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: P638467

Luminaire Tested: GWS-SA4E-830-U-RW-W-GRSWH

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: | P638467 |
| | TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-51) |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Issue Date: | 1/10/2023 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | GWS-SA4E-830-U-RW-W-GRSWH |
| Description: | GALLEON WALL SLIM LUMINAIRE. (4) LIGHTSQUARES WITH 16 LEDS EACH AND RECTANGULAR WIDE OPTICS W/ FACTORY INSTALLED GLARE SHIELD, WH |
| Light Source: | (64) 3000K CCT, 80 CRI LEDS |
| Ballast/Driver: | - |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 21430.5 lumens |
| Efficiency: | N/A |
| Efficacy: | 105.8 lumens/watt |
| Luminous Opening: | Rectangular (W 1' x L: 1' x H: 0') |
| IES Classification: | Type V - Short |
| BUG Rating: | B4 - U0 - G1 |

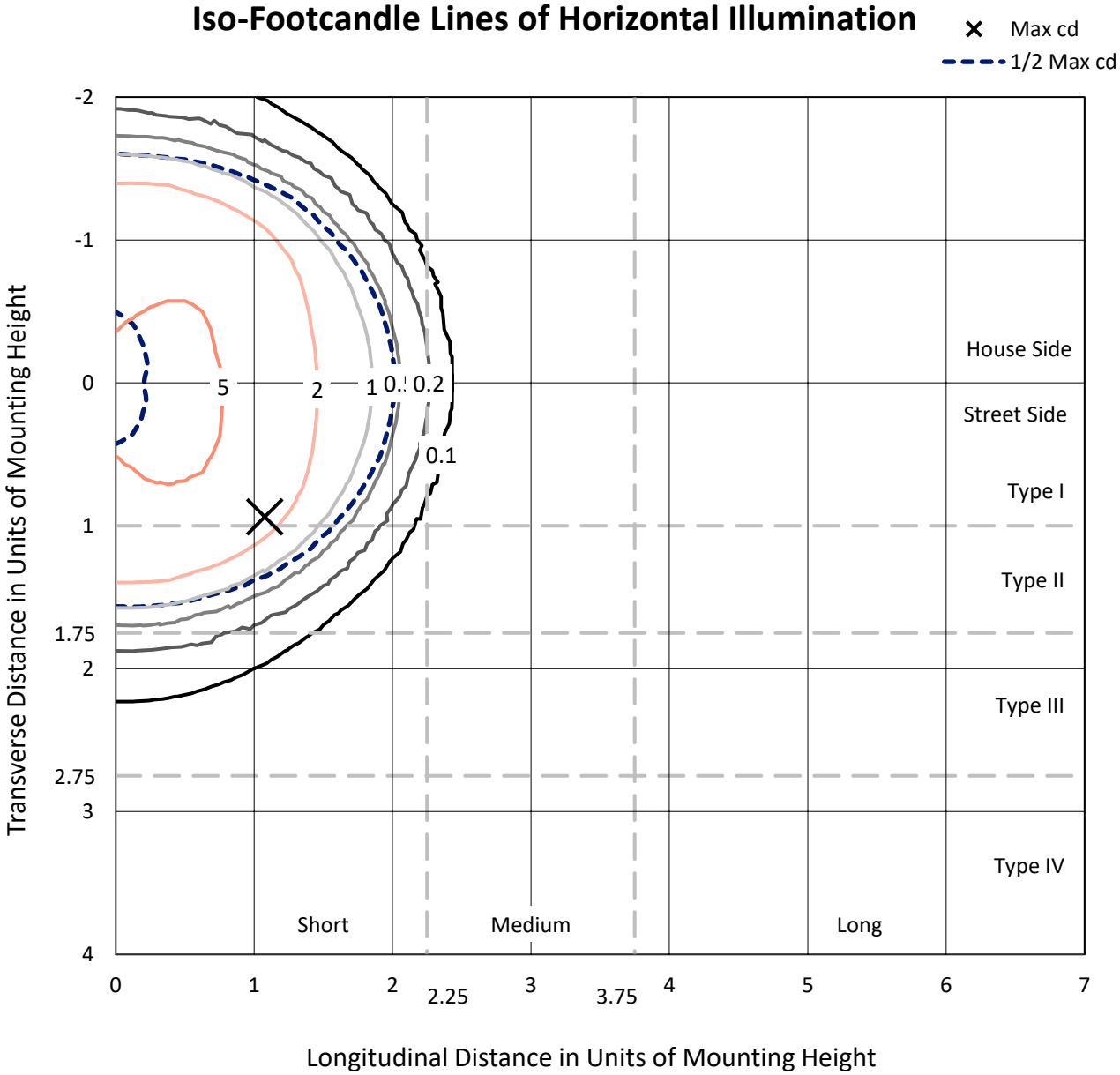
| | |
|---|---|
| Input Watts (W): | 202.6 |
| Input Voltage (V): | 120 |
| Input Current (Ain): | NR |
| Voltage Rise (V): | NR |
| Power Factor: | NR |
| Total Harmonic Distortion (THDi): | NR |
| Frequency (hertz): | 0 |
| Stabilization Time: | NR |
| Operation Time: | NR |
| Ambient Temperature (°C): | NR |
| Test Distance: | 28.75 FT |

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

Scaled Data Report

REPORT NUMBER: P638467
CATALOG NUMBER: GWS-SA4E-830-U-RW-W-GRSWH

## Iso-Footcandle Lines of Horizontal Illumination



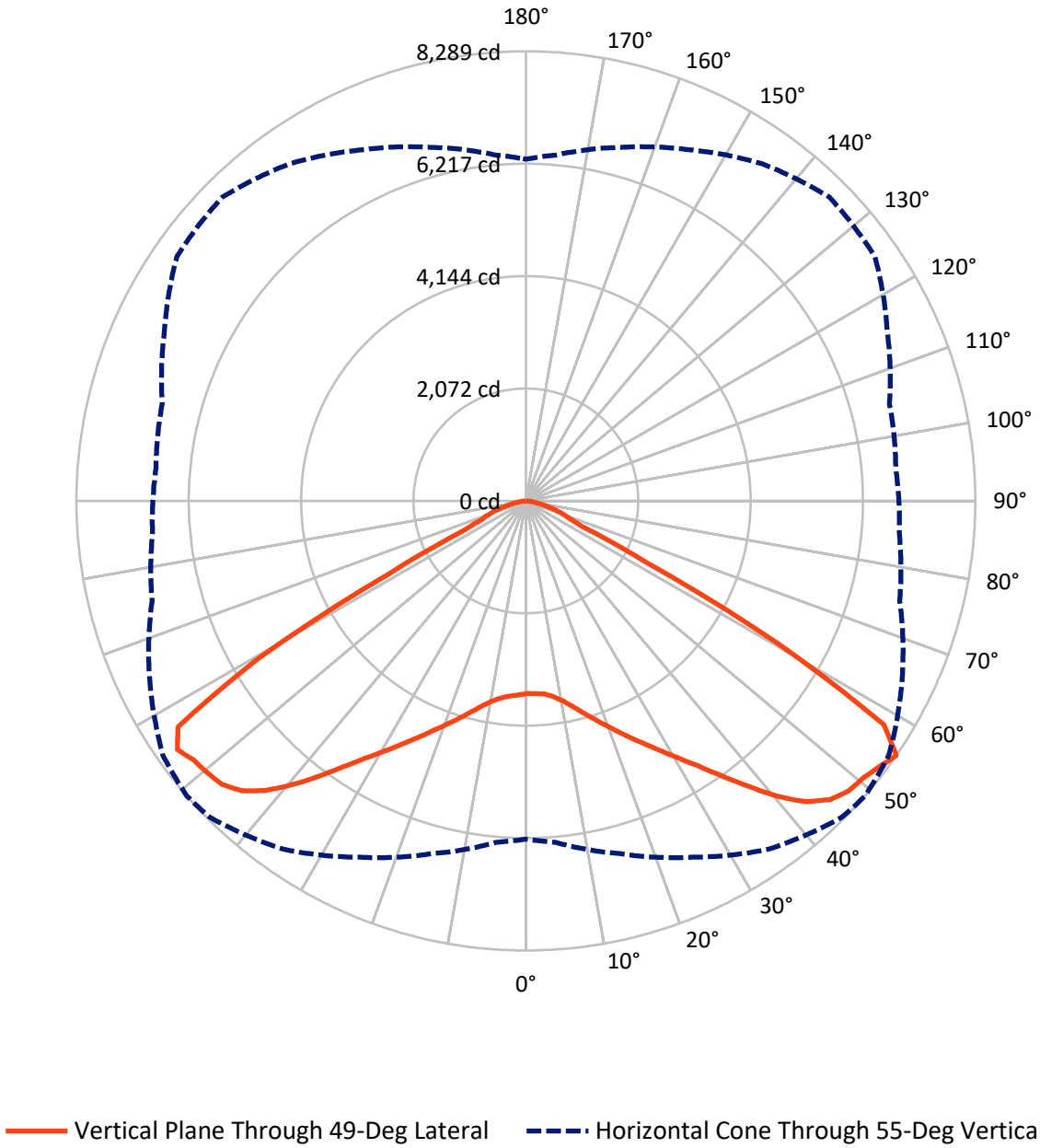

Based on 25 foot mounting height. Maximum calculated value = 6.3 fc
Type V - Short - N/A

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

Scaled Data Report

REPORT NUMBER: P638467
CATALOG NUMBER: GWS-SA4E-830-U-RW-W-GRSWH

## Luminous Intensity Polar Plot



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

Scaled Data Report

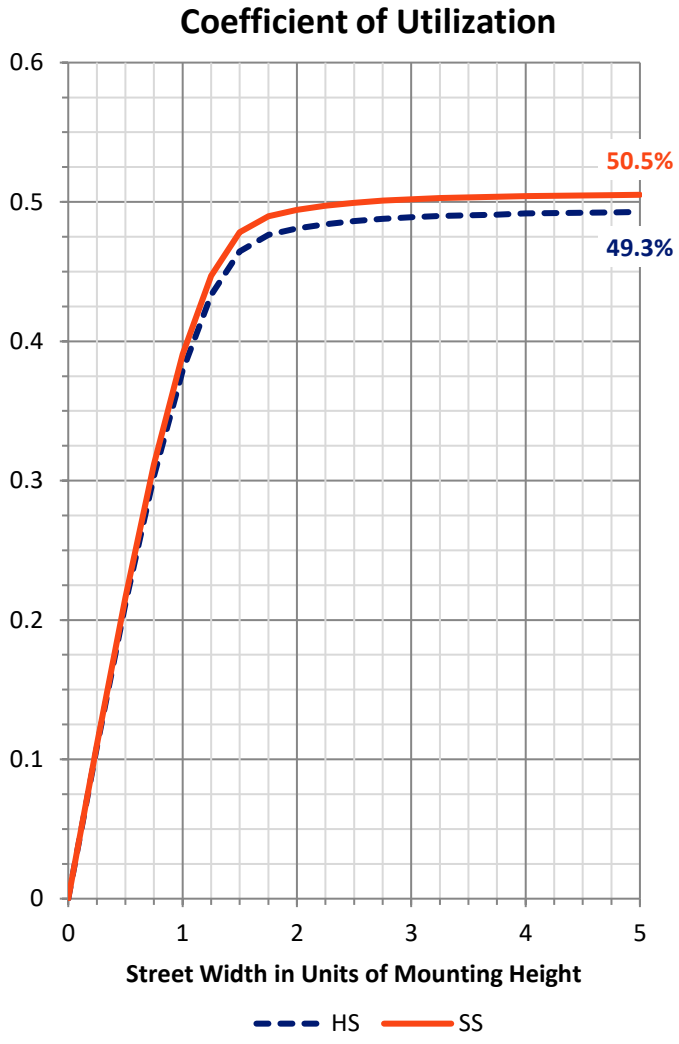
REPORT NUMBER: P638467
CATALOG NUMBER: GWS-SA4E-830-U-RW-W-GRSWH

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 10610.1 | 0.0 | 10610.1 |
| | % Fixture | 49.5 | 0.0 | 49.5 |
| **Street Side** | Lumens | 10820.4 | 0.0 | 10820.4 |
| | % Fixture | 50.5 | 0.0 | 50.5 |
| **Total** | Lumens | 21430.5 | 0.0 | 21430.5 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 346.3 | 1.6 |
| 10°-20° | 1142.3 | 5.3 |
| 20°-30° | 2175.7 | 10.2 |
| 30°-40° | 3688.3 | 17.2 |
| 40°-50° | 5550.7 | 25.9 |
| 50°-60° | 6075.7 | 28.4 |
| 60°-70° | 1921.2 | 9.0 |
| 70°-80° | 461.1 | 2.2 |
| 80°-90° | 69.2 | 0.3 |
| 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° | 21430.5 | 100.0 |
| 0°-180° | 21430.5 | 100.0 |



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

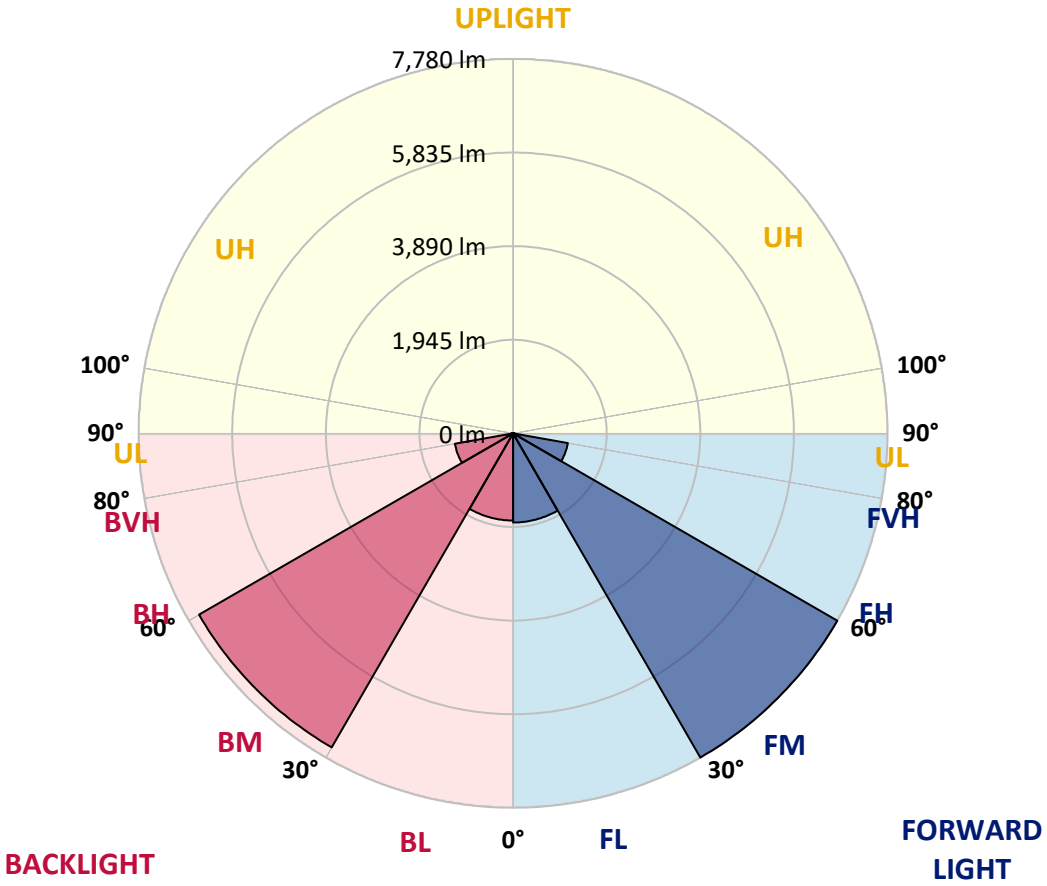
Scaled Data Report

REPORT NUMBER: P638467
CATALOG NUMBER: GWS-SA4E-830-U-RW-W-GRSWH

## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 1852.9 | 8.6 | | | |
| FM | (30°-60°) | 7779.9 | 36.3 | | | |
| FH | (60°-80°) | 1155.6 | 5.4 | | | G1/1800 |
| FVH | (80°-90°) | 32.0 | 0.1 | | | G1/100 |
| BL | (0°-30°) | 1811.5 | 8.5 | B3/2500 | | |
| BM | (30°-60°) | 7534.9 | 35.2 | B4/8500 | | |
| BH | (60°-80°) | 1226.7 | 5.7 | B3/2500 | | G1/1800 |
| BVH | (80°-90°) | 37.2 | 0.2 | | | G1/100 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

**BUG Rating: B4-U0-G1**
Type V Short



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

Scaled Data Report

REPORT NUMBER: P638467
CATALOG NUMBER: GWS-SA4E-830-U-RW-W-GRSWH

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 49° | 55° | 65° | 75° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 3550.1 | 3550.1 | 3550.1 | 3550.1 | 3550.1 | 3550.1 | 3550.1 | 3550.1 | 3550.1 | 3550.1 | 3550.1 |
| 2.5° | 3497.8 | 3501.3 | 3508.3 | 3520.5 | 3532.7 | 3550.1 | 3557.1 | 3565.8 | 3564.0 | 3574.5 | 3574.5 |
| 5° | 3480.4 | 3485.6 | 3496.1 | 3513.5 | 3534.4 | 3567.5 | 3576.2 | 3597.1 | 3618.1 | 3644.2 | 3652.9 |
| 7.5° | 3501.3 | 3508.3 | 3520.5 | 3548.3 | 3579.7 | 3623.3 | 3640.7 | 3675.6 | 3715.7 | 3762.7 | 3781.9 |
| 10° | 3541.4 | 3550.1 | 3571.0 | 3616.3 | 3666.9 | 3733.1 | 3748.8 | 3792.3 | 3856.8 | 3921.3 | 3959.7 |
| 12.5° | 3586.7 | 3600.6 | 3639.0 | 3710.4 | 3785.4 | 3872.5 | 3896.9 | 3950.9 | 4020.6 | 4104.3 | 4156.6 |
| 15° | 3639.0 | 3651.2 | 3710.4 | 3811.5 | 3928.3 | 4043.3 | 4071.2 | 4123.5 | 4201.9 | 4283.8 | 4357.0 |
| 17.5° | 3748.8 | 3769.7 | 3839.4 | 3956.2 | 4092.1 | 4228.0 | 4259.4 | 4318.7 | 4381.4 | 4445.9 | 4515.6 |
| 20° | 3898.7 | 3916.1 | 4005.0 | 4149.6 | 4310.0 | 4433.7 | 4465.1 | 4517.3 | 4547.0 | 4580.1 | 4639.3 |
| 22.5° | 4048.5 | 4072.9 | 4174.0 | 4344.8 | 4533.0 | 4667.2 | 4691.6 | 4740.4 | 4719.5 | 4709.1 | 4747.4 |
| 25° | 4235.0 | 4268.1 | 4367.5 | 4553.9 | 4745.7 | 4911.2 | 4930.4 | 4972.2 | 4937.4 | 4883.3 | 4881.6 |
| 27.5° | 4466.8 | 4496.4 | 4599.3 | 4791.0 | 4980.9 | 5153.5 | 5190.1 | 5245.8 | 5169.2 | 5102.9 | 5055.9 |
| 30° | 4742.2 | 4761.3 | 4874.6 | 5078.5 | 5273.7 | 5437.5 | 5484.6 | 5540.4 | 5482.9 | 5373.1 | 5326.0 |
| 32.5° | 5062.8 | 5089.0 | 5219.7 | 5434.1 | 5608.3 | 5772.2 | 5819.2 | 5888.9 | 5826.2 | 5702.5 | 5643.2 |
| 35° | 5448.0 | 5474.1 | 5611.8 | 5845.4 | 6023.1 | 6192.2 | 6225.3 | 6282.8 | 6204.4 | 6061.5 | 6014.4 |
| 37.5° | 5866.3 | 5899.4 | 6073.7 | 6295.0 | 6481.5 | 6678.4 | 6680.2 | 6697.6 | 6586.1 | 6408.3 | 6356.0 |
| 40° | 6336.8 | 6380.4 | 6554.7 | 6784.7 | 7009.6 | 7169.9 | 7168.2 | 7119.4 | 6931.1 | 6655.8 | 6575.6 |
| 42.5° | 6802.2 | 6837.0 | 7013.0 | 7250.1 | 7474.9 | 7626.5 | 7581.2 | 7462.7 | 7190.8 | 6816.1 | 6709.8 |
| 45° | 7138.5 | 7164.7 | 7349.4 | 7616.1 | 7844.4 | 7938.5 | 7856.6 | 7713.7 | 7345.9 | 6917.2 | 6760.3 |
| 47.5° | 7297.1 | 7332.0 | 7518.5 | 7783.4 | 8041.3 | 8095.3 | 7997.7 | 7863.5 | 7436.5 | 7011.3 | 6800.4 |
| 50° | 7211.7 | 7257.0 | 7467.9 | 7713.7 | 8004.7 | 8116.2 | 8046.5 | 7912.3 | 7532.4 | 7103.7 | 6871.9 |
| 52.5° | 6990.4 | 7034.0 | 7300.6 | 7598.6 | 7928.0 | 8149.4 | 8147.6 | 8037.8 | 7642.2 | 7129.8 | 6875.4 |
| 55° | 6234.0 | 6319.4 | 6734.2 | 7248.3 | 7833.9 | 8246.9 | 8288.8 | 8172.0 | 7659.6 | 7136.8 | 6912.0 |
| 57.5° | 4057.2 | 4207.1 | 4601.0 | 5270.2 | 6444.9 | 7501.0 | 7783.4 | 7811.2 | 7534.1 | 7107.2 | 6918.9 |
| 60° | 1694.0 | 1814.3 | 2126.2 | 2570.6 | 3541.4 | 4797.9 | 5345.2 | 5894.2 | 6556.4 | 6796.9 | 6854.4 |
| 62.5° | 1052.7 | 1063.1 | 1094.5 | 1195.6 | 1519.7 | 2133.2 | 2485.2 | 2999.4 | 3984.1 | 4822.3 | 5209.2 |
| 65° | 949.8 | 955.1 | 962.0 | 955.1 | 970.7 | 1045.7 | 1139.8 | 1319.3 | 1720.1 | 2136.7 | 2631.6 |
| 67.5° | 836.5 | 843.5 | 848.7 | 843.5 | 848.7 | 852.2 | 862.7 | 878.4 | 951.6 | 1010.8 | 1056.1 |
| 70° | 676.2 | 686.7 | 695.4 | 691.9 | 712.8 | 712.8 | 723.3 | 735.5 | 772.1 | 815.6 | 847.0 |
| 72.5° | 515.9 | 507.2 | 517.6 | 521.1 | 540.3 | 550.7 | 566.4 | 580.4 | 622.2 | 648.3 | 688.4 |
| 75° | 334.6 | 325.9 | 341.6 | 350.3 | 376.4 | 390.4 | 404.3 | 418.3 | 447.9 | 465.3 | 503.7 |
| 77.5° | 181.3 | 179.5 | 195.2 | 207.4 | 235.3 | 252.7 | 263.2 | 273.6 | 298.0 | 303.2 | 327.6 |
| 80° | 104.6 | 104.6 | 115.0 | 123.7 | 141.2 | 160.3 | 170.8 | 179.5 | 196.9 | 202.2 | 212.6 |
| 82.5° | 57.5 | 57.5 | 62.7 | 68.0 | 81.9 | 92.4 | 101.1 | 108.1 | 123.7 | 129.0 | 134.2 |
| 85° | 27.9 | 26.1 | 29.6 | 33.1 | 38.3 | 43.6 | 48.8 | 52.3 | 64.5 | 68.0 | 74.9 |
| 87.5° | 3.5 | 3.5 | 3.5 | 5.2 | 7.0 | 10.5 | 12.2 | 12.2 | 19.2 | 22.7 | 26.1 |
| 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
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report

REPORT NUMBER: P638467
CATALOG NUMBER: GWS-SA4E-830-U-RW-W-GRSWH

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 3550.1 | 3550.1 | 3550.1 | 3550.1 | 3550.1 | 3550.1 | 3550.1 | 3550.1 | 3550.1 | 3550.1 | 3550.1 |
| 2.5° | 3584.9 | 3562.3 | 3576.2 | 3581.5 | 3581.5 | 3576.2 | 3553.6 | 3546.6 | 3536.1 | 3520.5 | 3520.5 |
| 5° | 3665.1 | 3647.7 | 3651.2 | 3642.5 | 3621.5 | 3595.4 | 3553.6 | 3532.7 | 3515.2 | 3496.1 | 3494.3 |
| 7.5° | 3802.8 | 3780.1 | 3776.7 | 3743.5 | 3687.8 | 3632.0 | 3569.3 | 3530.9 | 3504.8 | 3480.4 | 3478.6 |
| 10° | 3982.3 | 3961.4 | 3935.3 | 3869.0 | 3787.1 | 3705.2 | 3619.8 | 3567.5 | 3529.2 | 3494.3 | 3492.6 |
| 12.5° | 4182.7 | 4158.3 | 4109.5 | 4011.9 | 3909.1 | 3828.9 | 3731.3 | 3651.2 | 3593.7 | 3546.6 | 3537.9 |
| 15° | 4400.6 | 4365.7 | 4282.1 | 4167.0 | 4066.0 | 3980.6 | 3876.0 | 3761.0 | 3673.8 | 3598.9 | 3590.2 |
| 17.5° | 4567.9 | 4522.6 | 4432.0 | 4323.9 | 4240.2 | 4154.8 | 4018.9 | 3874.3 | 3748.8 | 3654.7 | 3640.7 |
| 20° | 4682.9 | 4646.3 | 4543.5 | 4463.3 | 4414.5 | 4339.6 | 4181.0 | 4017.2 | 3876.0 | 3757.5 | 3750.5 |
| 22.5° | 4789.2 | 4745.7 | 4644.6 | 4597.5 | 4597.5 | 4547.0 | 4395.4 | 4201.9 | 4036.3 | 3898.7 | 3881.2 |
| 25° | 4909.5 | 4862.4 | 4785.7 | 4780.5 | 4804.9 | 4782.3 | 4599.3 | 4391.9 | 4198.4 | 4043.3 | 4015.4 |
| 27.5° | 5076.8 | 5024.5 | 4979.2 | 5010.6 | 5045.4 | 5021.0 | 4817.1 | 4576.6 | 4372.7 | 4215.8 | 4191.4 |
| 30° | 5343.4 | 5279.0 | 5237.1 | 5275.5 | 5343.4 | 5272.0 | 5050.6 | 4796.2 | 4590.5 | 4418.0 | 4405.8 |
| 32.5° | 5653.7 | 5580.5 | 5536.9 | 5597.9 | 5658.9 | 5547.3 | 5327.8 | 5083.8 | 4867.7 | 4686.4 | 4665.5 |
| 35° | 6026.6 | 5934.2 | 5869.8 | 5951.7 | 6014.4 | 5904.6 | 5686.8 | 5455.0 | 5214.5 | 5026.2 | 4998.4 |
| 37.5° | 6357.7 | 6246.2 | 6202.6 | 6317.7 | 6401.3 | 6329.9 | 6092.8 | 5875.0 | 5611.8 | 5406.2 | 5394.0 |
| 40° | 6598.3 | 6488.5 | 6457.1 | 6647.1 | 6793.5 | 6776.0 | 6563.4 | 6314.2 | 6066.7 | 5829.7 | 5807.0 |
| 42.5° | 6702.8 | 6626.1 | 6633.1 | 6889.3 | 7115.9 | 7227.4 | 7037.4 | 6770.8 | 6532.0 | 6286.3 | 6270.6 |
| 45° | 6725.5 | 6678.4 | 6734.2 | 7054.9 | 7352.9 | 7581.2 | 7419.1 | 7196.0 | 6925.9 | 6688.9 | 6681.9 |
| 47.5° | 6749.9 | 6723.7 | 6809.1 | 7149.0 | 7502.8 | 7767.7 | 7677.1 | 7447.0 | 7173.4 | 6941.6 | 6924.2 |
| 50° | 6807.4 | 6796.9 | 6892.8 | 7215.2 | 7574.2 | 7818.2 | 7715.4 | 7487.1 | 7206.5 | 6978.2 | 6936.4 |
| 52.5° | 6824.8 | 6807.4 | 6945.1 | 7318.0 | 7692.7 | 7816.5 | 7595.1 | 7297.1 | 7014.8 | 6760.3 | 6716.8 |
| 55° | *6878.8* | *6847.5* | *6941.6* | *7356.4* | *7856.6* | *7917.6* | *7588.2* | *7142.0* | *6748.1* | *6401.3* | *6298.5* |
| 57.5° | 6892.8 | 6857.9 | 6918.9 | 7293.6 | 7678.8 | 7624.8 | 6669.7 | 5763.5 | 5021.0 | 4635.9 | 4679.4 |
| 60° | 6817.9 | 6828.3 | 6723.7 | 6681.9 | 6159.1 | 5437.5 | 4083.4 | 3264.3 | 2563.7 | 2267.4 | 2331.9 |
| 62.5° | 5190.1 | 5233.6 | 4876.4 | 4240.2 | 3260.8 | 2584.6 | 1709.7 | 1328.0 | 1124.1 | 1071.8 | 1080.5 |
| 65° | 2619.4 | 2678.7 | 2307.5 | 1908.4 | 1418.6 | 1146.8 | 991.7 | 960.3 | 949.8 | 937.6 | 937.6 |
| 67.5° | 1037.0 | 1054.4 | 1040.5 | 974.2 | 906.3 | 881.9 | 874.9 | 871.4 | 859.2 | 852.2 | 854.0 |
| 70° | 833.1 | 847.0 | 826.1 | 784.3 | 756.4 | 754.6 | 751.1 | 744.2 | 735.5 | 735.5 | 740.7 |
| 72.5° | 679.7 | 693.6 | 664.0 | 637.9 | 617.0 | 601.3 | 592.6 | 587.3 | 575.1 | 575.1 | 580.4 |
| 75° | 500.2 | 508.9 | 484.5 | 481.0 | 458.4 | 442.7 | 428.7 | 421.8 | 406.1 | 399.1 | 404.3 |
| 77.5° | 332.9 | 331.1 | 318.9 | 318.9 | 310.2 | 291.0 | 275.4 | 259.7 | 238.8 | 224.8 | 228.3 |
| 80° | 216.1 | 216.1 | 210.9 | 210.9 | 202.2 | 186.5 | 167.3 | 151.6 | 139.4 | 129.0 | 129.0 |
| 82.5° | 137.7 | 135.9 | 134.2 | 132.5 | 129.0 | 113.3 | 99.3 | 88.9 | 80.2 | 73.2 | 74.9 |
| 85° | 76.7 | 76.7 | 73.2 | 73.2 | 66.2 | 57.5 | 50.5 | 43.6 | 38.3 | 36.6 | 36.6 |
| 87.5° | 26.1 | 26.1 | 24.4 | 24.4 | 20.9 | 15.7 | 12.2 | 10.5 | 8.7 | 7.0 | 8.7 |
| 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
1121 Highway 74 South
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

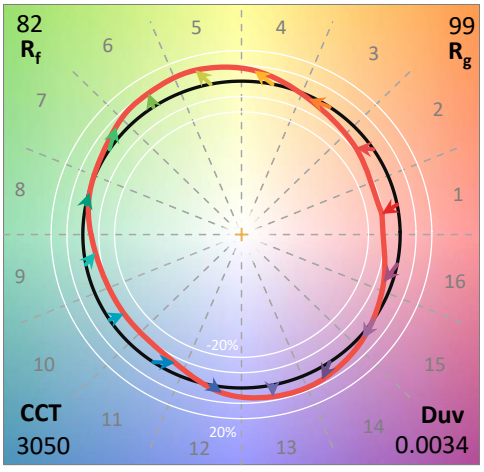
## Test Information

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

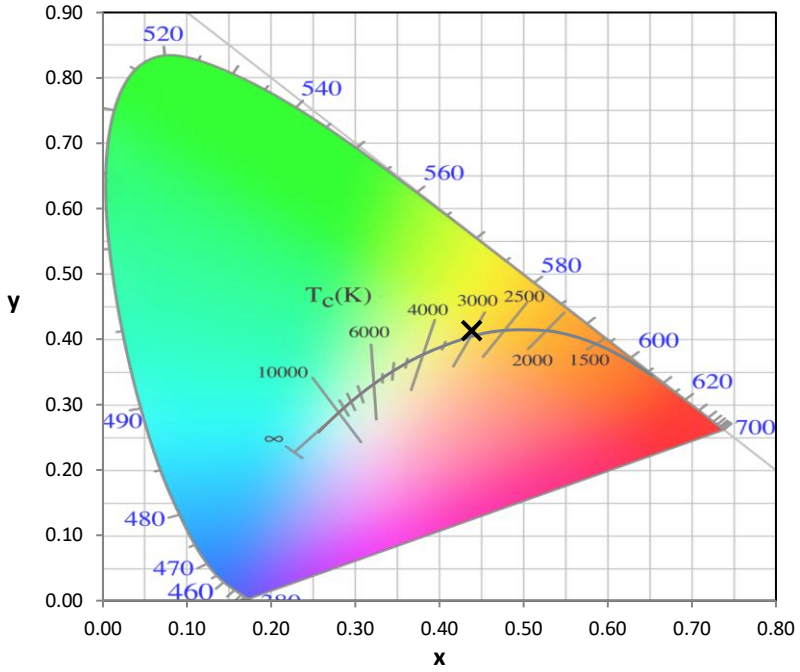
| | |
|---|---|
| Stabilization Time: | 20M |
| Operation Time: | 1H 20M |
| Sphere Temperature (°C): | 24.2 |

REPORT NUMBER: SP1-2408-195-9

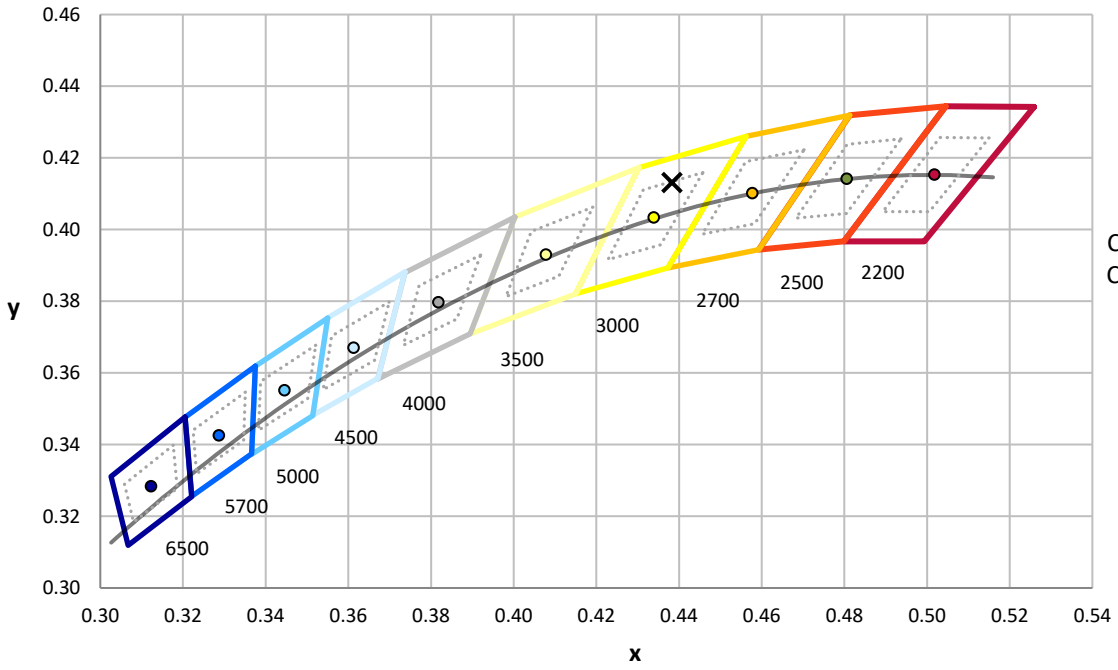
| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 | 2/8/2024 | 2/8/2025 |
| AC Power Source | IN0063 | 10/24/2023 | 10/24/2024 |
| DC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

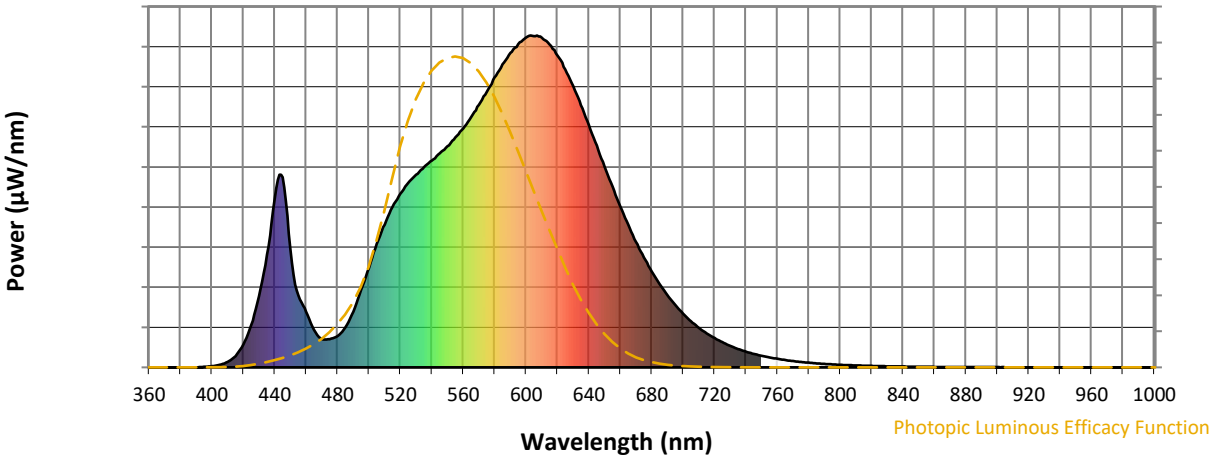



CCT = 3050K
CIE x = 0.4383
CIE y = 0.4131
Duv = 0.0034

Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-2408-195-9

## Photopic Flux vs. Wavelength

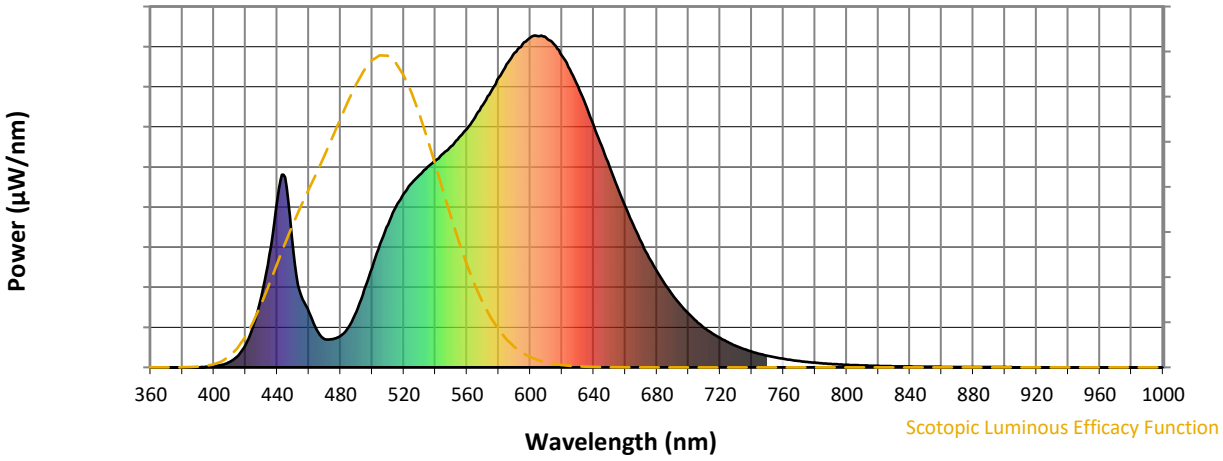



## Photopic Lumens: NR

| 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

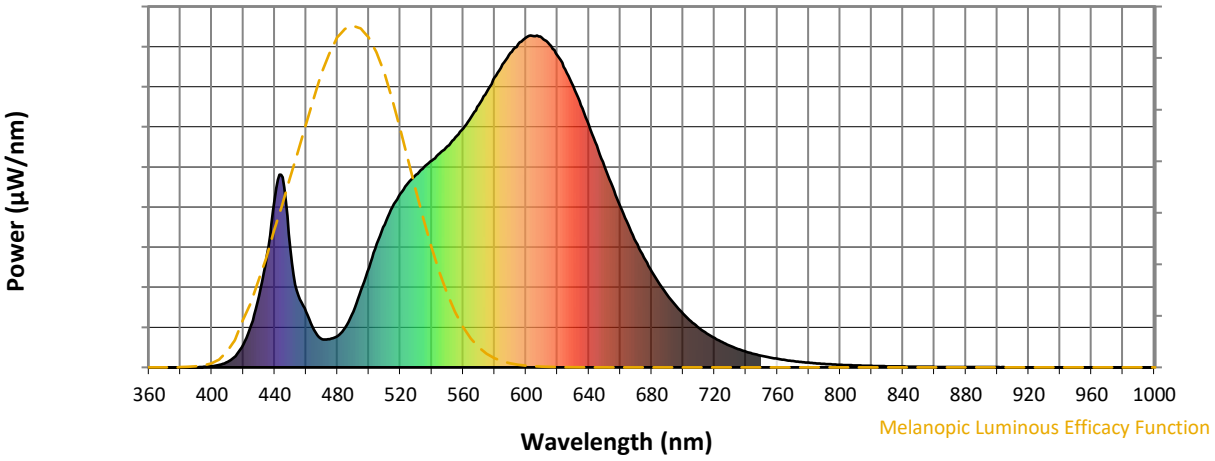



**Scotopic Lumens: NR** **S/P: 1.27**

| 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 | | | |

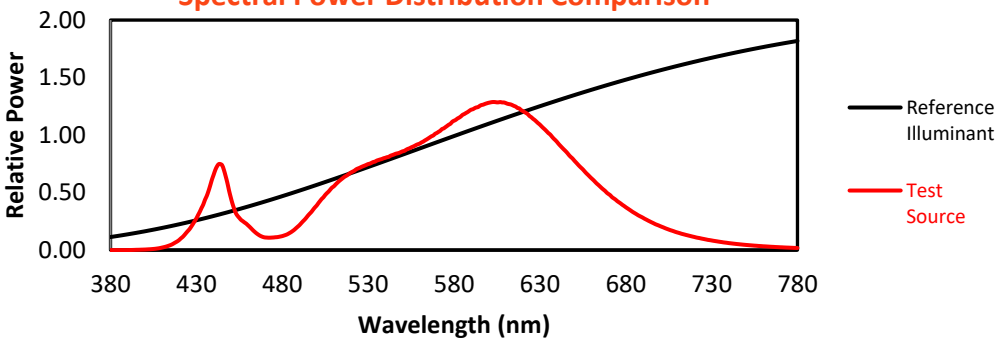
REPORT NUMBER: SP1-2408-195-9

# TM-30-18

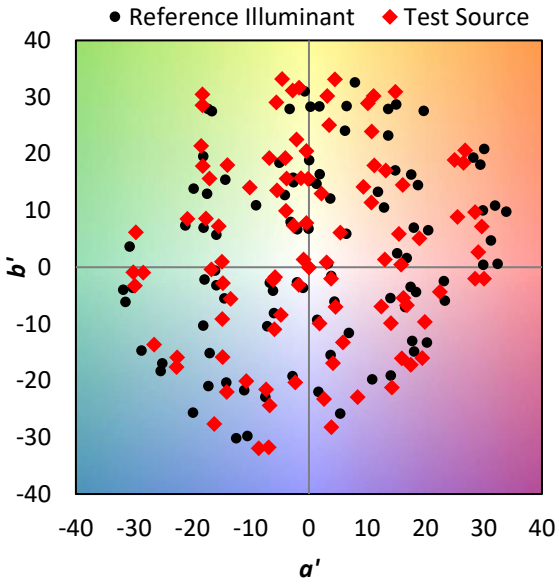
## Summary

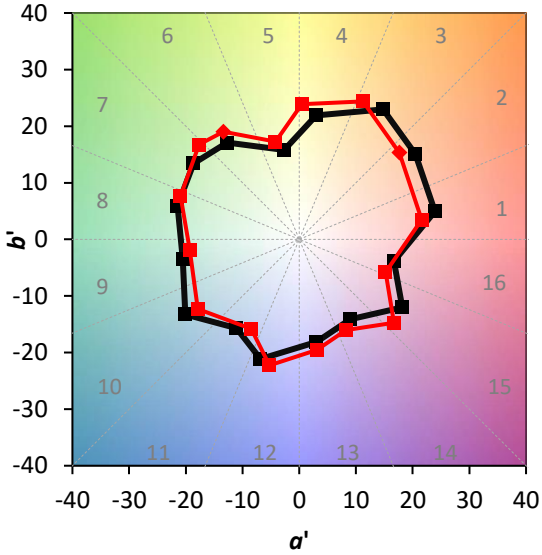
$R_f$ = 81.5
$R_g$ = 99.2
CIE $R_a$ = 81.0
$R_9$ = 7.1

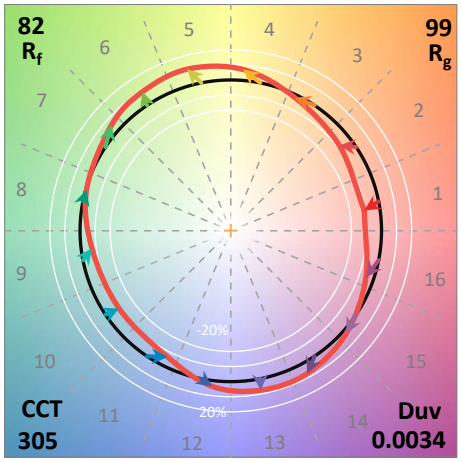
## Spectral Power Distribution Comparison

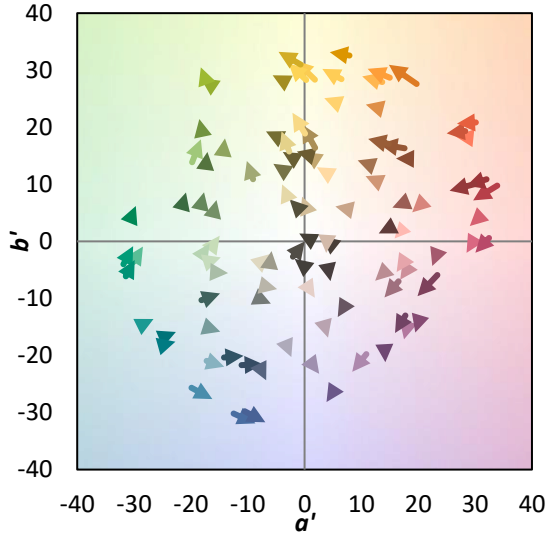



## Color Vector Graphics



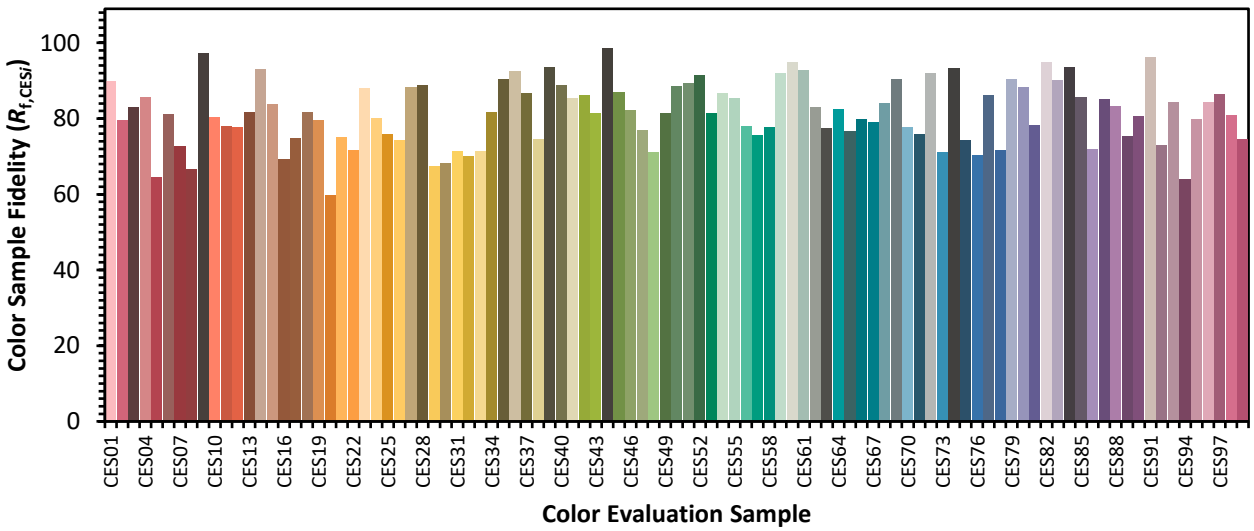



REPORT NUMBER: SP1-2408-195-9

# TM-30-18

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

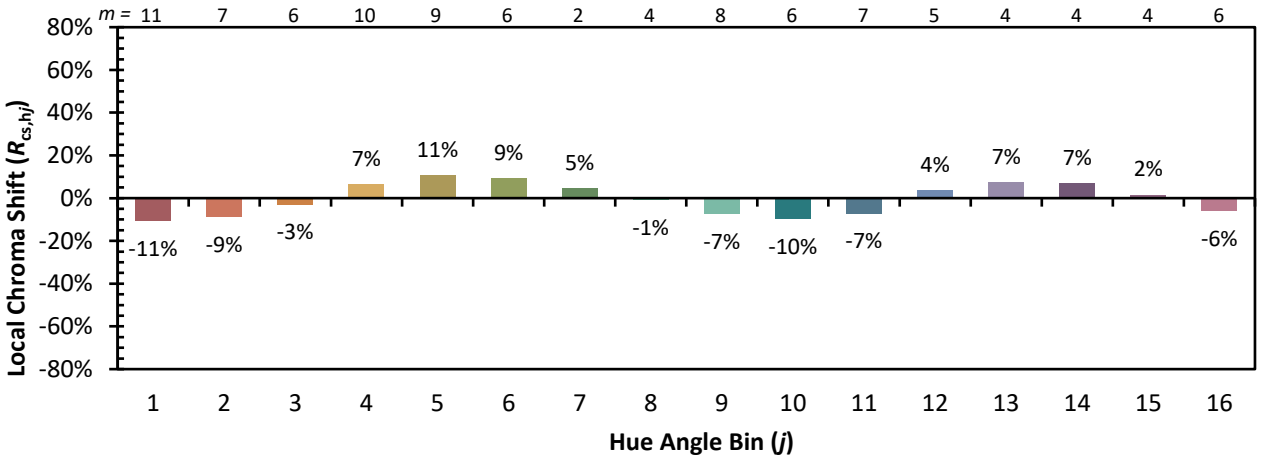
| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 74 | CES51 = 89 | CES76 = 70 |
| CES02 = 63 | CES27 = 88 | CES52 = 92 | CES77 = 86 |
| CES03 = 31 | CES28 = 89 | CES53 = 81 | CES78 = 72 |
| CES04 = 70 | CES29 = 67 | CES54 = 87 | CES79 = 90 |
| CES05 = 50 | CES30 = 68 | CES55 = 85 | CES80 = 88 |
| CES06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

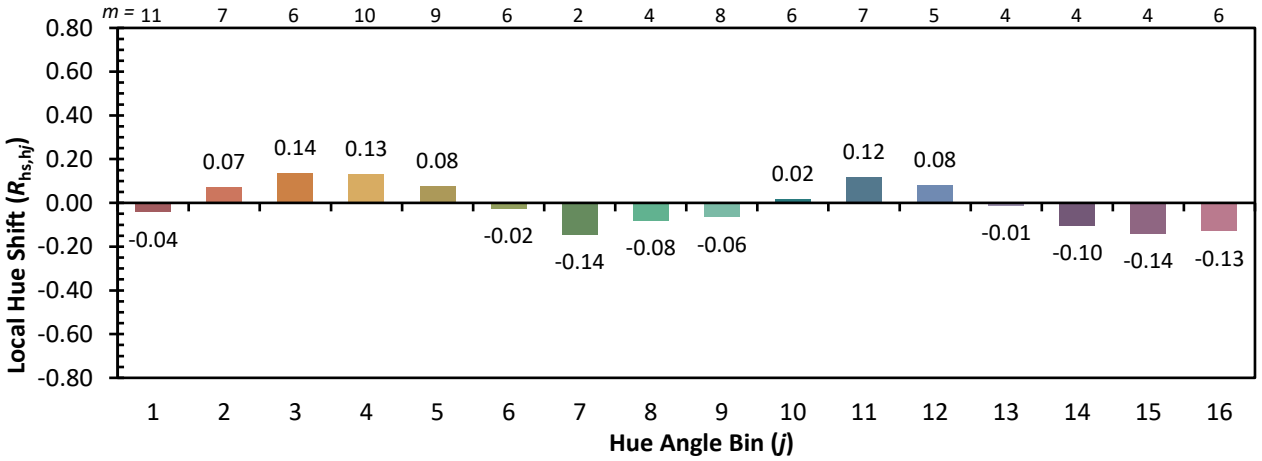


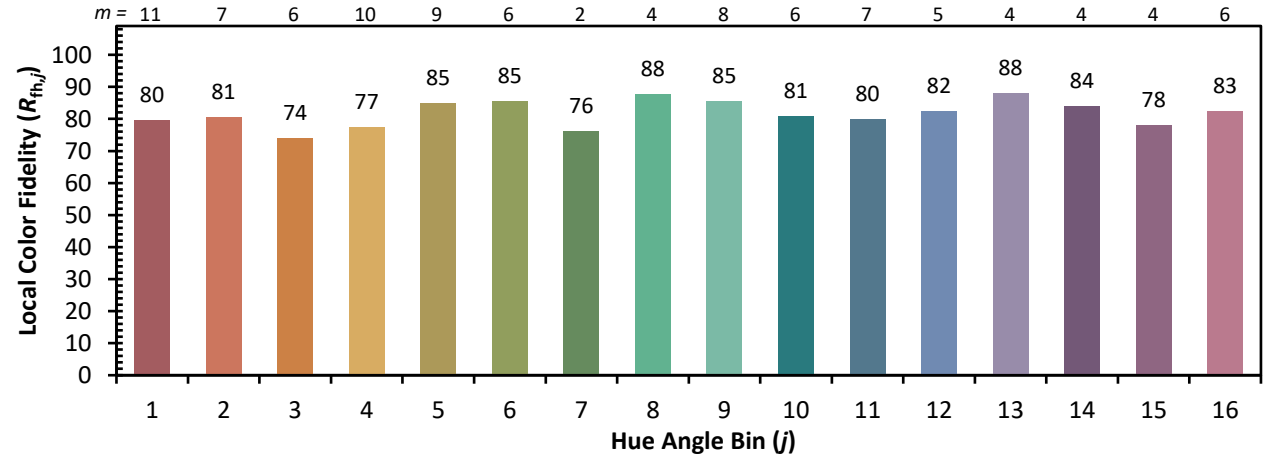
REPORT NUMBER: SP1-2408-195-9

# TM-30-18

## Color Rendition by Hue-Angle Bin



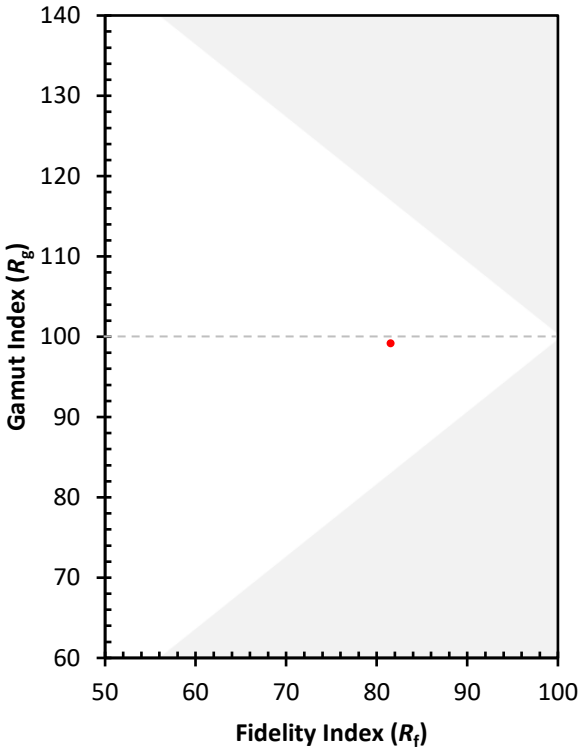



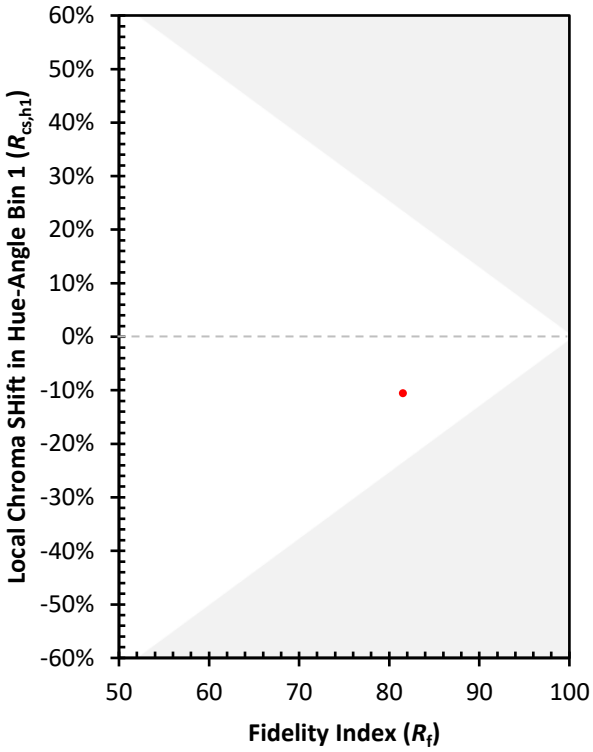



REPORT NUMBER: SP1-2408-195-9

## TM-30-18

### Measure Comparisons




(END OF REPORT)