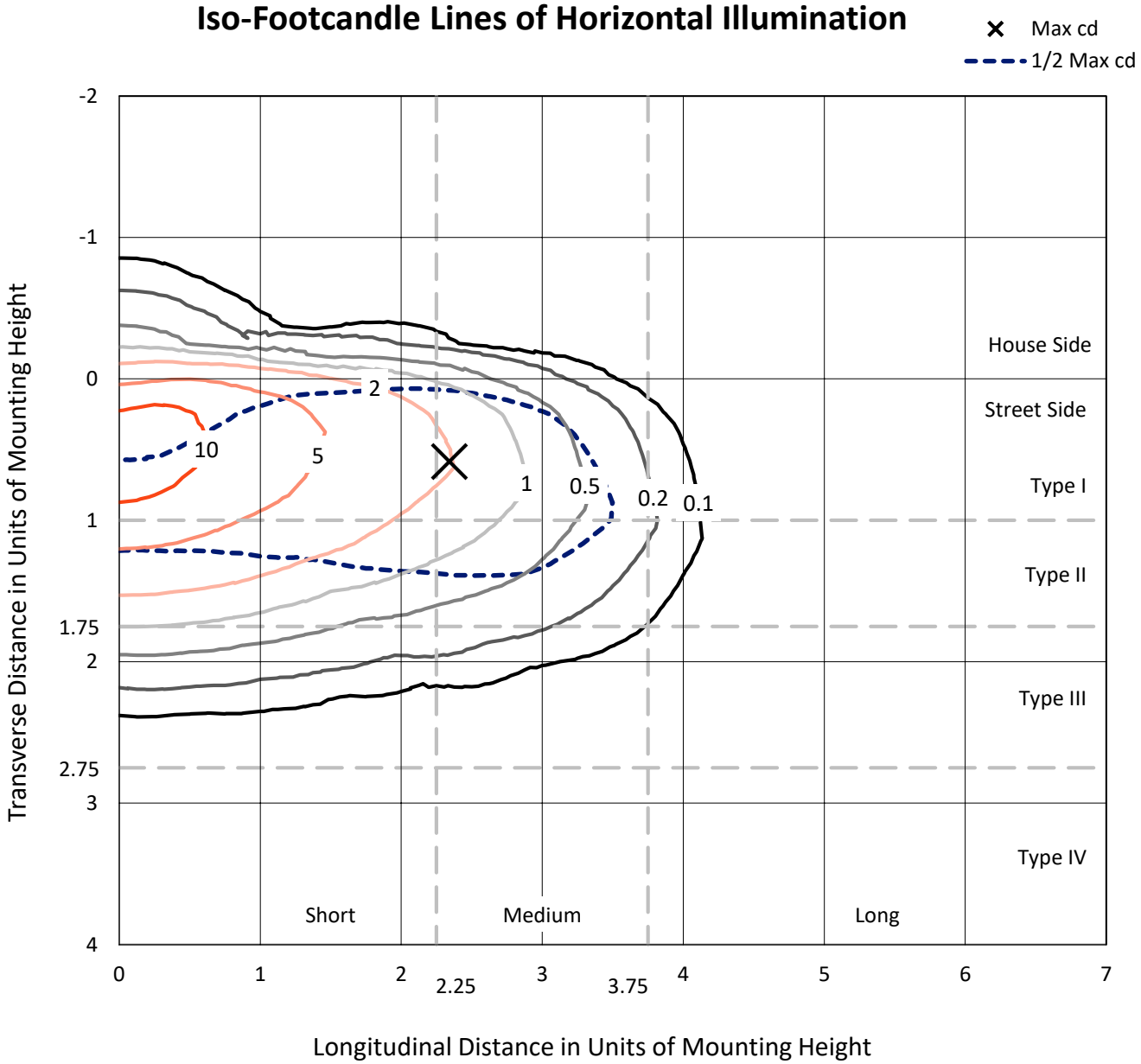
Scaled Data Report

REPORT NUMBER: P321441
CATALOG NUMBER: GLEON-SA7B-830-U-T2R-HSS

## Iso-Footcandle Lines of Horizontal Illumination




Based on 25 foot mounting height. Maximum calculated value = 12.4 fc
Type II - Medium - N/A

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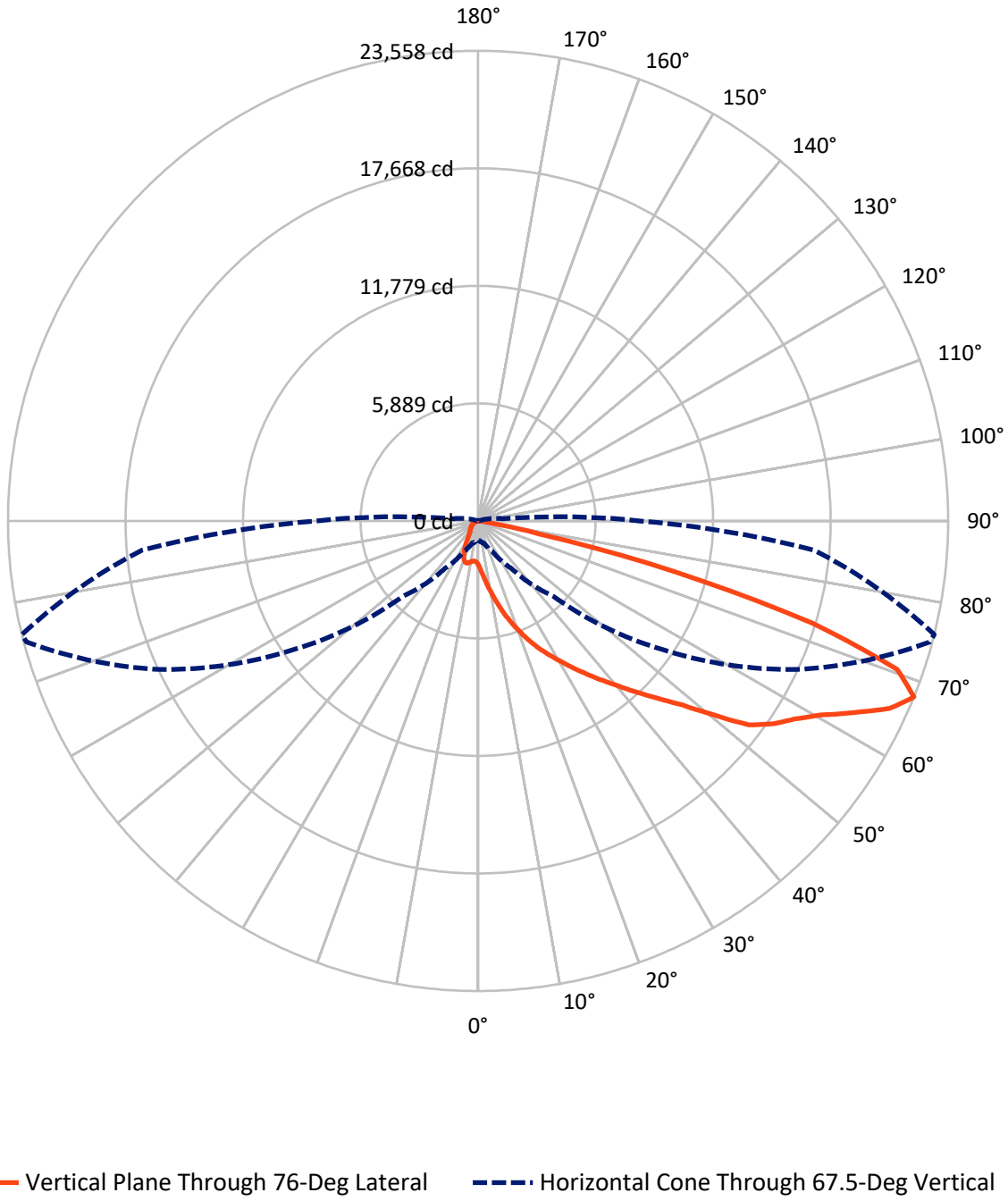
## Luminous Intensity Polar Plot



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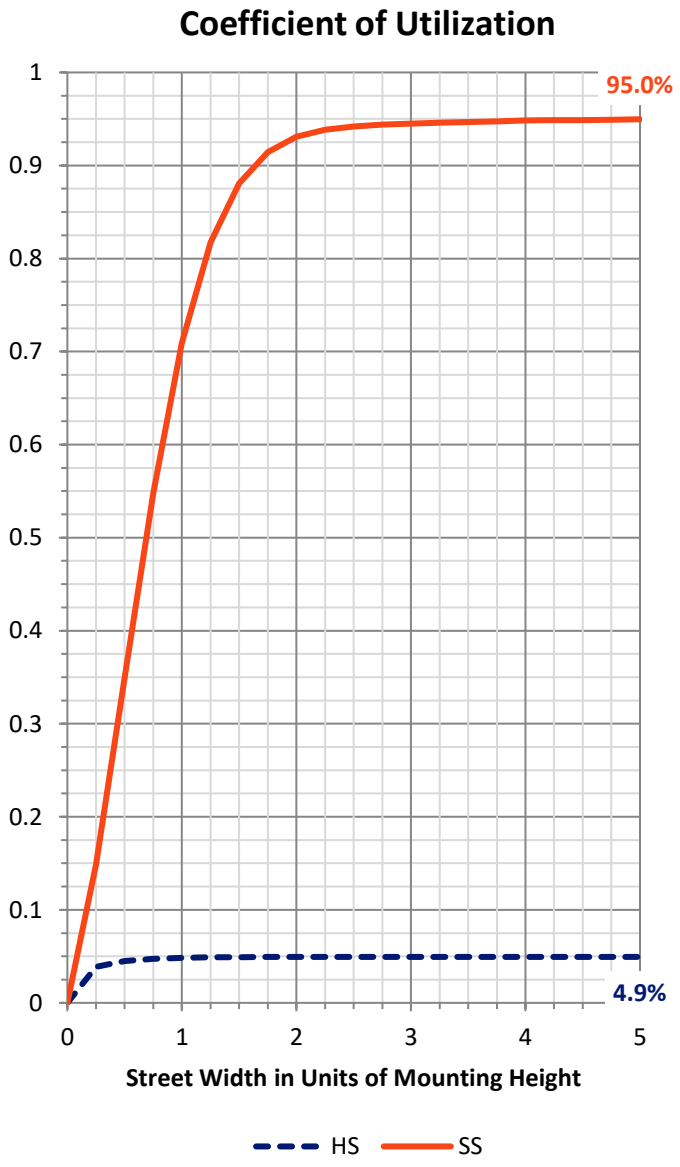
REPORT NUMBER: P321441
CATALOG NUMBER: GLEON-SA7B-830-U-T2R-HSS

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 1287.5 | 0.0 | 1287.5 |
| | % Fixture | 5.0 | 0.0 | 5.0 |
| **Street Side** | Lumens | 24639.5 | 0.0 | 24639.5 |
| | % Fixture | 95.0 | 0.0 | 95.0 |
| **Total** | Lumens | 25927.0 | 0.0 | 25927.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 273.5 | 1.1 |
| 10°-20° | 1084.1 | 4.2 |
| 20°-30° | 2205.9 | 8.5 |
| 30°-40° | 3828.7 | 14.8 |
| 40°-50° | 5409.4 | 20.9 |
| 50°-60° | 6134.5 | 23.7 |
| 60°-70° | 5088.0 | 19.6 |
| 70°-80° | 1843.0 | 7.1 |
| 80°-90° | 59.8 | 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° | 25927.0 | 100.0 |
| 0°-180° | 25927.0 | 100.0 |



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REPORT NUMBER: P321441
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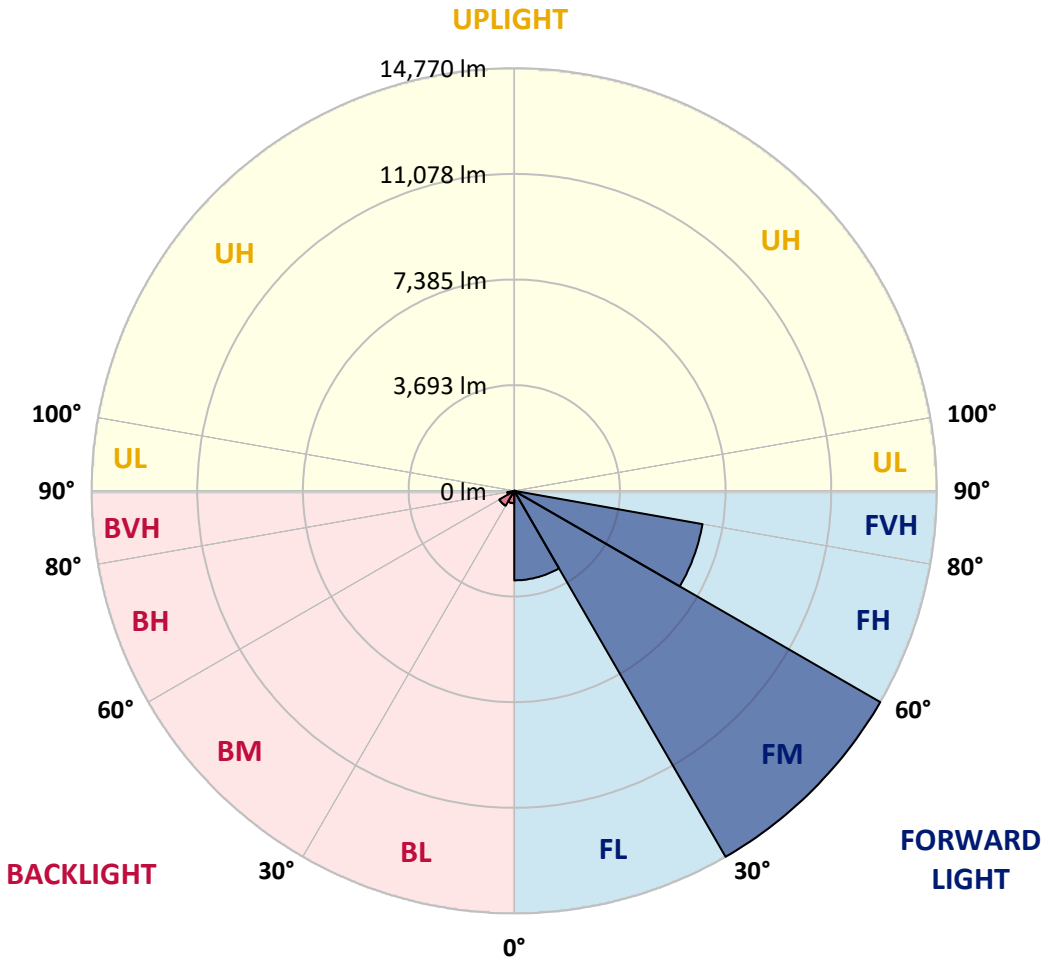
## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 3129.3 | 12.1 | | | |
| FM | (30°-60°) | 14770.1 | 57.0 | | | |
| FH | (60°-80°) | 6682.3 | 25.8 | | | G3/7500 |
| FVH | (80°-90°) | 57.9 | 0.2 | | | G1/100 |
| BL | (0°-30°) | 434.2 | 1.7 | B1/500 | | |
| BM | (30°-60°) | 602.6 | 2.3 | B1/1000 | | |
| BH | (60°-80°) | 248.8 | 1.0 | B1/500 | | G1/500 |
| BVH | (80°-90°) | 1.9 | 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: P321441
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**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 76° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 2199.4 | 2199.4 | 2199.4 | 2199.4 | 2199.4 | 2199.4 | 2199.4 | 2199.4 | 2199.4 | *2199.4* | 2199.4 |
| 2.5° | 3283.1 | 3209.3 | 3226.3 | 3178.6 | 3092.3 | 2915.1 | 2764.0 | 2620.8 | 2453.8 | *2448.2* | 2310.7 |
| 5° | 4427.1 | 4364.6 | 4356.7 | 4260.1 | 4103.4 | 3802.3 | 3509.2 | 3175.2 | 2802.6 | *2775.3* | 2483.4 |
| 7.5° | 5465.5 | 5415.5 | 5397.3 | 5282.6 | 4990.6 | 4697.5 | 4315.8 | 3825.0 | 3242.2 | *3192.3* | 2716.3 |
| 10° | 6263.0 | 6239.1 | 6243.6 | 6161.8 | 5911.9 | 5639.3 | 5138.3 | 4512.3 | 3741.0 | *3663.7* | 2995.7 |
| 12.5° | 6867.3 | 6873.0 | 6913.9 | 6863.9 | 6724.2 | 6522.0 | 5986.9 | 5245.1 | 4293.1 | *4187.4* | 3314.9 |
| 15° | 7311.5 | 7339.9 | 7414.9 | 7477.4 | 7467.1 | 7292.2 | 6801.4 | 5989.2 | 4879.3 | *4762.3* | 3670.5 |
| 17.5° | 7598.9 | 7630.7 | 7739.8 | 7878.4 | 8005.6 | 7964.7 | 7587.6 | 6707.1 | 5472.3 | *5337.1* | 4051.1 |
| 20° | 7851.1 | 7888.6 | 8005.6 | 8188.5 | 8426.0 | 8477.1 | 8229.4 | 7403.5 | 6064.1 | *5899.4* | 4444.2 |
| 22.5° | 8397.6 | 8396.4 | 8468.0 | 8574.8 | 8800.9 | 8932.6 | 8775.9 | 8049.9 | 6649.2 | *6477.7* | 4845.2 |
| 25° | 9385.9 | 9348.4 | 9323.4 | 9239.4 | 9289.3 | 9371.1 | 9283.7 | 8654.3 | 7237.7 | *7063.9* | 5251.9 |
| 27.5° | 10560.6 | 10583.3 | 10381.1 | 10155.0 | 9980.1 | 9896.0 | 9752.8 | 9214.4 | 7803.4 | *7612.6* | 5649.5 |
| 30° | 11800.0 | 11806.8 | 11568.2 | 11279.7 | 10894.6 | 10575.3 | 10327.7 | 9749.4 | 8385.1 | *8177.2* | 6035.7 |
| 32.5° | 12917.8 | 12873.5 | 12637.2 | 12244.2 | 11757.9 | 11399.0 | 10884.3 | 10347.0 | 9000.8 | *8799.7* | 6465.2 |
| 35° | 13803.9 | 13751.7 | 13464.3 | 13106.4 | 12602.0 | 12240.8 | 11621.6 | 10943.4 | 9648.3 | *9451.8* | 6895.7 |
| 37.5° | 14451.5 | 14390.1 | 14094.8 | 13726.7 | 13291.6 | 13081.4 | 12477.1 | 11592.1 | 10354.9 | *10143.6* | 7349.0 |
| 40° | 14676.4 | 14623.0 | 14437.8 | 14168.6 | 13818.7 | 13771.0 | 13384.7 | 12338.5 | 11124.0 | *10899.1* | 7862.5 |
| 42.5° | 14542.4 | 14490.1 | 14424.2 | 14333.3 | 14187.9 | 14233.4 | 14241.3 | 13189.3 | 11978.3 | *11756.8* | 8429.4 |
| 45° | 14010.7 | 13964.1 | 14032.3 | 14165.2 | 14345.8 | 14570.8 | 15022.9 | 14103.9 | 12932.6 | *12696.3* | 9084.9 |
| 47.5° | 13228.0 | 13193.9 | 13382.5 | 13714.2 | 14242.4 | 14862.7 | 15737.5 | 15064.9 | 14003.9 | *13784.6* | 9902.8 |
| 50° | 12114.7 | 12109.0 | 12486.1 | 13091.6 | 13903.9 | 15003.6 | 16475.9 | 16157.8 | 15492.1 | *15261.5* | 11040.0 |
| 52.5° | 10381.1 | 10392.4 | 11134.3 | 12103.3 | 13309.8 | 14908.2 | 16950.8 | 17561.9 | 17223.4 | *16983.7* | 12024.9 |
| 55° | 8730.4 | 8798.6 | 9324.6 | 10721.9 | 12398.7 | 14553.7 | 17114.3 | 18217.4 | 18178.8 | *17951.6* | 12572.5 |
| 57.5° | 7113.8 | 7237.7 | 7744.3 | 9049.6 | 11068.4 | 13736.9 | 17024.6 | 18501.4 | 18890.0 | *18716.1* | 13295.0 |
| 60° | 5362.1 | 5418.9 | 6002.8 | 7222.9 | 9360.9 | 12246.4 | 16373.6 | 18655.9 | 19862.4 | *19742.0* | 14343.6 |
| 62.5° | 3411.5 | 3553.5 | 4071.5 | 5248.5 | 7288.8 | 10176.6 | 15276.2 | 18653.7 | 21079.1 | *21145.0* | 15696.6 |
| 65° | 1797.2 | 1963.1 | 2238.0 | 3252.5 | 5008.8 | 7864.8 | 13625.6 | 18478.7 | 22571.8 | *22663.9* | 16754.2 |
| 67.5° | *969.0* | *1016.7* | *1162.2* | *1688.1* | *2904.8* | *5328.0* | *11200.2* | *17615.3* | *23436.4* | *23557.9* | *16901.9* |
| 70° | 708.9 | 735.0 | 789.5 | 933.8 | 1462.1 | 3094.6 | 8172.6 | 15657.9 | 22321.9 | *22276.5* | 15017.2 |
| 72.5° | 544.2 | 585.1 | 626.0 | 683.9 | 840.7 | 1651.8 | 5088.3 | 12261.2 | 17810.7 | *17510.8* | 11225.1 |
| 75° | 429.4 | 436.2 | 494.2 | 546.4 | 630.5 | 940.6 | 2259.6 | 7141.1 | 10870.7 | *10160.7* | 5821.0 |
| 77.5° | 343.1 | 347.6 | 381.7 | 427.1 | 506.7 | 618.0 | 699.8 | 2809.4 | 3470.6 | *3096.8* | 1263.3 |
| 80° | 203.3 | 214.7 | 284.0 | 329.4 | 420.3 | 389.7 | 255.6 | 610.0 | 541.9 | *490.8* | 212.4 |
| 82.5° | 113.6 | 122.7 | 160.2 | 260.2 | 293.1 | 186.3 | 127.2 | 164.7 | 127.2 | *123.8* | 60.2 |
| 85° | 0.0 | 5.7 | 103.4 | 161.3 | 119.3 | 40.9 | 53.4 | 54.5 | 37.5 | *35.2* | 23.9 |
| 87.5° | 0.0 | 0.0 | 31.8 | 30.7 | 4.5 | 6.8 | 12.5 | 18.2 | 14.8 | *14.8* | 12.5 |
| 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: P321441
CATALOG NUMBER: GLEON-SA7B-830-U-T2R-HSS

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 2199.4 | 2199.4 | 2199.4 | 2199.4 | 2199.4 | 2199.4 | 2199.4 | 2199.4 | 2199.4 | 2199.4 | 2199.4 |
| 2.5° | 2242.5 | 2181.2 | 2065.3 | 1951.7 | 1856.3 | 1777.9 | 1707.5 | 1679.1 | 1656.3 | 1652.9 | 1634.8 |
| 5° | 2342.5 | 2218.7 | 1997.1 | 1815.4 | 1693.8 | 1607.5 | 1533.6 | 1488.2 | 1453.0 | 1439.4 | 1426.9 |
| 7.5° | 2493.6 | 2306.1 | 1988.1 | 1779.0 | 1633.6 | 1488.2 | 1351.9 | 1204.2 | 1112.2 | 1077.0 | 1056.5 |
| 10° | 2677.6 | 2422.0 | 2022.1 | 1768.8 | 1514.3 | 1207.6 | 981.5 | 794.1 | 718.0 | 693.0 | 686.2 |
| 12.5° | 2892.3 | 2566.3 | 2081.2 | 1705.2 | 1259.9 | 857.7 | 677.1 | 613.5 | 596.4 | 588.5 | 588.5 |
| 15° | 3138.9 | 2724.2 | 2123.2 | 1521.1 | 931.5 | 648.7 | 586.2 | 556.7 | 538.5 | 528.3 | 529.4 |
| 17.5° | 3391.1 | 2878.7 | 2102.8 | 1254.2 | 687.3 | 577.1 | 530.5 | 498.7 | 473.7 | 463.5 | 461.2 |
| 20° | 3645.5 | 3021.8 | 1989.2 | 933.8 | 581.6 | 523.7 | 471.5 | 436.2 | 411.2 | 401.0 | 398.7 |
| 22.5° | 3909.1 | 3143.4 | 1789.3 | 685.0 | 522.6 | 464.6 | 413.5 | 378.3 | 354.4 | 345.4 | 340.8 |
| 25° | 4165.8 | 3242.2 | 1509.8 | 554.4 | 466.9 | 409.0 | 360.1 | 327.2 | 305.6 | 296.5 | 295.4 |
| 27.5° | 4405.5 | 3304.7 | 1186.0 | 489.6 | 418.1 | 359.0 | 314.7 | 285.1 | 267.0 | 260.2 | 259.0 |
| 30° | 4621.4 | 3310.4 | 877.0 | 441.9 | 374.9 | 315.8 | 274.9 | 248.8 | 232.9 | 226.1 | 223.8 |
| 32.5° | 4839.5 | 3262.7 | 638.5 | 398.7 | 335.1 | 278.3 | 238.6 | 218.1 | 206.8 | 201.1 | 201.1 |
| 35° | 5045.1 | 3152.5 | 497.6 | 361.3 | 296.5 | 242.0 | 210.2 | 195.4 | 188.6 | 182.9 | 182.9 |
| 37.5° | 5246.2 | 2994.6 | 422.6 | 328.3 | 260.2 | 211.3 | 185.2 | 176.1 | 170.4 | 164.7 | 164.7 |
| 40° | 5450.7 | 2795.8 | 384.0 | 297.6 | 230.6 | 187.4 | 164.7 | 156.8 | 151.1 | 146.5 | 145.4 |
| 42.5° | 5701.8 | 2566.3 | 359.0 | 269.2 | 204.5 | 165.9 | 145.4 | 136.3 | 131.8 | 127.2 | 125.0 |
| 45° | 5992.6 | 2368.6 | 338.5 | 240.8 | 182.9 | 147.7 | 126.1 | 117.0 | 110.2 | 104.5 | 103.4 |
| 47.5° | 6411.8 | 2225.5 | 311.3 | 210.2 | 162.5 | 128.4 | 109.1 | 98.8 | 88.6 | 82.9 | 81.8 |
| 50° | 6946.8 | 2107.3 | 276.1 | 182.9 | 142.0 | 109.1 | 90.9 | 78.4 | 69.3 | 63.6 | 63.6 |
| 52.5° | 7212.7 | 1952.8 | 244.2 | 159.0 | 119.3 | 92.0 | 73.8 | 59.1 | 54.5 | 48.8 | 48.8 |
| 55° | 7319.5 | 1834.7 | 212.4 | 135.2 | 98.8 | 76.1 | 57.9 | 45.4 | 42.0 | 38.6 | 37.5 |
| 57.5° | 7619.4 | 1800.6 | 185.2 | 114.7 | 81.8 | 60.2 | 44.3 | 34.1 | 31.8 | 27.3 | 27.3 |
| 60° | 8102.2 | 1817.7 | 160.2 | 97.7 | 65.9 | 46.6 | 32.9 | 26.1 | 23.9 | 19.3 | 19.3 |
| 62.5° | 8623.6 | 1796.1 | 135.2 | 84.1 | 51.1 | 34.1 | 22.7 | 19.3 | 19.3 | 11.4 | 10.2 |
| 65° | 8723.6 | 1599.5 | 115.9 | 69.3 | 39.8 | 25.0 | 14.8 | 12.5 | 17.0 | 2.3 | 0.0 |
| 67.5° | *8096.5* | *1240.5* | *100.0* | *53.4* | *29.5* | *19.3* | *11.4* | *5.7* | *14.8* | *0.0* | *0.0* |
| 70° | 6474.3 | 788.4 | 80.7 | 38.6 | 22.7 | 15.9 | 9.1 | 2.3 | 11.4 | 0.0 | 0.0 |
| 72.5° | 4578.2 | 457.8 | 63.6 | 27.3 | 19.3 | 12.5 | 6.8 | 0.0 | 6.8 | 0.0 | 0.0 |
| 75° | 2315.2 | 244.2 | 39.8 | 20.4 | 14.8 | 9.1 | 4.5 | 0.0 | 1.1 | 0.0 | 0.0 |
| 77.5° | 501.0 | 113.6 | 25.0 | 14.8 | 10.2 | 5.7 | 2.3 | 0.0 | 0.0 | 0.0 | 0.0 |
| 80° | 109.1 | 50.0 | 15.9 | 9.1 | 5.7 | 3.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 82.5° | 39.8 | 26.1 | 8.0 | 4.5 | 2.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85° | 21.6 | 13.6 | 4.5 | 2.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87.5° | 11.4 | 4.5 | 1.1 | 1.1 | 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

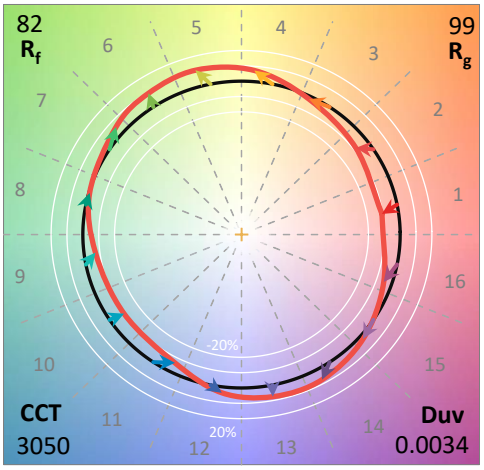
## Test Information

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

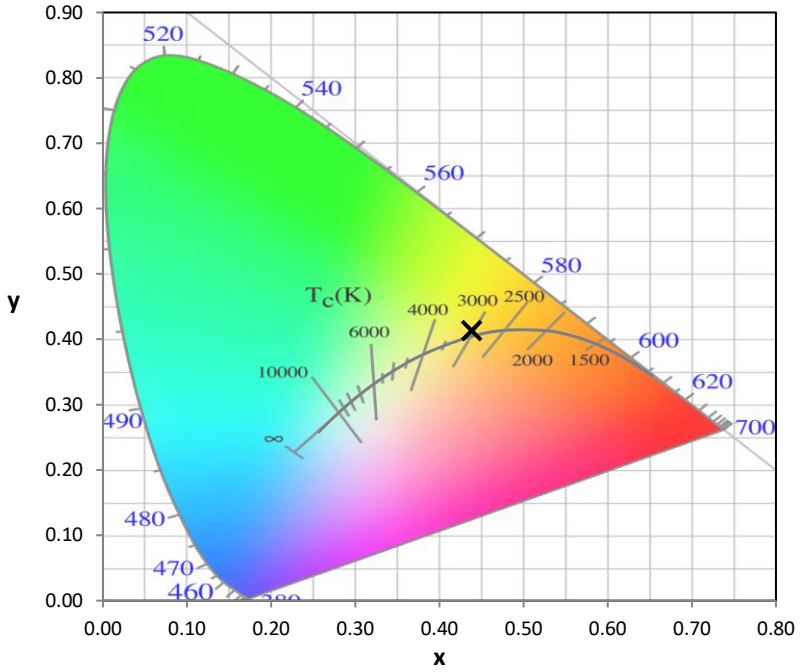
| | |
|---|---|
| Stabilization Time: | 20M |
| Operation Time: | 1H 20M |
| Sphere Temperature (°C): | 24.2 |

REPORT NUMBER: SP1-2408-195-9

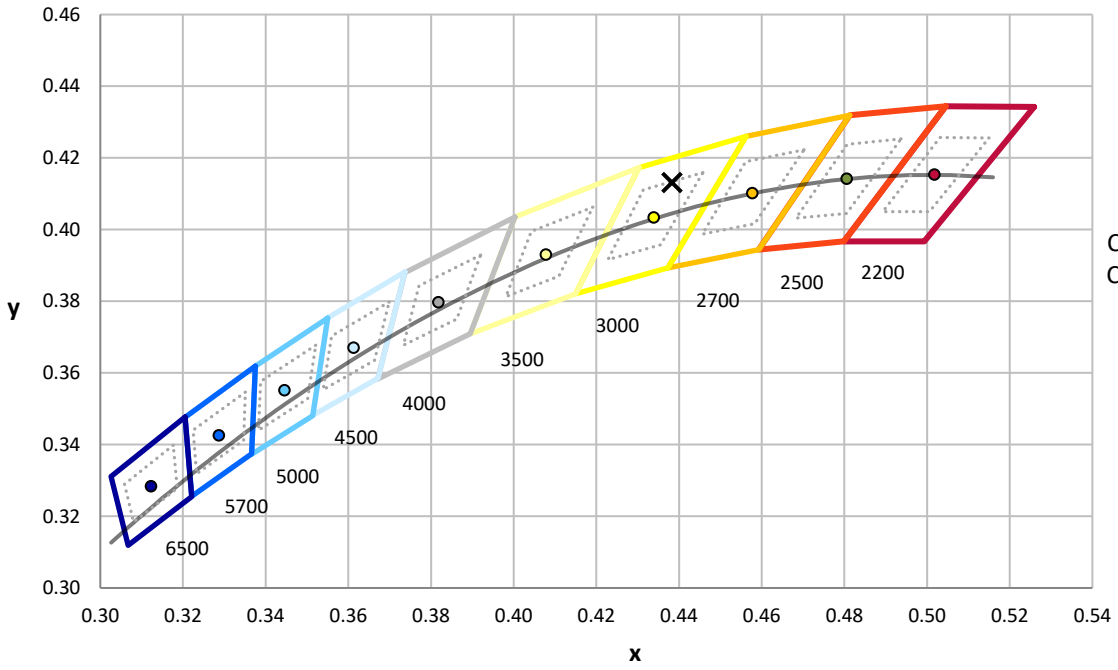
| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 | 2/8/2024 | 2/8/2025 |
| AC Power Source | IN0063 | 10/24/2023 | 10/24/2024 |
| DC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

REPORT NUMBER: SP1-2408-195-9

## 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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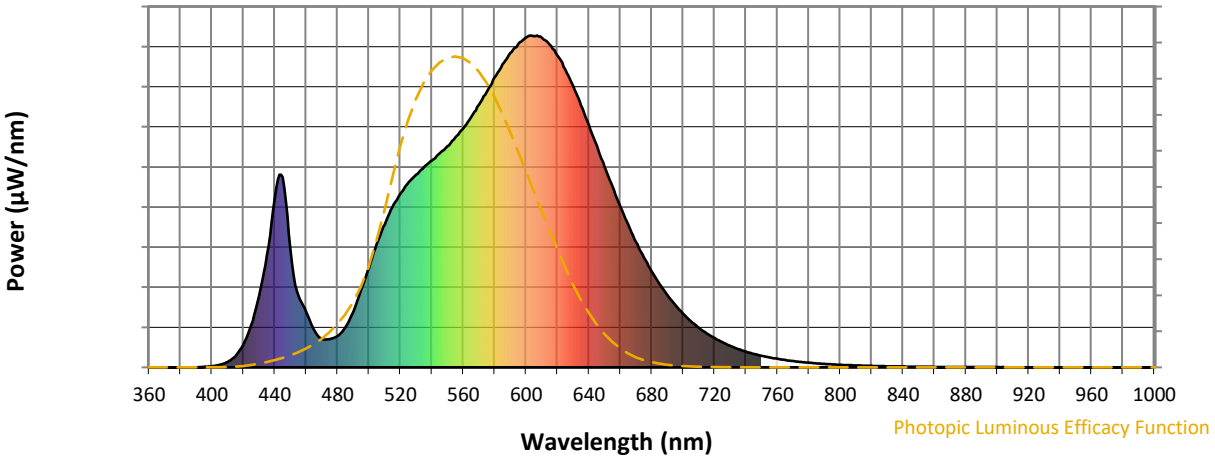
## Photopic Flux vs. Wavelength




## 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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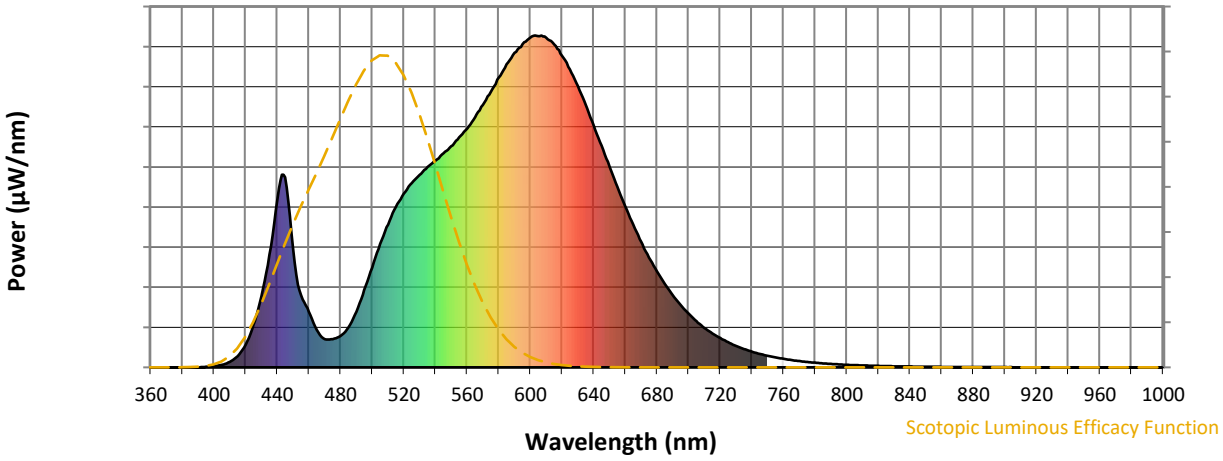
## Scotopic Flux vs. Wavelength




**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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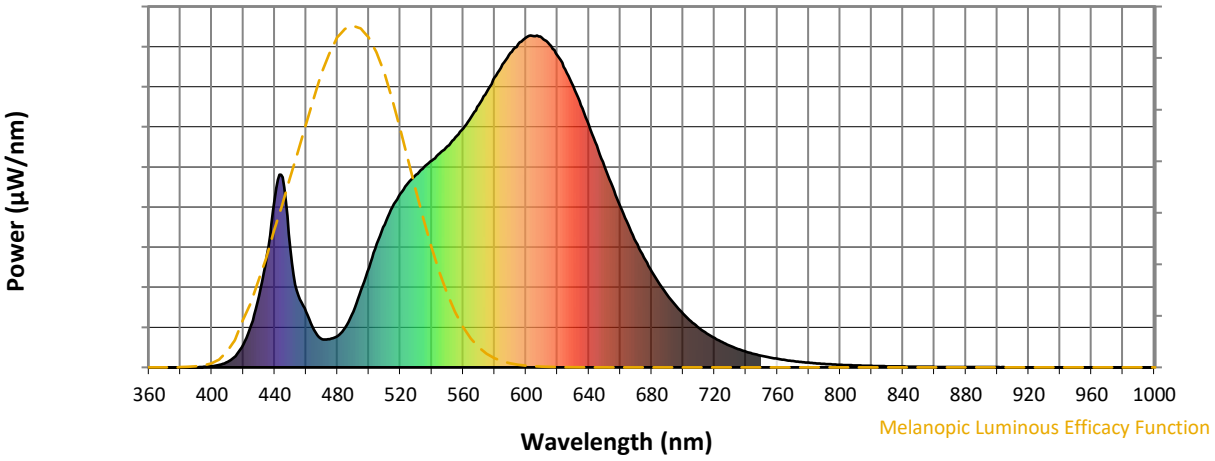
## Melanopic Flux vs. Wavelength




**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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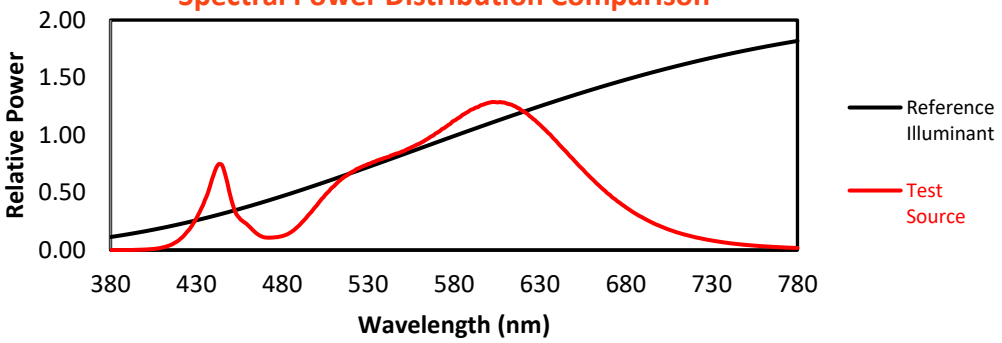
# TM-30-18

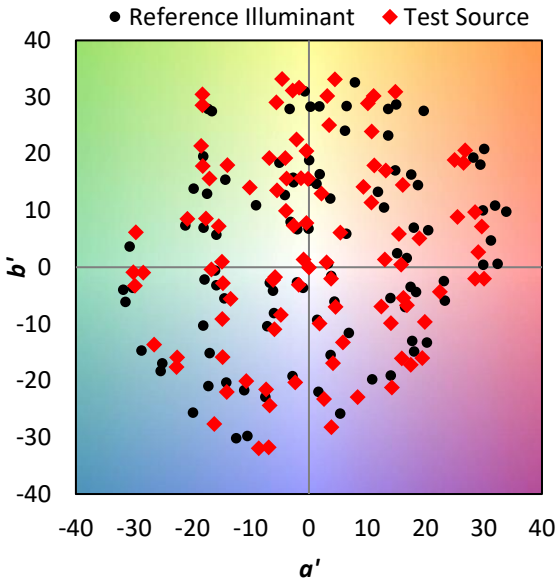
## Summary

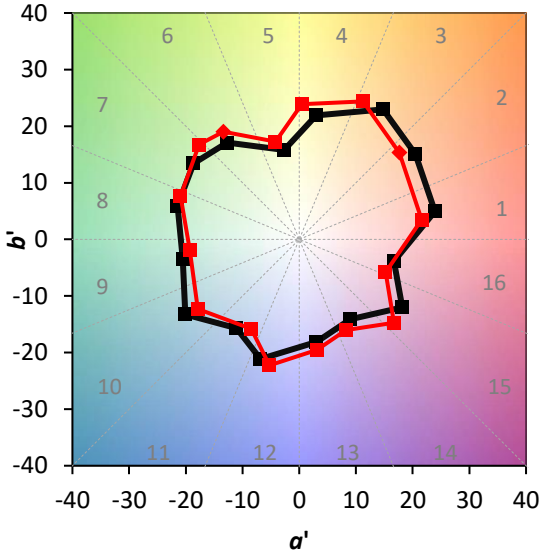
$R_f$ = 81.5
$R_g$ = 99.2
CIE $R_a$ = 81.0
$R_9$ = 7.1

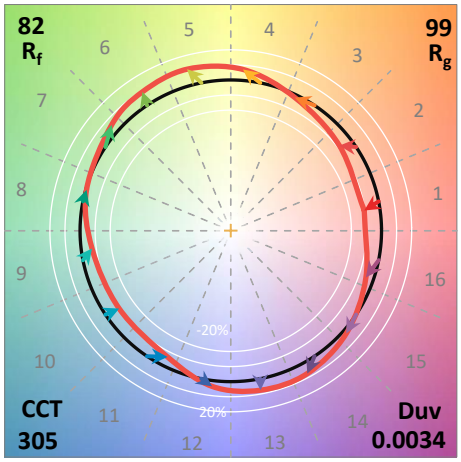
## Spectral Power Distribution Comparison

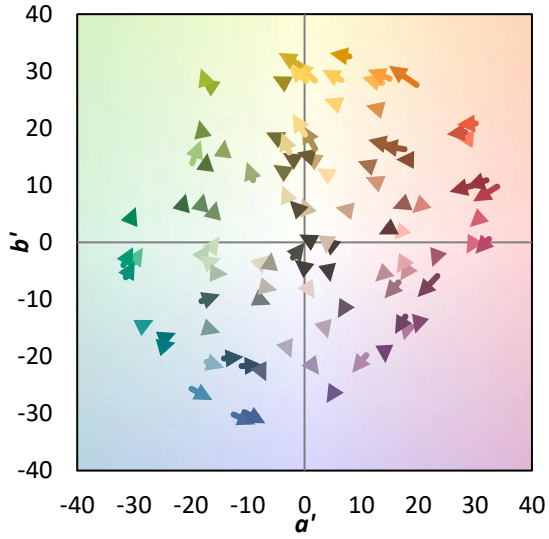



## Color Vector Graphics



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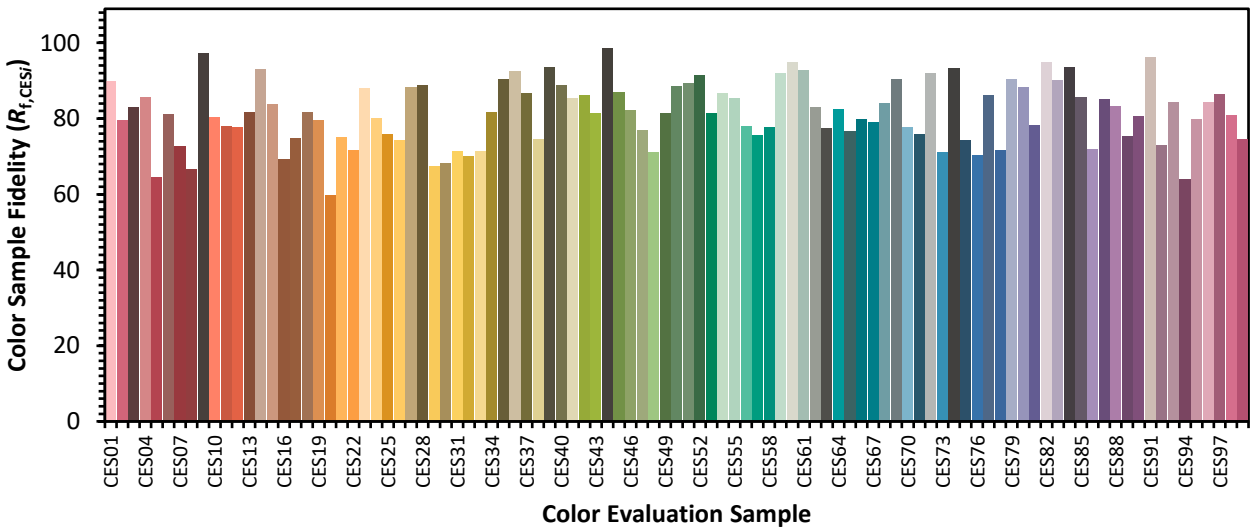
**Individual Sample Fidelity Index ($R_{f,i}$)**

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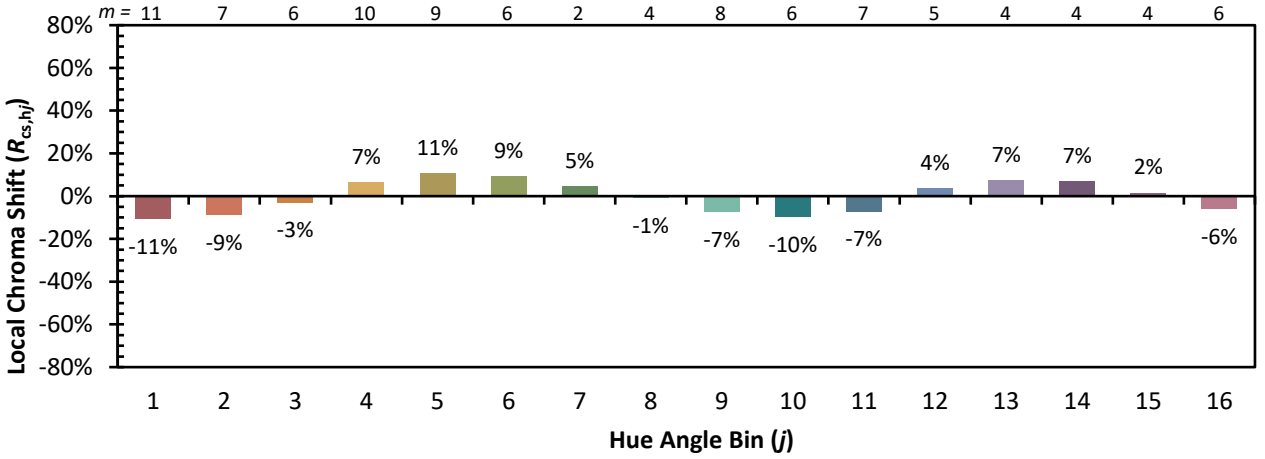
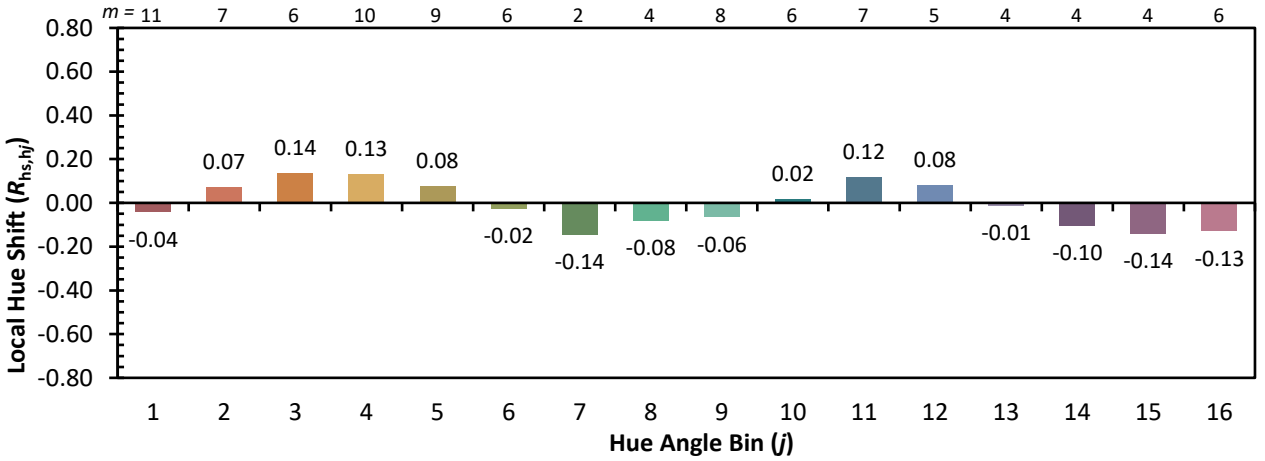
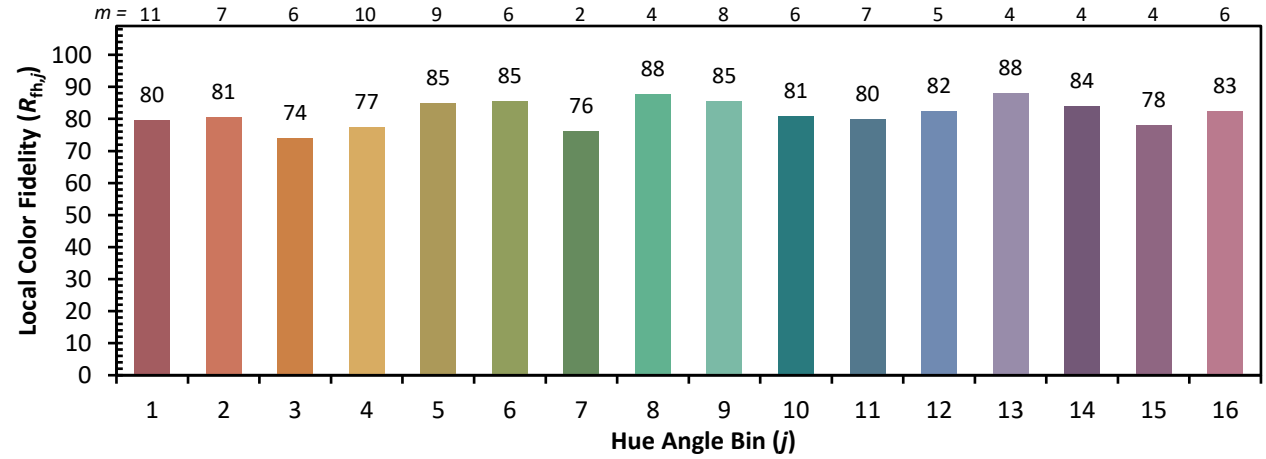
## Color Rendition by Hue-Angle Bin



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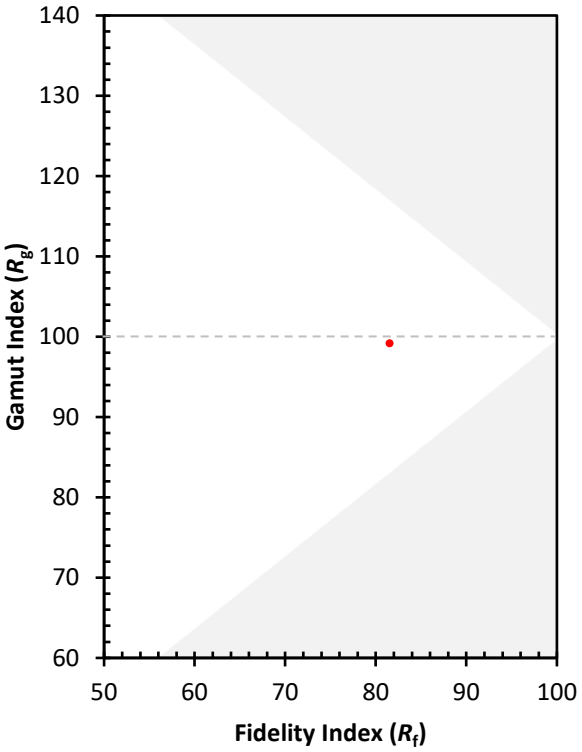
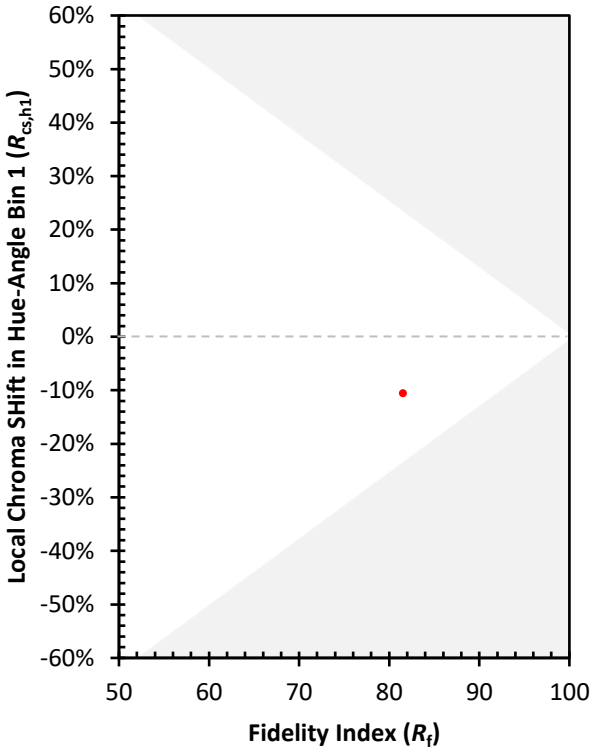
## Measure Comparisons

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