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

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Peachtree City, GA 30269

Scaled data based on original data using

LM-79-2024 Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

Brand: STREETWORKS

Report Number: P1457409

Luminaire Tested: GLAN-SB9C-930-U-T4LG

Issue Date: 05/20/2026

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

Scaled Data Report

**Test Information**

| | |
|---|---|
| Test Method: | LM-79-2024 |
| Report Number: | P1457409 |
| Test Lab: | INNOVATION CENTER(G1) |
| Issue Date: | 5/22/2026 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | STREETWORKS |
| Catalog Number: | GLAN-SB9C-930-U-T4LG |
| Description: | GALLEON II AREA AND ROADWAY HIGH DENSITY LUMINAIRE 615mA 9xLight Square PACKAGE 90CRI 3000K FIXTURE w/ TYPE IV LOW GLARE |
| Light Source: | (234) 3000K CCT, 90 CRI LEDS |
| Ballast/Driver: | ELECTRONIC DRIVER |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 46473 lumens |
| Efficiency: | N/A |
| Efficacy: | 103.3 lumens/watt |
| Luminous Opening: | Rectangular (W 1.5' x L: 1.5' x H: 0') |
| IES Classification: | Type IV - Short |
| BUG Rating: | B4 - U0 - G4 |

| | |
|---|---|
| Input Watts (W): | 449.8 |
| Input Voltage (V): | 120 |
| Input Current (Ain): | NR |
| Voltage Rise (V): | NR |
| Power Factor: | 0.97 |
| Total Harmonic Distortion (THDi): | NR |
| Frequency (hertz): | 60 |
| Stabilization Time: | NR |
| Operation Time: | NR |
| Ambient Temperature (°C): | NR |
| Test Distance: | 28.75 FT |

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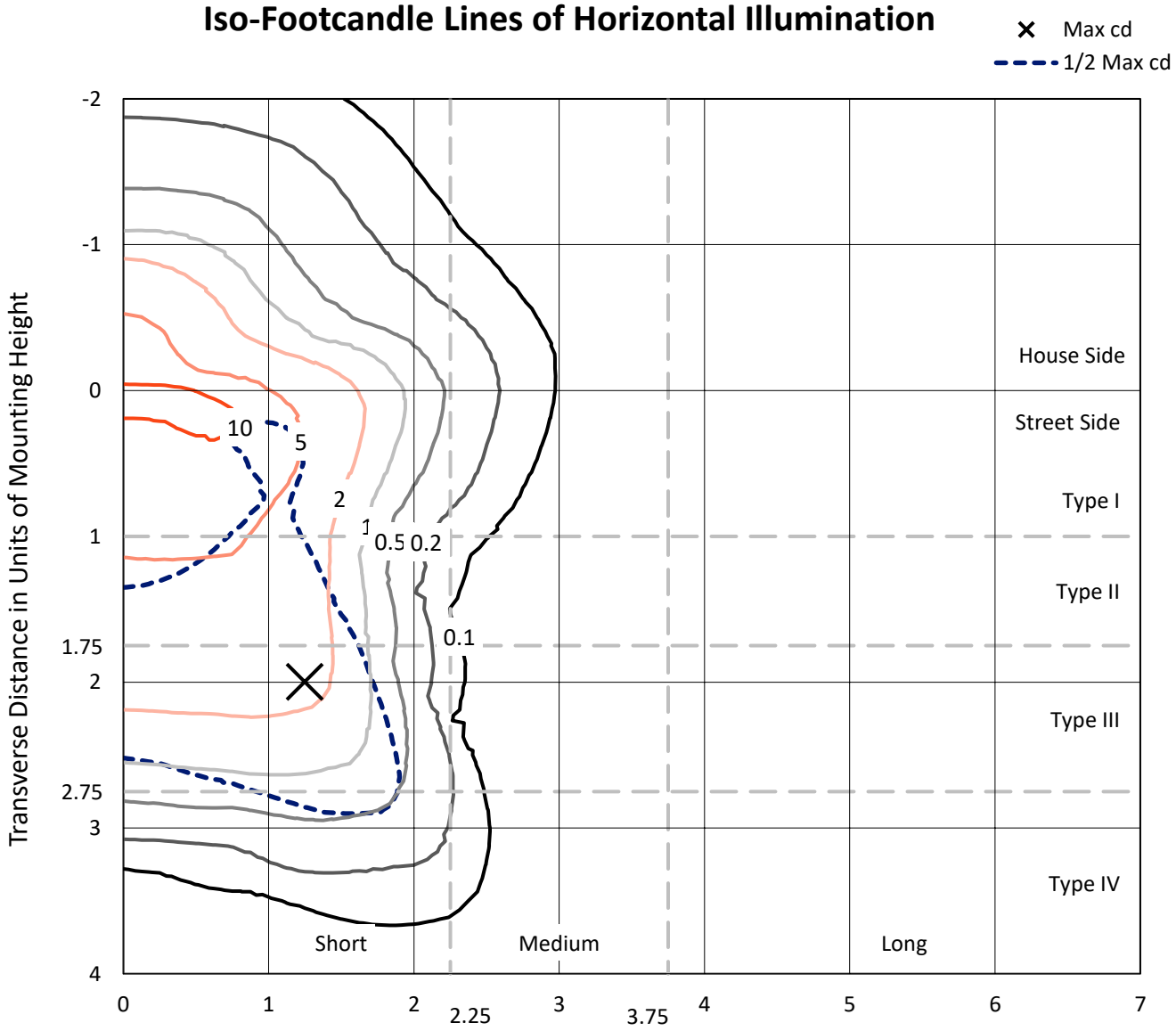
Scaled Data Report

REPORT NUMBER: P1457409
CATALOG NUMBER: GLAN-SB9C-930-U-T4LG

## Iso-Footcandle Lines of Horizontal Illumination




Based on 30 foot mounting height. Maximum calculated value = 12.7 fc
Type IV - Short - N/A

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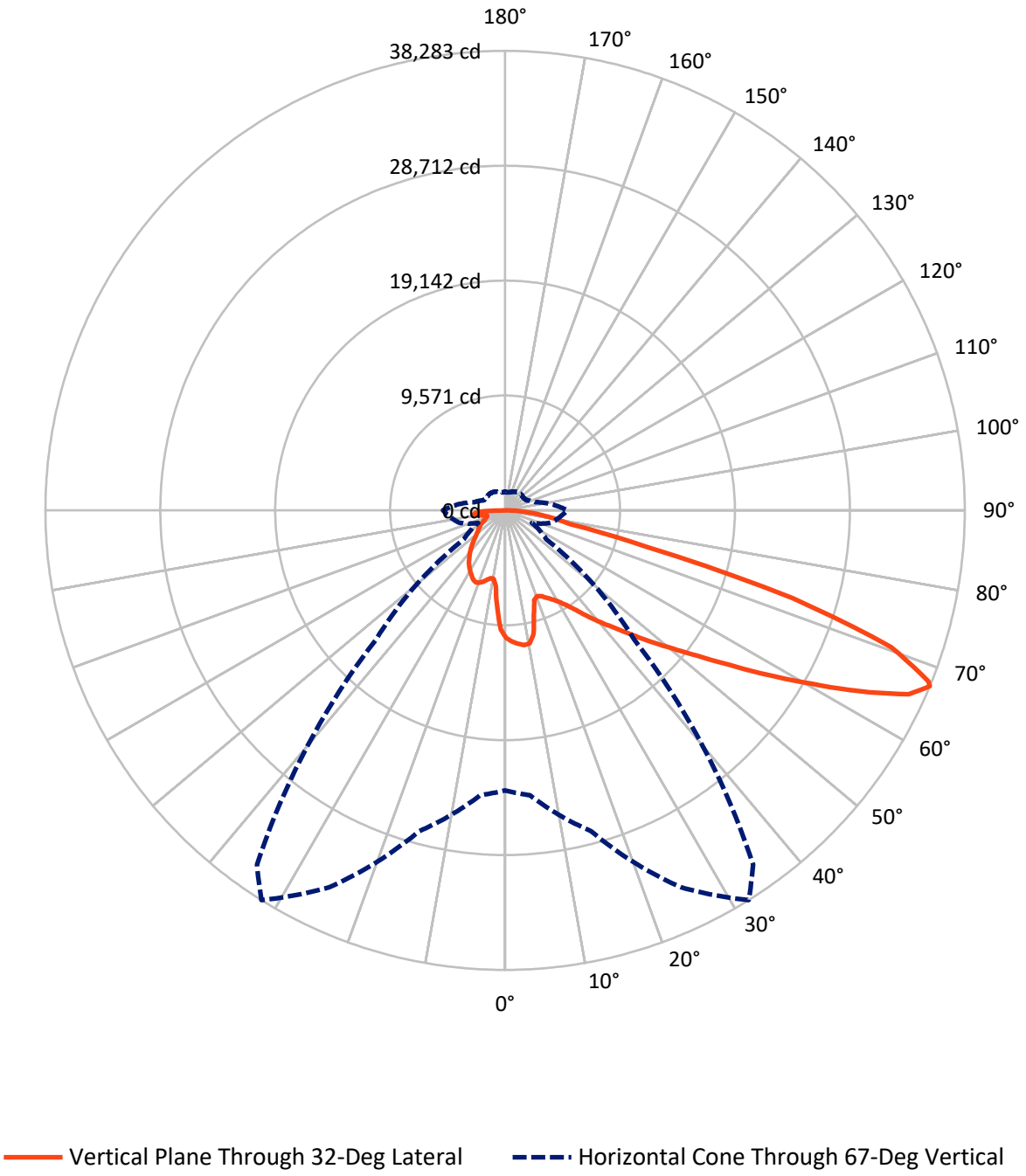
## Luminous Intensity Polar Plot



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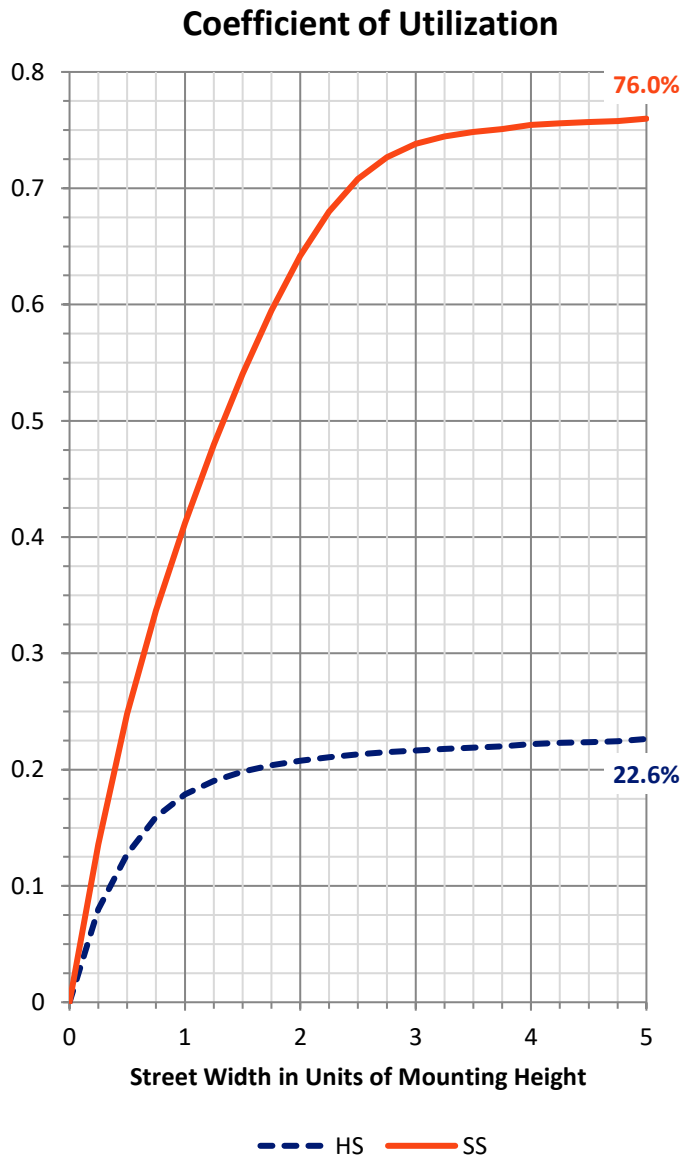
**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 11002.3 | 0.0 | 11002.3 |
| | % Fixture | 23.7 | 0.0 | 23.7 |
| **Street Side** | Lumens | 35470.7 | 0.0 | 35470.7 |
| | % Fixture | 76.3 | 0.0 | 76.3 |
| **Total** | Lumens | 46473.0 | 0.0 | 46473.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 927.8 | 2.0 |
| 10°-20° | 2463.3 | 5.3 |
| 20°-30° | 4022.7 | 8.7 |
| 30°-40° | 5929.1 | 12.8 |
| 40°-50° | 8176.5 | 17.6 |
| 50°-60° | 10329.4 | 22.2 |
| 60°-70° | 9997.0 | 21.5 |
| 70°-80° | 3567.9 | 7.7 |
| 80°-90° | 1059.5 | 2.3 |
| 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° | 46473.0 | 100.0 |
| 0°-180° | 46473.0 | 100.0 |



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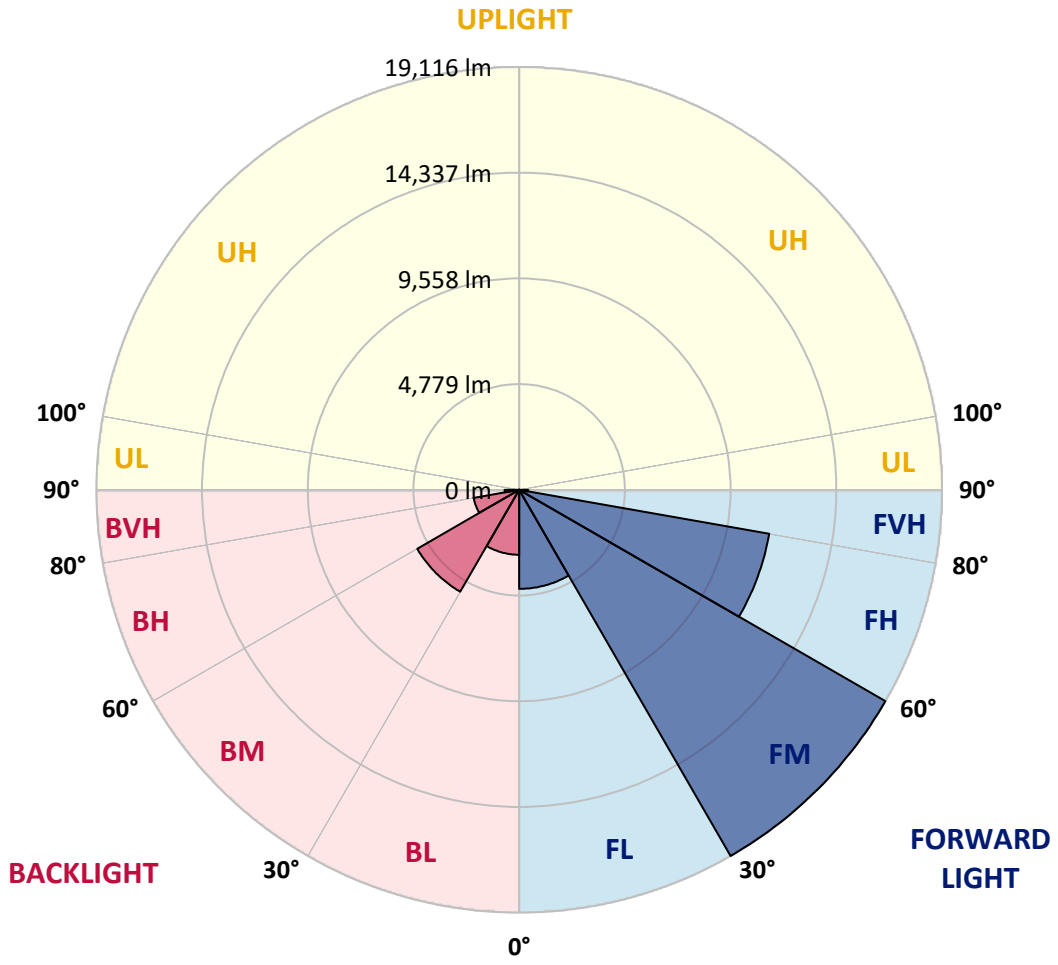
## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 4477.8 | 9.6 | | | |
| FM | (30°-60°) | 19115.8 | 41.1 | | | |
| FH | (60°-80°) | 11477.9 | 24.7 | | | G4/12000 |
| FVH | (80°-90°) | 399.2 | 0.9 | | | G3/500 |
| BL | (0°-30°) | 2936.0 | 6.3 | B4/5000 | | |
| BM | (30°-60°) | 5319.1 | 11.4 | B4/8500 | | |
| BH | (60°-80°) | 2087.0 | 4.5 | B3/2500 | | G3/2500 |
| BVH | (80°-90°) | 660.3 | 1.4 | | | G4/750 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

**BUG Rating: B4-U0-G4**
Type IV Short



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REPORT NUMBER: P1457409
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**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 32° | 35° | 45° | 55° | 65° | 75° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 10618.2 | 10618.2 | 10618.2 | 10618.2 | *10618.2* | 10618.2 | 10618.2 | 10618.2 | 10618.2 | 10618.2 | 10618.2 |
| 2.5° | 11020.6 | 10989.7 | 10958.7 | 10979.3 | *10938.1* | 10927.7 | 10876.1 | 10855.5 | 10793.6 | 10783.3 | 10669.8 |
| 5° | 11247.6 | 11185.7 | 11175.4 | 11196.0 | *11154.8* | 11154.8 | 11113.5 | 11082.5 | 10989.7 | 10938.1 | 10773.0 |
| 7.5° | 11247.6 | 11237.3 | 11257.9 | 11330.2 | *11340.5* | 11340.5 | 11340.5 | 11350.8 | 11257.9 | 11185.7 | 10927.7 |
| 10° | 10607.9 | 10504.7 | 10731.7 | 11092.8 | *11268.3* | 11371.5 | 11557.2 | 11670.7 | 11598.5 | 11546.9 | 11196.0 |
| 12.5° | 8698.9 | 8709.2 | 9070.3 | 9844.3 | *10545.9* | 10845.2 | 11619.1 | 12031.9 | 12062.8 | 11980.3 | 11536.6 |
| 15° | 7378.0 | 7429.6 | 7615.4 | 8172.6 | *8977.5* | 9421.2 | 11257.9 | 12351.7 | 12599.4 | 12516.9 | 11949.3 |
| 17.5° | 6975.6 | 7006.5 | 7089.1 | 7409.0 | *7863.0* | 8224.2 | 10277.6 | 12558.1 | 13249.5 | 13146.3 | 12413.7 |
| 20° | 6913.7 | 6934.3 | 7037.5 | 7305.8 | *7615.4* | 7821.7 | 9276.7 | 12393.0 | 13858.3 | 13817.0 | 12836.7 |
| 22.5° | 6924.0 | 6944.6 | 7078.8 | 7450.3 | *7770.1* | 7945.6 | 8956.8 | 12011.2 | 14498.1 | 14539.4 | 13270.1 |
| 25° | 6944.6 | 6955.0 | 7161.3 | 7656.6 | *8059.1* | 8275.8 | 9163.2 | 11670.7 | 15034.7 | 15385.5 | 13744.8 |
| 27.5° | 7058.1 | 7089.1 | 7367.7 | 7924.9 | *8399.6* | 8647.3 | 9648.2 | 11784.2 | 15622.8 | 16345.2 | 14312.3 |
| 30° | 7367.7 | 7388.3 | 7728.9 | 8306.7 | *8822.7* | 9080.7 | 10226.1 | 12238.2 | 16345.2 | 17335.8 | 14869.6 |
| 32.5° | 7852.7 | 7873.3 | 8265.5 | 8864.0 | *9421.2* | 9730.7 | 10979.3 | 13105.0 | 17150.0 | 18378.0 | 15426.8 |
| 35° | 8523.4 | 8533.7 | 8977.5 | 9617.2 | *10205.4* | 10556.3 | 11856.4 | 14085.3 | 17985.9 | 19265.4 | 15839.5 |
| 37.5° | 9318.0 | 9390.2 | 9844.3 | 10515.0 | *11206.3* | 11526.2 | 12888.3 | 15230.7 | 18728.8 | 20018.7 | 16076.9 |
| 40° | 10411.8 | 10432.4 | 10876.1 | 11526.2 | *12258.9* | 12568.4 | 13920.2 | 16314.2 | 19544.0 | 20462.4 | 16293.6 |
| 42.5° | 11536.6 | 11712.0 | 12083.5 | 12805.8 | *13352.7* | 13600.3 | 15096.6 | 17304.8 | 20194.1 | 20483.1 | 16200.7 |
| 45° | 13043.1 | 13177.3 | 13548.7 | 14188.5 | *14735.4* | 15024.4 | 16365.8 | 18212.9 | 20524.3 | 20307.6 | 15994.3 |
| 47.5° | 14766.4 | 14848.9 | 15148.2 | 15726.0 | *16334.9* | 16541.2 | 17686.6 | 18728.8 | 20648.2 | 20183.8 | 15901.5 |
| 50° | 16799.2 | 16799.2 | 17015.9 | 17511.2 | *18068.4* | 18357.4 | 18904.3 | 19038.4 | 21009.3 | 19967.1 | 16138.8 |
| 52.5° | 18512.1 | 18594.7 | 18883.6 | 19585.3 | *20142.5* | 20472.7 | 19853.6 | 19513.1 | 20276.7 | 18759.8 | 16211.0 |
| 55° | 20152.9 | 20245.7 | 20895.8 | 21772.9 | *22722.3* | 23083.4 | 21040.3 | 19275.7 | 17810.5 | 16995.3 | 15715.7 |
| 57.5° | 21721.3 | 21917.4 | 22732.6 | 24445.5 | *25879.9* | 25848.9 | 22546.8 | 17150.0 | 14539.4 | 15045.0 | 14632.2 |
| 60° | 23908.9 | 24115.3 | 25415.5 | 27572.2 | *29326.4* | 28593.7 | 22567.5 | 14271.1 | 11330.2 | 12011.2 | 12599.4 |
| 62.5° | 25735.4 | 26086.2 | 27995.2 | 31586.2 | *33196.0* | 32050.6 | 20699.8 | 10927.7 | 7522.5 | 8379.0 | 9741.1 |
| 65° | 25570.3 | 26034.6 | 28996.2 | 34537.4 | *36941.7* | 35878.9 | 17965.2 | 6913.7 | 3879.9 | 5727.0 | 6820.8 |
| 67° | *23320.8* | *23826.4* | *27665.0* | *34640.6* | *38283.2* | *36013.0* | *15168.8* | *4179.2* | *2466.2* | *3972.8* | *4736.4* |
| 67.5° | 22030.9 | 22773.9 | 27004.6 | 34444.6 | *38035.5* | 35445.5 | 13909.9 | 3498.1 | 2321.8 | 3694.2 | 4313.3 |
| 70° | 13548.7 | 14745.7 | 20266.4 | 30451.1 | *34093.7* | 29666.9 | 7728.9 | 1981.2 | 1888.4 | 2476.5 | 2982.2 |
| 72.5° | 4076.0 | 4437.1 | 7821.7 | 19533.7 | *25023.4* | 21989.6 | 3477.5 | 1527.2 | 1692.3 | 1991.6 | 2301.1 |
| 75° | 1981.2 | 2115.4 | 3229.8 | 7986.8 | *12186.6* | 12124.7 | 1940.0 | 1310.5 | 1568.5 | 1671.7 | 1816.1 |
| 77.5° | 1269.2 | 1351.8 | 2012.2 | 4468.1 | *5582.5* | 4973.7 | 1403.4 | 1145.4 | 1393.1 | 1372.4 | 1351.8 |
| 80° | 794.6 | 835.8 | 1289.9 | 2590.0 | *4117.2* | 3436.2 | 1031.9 | 939.0 | 1197.0 | 1062.8 | 959.7 |
| 82.5° | 515.9 | 567.5 | 825.5 | 1578.8 | *2940.9* | 2559.1 | 681.0 | 670.7 | 990.6 | 846.2 | 743.0 |
| 85° | 340.5 | 381.8 | 526.3 | 928.7 | *1743.9* | 1826.4 | 443.7 | 464.4 | 763.6 | 639.8 | 567.5 |
| 87.5° | 123.8 | 154.8 | 268.3 | 412.8 | *815.2* | 1011.3 | 185.7 | 175.4 | 371.5 | 299.2 | 237.3 |
| 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: P1457409
CATALOG NUMBER: GLAN-SB9C-930-U-T4LG

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 10618.2 | 10618.2 | 10618.2 | 10618.2 | 10618.2 | 10618.2 | 10618.2 | 10618.2 | 10618.2 | 10618.2 | 10618.2 |
| 2.5° | 10649.1 | 10618.2 | 10473.7 | 10349.9 | 10257.0 | 10133.2 | 9999.0 | 9844.3 | 9741.1 | 9761.7 | 9730.7 |
| 5° | 10700.7 | 10618.2 | 10339.6 | 9916.5 | 9503.7 | 8987.8 | 8327.4 | 7935.3 | 7636.0 | 7481.2 | 7522.5 |
| 7.5° | 10814.2 | 10669.8 | 10081.6 | 9225.1 | 8151.9 | 7099.4 | 6449.3 | 6077.8 | 5902.4 | 5830.2 | 5819.9 |
| 10° | 11010.3 | 10762.6 | 9751.4 | 8151.9 | 6748.6 | 6036.6 | 5799.2 | 5696.0 | 5675.4 | 5675.4 | 5665.1 |
| 12.5° | 11247.6 | 10855.5 | 9194.2 | 7109.7 | 6077.8 | 5819.9 | 5778.6 | 5788.9 | 5819.9 | 5850.8 | 5799.2 |
| 15° | 11536.6 | 10896.8 | 8502.8 | 6480.3 | 5943.7 | 5881.8 | 5943.7 | 6015.9 | 6067.5 | 6108.8 | 6057.2 |
| 17.5° | 11825.5 | 10855.5 | 7852.7 | 6181.0 | 5964.3 | 6046.9 | 6170.7 | 6284.2 | 6315.2 | 6377.1 | 6335.8 |
| 20° | 12031.9 | 10711.0 | 7295.5 | 6067.5 | 6015.9 | 6201.7 | 6356.5 | 6480.3 | 6542.2 | 6583.5 | 6542.2 |
| 22.5° | 12186.6 | 10525.3 | 6893.0 | 5954.0 | 6015.9 | 6242.9 | 6428.7 | 6573.2 | 6645.4 | 6686.7 | 6635.1 |
| 25° | 12320.8 | 10267.3 | 6583.5 | 5788.9 | 5892.1 | 6108.8 | 6315.2 | 6459.6 | 6562.8 | 6624.7 | 6593.8 |
| 27.5° | 12485.9 | 10060.9 | 6294.5 | 5541.3 | 5634.1 | 5840.5 | 6057.2 | 6232.6 | 6428.7 | 6531.9 | 6511.2 |
| 30° | 12671.6 | 9957.8 | 6015.9 | 5273.0 | 5334.9 | 5541.3 | 5799.2 | 6036.6 | 6304.9 | 6439.0 | 6439.0 |
| 32.5° | 12888.3 | 9885.5 | 5758.0 | 5015.0 | 5066.6 | 5293.6 | 5541.3 | 5758.0 | 6046.9 | 6263.6 | 6253.3 |
| 35° | 12981.2 | 9803.0 | 5551.6 | 4777.7 | 4880.9 | 5066.6 | 5262.7 | 5407.1 | 5706.4 | 5964.3 | 5985.0 |
| 37.5° | 13074.1 | 9772.0 | 5448.4 | 4591.9 | 4674.5 | 4818.9 | 4922.1 | 4994.4 | 5273.0 | 5541.3 | 5551.6 |
| 40° | 13187.6 | 9916.5 | 5520.6 | 4468.1 | 4395.9 | 4540.3 | 4591.9 | 4633.2 | 4777.7 | 4953.1 | 4953.1 |
| 42.5° | 13115.3 | 10019.7 | 5685.7 | 4354.6 | 4055.3 | 4220.4 | 4241.1 | 4230.8 | 4241.1 | 4251.4 | 4241.1 |
| 45° | 12929.6 | 9916.5 | 5685.7 | 4179.2 | 3694.2 | 3869.6 | 3859.3 | 3807.7 | 3725.1 | 3508.4 | 3477.5 |
| 47.5° | 12888.3 | 9854.6 | 5469.0 | 3890.2 | 3333.0 | 3477.5 | 3498.1 | 3394.9 | 3157.6 | 2930.6 | 2858.3 |
| 50° | 13063.8 | 9968.1 | 5128.5 | 3539.4 | 3023.4 | 3147.3 | 3198.9 | 3023.4 | 2755.2 | 2517.8 | 2476.5 |
| 52.5° | 13321.7 | 10112.5 | 4633.2 | 3157.6 | 2765.5 | 2889.3 | 2951.2 | 2755.2 | 2476.5 | 2290.8 | 2270.2 |
| 55° | 13290.8 | 10112.5 | 4076.0 | 2806.7 | 2569.4 | 2662.3 | 2765.5 | 2559.1 | 2342.4 | 2239.2 | 2228.9 |
| 57.5° | 12620.0 | 9730.7 | 3663.2 | 2559.1 | 2383.7 | 2466.2 | 2600.4 | 2404.3 | 2197.9 | 2218.6 | 2249.5 |
| 60° | 11309.5 | 8740.1 | 3353.6 | 2394.0 | 2218.6 | 2301.1 | 2445.6 | 2218.6 | 1950.3 | 1878.0 | 1878.0 |
| 62.5° | 9318.0 | 7202.6 | 3106.0 | 2228.9 | 2063.8 | 2167.0 | 2239.2 | 1940.0 | 1764.5 | 1682.0 | 1682.0 |
| 65° | 6985.9 | 5572.2 | 2848.0 | 2094.7 | 1929.6 | 2043.1 | 1960.6 | 1816.1 | 1640.7 | 1578.8 | 1589.1 |
| 67° | *5180.1* | *4323.6* | *2631.3* | *1981.2* | *1847.1* | *1898.7* | *1836.8* | *1733.6* | *1558.2* | *1506.6* | *1558.2* |
| 67.5° | 4653.8 | 4106.9 | 2579.7 | 1950.3 | 1826.4 | 1867.7 | 1805.8 | 1723.3 | 1537.5 | 1485.9 | 1537.5 |
| 70° | 3198.9 | 3157.6 | 2301.1 | 1805.8 | 1712.9 | 1671.7 | 1702.6 | 1599.4 | 1444.6 | 1424.0 | 1475.6 |
| 72.5° | 2435.3 | 2517.8 | 2063.8 | 1682.0 | 1589.1 | 1537.5 | 1609.8 | 1506.6 | 1351.8 | 1382.7 | 1434.3 |
| 75° | 1909.0 | 2032.8 | 1847.1 | 1506.6 | 1444.6 | 1455.0 | 1599.4 | 1558.2 | 1434.3 | 1465.3 | 1475.6 |
| 77.5° | 1413.7 | 1640.7 | 1578.8 | 1310.5 | 1258.9 | 1403.4 | 1805.8 | 1929.6 | 1712.9 | 1661.3 | 1589.1 |
| 80° | 1031.9 | 1176.4 | 1331.1 | 1083.5 | 1052.5 | 1351.8 | 2228.9 | 2466.2 | 2115.4 | 1909.0 | 1857.4 |
| 82.5° | 763.6 | 825.5 | 1093.8 | 866.8 | 763.6 | 1207.3 | 2476.5 | 2899.6 | 2517.8 | 2125.7 | 2063.8 |
| 85° | 546.9 | 639.8 | 866.8 | 639.8 | 505.6 | 990.6 | 2424.9 | 2837.7 | 2497.2 | 2012.2 | 1960.6 |
| 87.5° | 196.1 | 278.6 | 371.5 | 288.9 | 258.0 | 681.0 | 2001.9 | 2043.1 | 1558.2 | 712.0 | 722.3 |
| 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: SP1-2407-184-14

Test Date: 10/11/2024

Luminaire Tested: GSS-SB1A-930-U-5WQ

Data in this report applies to families of products including GSS-SB1A-930-U-5WQ

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

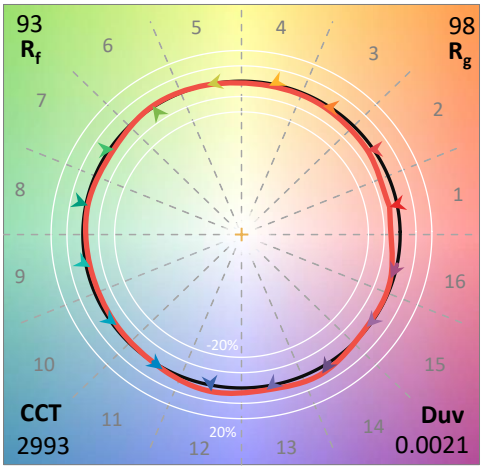
## Test Information

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | SP1-2407-184-14 |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Photometer: | SP1 - 76IN SPHERE |
| Measurement Geometry: | 4π |
| Issue Date: | 10/15/2024 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | McGraw-Edison |
| Catalog Number: | **GSS-SB1A-930-U-5WQ** |
| Description: | GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 90 CRI 3000K CCT 26 LEDS |

## Spectral Parameters

| | |
|---|---|
| CCT (K): | 2993 |
| CIE u': | 0.2501 |
| CIE v': | 0.5245 |
| Duv: | 0.0021 |
| CIE x: | 0.4406 |
| CIE y: | 0.4107 |
| CIE z: | 0.1487 |
| Peak Wavelength (nm): | 621 |
| Dominant Wavelength (nm): | 582 |
| Purity: | 55.53327 |
| Rf: | 92.6 |
| Rg: | 98.5 |

| | |
|---|---|
| CRI (Ra): | 92.4 |
| R1: | 92.2 |
| R2: | 95.2 |
| R3: | 97.0 |
| R4: | 93.1 |
| R5: | 91.7 |
| R6: | 94.2 |
| R7: | 93.3 |
| R8: | 82.3 |
| R9: | 58.2 |
| R10: | 87.7 |
| R11: | 93.5 |
| R12: | 81.7 |
| R13: | 92.9 |
| R14: | 97.6 |
| R15: | 88.1 |




## Test Conditions

| | |
|---|---|
| Stabilization Time: | 20M |
| Operation Time: | 1H 20M |
| Sphere Temperature (°C): | 25.2 |

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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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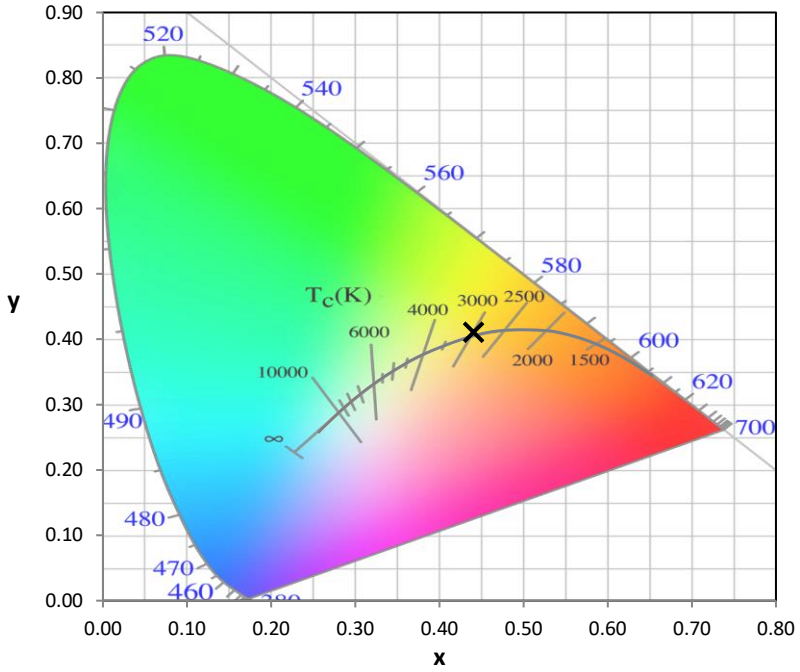
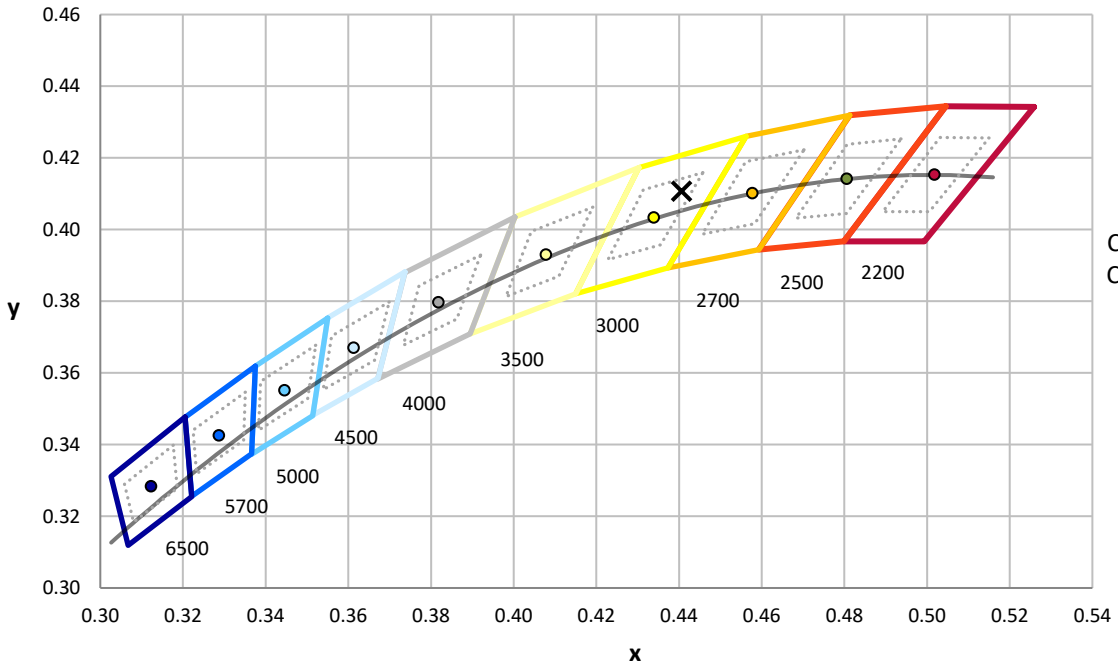
## CIE 1931 Chromaticity Diagram




## CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles




CCT = 2993K
CIE x = 0.4406
CIE y = 0.4107
Duv = 0.0021

Point lies inside the ANSI 3000K 4-step quadrangle

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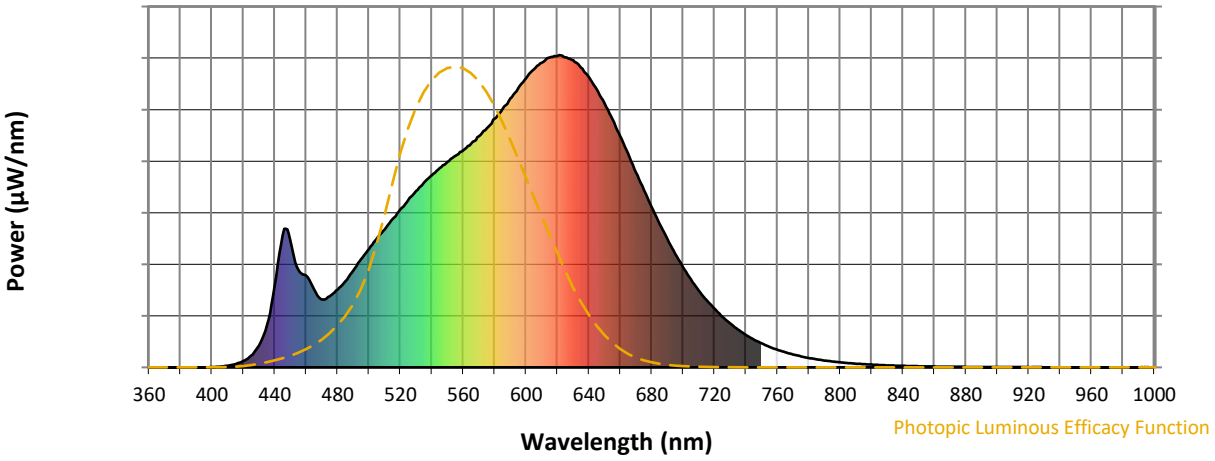
## Photopic Flux vs. Wavelength




## 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 | 310 | NR | 620 | 998 | NR | 750 | 77 | NR | 880 | 2 | NR |
| 365 | 0 | NR | 495 | 347 | NR | 625 | 993 | NR | 755 | 66 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 379 | NR | 630 | 983 | NR | 760 | 56 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 412 | NR | 635 | 960 | NR | 765 | 48 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 442 | NR | 640 | 930 | NR | 770 | 41 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 475 | NR | 645 | 889 | NR | 775 | 35 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 506 | NR | 650 | 846 | NR | 780 | 30 | NR | 910 | 1 | NR |
| 395 | 0 | NR | 525 | 535 | NR | 655 | 794 | NR | 785 | 26 | NR | 915 | 1 | NR |
| 400 | 1 | NR | 530 | 565 | NR | 660 | 740 | NR | 790 | 22 | NR | 920 | 1 | NR |
| 405 | 2 | NR | 535 | 592 | NR | 665 | 684 | NR | 795 | 19 | NR | 925 | 1 | NR |
| 410 | 6 | NR | 540 | 615 | NR | 670 | 624 | NR | 800 | 16 | NR | 930 | 0 | NR |
| 415 | 10 | NR | 545 | 638 | NR | 675 | 567 | NR | 805 | 14 | NR | 935 | 0 | NR |
| 420 | 20 | NR | 550 | 658 | NR | 680 | 513 | NR | 810 | 12 | NR | 940 | 0 | NR |
| 425 | 38 | NR | 555 | 678 | NR | 685 | 459 | NR | 815 | 10 | NR | 945 | 0 | NR |
| 430 | 70 | NR | 560 | 695 | NR | 690 | 412 | NR | 820 | 9 | NR | 950 | 0 | NR |
| 435 | 136 | NR | 565 | 716 | NR | 695 | 363 | NR | 825 | 8 | NR | 955 | 0 | NR |
| 440 | 262 | NR | 570 | 740 | NR | 700 | 320 | NR | 830 | 7 | NR | 960 | 0 | NR |
| 445 | 424 | NR | 575 | 765 | NR | 705 | 281 | NR | 835 | 6 | NR | 965 | 0 | NR |
| 450 | 406 | NR | 580 | 796 | NR | 710 | 245 | NR | 840 | 5 | NR | 970 | 0 | NR |
| 455 | 313 | NR | 585 | 827 | NR | 715 | 215 | NR | 845 | 4 | NR | 975 | 0 | NR |
| 460 | 294 | NR | 590 | 861 | NR | 720 | 188 | NR | 850 | 4 | NR | 980 | 0 | NR |
| 465 | 250 | NR | 595 | 894 | NR | 725 | 162 | NR | 855 | 3 | NR | 985 | 0 | NR |
| 470 | 217 | NR | 600 | 927 | NR | 730 | 140 | NR | 860 | 3 | NR | 990 | 0 | NR |
| 475 | 228 | NR | 605 | 954 | NR | 735 | 121 | NR | 865 | 2 | NR | 995 | 0 | NR |
| 480 | 249 | NR | 610 | 976 | NR | 740 | 104 | NR | 870 | 2 | NR | 1000 | 0 | NR |
| 485 | 276 | NR | 615 | 992 | NR | 745 | 89 | NR | 875 | 2 | NR | | | |

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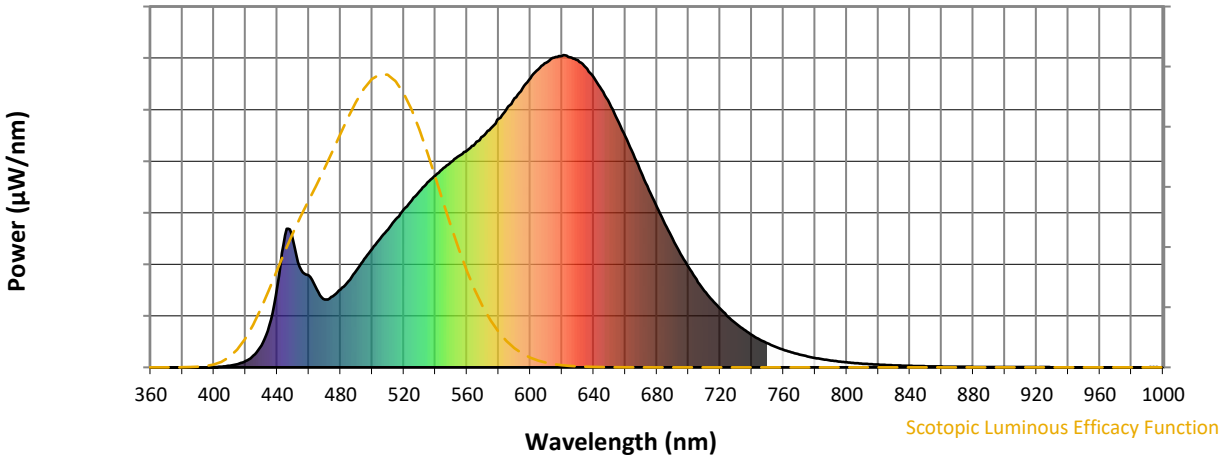
## Scotopic Flux vs. Wavelength




**Scotopic Lumens: NR** **S/P: 1.39**

| 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 | 310 | NR | 620 | 998 | NR | 750 | 77 | NR | 880 | 2 | NR |
| 365 | 0 | NR | 495 | 347 | NR | 625 | 993 | NR | 755 | 66 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 379 | NR | 630 | 983 | NR | 760 | 56 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 412 | NR | 635 | 960 | NR | 765 | 48 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 442 | NR | 640 | 930 | NR | 770 | 41 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 475 | NR | 645 | 889 | NR | 775 | 35 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 506 | NR | 650 | 846 | NR | 780 | 30 | NR | 910 | 1 | NR |
| 395 | 0 | NR | 525 | 535 | NR | 655 | 794 | NR | 785 | 26 | NR | 915 | 1 | NR |
| 400 | 1 | NR | 530 | 565 | NR | 660 | 740 | NR | 790 | 22 | NR | 920 | 1 | NR |
| 405 | 2 | NR | 535 | 592 | NR | 665 | 684 | NR | 795 | 19 | NR | 925 | 1 | NR |
| 410 | 6 | NR | 540 | 615 | NR | 670 | 624 | NR | 800 | 16 | NR | 930 | 0 | NR |
| 415 | 10 | NR | 545 | 638 | NR | 675 | 567 | NR | 805 | 14 | NR | 935 | 0 | NR |
| 420 | 20 | NR | 550 | 658 | NR | 680 | 513 | NR | 810 | 12 | NR | 940 | 0 | NR |
| 425 | 38 | NR | 555 | 678 | NR | 685 | 459 | NR | 815 | 10 | NR | 945 | 0 | NR |
| 430 | 70 | NR | 560 | 695 | NR | 690 | 412 | NR | 820 | 9 | NR | 950 | 0 | NR |
| 435 | 136 | NR | 565 | 716 | NR | 695 | 363 | NR | 825 | 8 | NR | 955 | 0 | NR |
| 440 | 262 | NR | 570 | 740 | NR | 700 | 320 | NR | 830 | 7 | NR | 960 | 0 | NR |
| 445 | 424 | NR | 575 | 765 | NR | 705 | 281 | NR | 835 | 6 | NR | 965 | 0 | NR |
| 450 | 406 | NR | 580 | 796 | NR | 710 | 245 | NR | 840 | 5 | NR | 970 | 0 | NR |
| 455 | 313 | NR | 585 | 827 | NR | 715 | 215 | NR | 845 | 4 | NR | 975 | 0 | NR |
| 460 | 294 | NR | 590 | 861 | NR | 720 | 188 | NR | 850 | 4 | NR | 980 | 0 | NR |
| 465 | 250 | NR | 595 | 894 | NR | 725 | 162 | NR | 855 | 3 | NR | 985 | 0 | NR |
| 470 | 217 | NR | 600 | 927 | NR | 730 | 140 | NR | 860 | 3 | NR | 990 | 0 | NR |
| 475 | 228 | NR | 605 | 954 | NR | 735 | 121 | NR | 865 | 2 | NR | 995 | 0 | NR |
| 480 | 249 | NR | 610 | 976 | NR | 740 | 104 | NR | 870 | 2 | NR | 1000 | 0 | NR |
| 485 | 276 | NR | 615 | 992 | NR | 745 | 89 | NR | 875 | 2 | NR | | | |

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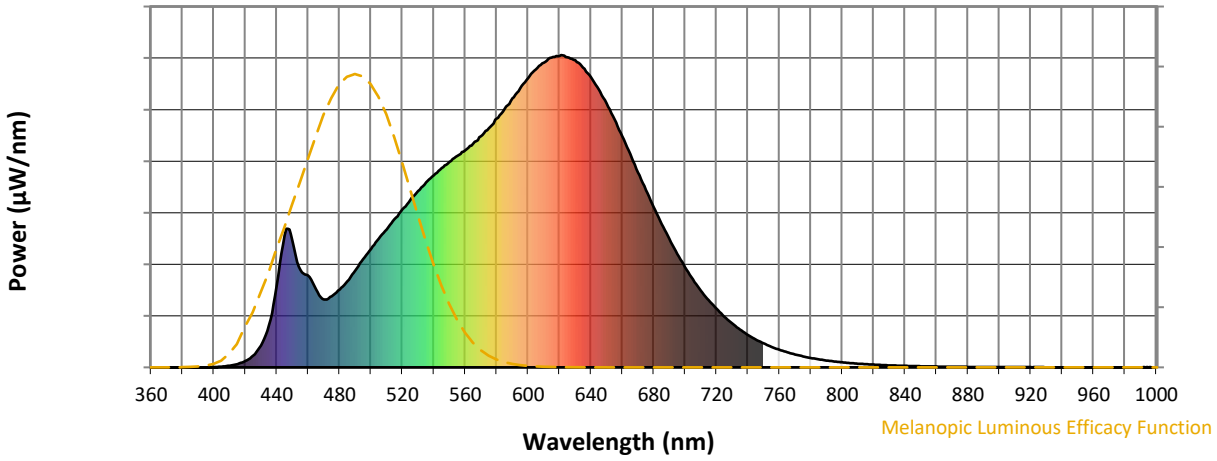
## Melanopic Flux vs. Wavelength




**Melanopic Lumens: NR** **M/P: 2.69**

| 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 | 310 | NR | 620 | 998 | NR | 750 | 77 | NR | 880 | 2 | NR |
| 365 | 0 | NR | 495 | 347 | NR | 625 | 993 | NR | 755 | 66 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 379 | NR | 630 | 983 | NR | 760 | 56 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 412 | NR | 635 | 960 | NR | 765 | 48 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 442 | NR | 640 | 930 | NR | 770 | 41 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 475 | NR | 645 | 889 | NR | 775 | 35 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 506 | NR | 650 | 846 | NR | 780 | 30 | NR | 910 | 1 | NR |
| 395 | 0 | NR | 525 | 535 | NR | 655 | 794 | NR | 785 | 26 | NR | 915 | 1 | NR |
| 400 | 1 | NR | 530 | 565 | NR | 660 | 740 | NR | 790 | 22 | NR | 920 | 1 | NR |
| 405 | 2 | NR | 535 | 592 | NR | 665 | 684 | NR | 795 | 19 | NR | 925 | 1 | NR |
| 410 | 6 | NR | 540 | 615 | NR | 670 | 624 | NR | 800 | 16 | NR | 930 | 0 | NR |
| 415 | 10 | NR | 545 | 638 | NR | 675 | 567 | NR | 805 | 14 | NR | 935 | 0 | NR |
| 420 | 20 | NR | 550 | 658 | NR | 680 | 513 | NR | 810 | 12 | NR | 940 | 0 | NR |
| 425 | 38 | NR | 555 | 678 | NR | 685 | 459 | NR | 815 | 10 | NR | 945 | 0 | NR |
| 430 | 70 | NR | 560 | 695 | NR | 690 | 412 | NR | 820 | 9 | NR | 950 | 0 | NR |
| 435 | 136 | NR | 565 | 716 | NR | 695 | 363 | NR | 825 | 8 | NR | 955 | 0 | NR |
| 440 | 262 | NR | 570 | 740 | NR | 700 | 320 | NR | 830 | 7 | NR | 960 | 0 | NR |
| 445 | 424 | NR | 575 | 765 | NR | 705 | 281 | NR | 835 | 6 | NR | 965 | 0 | NR |
| 450 | 406 | NR | 580 | 796 | NR | 710 | 245 | NR | 840 | 5 | NR | 970 | 0 | NR |
| 455 | 313 | NR | 585 | 827 | NR | 715 | 215 | NR | 845 | 4 | NR | 975 | 0 | NR |
| 460 | 294 | NR | 590 | 861 | NR | 720 | 188 | NR | 850 | 4 | NR | 980 | 0 | NR |
| 465 | 250 | NR | 595 | 894 | NR | 725 | 162 | NR | 855 | 3 | NR | 985 | 0 | NR |
| 470 | 217 | NR | 600 | 927 | NR | 730 | 140 | NR | 860 | 3 | NR | 990 | 0 | NR |
| 475 | 228 | NR | 605 | 954 | NR | 735 | 121 | NR | 865 | 2 | NR | 995 | 0 | NR |
| 480 | 249 | NR | 610 | 976 | NR | 740 | 104 | NR | 870 | 2 | NR | 1000 | 0 | NR |
| 485 | 276 | NR | 615 | 992 | NR | 745 | 89 | NR | 875 | 2 | NR | | | |

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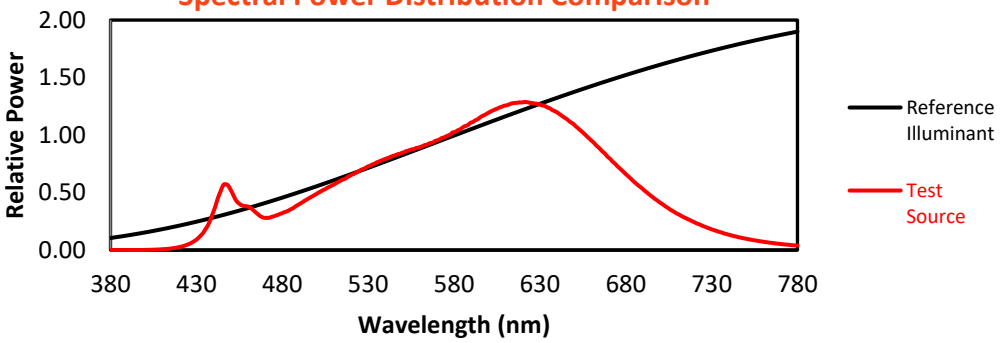
# TM-30-18

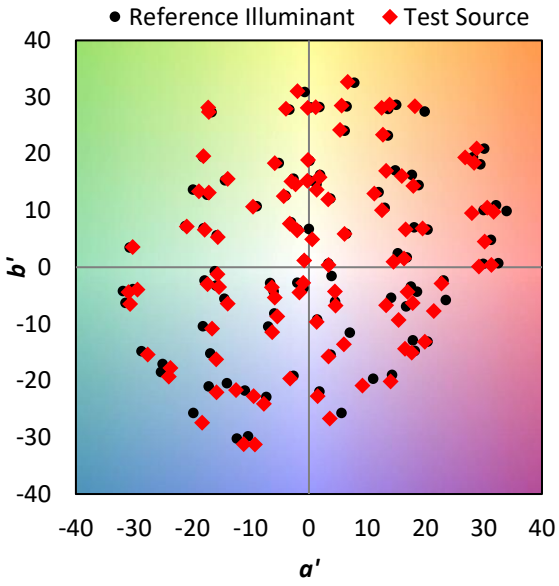
## Summary

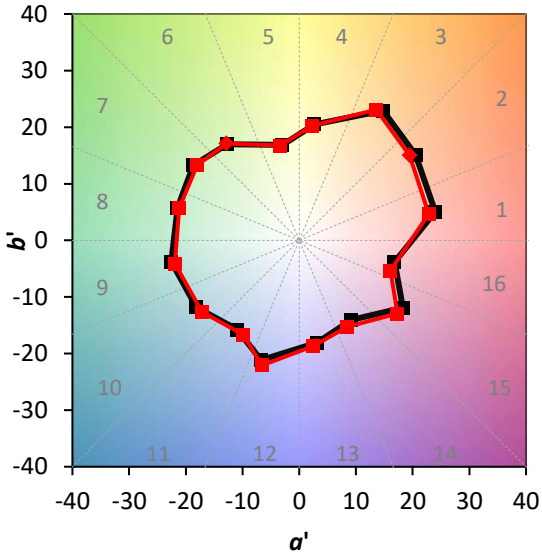
$R_f$ = 92.6
$R_g$ = 98.5
CIE $R_a$ = 92.4
$R_9$ = 58.2

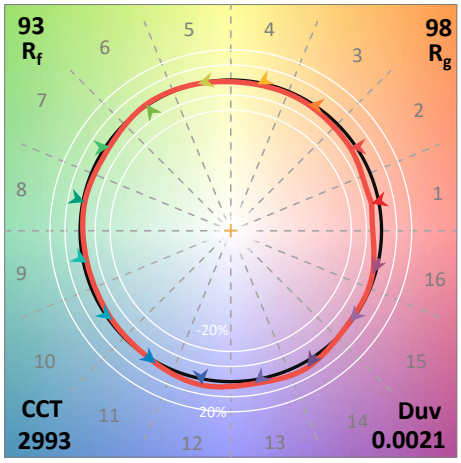
## Spectral Power Distribution Comparison

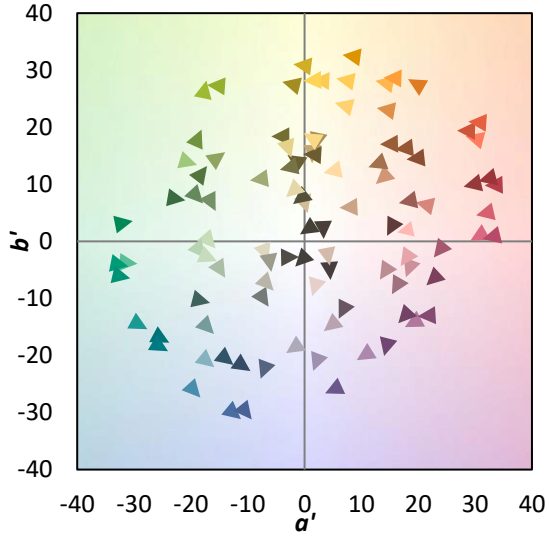



## Color Vector Graphics



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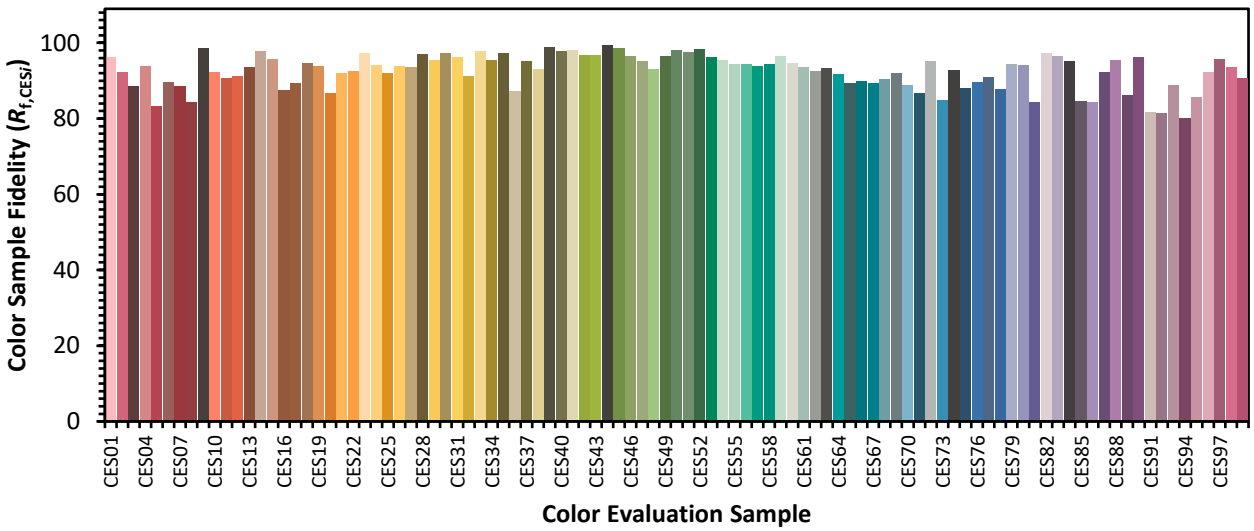
# TM-30-18

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

| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 94 | CES51 = 98 | CES76 = 90 |
| CES02 = 63 | CES27 = 94 | CES52 = 98 | CES77 = 91 |
| CES03 = 32 | CES28 = 97 | CES53 = 96 | CES78 = 88 |
| CES04 = 70 | CES29 = 95 | CES54 = 95 | CES79 = 94 |
| CES05 = 51 | CES30 = 97 | CES55 = 94 | CES80 = 94 |
| CES06 = 51 | CES31 = 96 | CES56 = 94 | CES81 = 84 |
| CES07 = 43 | CES32 = 91 | CES57 = 94 | CES82 = 97 |
| CES08 = 42 | CES33 = 98 | CES58 = 94 | CES83 = 97 |
| CES09 = 29 | CES34 = 96 | CES59 = 97 | CES84 = 95 |
| CES10 = 76 | CES35 = 97 | CES60 = 95 | CES85 = 85 |
| CES11 = 59 | CES36 = 87 | CES61 = 94 | CES86 = 84 |
| CES12 = 65 | CES37 = 95 | CES62 = 92 | CES87 = 92 |
| CES13 = 44 | CES38 = 93 | CES63 = 93 | CES88 = 95 |
| CES14 = 74 | CES39 = 99 | CES64 = 92 | CES89 = 86 |
| CES15 = 72 | CES40 = 98 | CES65 = 89 | CES90 = 96 |
| CES16 = 48 | CES41 = 98 | CES66 = 90 | CES91 = 82 |
| CES17 = 50 | CES42 = 97 | CES67 = 89 | CES92 = 81 |
| CES18 = 57 | CES43 = 97 | CES68 = 90 | CES93 = 89 |
| CES19 = 72 | CES44 = 99 | CES69 = 92 | CES94 = 80 |
| CES20 = 67 | CES45 = 99 | CES70 = 89 | CES95 = 86 |
| CES21 = 86 | CES46 = 96 | CES71 = 87 | CES96 = 92 |
| CES22 = 79 | CES47 = 95 | CES72 = 95 | CES97 = 96 |
| CES23 = 92 | CES48 = 93 | CES73 = 85 | CES98 = 94 |
| CES24 = 91 | CES49 = 97 | CES74 = 93 | CES99 = 91 |
| CES25 = 72 | CES50 = 98 | CES75 = 88 | |



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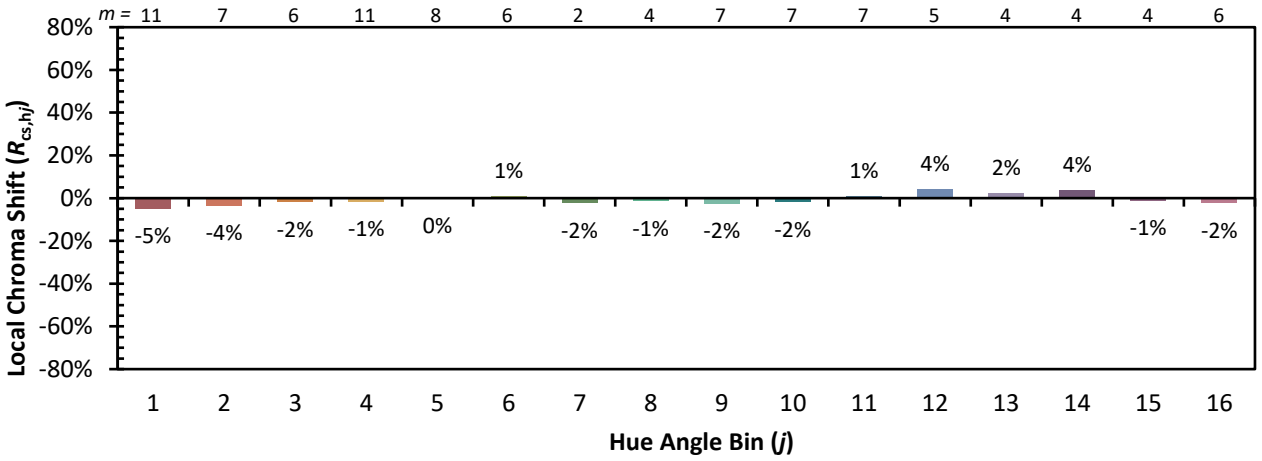
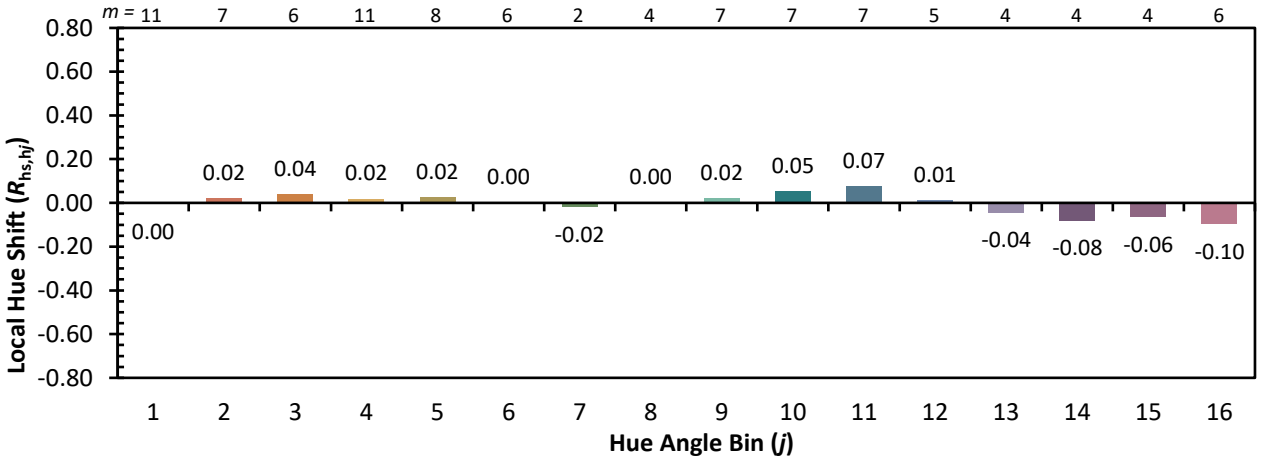
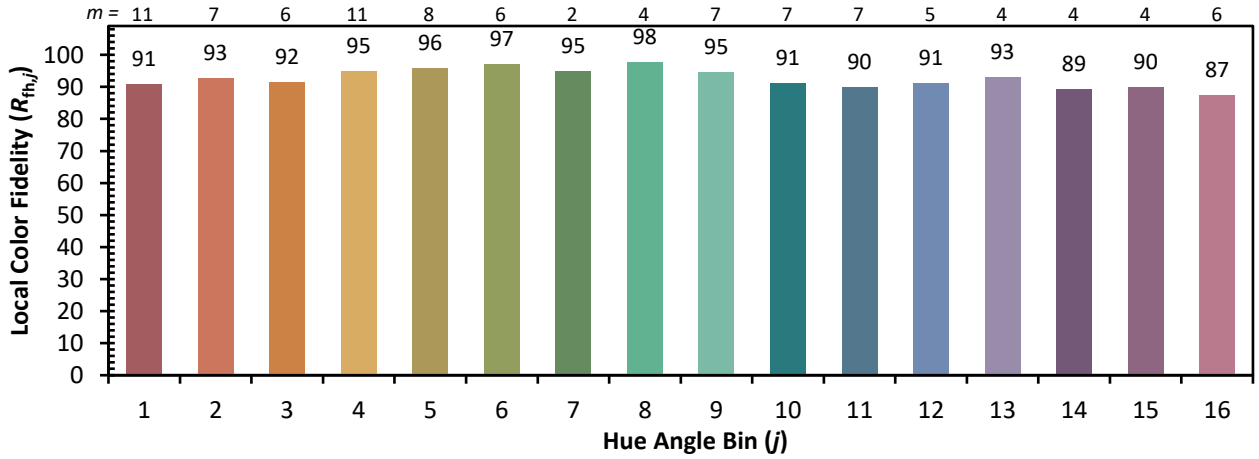
## Color Rendition by Hue-Angle Bin



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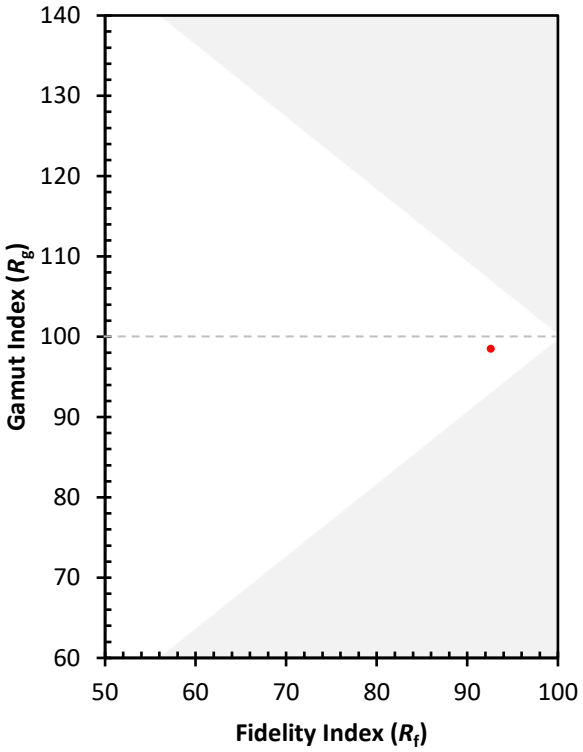
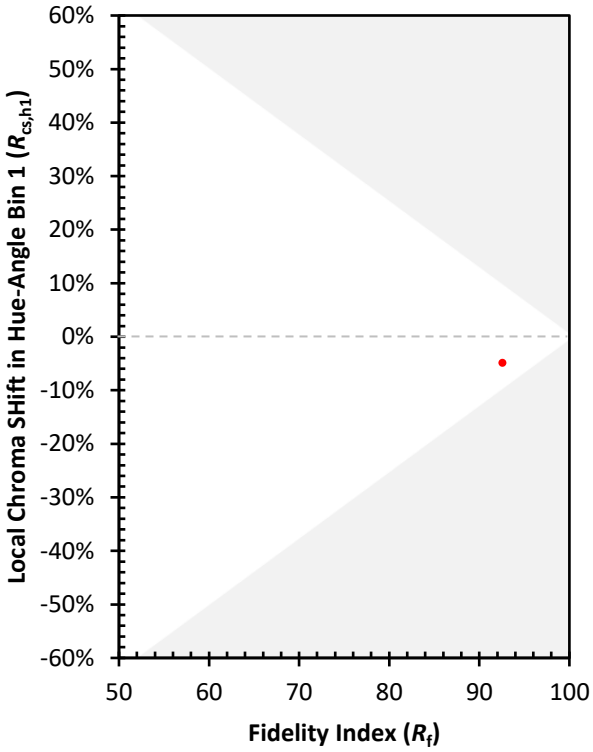
## Measure Comparisons




(END OF REPORT)