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: P318892

Luminaire Tested: **GLEON-SA8C-830-U-T4FT**

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: | P318892 |
| | TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-16) |
| Test Lab: | INNOVATION CENTER |
| Issue Date: | 3/3/2020 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS (FORMERLY EATON) |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | GLEON-SA8C-830-U-T4FT |
| Description: | GALLEON AREA AND ROADWAY LUMINAIRE |
| | (8) 80 CRI, 3000K, 1050mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE IV FORWARD THROW OPTICS |
| Light Source: | - |
| Ballast/Driver: | ELECTRONIC DRIVER |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 45316 lumens |
| Efficiency: | N/A |
| Efficacy: | 101.8 lumens/watt |
| Luminous Opening: | Rectangular (W 2' x L: 1' x H: 0') |
| IES Classification: | Type IV - Short |
| BUG Rating: | B4 - U0 - G5 |

| | |
|---|---|
| Input Watts (W): | 445 |
| 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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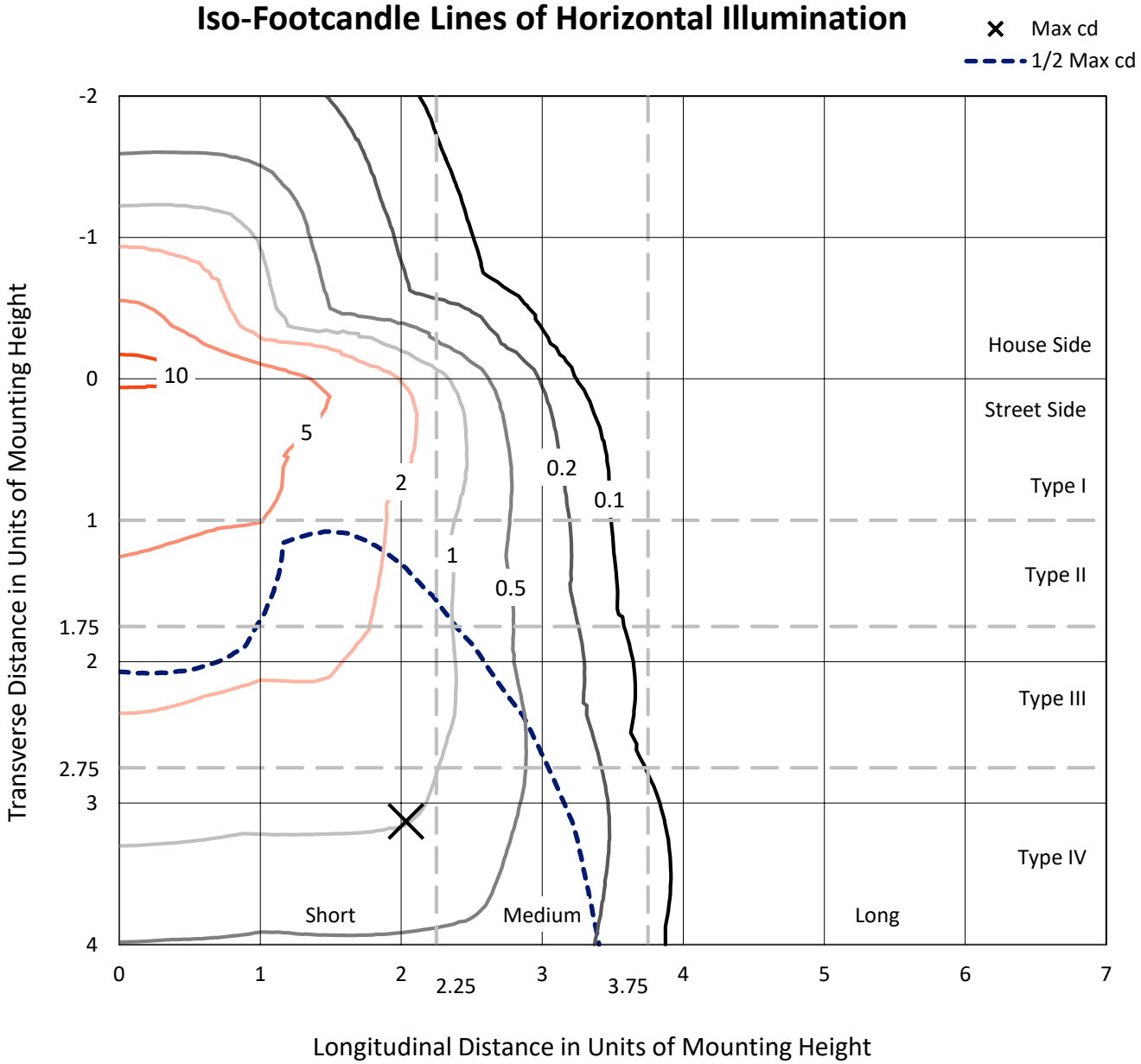
Scaled Data Report

REPORT NUMBER: P318892
CATALOG NUMBER: GLEON-SA8C-830-U-T4FT

## Iso-Footcandle Lines of Horizontal Illumination




Based on 25 foot mounting height. Maximum calculated value = 11.3 fc
Type IV - Short - N/A

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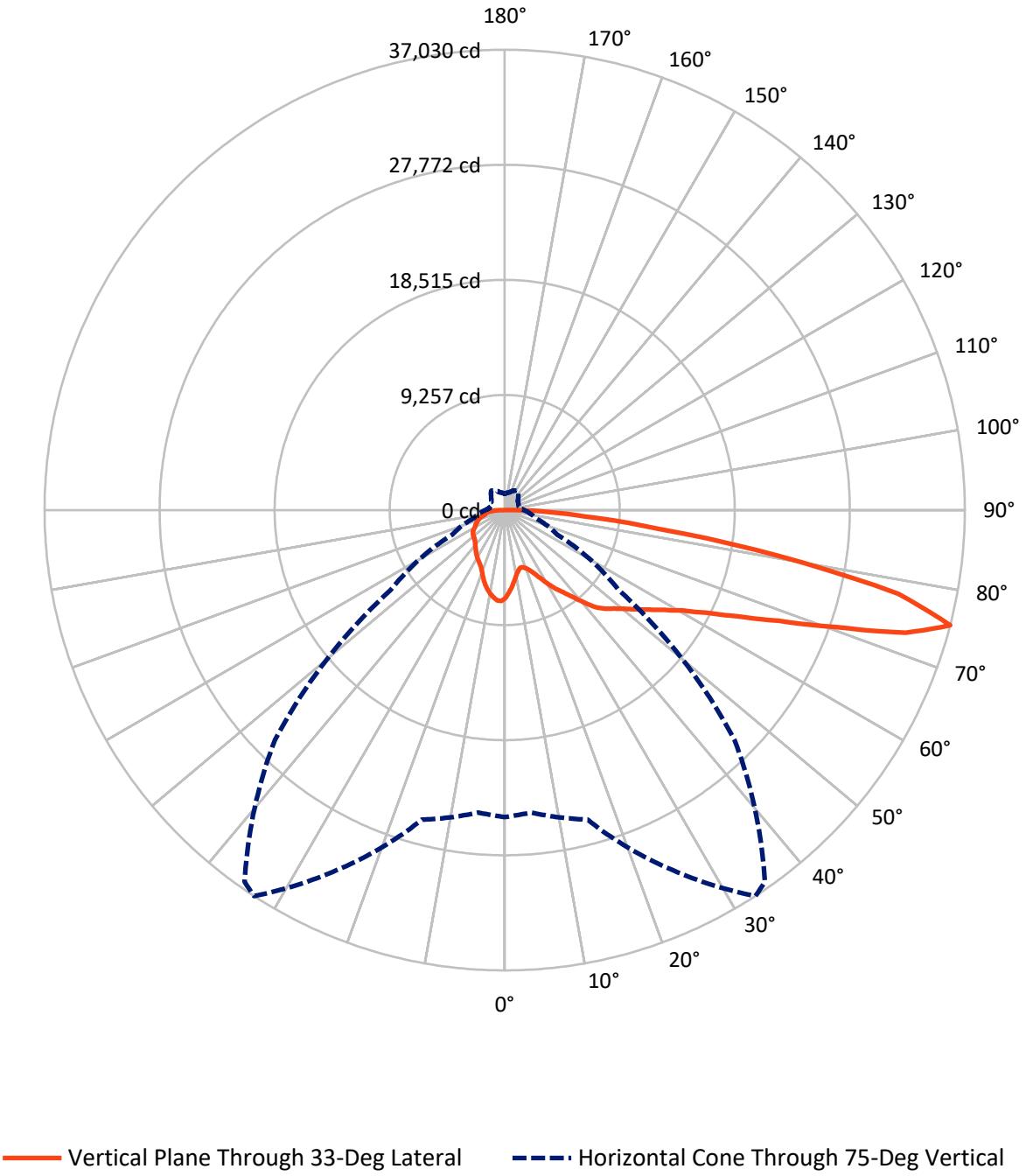
## Luminous Intensity Polar Plot



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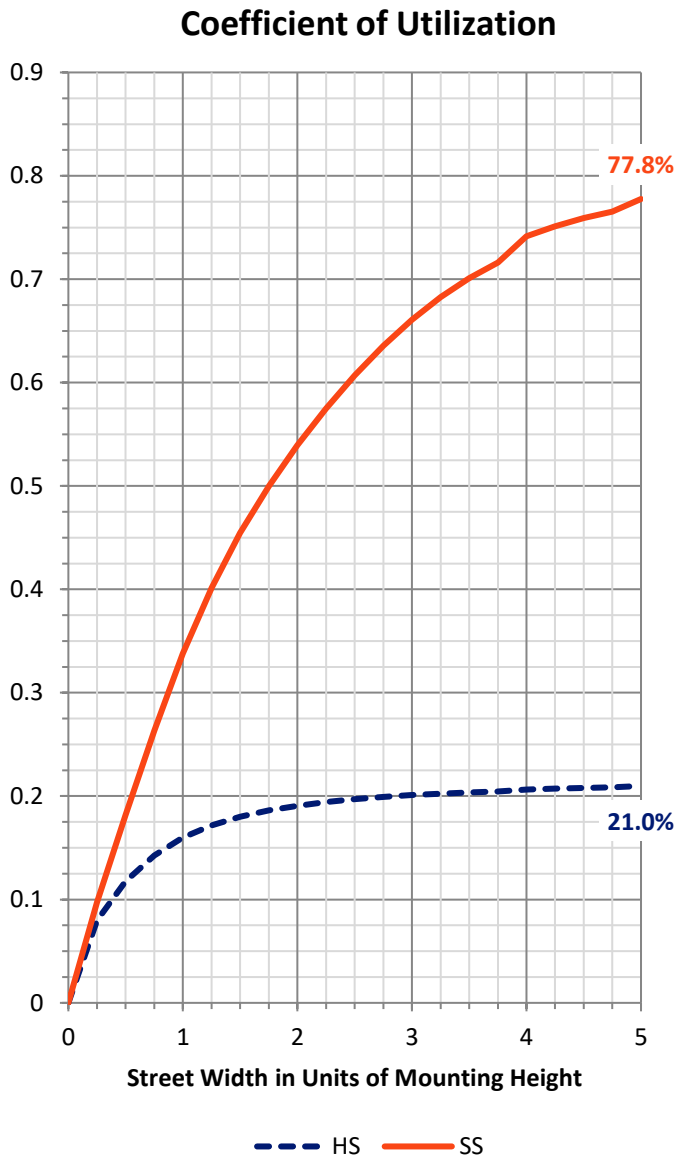
REPORT NUMBER: P318892
CATALOG NUMBER: GLEON-SA8C-830-U-T4FT

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 9730.5 | 0.0 | 9730.5 |
| | % Fixture | 21.5 | 0.0 | 21.5 |
| **Street Side** | Lumens | 35585.5 | 0.0 | 35585.5 |
| | % Fixture | 78.5 | 0.0 | 78.5 |
| **Total** | Lumens | 45316.0 | 0.0 | 45316.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 640.6 | 1.4 |
| 10°-20° | 1735.0 | 3.8 |
| 20°-30° | 2833.5 | 6.3 |
| 30°-40° | 4219.7 | 9.3 |
| 40°-50° | 6052.2 | 13.4 |
| 50°-60° | 8308.7 | 18.3 |
| 60°-70° | 10402.1 | 23.0 |
| 70°-80° | 9410.3 | 20.8 |
| 80°-90° | 1714.1 | 3.8 |
| 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° | 45316.0 | 100.0 |
| 0°-180° | 45316.0 | 100.0 |



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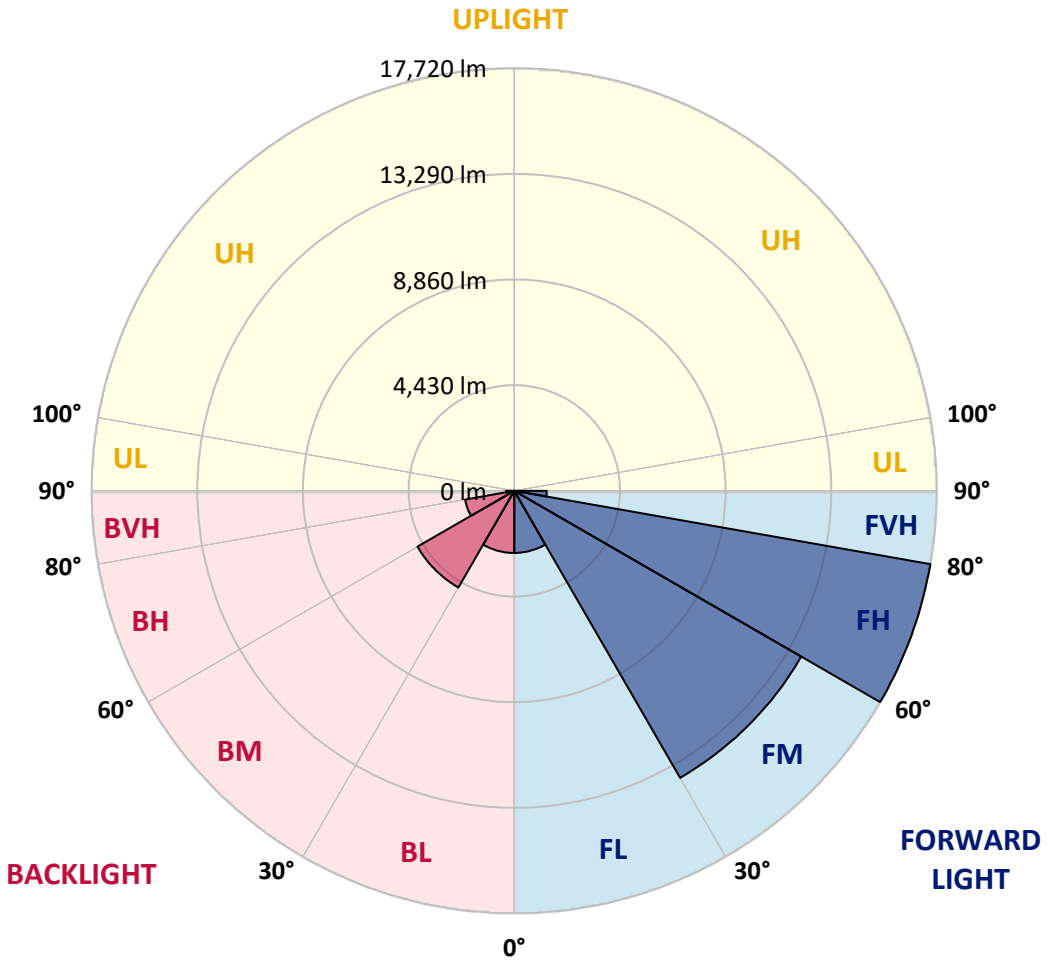
REPORT NUMBER: P318892
CATALOG NUMBER: GLEON-SA8C-830-U-T4FT

## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 2602.7 | 5.7 | | | |
| FM | (30°-60°) | 13897.5 | 30.7 | | | |
| FH | (60°-80°) | 17720.1 | 39.1 | | | G5 |
| FVH | (80°-90°) | 1365.2 | 3.0 | | | G5 |
| BL | (0°-30°) | 2606.3 | 5.8 | B4/5000 | | |
| BM | (30°-60°) | 4683.0 | 10.3 | B3/5000 | | |
| BH | (60°-80°) | 2092.2 | 4.6 | B3/2500 | | G3/2500 |
| BVH | (80°-90°) | 349.0 | 0.8 | | | G3/500 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

**BUG Rating: B4-U0-G5**
Type IV Short



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Scaled Data Report

REPORT NUMBER: P318892
CATALOG NUMBER: GLEON-SA8C-830-U-T4FT

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 33° | 35° | 45° | 55° | 65° | 75° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 7083.1 | 7083.1 | 7083.1 | 7083.1 | *7083.1* | 7083.1 | 7083.1 | 7083.1 | 7083.1 | 7083.1 | 7083.1 |
| 2.5° | 6577.5 | 6552.5 | 6599.5 | 6605.7 | *6646.4* | 6662.1 | 6718.4 | 6806.1 | 6878.1 | 6961.0 | 7036.2 |
| 5° | 5981.1 | 5963.9 | 6029.7 | 6076.6 | *6165.9* | 6203.4 | 6336.5 | 6522.8 | 6688.7 | 6876.5 | 7047.1 |
| 7.5° | 5414.5 | 5405.1 | 5478.7 | 5585.1 | *5688.4* | 5740.1 | 5970.2 | 6241.0 | 6518.1 | 6821.7 | 7083.1 |
| 10° | 4937.1 | 4933.9 | 5004.4 | 5109.3 | *5261.1* | 5319.0 | 5616.4 | 5973.3 | 6361.5 | 6779.5 | 7144.2 |
| 12.5° | 4669.4 | 4680.4 | 4713.2 | 4800.9 | *4941.8* | 4999.7 | 5330.0 | 5749.5 | 6230.0 | 6765.4 | 7233.4 |
| 15° | 4735.1 | 4752.4 | 4696.0 | 4692.9 | *4793.1* | 4838.5 | 5148.4 | 5589.8 | 6136.1 | 6788.9 | 7363.3 |
| 17.5° | 5015.3 | 5018.5 | 4869.8 | 4775.8 | *4836.9* | 4860.4 | 5092.0 | 5499.0 | 6081.3 | 6842.1 | 7526.1 |
| 20° | 5409.8 | 5402.0 | 5139.0 | 4982.5 | *5015.3* | 5021.6 | 5171.9 | 5500.6 | 6076.6 | 6934.4 | 7737.5 |
| 22.5° | 5932.6 | 5874.7 | 5520.9 | 5308.1 | *5300.2* | 5290.8 | 5376.9 | 5616.4 | 6145.5 | 7084.7 | 7989.5 |
| 25° | 6615.1 | 6560.3 | 6073.5 | 5782.4 | *5719.7* | 5696.3 | 5708.8 | 5863.7 | 6281.7 | 7245.9 | 8271.2 |
| 27.5° | 7374.3 | 7278.8 | 6809.2 | 6397.5 | *6267.6* | 6234.7 | 6159.6 | 6212.8 | 6430.4 | 7400.9 | 8606.2 |
| 30° | 8009.8 | 7958.2 | 7548.0 | 7059.7 | *6906.3* | 6859.3 | 6662.1 | 6604.2 | 6644.9 | 7612.2 | 9028.9 |
| 32.5° | 8365.2 | 8330.7 | 8081.8 | 7687.4 | *7544.9* | 7479.2 | 7200.5 | 7084.7 | 6989.2 | 7945.6 | 9601.8 |
| 35° | 8795.6 | 8773.7 | 8623.4 | 8337.0 | *8125.7* | 8056.8 | 7840.8 | 7720.2 | 7474.5 | 8404.3 | 10342.2 |
| 37.5° | 9343.5 | 9320.0 | 9323.1 | 9091.5 | *8839.5* | 8775.3 | 8632.8 | 8506.0 | 8103.7 | 9006.9 | 11146.8 |
| 40° | 9963.4 | 9918.0 | 9900.7 | 9889.8 | *9730.1* | 9694.1 | 9619.0 | 9446.8 | 8892.7 | 9727.0 | 11940.4 |
| 42.5° | 10896.3 | 10735.1 | 10390.7 | 10520.6 | *10678.7* | 10659.9 | 10721.0 | 10473.7 | 9769.3 | 10578.5 | 12715.2 |
| 45° | 11796.4 | 11531.8 | 10937.0 | 10965.2 | *11311.1* | 11416.0 | 11873.1 | 11697.8 | 10719.4 | 11511.5 | 13516.7 |
| 47.5° | 12206.5 | 12006.1 | 11500.5 | 11502.1 | *11844.9* | 12062.5 | 13064.3 | 12939.1 | 11718.1 | 12571.2 | 14495.0 |
| 50° | 12665.1 | 12464.8 | 12010.8 | 12181.4 | *12480.4* | 12712.1 | 14214.8 | 14150.6 | 12668.3 | 13731.1 | 15667.4 |
| 52.5° | 13166.0 | 12826.4 | 12538.3 | 12843.6 | *13263.1* | 13532.3 | 15366.9 | 15191.6 | 13540.2 | 14898.9 | 17015.2 |
| 55° | 13172.3 | 13079.9 | 13299.1 | 13522.9 | *14150.6* | 14480.9 | 16573.8 | 16110.4 | 14250.8 | 16046.3 | 18112.5 |
| 57.5° | 13922.1 | 13771.8 | 14236.7 | 14340.0 | *15160.3* | 15532.8 | 17774.4 | 16910.3 | 14974.0 | 16926.0 | 18704.2 |
| 60° | 14914.5 | 14786.2 | 15166.5 | 15438.9 | *16409.4* | 16907.2 | 19056.4 | 17732.1 | 15542.2 | 17589.7 | 18676.0 |
| 62.5° | 16628.6 | 16483.0 | 16478.3 | 16860.2 | *18167.3* | 18746.5 | 20494.9 | 18538.3 | 15767.6 | 17721.2 | 17879.3 |
| 65° | 19137.8 | 18906.1 | 18469.4 | 18651.0 | *20595.1* | 21172.7 | 22102.5 | 19122.1 | 15470.2 | 17016.8 | 15827.1 |
| 67.5° | 21579.7 | 21571.9 | 21035.0 | 21407.5 | *23800.9* | 24264.3 | 23934.0 | 19180.1 | 14542.0 | 14563.9 | 12186.1 |
| 70° | 24013.8 | 24045.1 | 23954.3 | 25250.4 | *28132.2* | 28614.3 | 25884.4 | 18402.1 | 12455.4 | 10517.5 | 7300.7 |
| 72.5° | 25942.3 | 25934.5 | 26391.6 | 29733.6 | *33753.3* | 33645.3 | 27528.0 | 16044.7 | 8942.8 | 5677.5 | 3489.1 |
| 75° | *24693.2* | *24420.8* | *25782.6* | *31953.2* | *37029.6* | *36502.1* | *26130.2* | *11192.2* | *4641.2* | *2584.4* | *1878.4* |
| 77.5° | 16105.7 | 16364.0 | 18363.0 | 26396.3 | *32389.9* | 31748.1 | 19170.7 | 5222.0 | 2186.8 | 1695.3 | 1361.8 |
| 80° | 5832.4 | 6104.8 | 8598.4 | 14952.1 | *22315.4* | 22210.6 | 9440.5 | 2146.1 | 1479.2 | 1280.4 | 992.4 |
| 82.5° | 2006.8 | 2106.9 | 3392.1 | 6640.2 | *12599.4* | 13069.0 | 3551.7 | 1219.4 | 1075.4 | 907.9 | 679.4 |
| 85° | 787.4 | 901.6 | 1551.2 | 3194.9 | *6355.3* | 6402.2 | 1438.5 | 729.4 | 748.2 | 594.8 | 372.5 |
| 87.5° | 299.0 | 363.2 | 742.0 | 1483.9 | *2902.1* | 2665.8 | 515.0 | 347.5 | 425.8 | 353.8 | 176.9 |
| 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: P318892
CATALOG NUMBER: GLEON-SA8C-830-U-T4FT

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 7083.1 | 7083.1 | 7083.1 | 7083.1 | 7083.1 | 7083.1 | 7083.1 | 7083.1 | 7083.1 | 7083.1 | 7083.1 |
| 2.5° | 7094.1 | 7127.0 | 7195.8 | 7242.8 | 7292.9 | 7307.0 | 7313.2 | 7325.8 | 7338.3 | 7333.6 | 7335.2 |
| 5° | 7137.9 | 7202.1 | 7313.2 | 7360.2 | 7382.1 | 7357.1 | 7308.6 | 7269.4 | 7241.2 | 7225.6 | 7220.9 |
| 7.5° | 7209.9 | 7300.7 | 7419.7 | 7411.9 | 7361.8 | 7250.6 | 7125.4 | 7031.5 | 6953.2 | 6925.0 | 6909.4 |
| 10° | 7305.4 | 7411.9 | 7494.8 | 7405.6 | 7260.0 | 7067.5 | 6879.7 | 6734.1 | 6616.7 | 6571.3 | 6563.5 |
| 12.5° | 7427.5 | 7535.5 | 7551.2 | 7361.8 | 7120.7 | 6857.7 | 6602.6 | 6410.1 | 6234.7 | 6178.4 | 6165.9 |
| 15° | 7585.6 | 7687.4 | 7590.3 | 7285.1 | 6948.5 | 6594.8 | 6264.5 | 6003.1 | 5818.4 | 5749.5 | 5724.4 |
| 17.5° | 7751.5 | 7848.6 | 7598.1 | 7158.3 | 6723.1 | 6283.3 | 5868.4 | 5600.8 | 5389.5 | 5309.6 | 5300.2 |
| 20° | 7950.3 | 7994.2 | 7565.3 | 6976.7 | 6413.2 | 5879.4 | 5442.7 | 5190.7 | 5077.9 | 5021.6 | 5015.3 |
| 22.5° | 8196.1 | 8149.1 | 7490.1 | 6730.9 | 6020.3 | 5412.9 | 5057.6 | 4940.2 | 4912.0 | 4899.5 | 4904.2 |
| 25° | 8455.9 | 8311.9 | 7379.0 | 6410.1 | 5524.1 | 4946.5 | 4775.8 | 4808.7 | 4846.3 | 4841.6 | 4841.6 |
| 27.5° | 8742.4 | 8477.9 | 7208.4 | 5984.3 | 4974.6 | 4564.5 | 4584.9 | 4705.4 | 4761.8 | 4760.2 | 4758.6 |
| 30° | 9110.3 | 8665.7 | 6990.8 | 5472.4 | 4461.2 | 4295.3 | 4418.9 | 4566.1 | 4642.8 | 4639.7 | 4641.2 |
| 32.5° | 9562.6 | 8872.3 | 6694.9 | 4901.1 | 4090.2 | 4096.5 | 4238.9 | 4384.5 | 4473.7 | 4465.9 | 4467.5 |
| 35° | 10091.7 | 9104.0 | 6294.2 | 4337.5 | 3844.5 | 3938.4 | 4051.1 | 4152.8 | 4237.4 | 4226.4 | 4215.4 |
| 37.5° | 10667.8 | 9331.0 | 5762.0 | 3833.5 | 3644.1 | 3791.2 | 3885.2 | 3902.4 | 3941.5 | 3913.3 | 3893.0 |
| 40° | 11215.6 | 9504.7 | 5076.4 | 3420.3 | 3442.2 | 3666.0 | 3727.1 | 3658.2 | 3587.7 | 3578.4 | 3550.2 |
| 42.5° | 11693.1 | 9562.6 | 4382.9 | 3090.0 | 3229.3 | 3534.5 | 3572.1 | 3428.1 | 3301.3 | 3241.8 | 3216.8 |
| 45° | 12197.1 | 9583.0 | 3736.5 | 2812.9 | 3024.2 | 3417.1 | 3457.8 | 3265.3 | 3086.8 | 2958.5 | 2916.2 |
| 47.5° | 12856.1 | 9730.1 | 3234.0 | 2607.8 | 2867.7 | 3338.9 | 3396.8 | 3135.4 | 2903.7 | 2720.6 | 2681.4 |
| 50° | 13718.6 | 10021.3 | 2825.4 | 2451.3 | 2765.9 | 3287.2 | 3352.9 | 3008.6 | 2753.4 | 2532.7 | 2493.6 |
| 52.5° | 14676.6 | 10289.0 | 2495.1 | 2324.5 | 2667.3 | 3196.4 | 3296.6 | 2917.8 | 2612.5 | 2359.0 | 2316.7 |
| 55° | 15346.6 | 10083.9 | 2229.0 | 2193.0 | 2539.0 | 3066.5 | 3218.3 | 2841.1 | 2410.6 | 2189.9 | 2152.3 |
| 57.5° | 15474.9 | 9382.6 | 2027.1 | 2056.9 | 2384.0 | 2903.7 | 3097.8 | 2670.5 | 2301.0 | 2116.3 | 2077.2 |
| 60° | 15124.3 | 8405.9 | 1876.8 | 1931.6 | 2218.1 | 2698.6 | 2872.4 | 2549.9 | 2196.2 | 2038.1 | 2005.2 |
| 62.5° | 14243.0 | 7405.6 | 1765.7 | 1818.9 | 2063.1 | 2490.4 | 2731.5 | 2423.1 | 2089.7 | 1948.8 | 1916.0 |
| 65° | 12463.2 | 6217.5 | 1659.3 | 1718.7 | 1919.1 | 2310.4 | 2604.7 | 2305.7 | 1984.8 | 1876.8 | 1845.5 |
| 67.5° | 9407.7 | 4656.9 | 1559.1 | 1612.3 | 1790.7 | 2153.9 | 2467.0 | 2189.9 | 1883.1 | 1814.2 | 1776.7 |
| 70° | 5539.7 | 2916.2 | 1444.8 | 1501.2 | 1656.1 | 1991.1 | 2319.8 | 2063.1 | 1756.3 | 1725.0 | 1676.5 |
| 72.5° | 2578.1 | 1754.7 | 1314.9 | 1369.7 | 1487.1 | 1773.5 | 2130.4 | 1897.2 | 1606.0 | 1537.2 | 1471.4 |
| 75° | *1538.7* | *1283.6* | *1161.5* | *1210.0* | *1293.0* | *1541.9* | *1892.5* | *1728.1* | *1463.6* | *1372.8* | *1303.9* |
| 77.5° | 1150.5 | 981.5 | 992.4 | 1044.1 | 1111.4 | 1349.3 | 1676.5 | 1595.1 | 1354.0 | 1283.6 | 1236.6 |
| 80° | 828.1 | 745.1 | 809.3 | 865.6 | 936.1 | 1227.2 | 1606.0 | 1474.5 | 1224.1 | 1130.2 | 1086.3 |
| 82.5° | 552.6 | 535.3 | 608.9 | 666.8 | 735.7 | 1073.8 | 1509.0 | 1291.4 | 1045.6 | 926.7 | 829.6 |
| 85° | 305.2 | 322.5 | 410.1 | 435.2 | 494.6 | 756.1 | 1236.6 | 1037.8 | 787.4 | 634.0 | 605.8 |
| 87.5° | 126.8 | 148.7 | 220.7 | 212.9 | 263.0 | 450.8 | 814.0 | 626.1 | 500.9 | 374.1 | 291.2 |
| 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

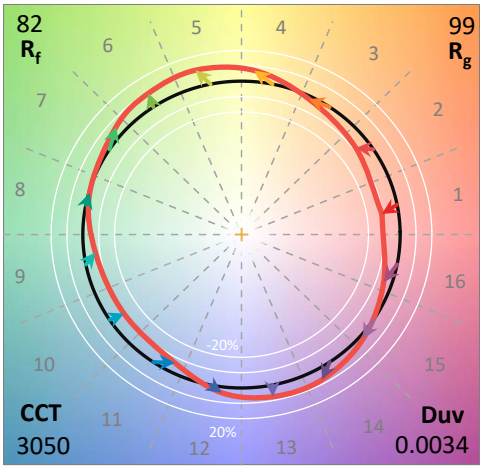
## Test Information

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

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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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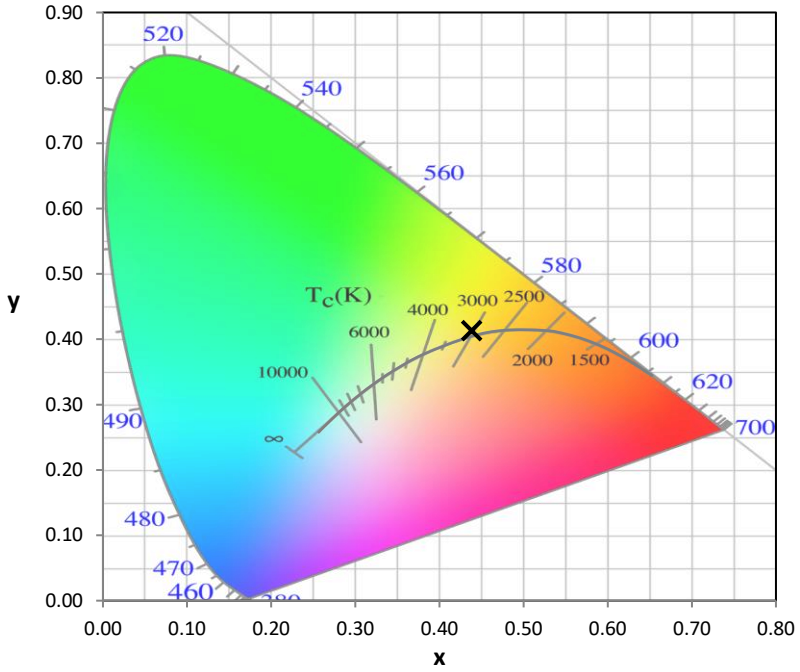
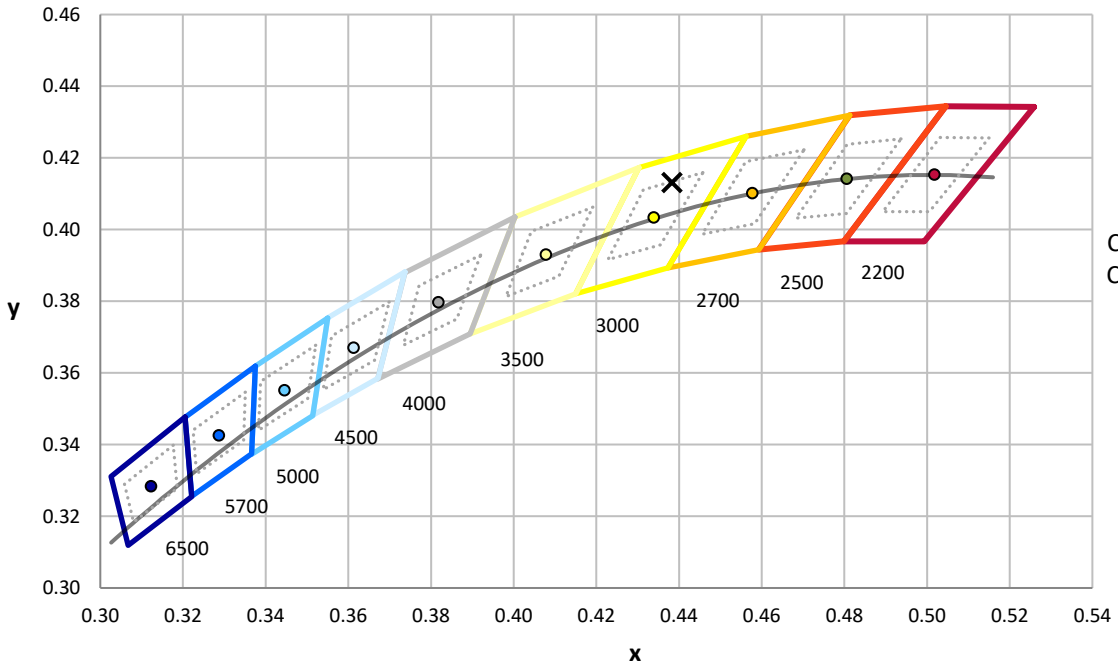
## CIE 1931 Chromaticity Diagram




## 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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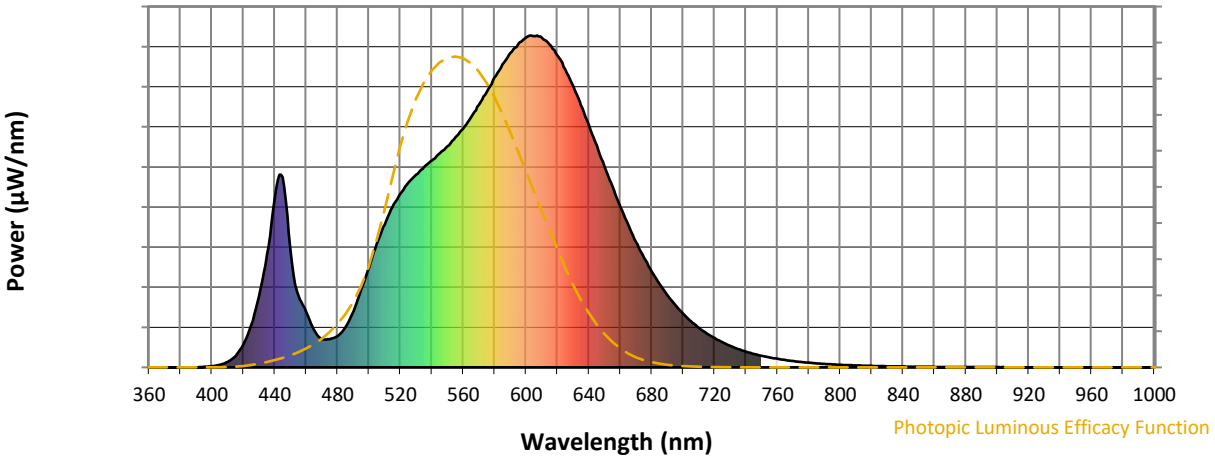
## Photopic Flux vs. Wavelength




## 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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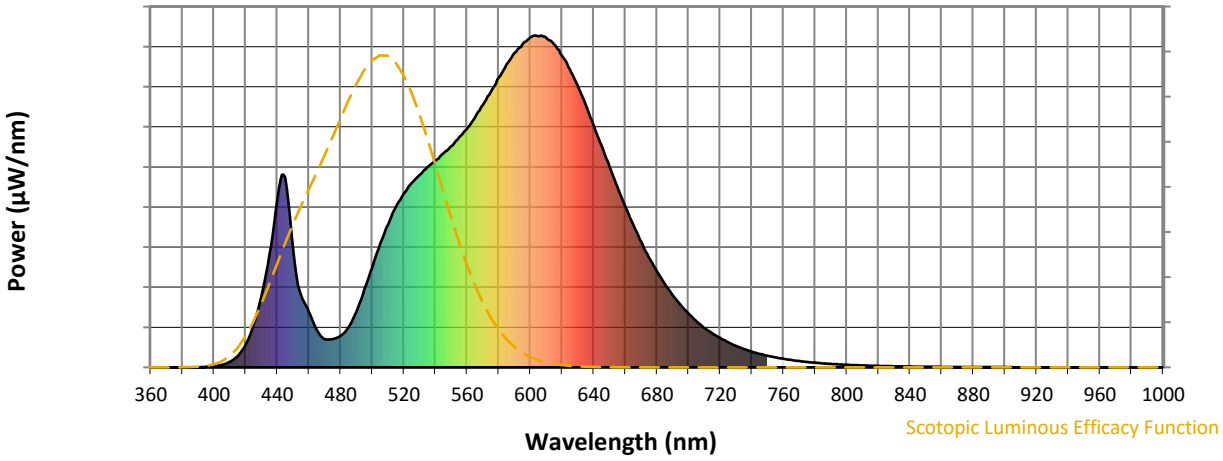
## Scotopic Flux vs. Wavelength




**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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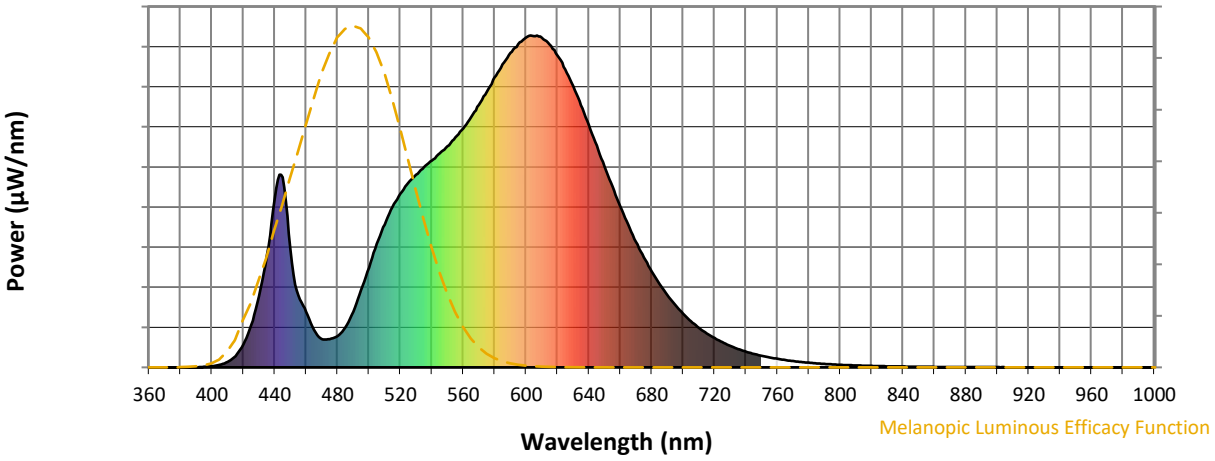
## Melanopic Flux vs. Wavelength




**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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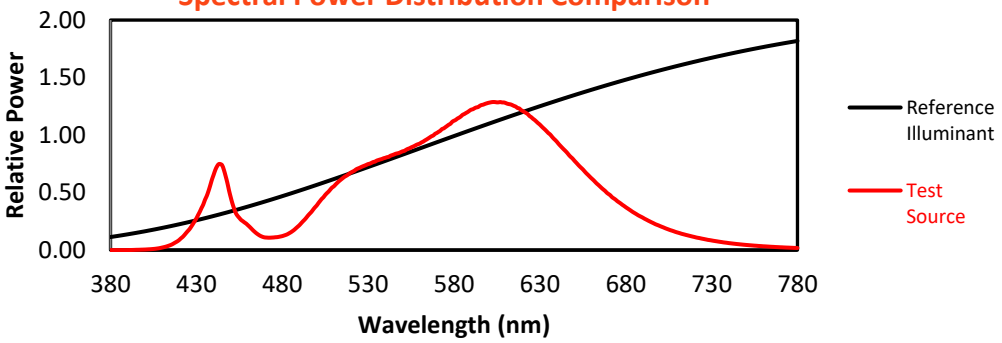
# TM-30-18

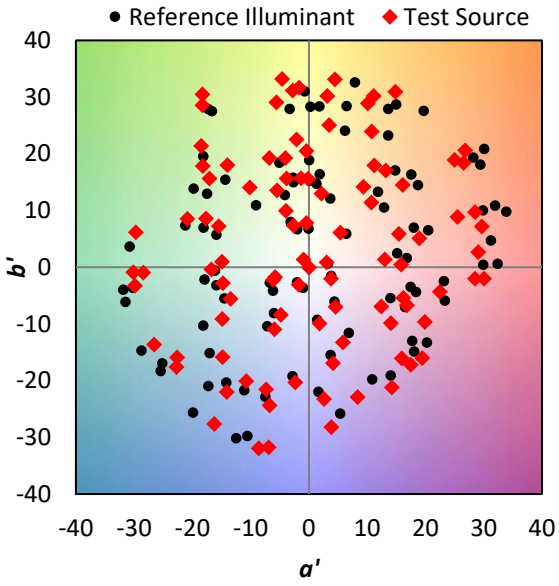
## Summary

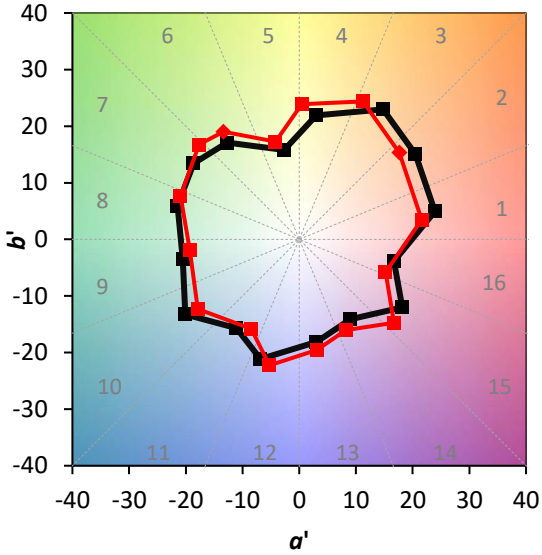
$R_f$ = 81.5
$R_g$ = 99.2
CIE $R_a$ = 81.0
$R_9$ = 7.1

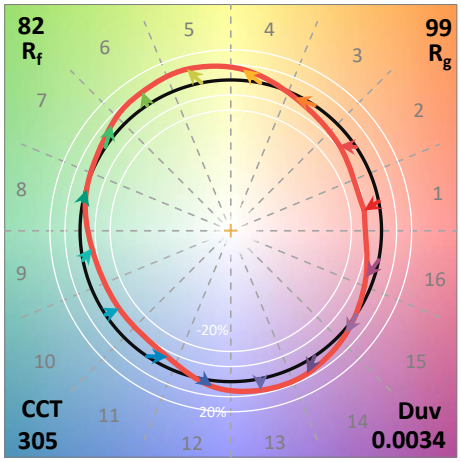
## Spectral Power Distribution Comparison

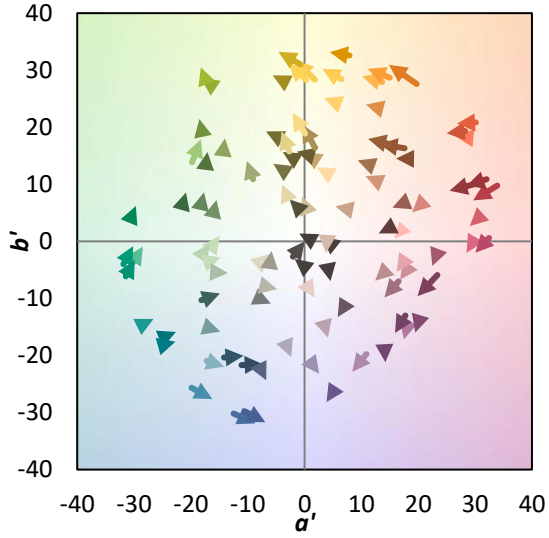



## Color Vector Graphics



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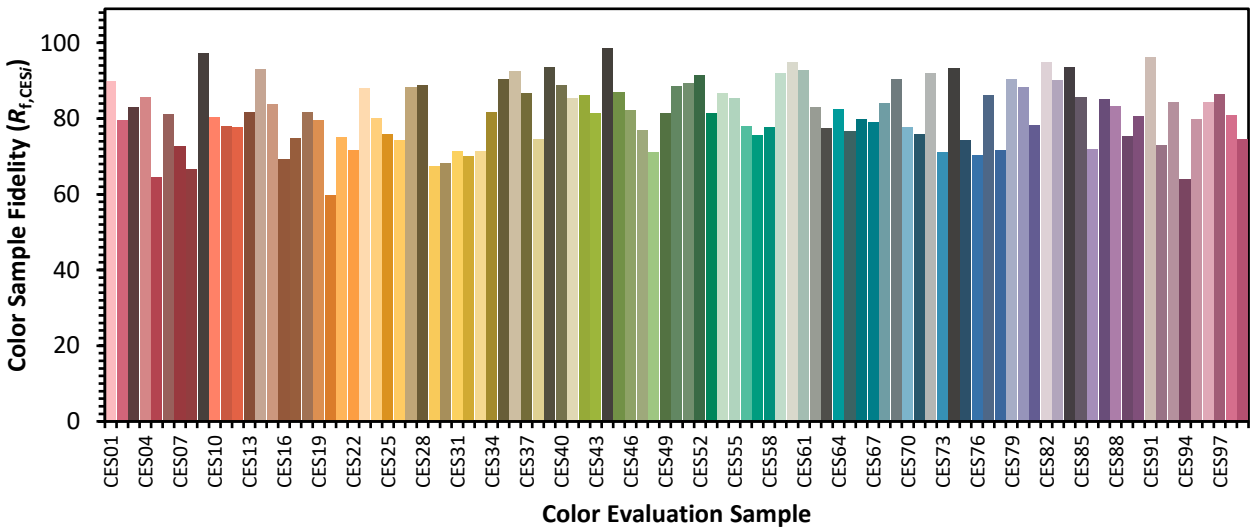
# TM-30-18

**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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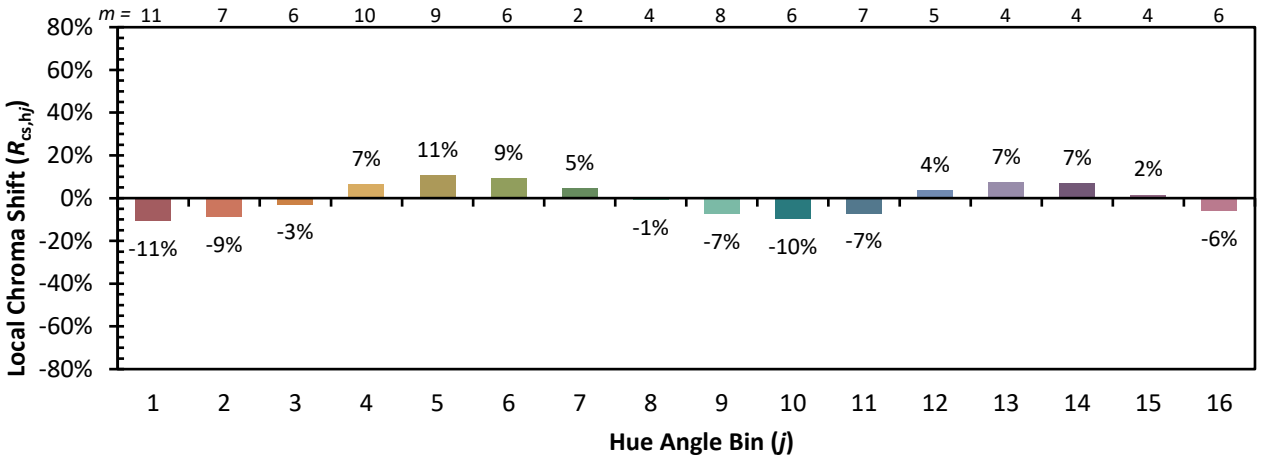
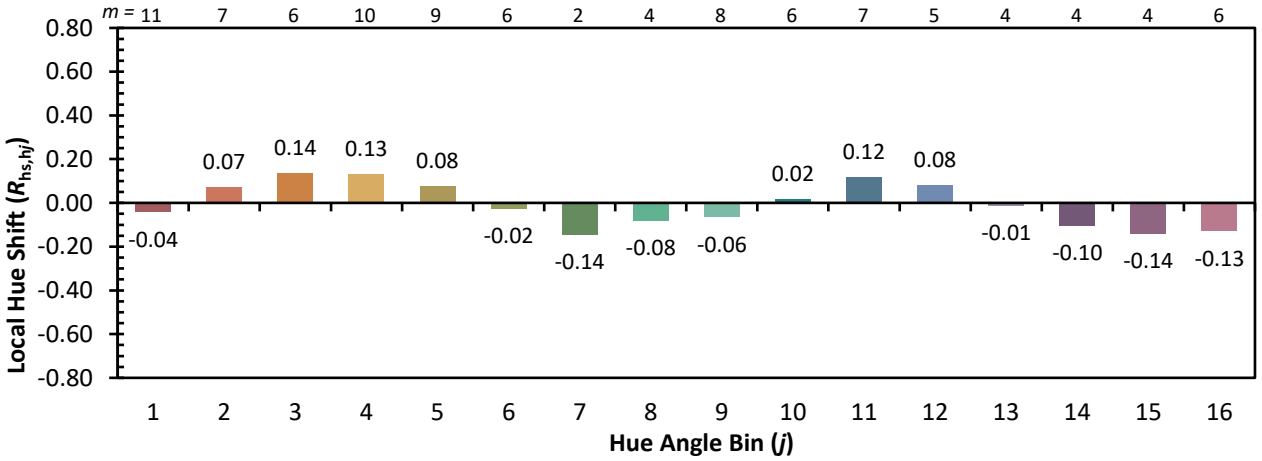
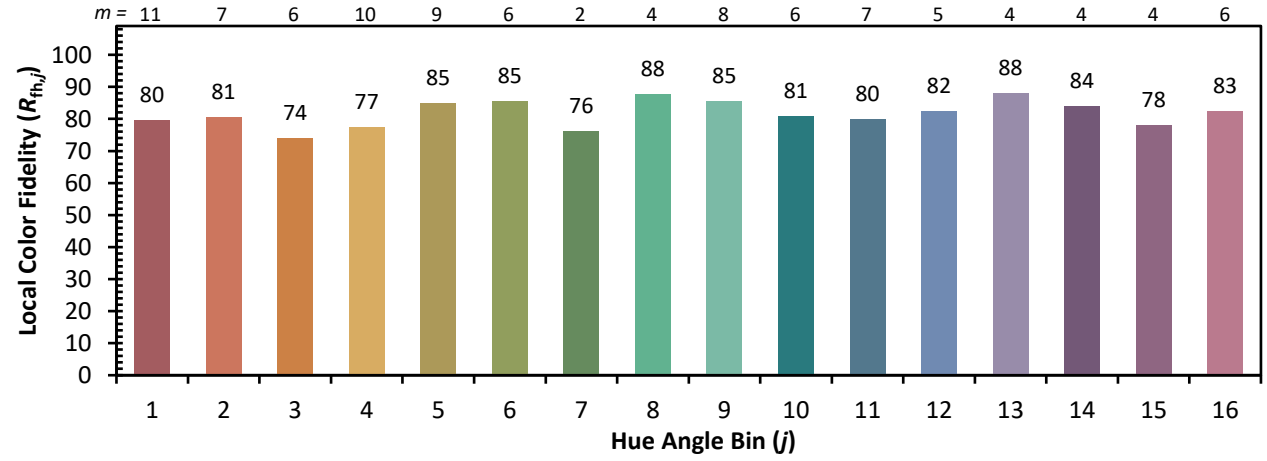
# TM-30-18

## Color Rendition by Hue-Angle Bin



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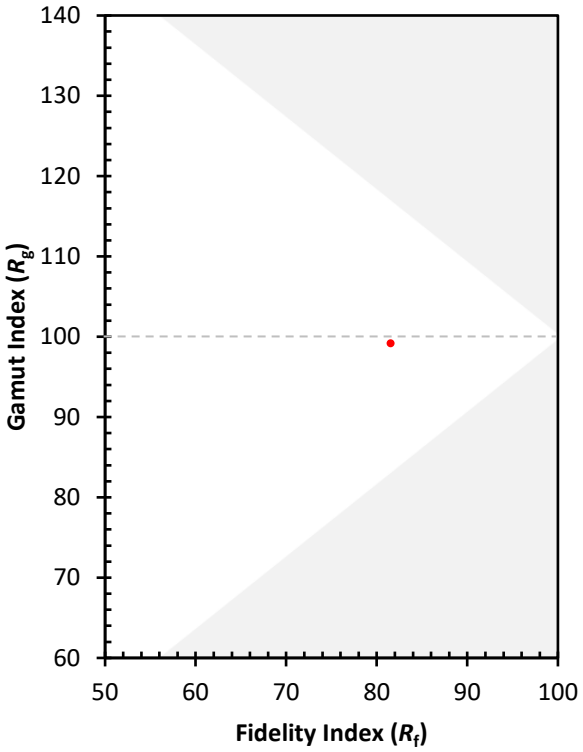
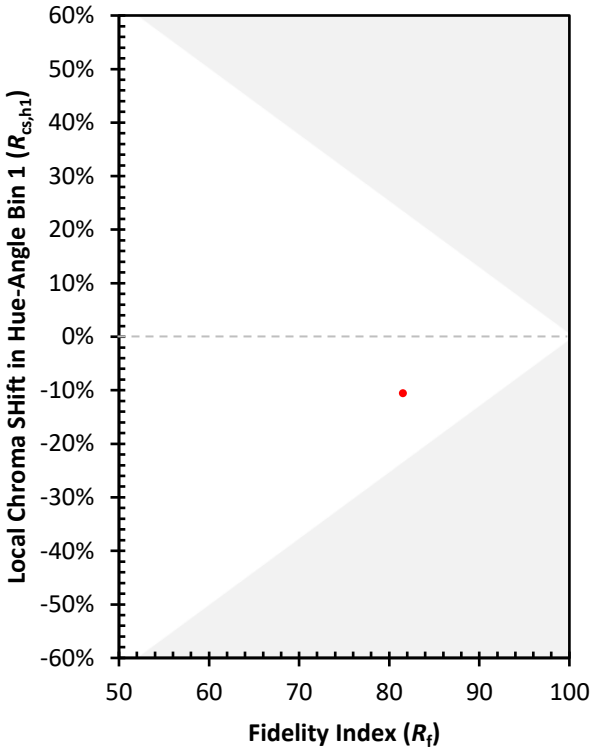
## TM-30-18

### Measure Comparisons




(END OF REPORT)