Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled data based on original data using

LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

Brand: McGRAW-EDISON

Report Number: P642927

Luminaire Tested: GWS-SA6D-830-U-SL2-W

Issue Date: 1/10/2023

Report Generated By 670246102 / DESKTOP-G35701P

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report

**Test Information**

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | P642927 |
| | TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-27) |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Issue Date: | 1/10/2023 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | GWS-SA6D-830-U-SL2-W |
| Description: | GALLEON WALL SLIM LUMINAIRE. (6) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II SPILL LIGHT ELIMINATOR OPTICS |
| Light Source: | (96) 3000K CCT, 80 CRI LEDS |
| Ballast/Driver: | - |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 27963.7 lumens |
| Efficiency: | N/A |
| Efficacy: | 113.8 lumens/watt |
| Luminous Opening: | Rectangular (W 2' x L: 1' x H: 0') |
| IES Classification: | Type II - Short |
| BUG Rating: | B3 - U0 - G4 |

| | |
|---|---|
| Input Watts (W): | 245.7 |
| Input Voltage (V): | 120 |
| Input Current (Ain): | NR |
| Voltage Rise (V): | NR |
| Power Factor: | NR |
| Total Harmonic Distortion (THDi): | NR |
| Frequency (hertz): | 0 |
| Stabilization Time: | NR |
| Operation Time: | NR |
| Ambient Temperature (°C): | NR |
| Test Distance: | 28.75 FT |

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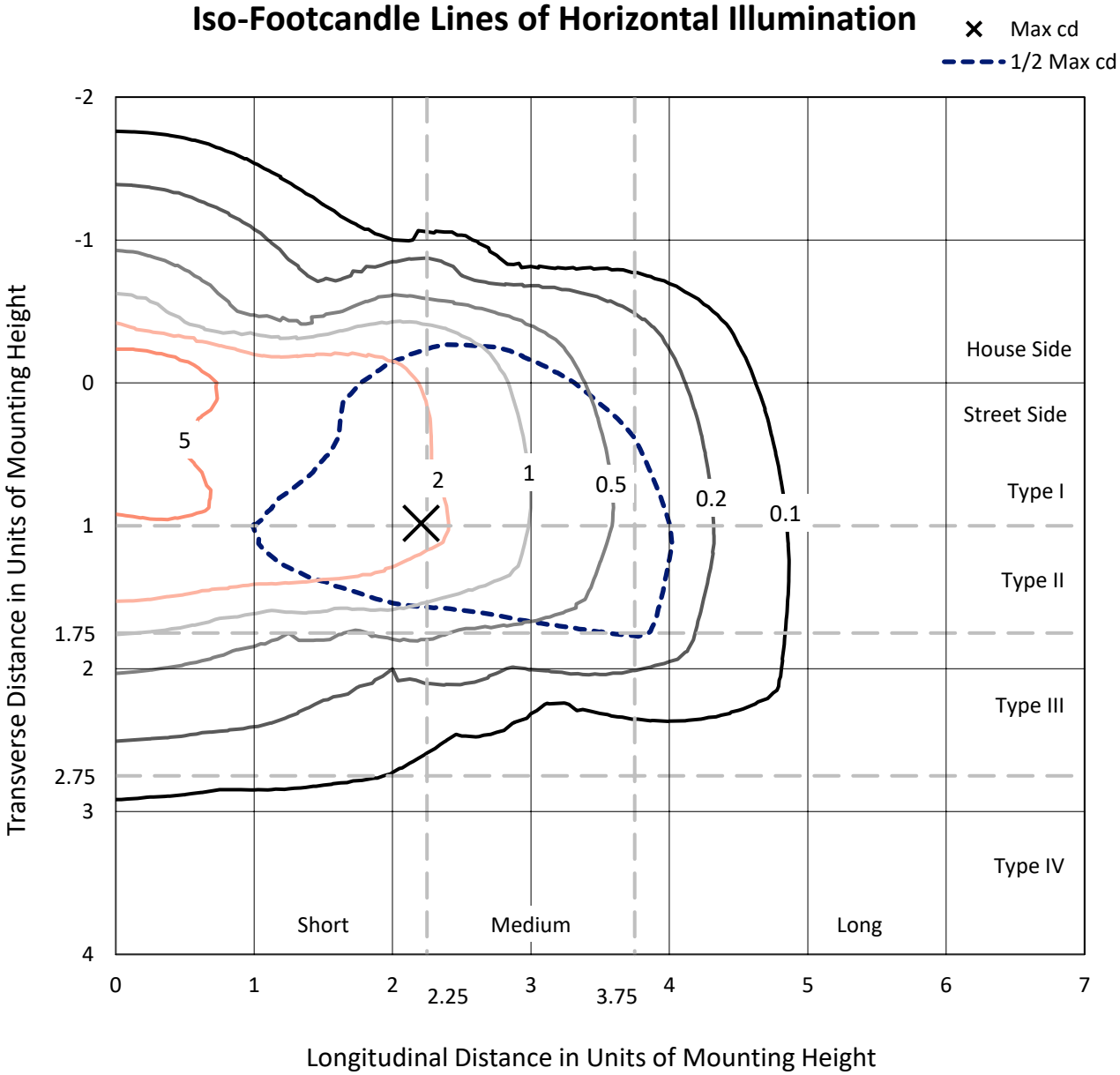
Scaled Data Report

REPORT NUMBER: P642927
CATALOG NUMBER: GWS-SA6D-830-U-SL2-W

## Iso-Footcandle Lines of Horizontal Illumination




Based on 25 foot mounting height. Maximum calculated value = 9.9 fc
Type II - Short - N/A

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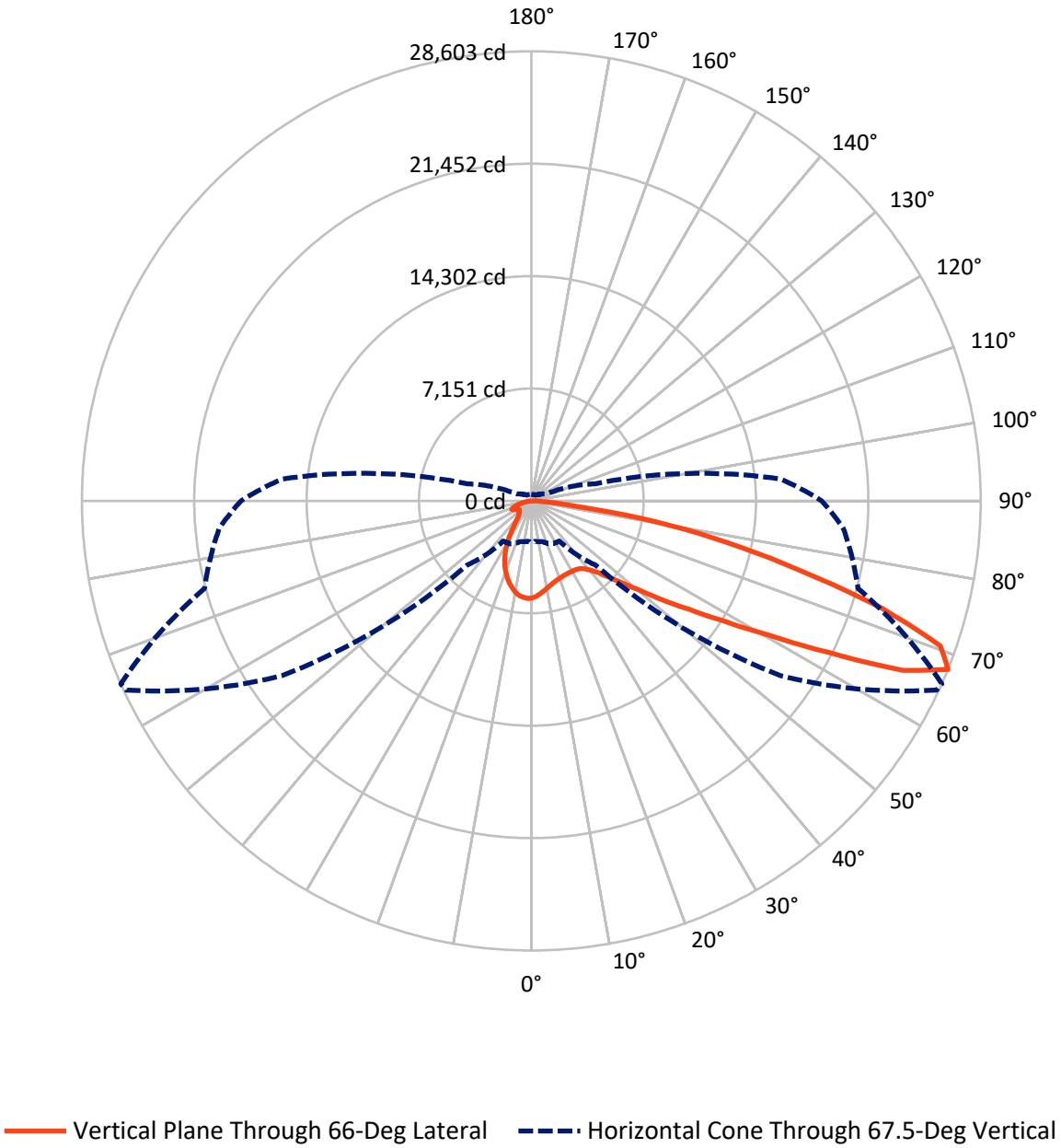
## Luminous Intensity Polar Plot



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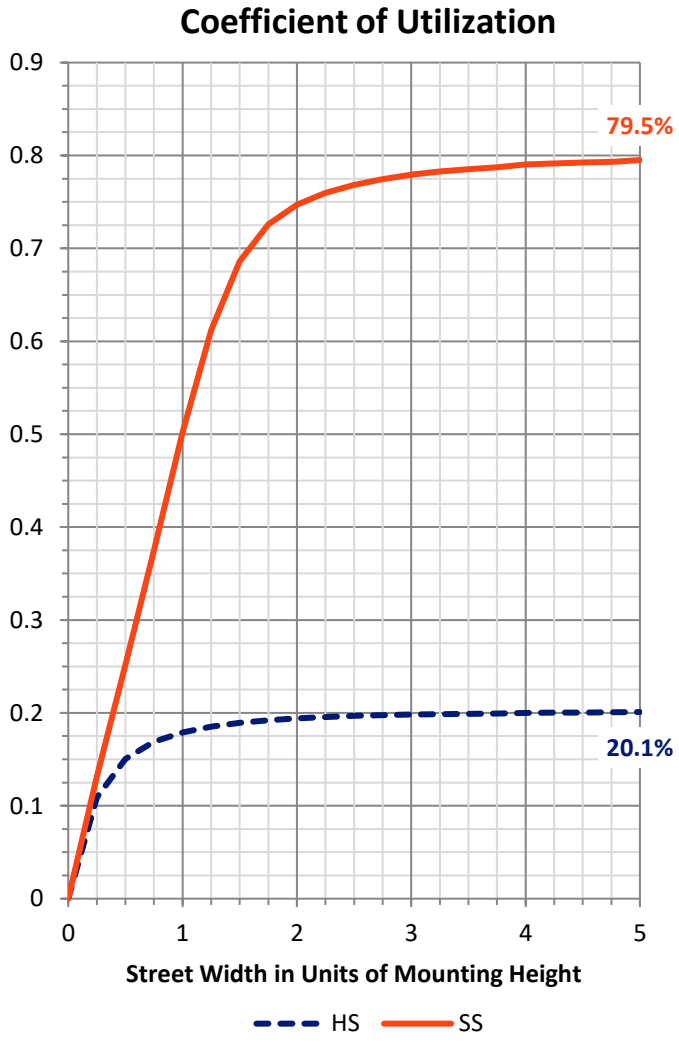
REPORT NUMBER: P642927
CATALOG NUMBER: GWS-SA6D-830-U-SL2-W

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 5674.5 | 0.0 | 5674.5 |
| | % Fixture | 20.3 | 0.0 | 20.3 |
| **Street Side** | Lumens | 22289.2 | 0.0 | 22289.2 |
| | % Fixture | 79.7 | 0.0 | 79.7 |
| **Total** | Lumens | 27963.7 | 0.0 | 27963.7 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 542.3 | 1.9 |
| 10°-20° | 1332.8 | 4.8 |
| 20°-30° | 1831.9 | 6.6 |
| 30°-40° | 2504.6 | 9.0 |
| 40°-50° | 3795.1 | 13.6 |
| 50°-60° | 5899.5 | 21.1 |
| 60°-70° | 7182.5 | 25.7 |
| 70°-80° | 4375.3 | 15.6 |
| 80°-90° | 499.8 | 1.8 |
| 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° | 27963.7 | 100.0 |
| 0°-180° | 27963.7 | 100.0 |



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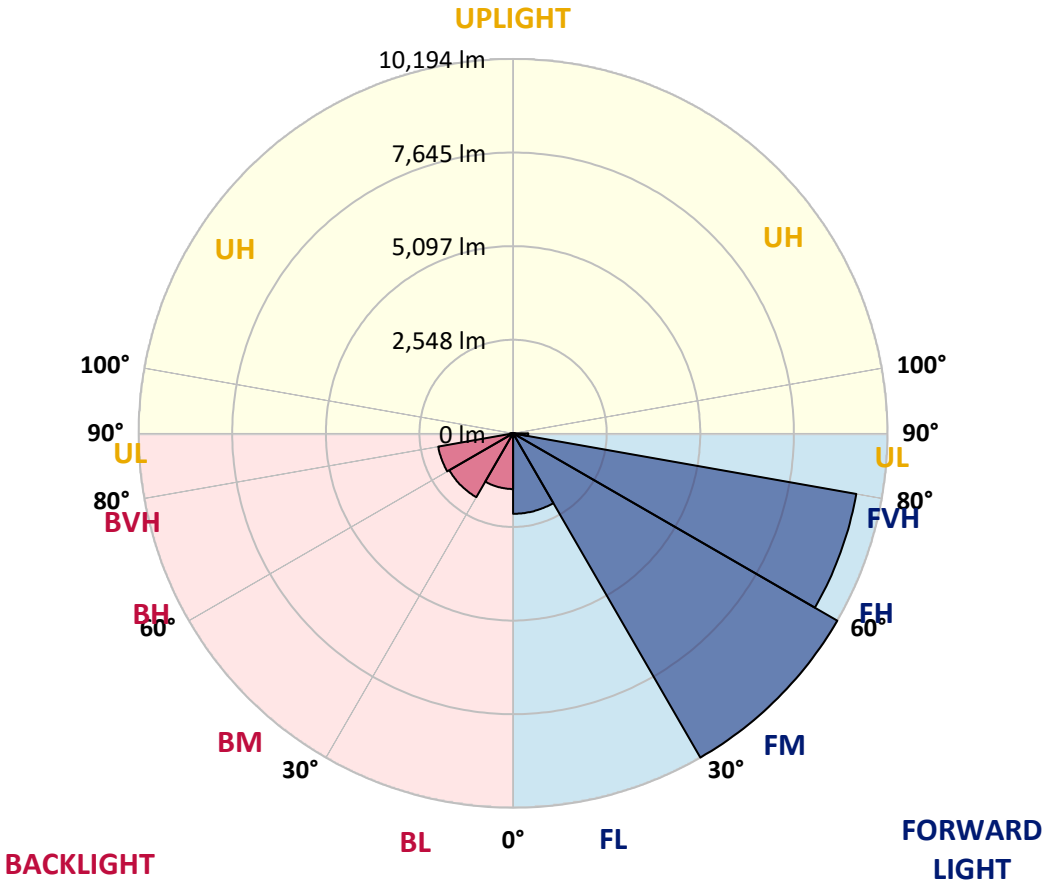
REPORT NUMBER: P642927
CATALOG NUMBER: GWS-SA6D-830-U-SL2-W

## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 2191.1 | 7.8 | | | |
| FM | (30°-60°) | 10193.8 | 36.5 | | | |
| FH | (60°-80°) | 9488.8 | 33.9 | | | G4/12000 |
| FVH | (80°-90°) | 415.5 | 1.5 | | | G3/500 |
| BL | (0°-30°) | 1515.9 | 5.4 | B3/2500 | | |
| BM | (30°-60°) | 2005.3 | 7.2 | B2/2500 | | |
| BH | (60°-80°) | 2069.0 | 7.4 | B3/2500 | | G3/2500 |
| BVH | (80°-90°) | 84.3 | 0.3 | | | G1/100 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

**BUG Rating: B3-U0-G4**
Type II Short



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REPORT NUMBER: P642927
CATALOG NUMBER: GWS-SA6D-830-U-SL2-W

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 66° | 75° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 6179.2 | 6179.2 | 6179.2 | 6179.2 | 6179.2 | 6179.2 | 6179.2 | 6179.2 | *6179.2* | 6179.2 | 6179.2 |
| 2.5° | 5787.5 | 5807.9 | 5795.7 | 5873.2 | 5877.3 | 5975.2 | 6030.3 | 6077.2 | *6081.3* | 6142.5 | 6183.3 |
| 5° | 5391.7 | 5404.0 | 5404.0 | 5477.4 | 5526.4 | 5656.9 | 5783.4 | 5918.1 | *5928.3* | 6075.1 | 6187.3 |
| 7.5° | 5071.5 | 5083.7 | 5075.5 | 5173.5 | 5236.7 | 5381.5 | 5542.7 | 5748.7 | *5769.1* | 6005.8 | 6201.6 |
| 10° | 4820.5 | 4816.5 | 4836.9 | 4926.6 | 5008.2 | 5181.6 | 5361.1 | 5595.7 | *5626.3* | 5926.2 | 6217.9 |
| 12.5° | 4649.2 | 4653.3 | 4665.5 | 4759.3 | 4847.1 | 5018.4 | 5204.1 | 5459.1 | *5491.7* | 5834.4 | 6209.8 |
| 15° | 4567.6 | 4559.4 | 4569.6 | 4655.3 | 4738.9 | 4889.9 | 5081.7 | 5344.8 | *5377.5* | 5752.8 | 6211.8 |
| 17.5° | 4549.2 | 4543.1 | 4541.1 | 4602.3 | 4665.5 | 4806.3 | 4989.9 | 5257.1 | *5291.8* | 5699.8 | 6224.1 |
| 20° | 4606.3 | 4598.2 | 4575.7 | 4602.3 | 4628.8 | 4747.1 | 4924.6 | 5193.9 | *5232.6* | 5665.1 | 6248.5 |
| 22.5° | 4763.4 | 4749.1 | 4714.5 | 4681.8 | 4647.1 | 4718.5 | 4883.8 | 5146.9 | *5185.7* | 5642.7 | 6273.0 |
| 25° | 5002.1 | 4989.9 | 4953.1 | 4879.7 | 4753.2 | 4741.0 | 4875.6 | 5126.5 | *5165.3* | 5626.3 | 6283.2 |
| 27.5° | 5330.5 | 5312.2 | 5275.5 | 5169.4 | 4963.3 | 4824.6 | 4906.2 | 5124.5 | *5161.2* | 5608.0 | 6273.0 |
| 30° | 5720.2 | 5707.9 | 5687.5 | 5559.0 | 5283.6 | 5002.1 | 4975.6 | 5140.8 | *5169.4* | 5597.8 | 6252.6 |
| 32.5° | 6115.9 | 6103.7 | 6120.0 | 6058.8 | 5720.2 | 5295.9 | 5126.5 | 5185.7 | *5206.1* | 5595.7 | 6234.3 |
| 35° | 6464.8 | 6479.1 | 6597.4 | 6607.6 | 6275.1 | 5693.7 | 5365.2 | 5289.7 | *5293.8* | 5636.5 | 6242.4 |
| 37.5° | 6829.9 | 6885.0 | 7040.1 | 7172.7 | 6895.2 | 6220.0 | 5720.2 | 5485.6 | *5481.5* | 5740.6 | 6293.4 |
| 40° | 7313.4 | 7337.9 | 7535.8 | 7784.7 | 7611.3 | 6942.1 | 6224.1 | 5805.9 | *5777.3* | 5952.7 | 6430.1 |
| 42.5° | 7784.7 | 7843.8 | 8160.0 | 8445.6 | 8388.5 | 7756.1 | 6858.5 | 6285.3 | *6234.3* | 6328.1 | 6711.6 |
| 45° | 8384.4 | 8441.6 | 8796.5 | 9163.7 | 9267.8 | 8676.2 | 7670.4 | 6966.6 | *6915.6* | 6893.2 | 7227.7 |
| 47.5° | 8984.2 | 9043.4 | 9361.6 | 9892.0 | 10257.2 | 9826.7 | 8727.2 | 7866.3 | *7782.6* | 7694.9 | 8007.0 |
| 50° | 9388.1 | 9457.5 | 9761.4 | 10397.9 | 11254.7 | 11262.9 | 9979.7 | 9045.4 | *8939.3* | 8800.6 | 9104.6 |
| 52.5° | 9373.8 | 9418.7 | 9708.4 | 10442.8 | 11972.8 | 12913.2 | 11656.6 | 10546.8 | *10461.2* | 10159.2 | 10424.4 |
| 55° | 8637.4 | 8704.7 | 8996.4 | 9914.4 | 12050.3 | 14477.9 | 14120.9 | 12317.6 | *12164.6* | 11624.0 | 11915.7 |
| 57.5° | 7158.4 | 7215.5 | 7509.3 | 8641.5 | 11362.8 | 15279.7 | 17250.3 | 14573.8 | *14363.7* | 13219.3 | 13555.9 |
| 60° | 5404.0 | 5334.6 | 5473.3 | 6464.8 | 9718.6 | 15300.1 | 20012.5 | 17633.8 | *17282.9* | 14924.7 | 15206.2 |
| 62.5° | 4055.5 | 3986.2 | 4016.8 | 4296.3 | 6589.2 | 14063.8 | 21587.4 | 21819.9 | *21240.6* | 16850.5 | 16795.4 |
| 65° | 3204.9 | 3166.1 | 3253.8 | 3445.6 | 3841.3 | 10710.0 | 21599.6 | 26346.7 | *25981.5* | 19082.2 | 18425.4 |
| 67.5° | *2611.2* | *2586.7* | *2676.5* | *3031.5* | *3115.1* | *5754.9* | *19367.8* | *28460.1* | *28603.0* | *21526.2* | *19937.0* |
| 70° | 2103.2 | 2066.5 | 2207.3 | 2674.5 | 2896.8 | 3482.3 | 13874.1 | 27383.0 | *27613.5* | 22982.7 | 19510.6 |
| 72.5° | 1452.5 | 1454.5 | 1525.9 | 2166.5 | 2796.9 | 3007.0 | 7847.9 | 22801.2 | *23301.0* | 21662.8 | 17152.4 |
| 75° | 979.2 | 987.4 | 1007.8 | 1430.0 | 2576.5 | 2917.2 | 4182.0 | 17262.5 | *17615.5* | 17905.1 | 14178.1 |
| 77.5° | 591.6 | 595.7 | 642.6 | 865.0 | 1776.8 | 2723.4 | 2833.6 | 12513.4 | *12790.8* | 11803.5 | 8788.4 |
| 80° | 342.7 | 357.0 | 399.8 | 579.4 | 1199.5 | 2046.1 | 2193.0 | 7672.5 | *7986.6* | 5246.9 | 2792.8 |
| 82.5° | 151.0 | 161.2 | 218.3 | 336.6 | 699.7 | 1740.1 | 1711.6 | 3031.5 | *2986.6* | 1462.7 | 969.0 |
| 85° | 26.5 | 32.6 | 46.9 | 106.1 | 257.0 | 918.0 | 1328.0 | 1338.2 | *1258.7* | 554.9 | 401.9 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 6.1 | 199.9 | 359.0 | *357.0* | 157.1 | 138.7 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | *0.0* | 0.0 | 0.0 |

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Scaled Data Report

REPORT NUMBER: P642927
CATALOG NUMBER: GWS-SA6D-830-U-SL2-W

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 6179.2 | 6179.2 | 6179.2 | 6179.2 | 6179.2 | 6179.2 | 6179.2 | 6179.2 | 6179.2 | 6179.2 | 6179.2 |
| 2.5° | 6209.8 | 6154.7 | 6203.7 | 6209.8 | 6199.6 | 6191.4 | 6130.2 | 6077.2 | 6071.1 | 6013.9 | 6013.9 |
| 5° | 6232.2 | 6181.2 | 6205.7 | 6158.8 | 6085.3 | 6009.9 | 5879.3 | 5789.5 | 5748.7 | 5675.3 | 5675.3 |
| 7.5° | 6262.8 | 6209.8 | 6181.2 | 6064.9 | 5893.6 | 5728.3 | 5518.2 | 5342.8 | 5271.4 | 5167.3 | 5163.3 |
| 10° | 6291.4 | 6224.1 | 6126.1 | 5899.7 | 5626.3 | 5363.2 | 5057.2 | 4808.3 | 4639.0 | 4514.5 | 4514.5 |
| 12.5° | 6289.3 | 6201.6 | 6007.8 | 5673.3 | 5295.9 | 4914.4 | 4506.4 | 4131.0 | 3906.6 | 3712.8 | 3700.6 |
| 15° | 6285.3 | 6164.9 | 5856.9 | 5410.1 | 4910.3 | 4381.9 | 3827.1 | 3337.5 | 3004.9 | 2815.2 | 2798.9 |
| 17.5° | 6281.2 | 6118.0 | 5687.5 | 5110.2 | 4441.1 | 3721.0 | 2988.6 | 2458.2 | 2180.8 | 2064.5 | 2068.6 |
| 20° | 6281.2 | 6064.9 | 5506.0 | 4765.5 | 3900.5 | 2929.5 | 2193.0 | 1807.4 | 1738.1 | 1744.2 | 1750.3 |
| 22.5° | 6262.8 | 5999.7 | 5304.0 | 4390.1 | 3298.7 | 2154.2 | 1617.7 | 1487.2 | 1523.9 | 1581.0 | 1589.2 |
| 25° | 6220.0 | 5891.5 | 5069.4 | 3973.9 | 2582.6 | 1568.8 | 1319.9 | 1295.4 | 1362.7 | 1434.1 | 1454.5 |
| 27.5° | 6152.7 | 5767.1 | 4806.3 | 3486.4 | 1901.3 | 1260.7 | 1160.8 | 1158.7 | 1211.8 | 1264.8 | 1283.2 |
| 30° | 6081.3 | 5628.4 | 4528.8 | 2943.7 | 1377.0 | 1097.5 | 1058.8 | 1058.8 | 1085.3 | 1117.9 | 1113.8 |
| 32.5° | 5997.6 | 5487.6 | 4231.0 | 2378.6 | 1122.0 | 1005.7 | 993.5 | 987.4 | 991.4 | 1003.7 | 1003.7 |
| 35° | 5926.2 | 5363.2 | 3925.0 | 1780.9 | 1005.7 | 954.7 | 942.5 | 928.2 | 922.1 | 913.9 | 918.0 |
| 37.5° | 5899.7 | 5265.3 | 3608.8 | 1342.3 | 948.6 | 918.0 | 897.6 | 877.2 | 862.9 | 858.8 | 856.8 |
| 40° | 5942.5 | 5224.5 | 3292.6 | 1105.7 | 907.8 | 879.2 | 856.8 | 830.3 | 818.0 | 818.0 | 818.0 |
| 42.5° | 6109.8 | 5255.1 | 2970.3 | 999.6 | 879.2 | 846.6 | 814.0 | 789.5 | 785.4 | 789.5 | 791.5 |
| 45° | 6415.8 | 5373.4 | 2635.7 | 946.6 | 854.8 | 814.0 | 775.2 | 756.8 | 756.8 | 760.9 | 760.9 |
| 47.5° | 6962.5 | 5683.5 | 2305.2 | 913.9 | 830.3 | 787.4 | 746.6 | 728.3 | 726.2 | 730.3 | 730.3 |
| 50° | 7909.1 | 6242.4 | 2007.4 | 891.5 | 811.9 | 767.0 | 726.2 | 701.8 | 695.6 | 693.6 | 693.6 |
| 52.5° | 9102.5 | 7211.4 | 1817.6 | 875.2 | 789.5 | 744.6 | 703.8 | 671.2 | 658.9 | 652.8 | 652.8 |
| 55° | 10544.8 | 8502.8 | 1817.6 | 862.9 | 760.9 | 718.1 | 671.2 | 638.5 | 620.2 | 612.0 | 612.0 |
| 57.5° | 12178.8 | 10006.2 | 2131.8 | 852.7 | 738.5 | 687.5 | 636.5 | 603.8 | 583.4 | 571.2 | 571.2 |
| 60° | 13841.5 | 11595.4 | 2909.1 | 838.4 | 718.1 | 648.7 | 597.7 | 567.1 | 540.6 | 526.3 | 524.3 |
| 62.5° | 15565.3 | 13345.7 | 3933.1 | 846.6 | 703.8 | 612.0 | 556.9 | 522.2 | 499.8 | 485.5 | 483.5 |
| 65° | 17144.2 | 15012.4 | 4828.7 | 909.8 | 705.8 | 579.4 | 510.0 | 479.4 | 461.0 | 442.7 | 440.6 |
| 67.5° | *18484.5* | *15932.5* | *4200.4* | *1038.4* | *748.7* | *540.6* | *463.1* | *432.5* | *416.2* | *403.9* | *401.9* |
| 70° | 17546.1 | 14528.9 | 2382.7 | 1117.9 | 807.8 | 499.8 | 410.0 | 389.6 | 373.3 | 365.2 | 363.1 |
| 72.5° | 15004.3 | 12301.2 | 1593.2 | 987.4 | 736.4 | 446.8 | 361.1 | 344.8 | 332.5 | 322.3 | 320.3 |
| 75° | 12154.4 | 9755.3 | 1217.9 | 809.9 | 573.2 | 363.1 | 310.1 | 297.8 | 285.6 | 275.4 | 273.4 |
| 77.5° | 7191.0 | 5636.5 | 897.6 | 640.6 | 403.9 | 283.6 | 257.0 | 246.8 | 234.6 | 226.4 | 224.4 |
| 80° | 2295.0 | 1958.4 | 569.2 | 440.6 | 267.2 | 218.3 | 197.9 | 189.7 | 177.5 | 167.3 | 165.2 |
| 82.5° | 875.2 | 756.8 | 301.9 | 224.4 | 177.5 | 148.9 | 132.6 | 124.4 | 116.3 | 106.1 | 104.0 |
| 85° | 387.6 | 363.1 | 167.3 | 120.4 | 95.9 | 73.4 | 65.3 | 61.2 | 51.0 | 42.8 | 40.8 |
| 87.5° | 136.7 | 136.7 | 71.4 | 34.7 | 20.4 | 10.2 | 6.1 | 2.0 | 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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Peachtree City, GA 30269

# 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

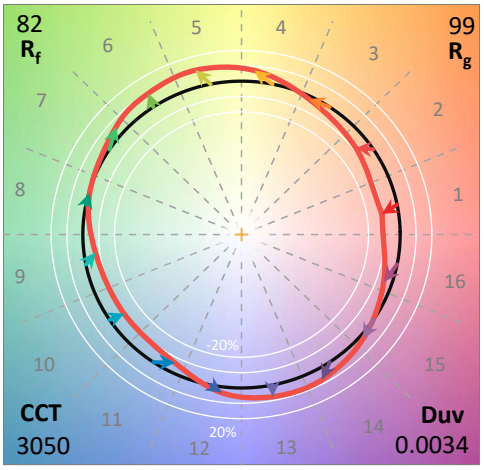
## Test Information

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

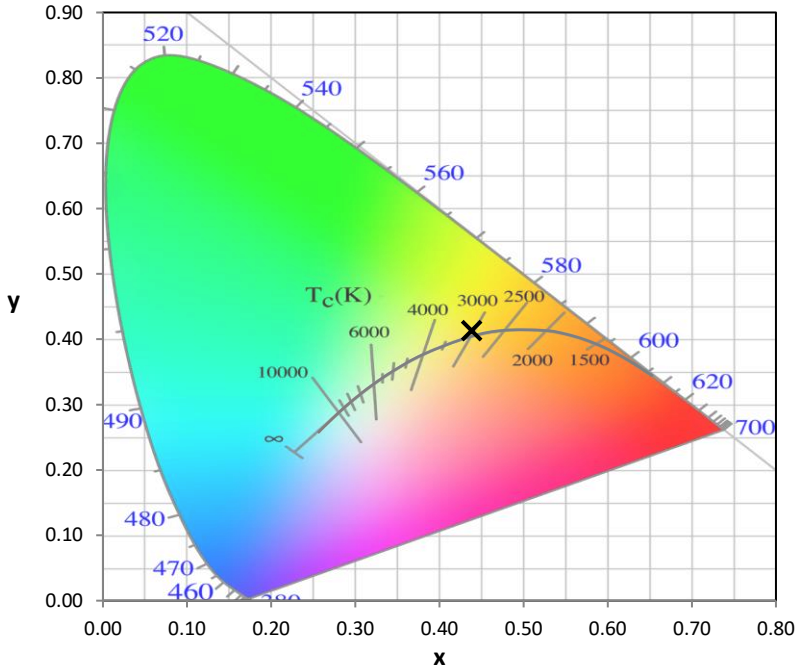
| | |
|---|---|
| Stabilization Time: | 20M |
| Operation Time: | 1H 20M |
| Sphere Temperature (°C): | 24.2 |

REPORT NUMBER: SP1-2408-195-9

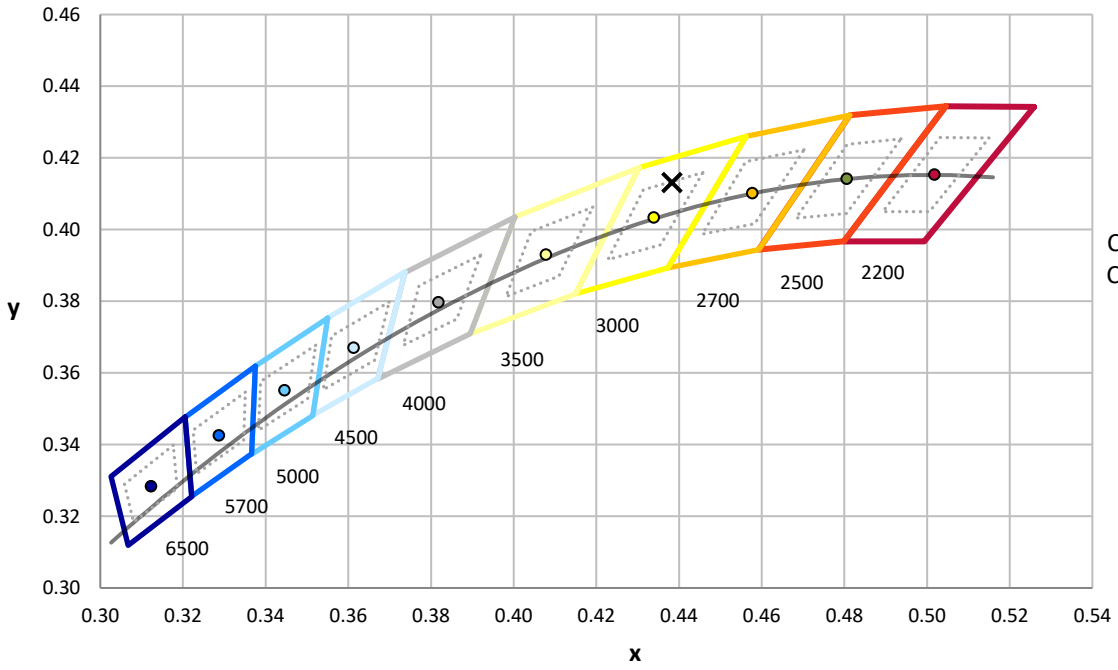
| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 | 2/8/2024 | 2/8/2025 |
| AC Power Source | IN0063 | 10/24/2023 | 10/24/2024 |
| DC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

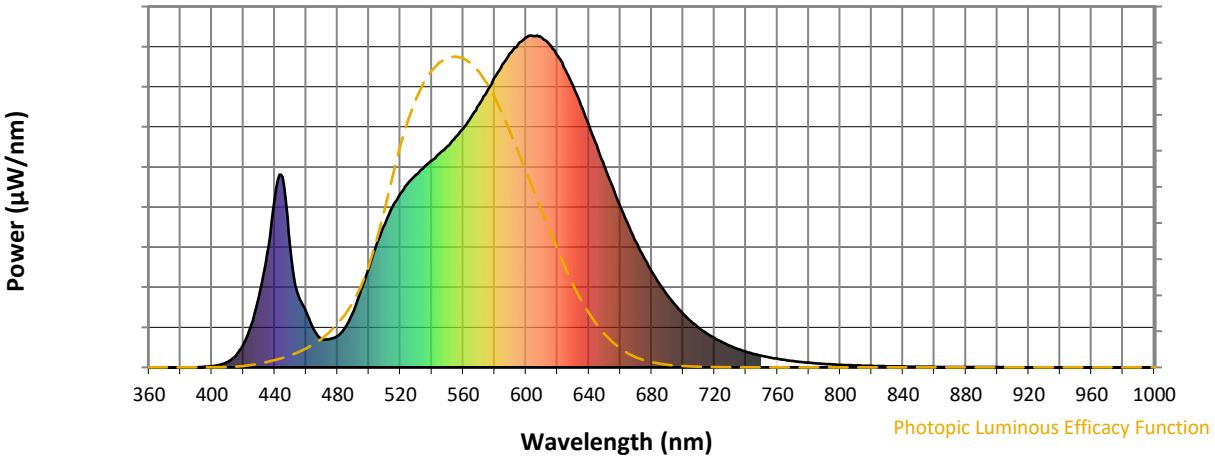



CCT = 3050K
CIE x = 0.4383
CIE y = 0.4131
Duv = 0.0034

Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-2408-195-9

## Photopic Flux vs. Wavelength

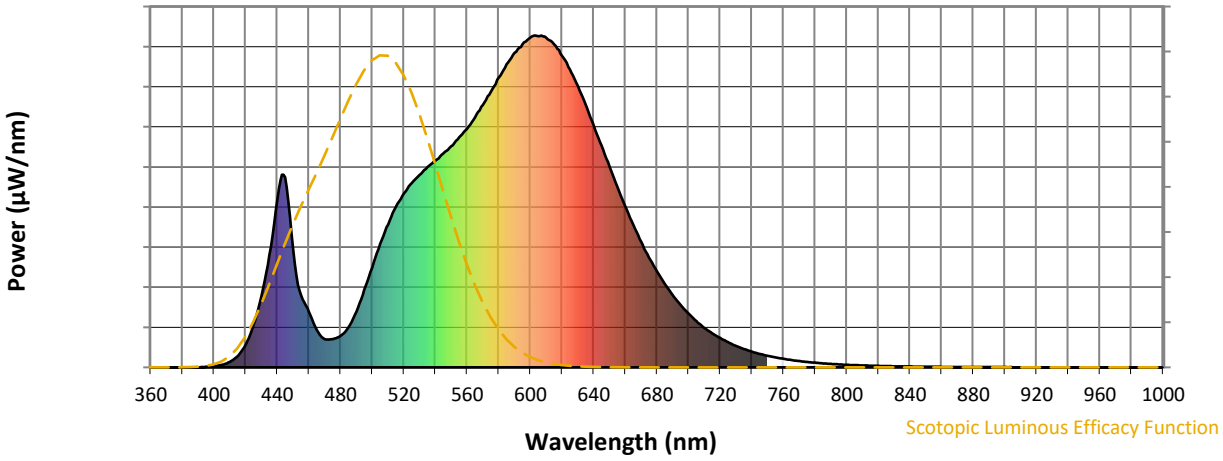



## Photopic Lumens: NR

| 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 | | | |

REPORT NUMBER: SP1-2408-195-9

## Scotopic Flux vs. Wavelength

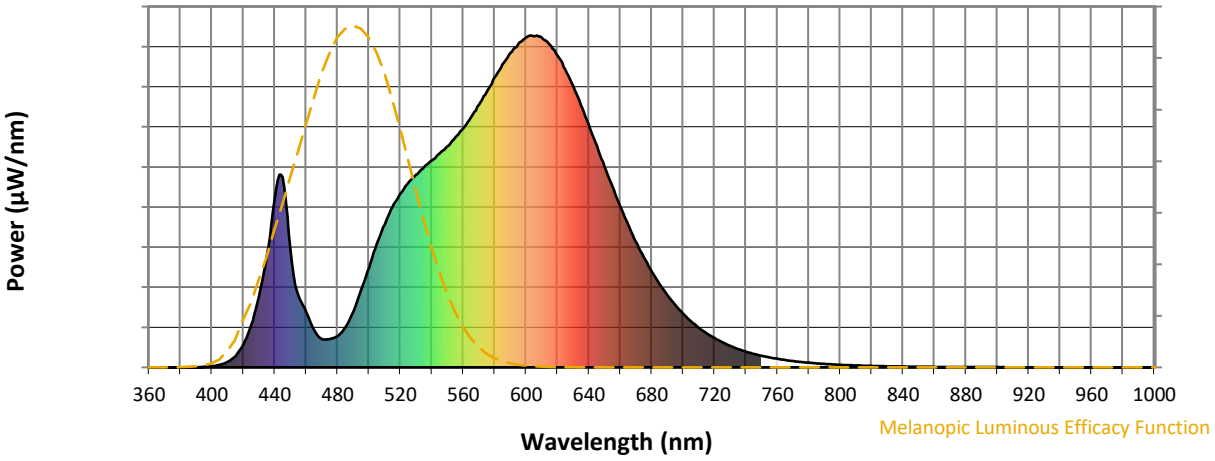



**Scotopic Lumens: NR** **S/P: 1.27**

| 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 | | | |

REPORT NUMBER: SP1-2408-195-9

## 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 | | | |

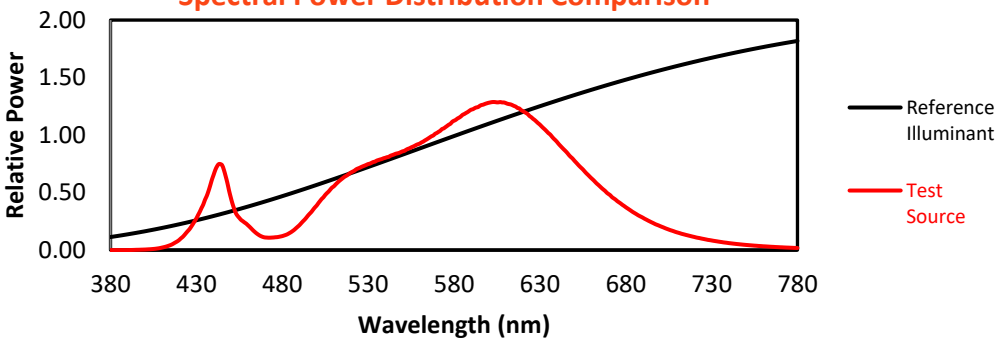
REPORT NUMBER: SP1-2408-195-9

# TM-30-18

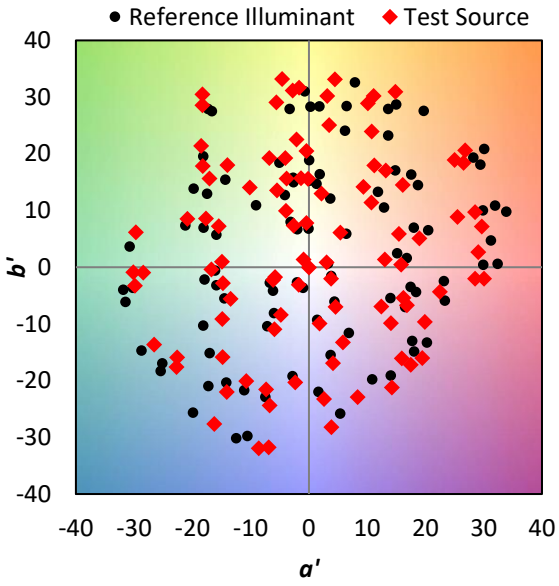
## Summary

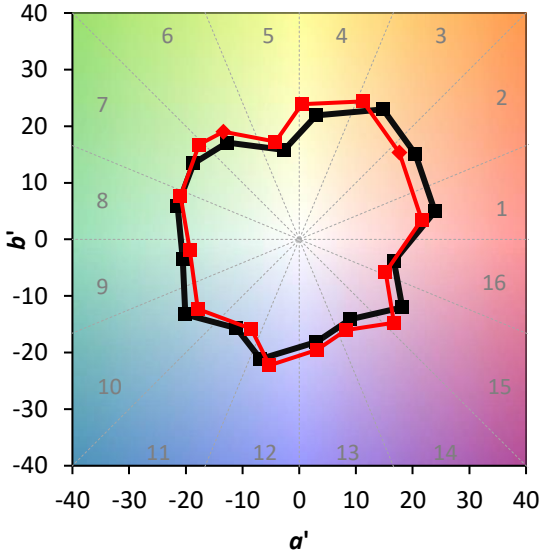
$R_f$ = 81.5
$R_g$ = 99.2
CIE $R_a$ = 81.0
$R_9$ = 7.1

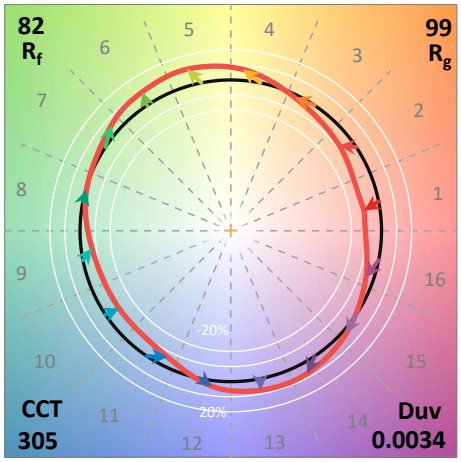
## Spectral Power Distribution Comparison

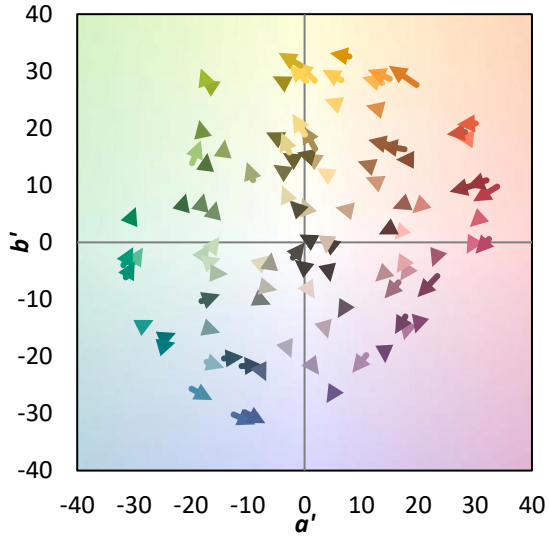



## Color Vector Graphics



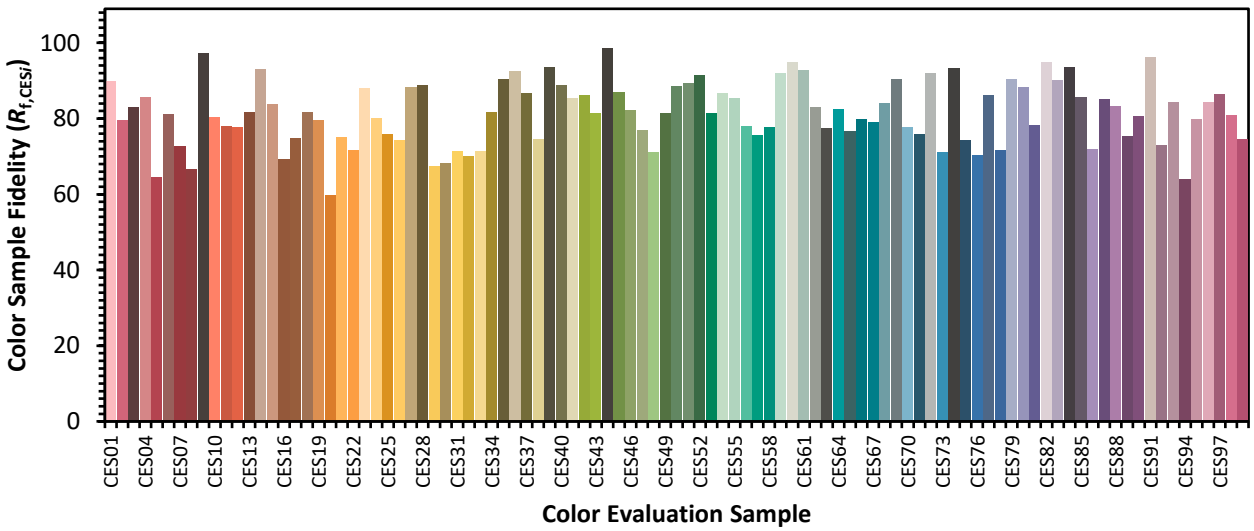



REPORT NUMBER: SP1-2408-195-9

# TM-30-18

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

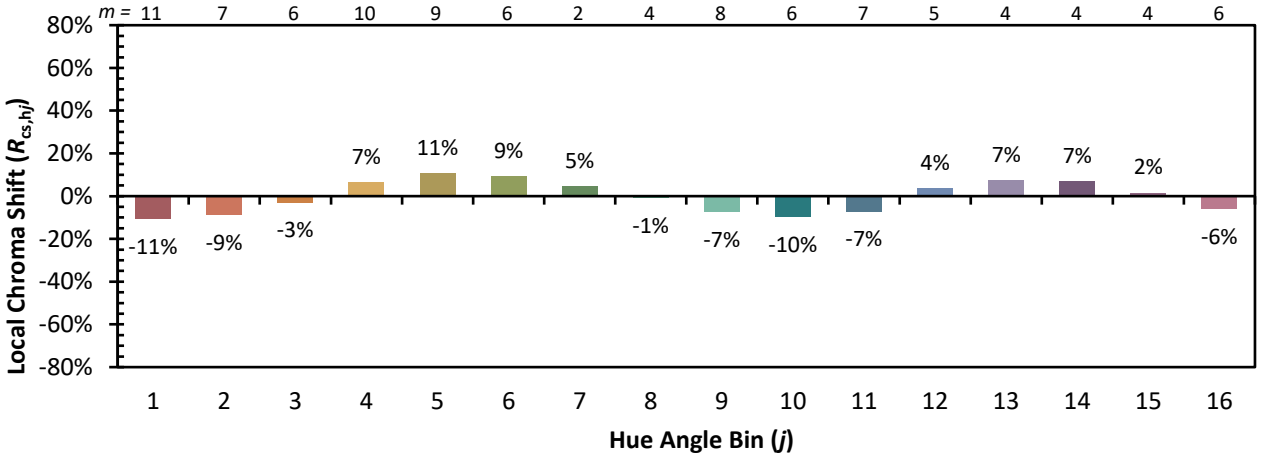
| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 74 | CES51 = 89 | CES76 = 70 |
| CES02 = 63 | CES27 = 88 | CES52 = 92 | CES77 = 86 |
| CES03 = 31 | CES28 = 89 | CES53 = 81 | CES78 = 72 |
| CES04 = 70 | CES29 = 67 | CES54 = 87 | CES79 = 90 |
| CES05 = 50 | CES30 = 68 | CES55 = 85 | CES80 = 88 |
| CES06 = 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 | |

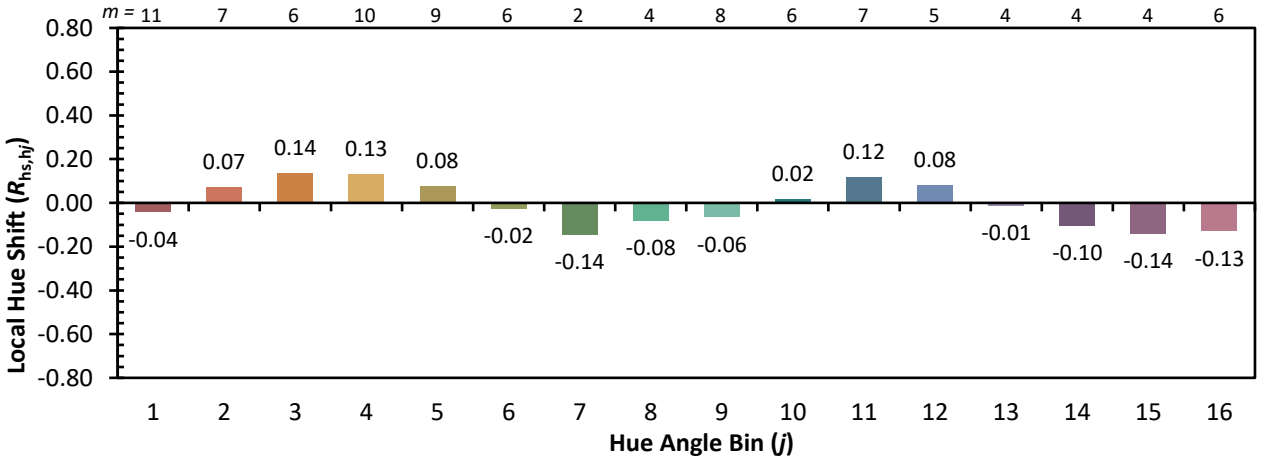


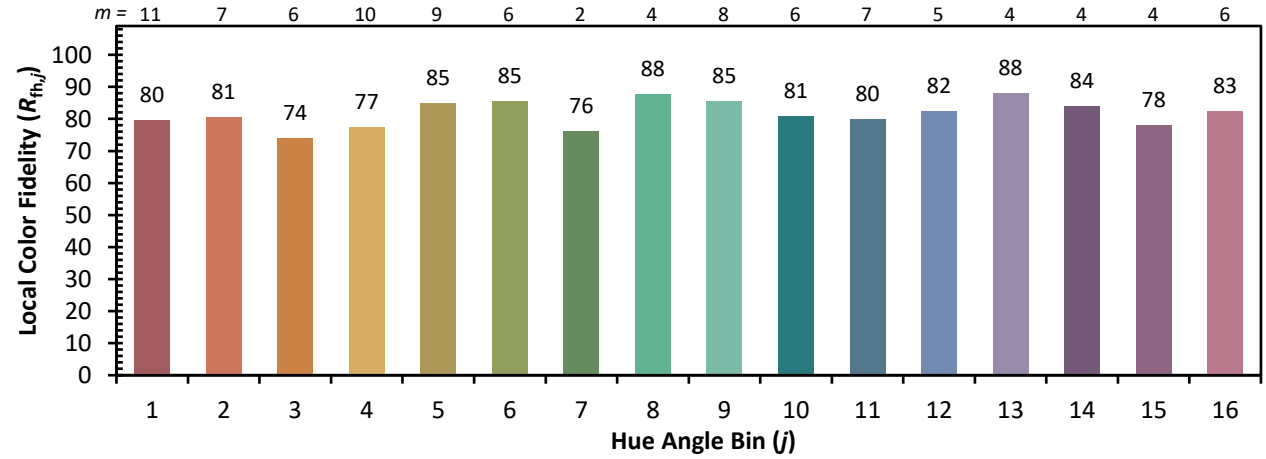
REPORT NUMBER: SP1-2408-195-9

# TM-30-18

## Color Rendition by Hue-Angle Bin



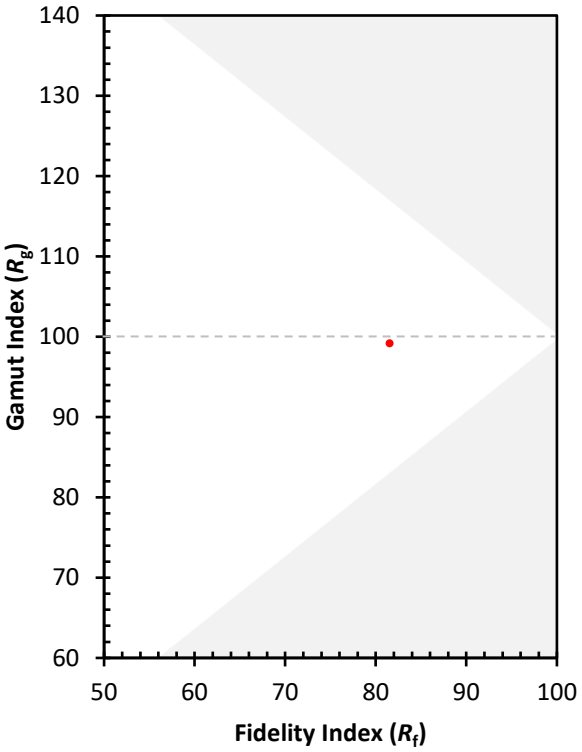



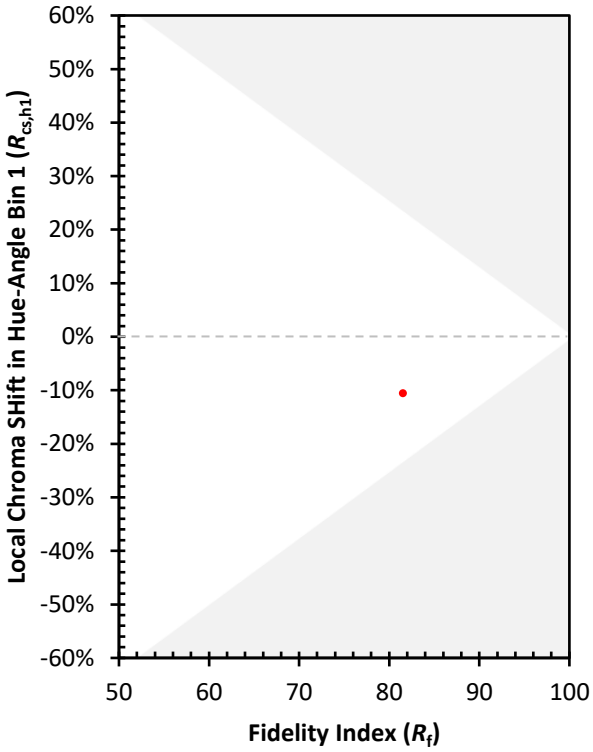



REPORT NUMBER: SP1-2408-195-9

# TM-30-18

## Measure Comparisons




(END OF REPORT)