

Signify Classified - Internal  
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: P1438168

Luminaire Tested: **GALN-SB6D-735-U-T4LG-HSS**

Issue Date: 03/27/202

This test was performed under the Supervised Manufacturer's Testing Program. The results of this test have not been influenced by sources from within Cooper Lighting Solutions or from external interests.

Report Generated By 670245763



**Test Information**

Test Method: LM-79-08  
Report Number: P1438168  
Test Lab: INNOVATION CENTER(G1)  
Issue Date: 03/27/202  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GALN-SB6D-735-U-T4LG-HSS  
Description: GALLEON II AREA AND ROADWAY HIGH DENSITY LUMINAIRE 900mA 6xLight Square PACKAGE 70CRI 3500K FIXTURE w/ TYPE IV LOW GLARE WITH HOUSE SIDE SHIELD  
Light Source: (156) 3500K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER  
Luminaire Equipment: 

| <u>Sample No.</u> | <u>Condition</u> | <u>Description</u> |
|-------------------|------------------|--------------------|
| a                 | good             | reflector          |
| b                 | good             | lens               |
| c                 | good             | housing            |
| d                 | good             | cord               |

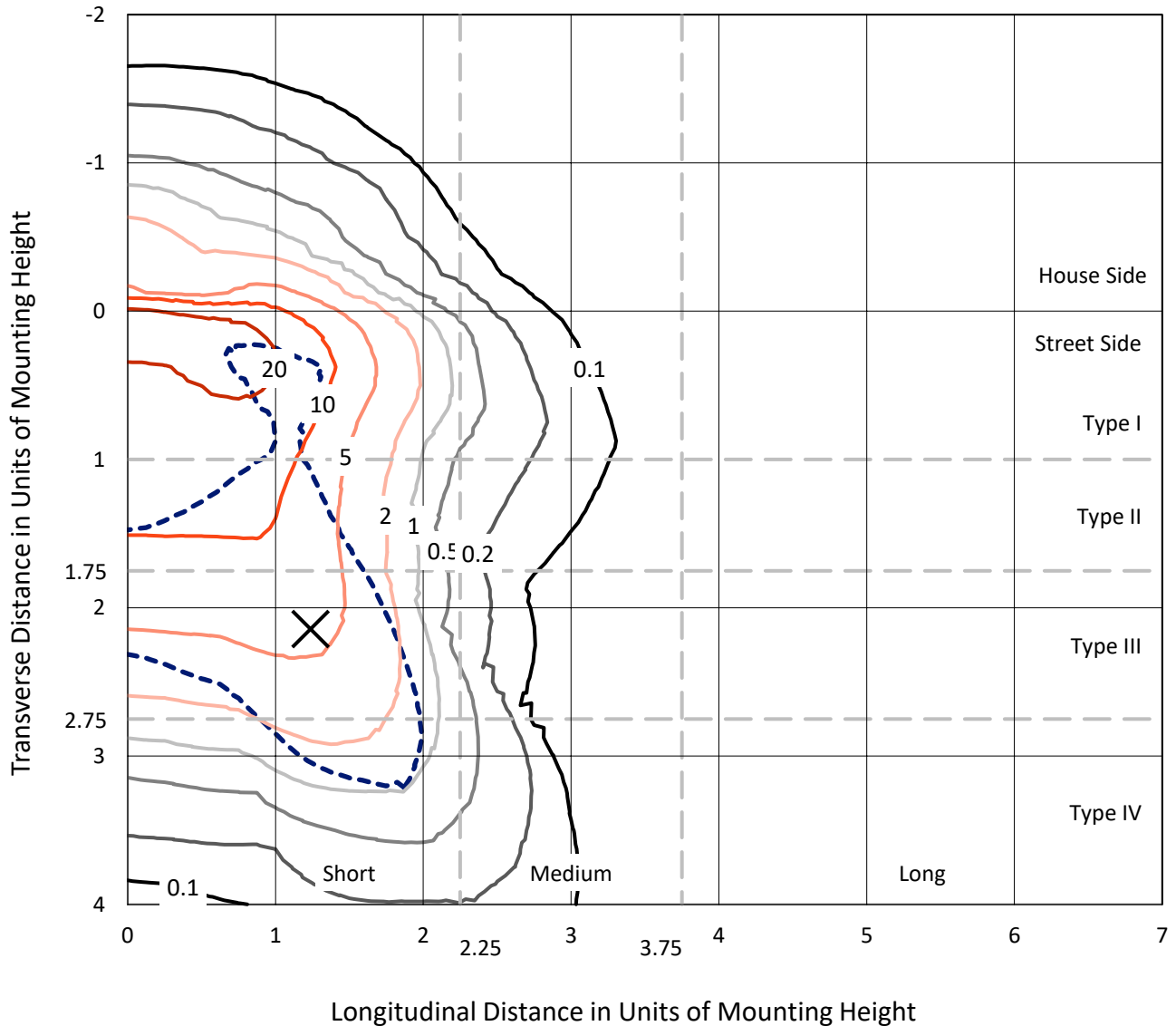
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 44737 lumens  
Efficiency: N/A  
Efficacy: 101.7 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B3 - U0 - G5  
  
Input Watts (W): 440.1  
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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### Iso-Footcandle Lines of Horizontal Illumination

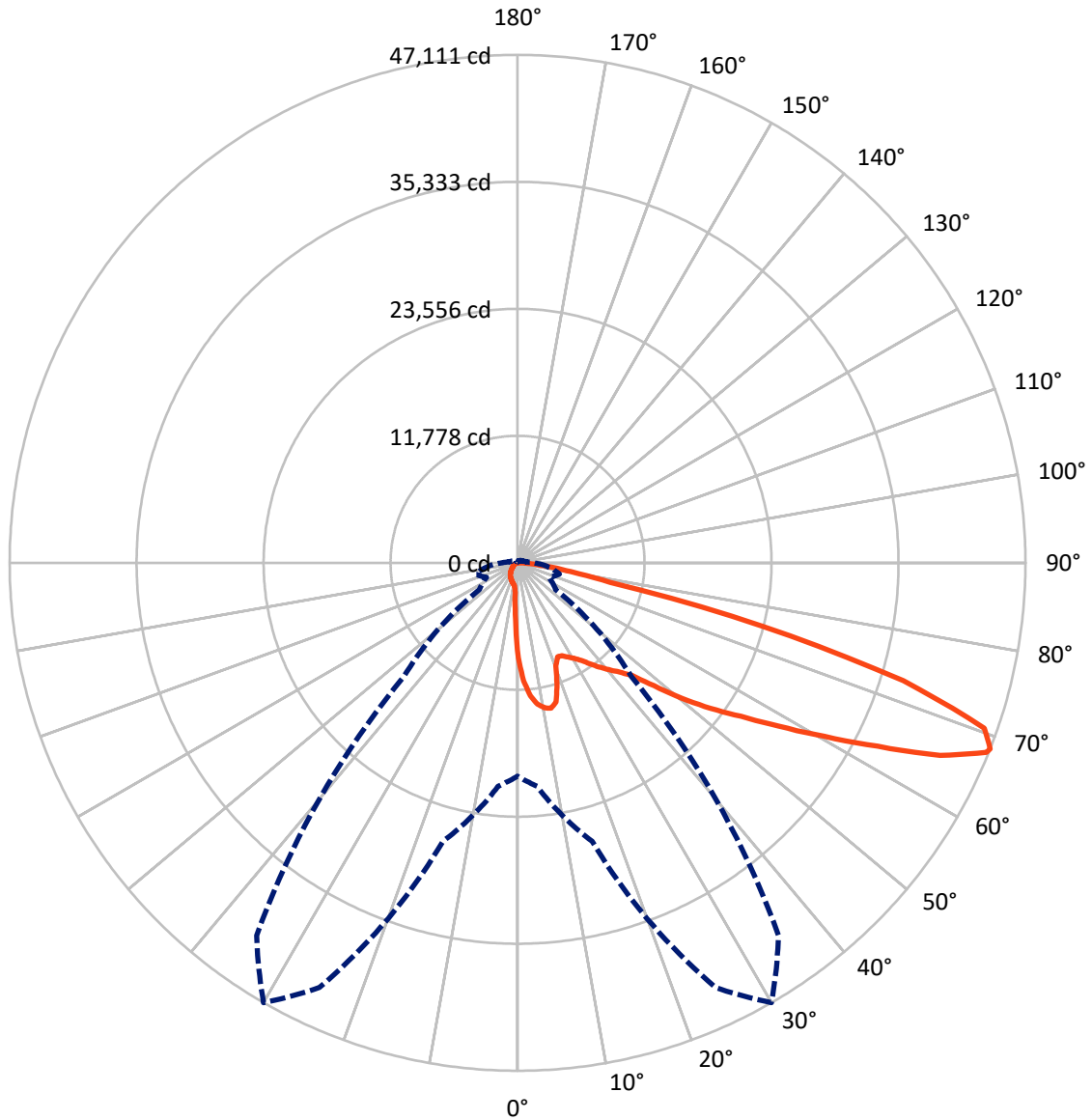
✕ Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 33.7 fc  
 Type IV - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 30-Deg Lateral      - - - Horizontal Cone Through 68-Deg Vertical

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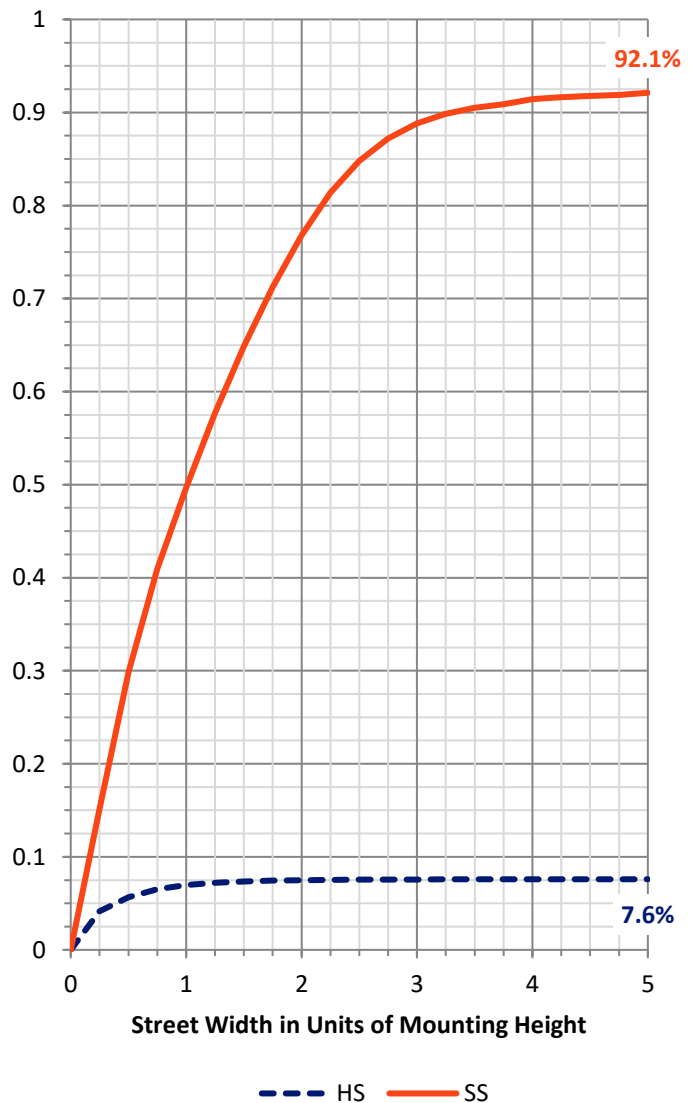
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 3414.6   | 0.0    | 3414.6  |
|                    | % Fixture | 7.6      | 0.0    | 7.6     |
| <b>Street Side</b> | Lumens    | 41322.4  | 0.0    | 41322.4 |
|                    | % Fixture | 92.4     | 0.0    | 92.4    |
| <b>Total</b>       | Lumens    | 44737.0  | 0.0    | 44737.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 761.2   | 1.7       |
| 10°-20°   | 2173.2  | 4.9       |
| 20°-30°   | 3415.1  | 7.6       |
| 30°-40°   | 5356.3  | 12.0      |
| 40°-50°   | 8006.1  | 17.9      |
| 50°-60°   | 10650.6 | 23.8      |
| 60°-70°   | 10295.9 | 23.0      |
| 70°-80°   | 3701.0  | 8.3       |
| 80°-90°   | 377.7   | 0.8       |
| 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°    | 44737.0 | 100.0     |
| 0°-180°   | 44737.0 | 100.0     |

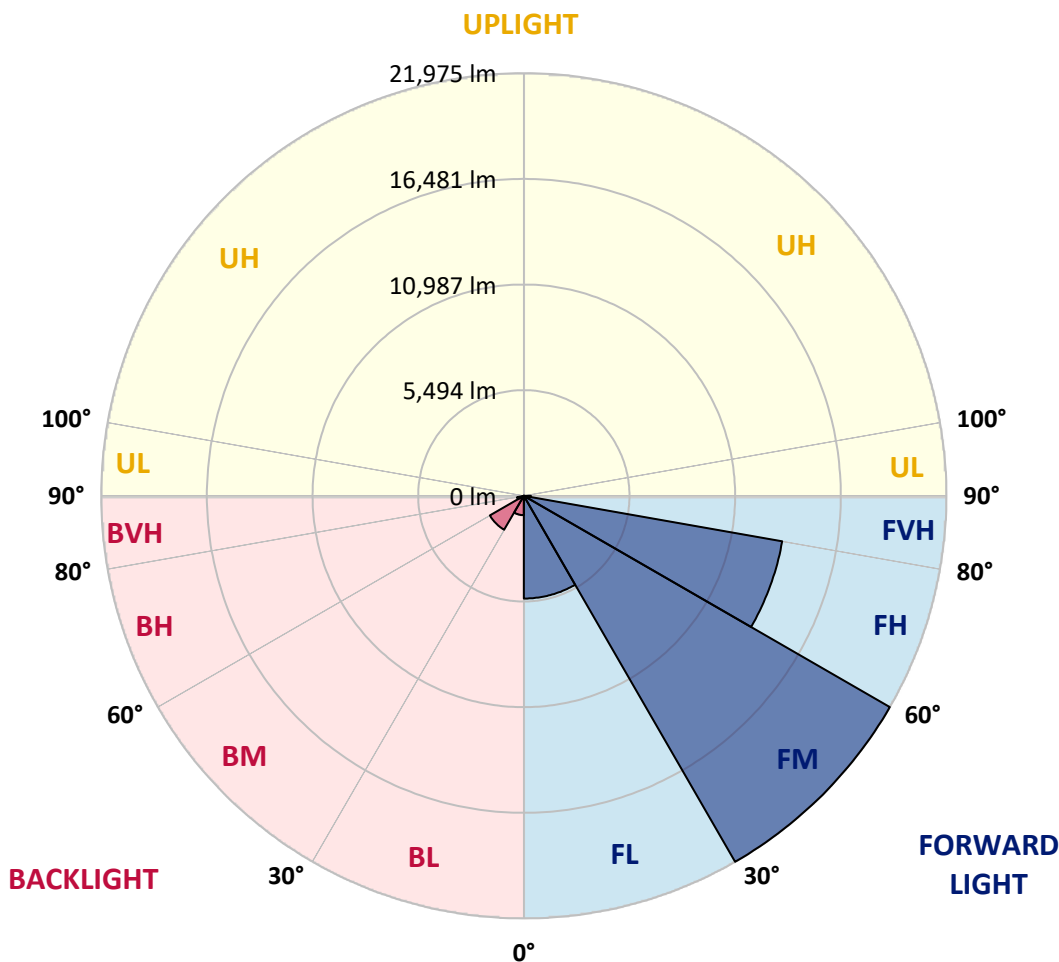


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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |        |
|----------------|---------|-----------|-------------------------|------|--------|
|                |         |           | B                       | U    | G      |
| FL (0°-30°)    | 5341.6  | 11.9      |                         |      |        |
| FM (30°-60°)   | 21974.8 | 49.1      |                         |      |        |
| FH (60°-80°)   | 13641.7 | 30.5      |                         |      | G5     |
| FVH (80°-90°)  | 364.3   | 0.8       |                         |      | G3/500 |
| BL (0°-30°)    | 1007.9  | 2.3       | B3/2500                 |      |        |
| BM (30°-60°)   | 2038.2  | 4.6       | B2/2500                 |      |        |
| BH (60°-80°)   | 355.1   | 0.8       | B1/500                  |      | G1/500 |
| BVH (80°-90°)  | 13.4    | 0.0       |                         |      | G1/100 |
| UL (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |        |
| UH (100°-180°) | 0.0     | 0.0       |                         | U0/0 |        |

**BUG Rating: B3-U0-G5**  
 Type IV Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 30°     | 35°     | 45°     | 55°     | 65°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 8821.6  | 8821.6  | 8821.6  | 8821.6  | 8821.6  | 8821.6  | 8821.6  | 8821.6  | 8821.6  | 8821.6  | 8821.6  |
| 2.5°  | 11275.0 | 11275.0 | 11194.6 | 11087.3 | 10966.7 | 10926.5 | 10698.5 | 10376.8 | 10041.6 | 9652.8  | 9089.7  |
| 5°    | 12722.9 | 12709.5 | 12548.7 | 12548.7 | 12387.8 | 12240.3 | 12012.4 | 11543.2 | 11006.9 | 10309.7 | 9331.1  |
| 7.5°  | 13366.5 | 13393.3 | 13326.2 | 13326.2 | 13232.4 | 13125.1 | 12991.1 | 12535.3 | 11905.1 | 10966.7 | 9572.4  |
| 10°   | 13594.4 | 13607.8 | 13607.8 | 13701.6 | 13674.8 | 13661.4 | 13648.0 | 13393.3 | 12736.4 | 11637.0 | 9827.1  |
| 12.5° | 13044.7 | 13111.7 | 13299.4 | 13715.0 | 13849.1 | 13996.6 | 14197.7 | 14117.2 | 13661.4 | 12481.6 | 10215.9 |
| 15°   | 11275.0 | 11288.4 | 11811.3 | 12843.6 | 13393.3 | 13956.4 | 14734.0 | 14894.8 | 14599.9 | 13393.3 | 10618.1 |
| 17.5° | 9304.2  | 9344.5  | 9760.1  | 10913.0 | 11797.9 | 13098.3 | 15042.3 | 15699.2 | 15592.0 | 14291.5 | 10993.5 |
| 20°   | 8486.4  | 8540.1  | 8741.2  | 9465.1  | 10135.5 | 11342.1 | 14734.0 | 16463.4 | 16503.6 | 15189.8 | 11342.1 |
| 22.5° | 8298.7  | 8339.0  | 8499.8  | 9062.9  | 9478.5  | 10282.9 | 13688.2 | 17066.7 | 17535.9 | 16222.1 | 11757.7 |
| 25°   | 8245.1  | 8285.3  | 8526.7  | 9143.4  | 9532.2  | 10202.5 | 12736.4 | 17388.5 | 18756.0 | 17294.6 | 12159.9 |
| 27.5° | 8204.9  | 8258.5  | 8647.3  | 9438.3  | 9894.1  | 10537.7 | 12562.1 | 17455.5 | 19922.3 | 18434.2 | 12816.8 |
| 30°   | 8258.5  | 8339.0  | 8848.4  | 9746.7  | 10269.5 | 10993.5 | 12977.7 | 17522.5 | 21209.4 | 19734.6 | 13648.0 |
| 32.5° | 8473.0  | 8540.1  | 9156.8  | 10162.3 | 10765.6 | 11583.4 | 13688.2 | 17924.7 | 22429.4 | 21061.9 | 14439.0 |
| 35°   | 8714.3  | 8808.2  | 9545.6  | 10752.2 | 11476.1 | 12401.2 | 14653.5 | 18715.7 | 23595.8 | 22322.1 | 15256.8 |
| 37.5° | 9009.3  | 9116.5  | 10001.4 | 11422.5 | 12253.7 | 13299.4 | 15699.2 | 19815.1 | 24628.1 | 23354.5 | 16074.6 |
| 40°   | 9411.5  | 9532.2  | 10524.3 | 12133.1 | 13031.3 | 14077.0 | 16731.5 | 20901.0 | 25419.1 | 23971.2 | 16610.9 |
| 42.5° | 10993.5 | 11154.4 | 11570.0 | 12830.2 | 13835.7 | 14908.2 | 17750.5 | 21933.3 | 25714.0 | 24172.3 | 16718.1 |
| 45°   | 13943.0 | 14103.8 | 13996.6 | 14237.9 | 14908.2 | 15913.7 | 18863.2 | 22925.4 | 25754.2 | 24118.6 | 16664.5 |
| 47.5° | 16905.8 | 17093.5 | 16999.7 | 16865.6 | 17013.1 | 17495.7 | 20110.0 | 23555.6 | 25539.7 | 24091.8 | 16664.5 |
| 50°   | 19734.6 | 19627.4 | 19640.8 | 19600.6 | 19734.6 | 19989.4 | 21316.6 | 23676.2 | 25486.1 | 24346.5 | 16812.0 |
| 52.5° | 21249.6 | 21303.2 | 21638.4 | 22134.4 | 22429.4 | 22684.1 | 22697.5 | 23863.9 | 25097.3 | 23917.5 | 16637.7 |
| 55°   | 22737.7 | 22845.0 | 23622.6 | 24467.2 | 25124.1 | 25606.8 | 24078.4 | 23743.2 | 22778.0 | 22483.0 | 15726.0 |
| 57.5° | 24413.6 | 24561.1 | 25660.4 | 27403.3 | 28556.2 | 28811.0 | 25445.9 | 21490.9 | 19278.8 | 20431.8 | 13956.4 |
| 60°   | 26719.5 | 26893.8 | 28355.1 | 30969.5 | 32685.5 | 32162.6 | 25553.1 | 17911.3 | 15310.4 | 16959.5 | 11516.3 |
| 62.5° | 28529.4 | 28878.0 | 31519.1 | 35594.8 | 37485.1 | 35822.7 | 23555.6 | 13728.4 | 10698.5 | 11918.5 | 8406.0  |
| 65°   | 26598.9 | 27269.2 | 31572.8 | 40890.4 | 43075.7 | 40126.2 | 20418.4 | 9371.3  | 6033.0  | 7708.8  | 5376.1  |
| 67.5° | 21504.3 | 22442.8 | 28033.4 | 43464.5 | 46910.0 | 42391.9 | 16074.6 | 4973.9  | 3458.9  | 4477.8  | 2828.8  |
| 68°   | 19788.3 | 20807.2 | 26732.9 | 43464.5 | 47111.1 | 42190.8 | 14921.6 | 4303.5  | 3190.8  | 4022.0  | 2453.4  |
| 70°   | 13674.8 | 14398.8 | 20552.5 | 41024.5 | 45931.3 | 38463.8 | 9827.1  | 2466.8  | 2399.8  | 2761.8  | 1622.2  |
| 72.5° | 6703.3  | 7480.9  | 10993.5 | 32511.2 | 37418.1 | 29561.7 | 4477.8  | 1635.6  | 1823.3  | 2024.4  | 1273.6  |
| 75°   | 2667.9  | 2828.8  | 4330.4  | 16034.4 | 23381.3 | 18863.2 | 2346.2  | 1233.4  | 1568.6  | 1582.0  | 1005.5  |
| 77.5° | 1528.4  | 1622.2  | 2399.8  | 5898.9  | 8768.0  | 8432.8  | 1515.0  | 884.8   | 1246.8  | 1139.6  | 656.9   |
| 80°   | 858.0   | 871.4   | 1354.1  | 3110.4  | 5014.1  | 4491.2  | 1032.3  | 643.5   | 951.9   | 804.4   | 442.4   |
| 82.5° | 429.0   | 482.6   | 858.0   | 1716.1  | 2788.6  | 2855.6  | 549.7   | 455.8   | 764.2   | 576.5   | 362.0   |
| 85°   | 308.4   | 335.2   | 616.7   | 951.9   | 1287.0  | 1930.6  | 335.2   | 227.9   | 576.5   | 388.8   | 254.7   |
| 87.5° | 160.9   | 201.1   | 388.8   | 469.2   | 522.9   | 656.9   | 160.9   | 107.3   | 321.8   | 227.9   | 134.1   |
| 90°   | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     |



REPORT NUMBER: P1438168

CATALOG NUMBER: GALN-SB6D-735-U-T4LG-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 8821.6  | 8821.6 | 8821.6 | 8821.6 | 8821.6 | 8821.6 | 8821.6 | 8821.6 | 8821.6 | 8821.6 | 8821.6 |
| 2.5°  | 8821.6  | 8513.2 | 7883.1 | 7145.8 | 6569.3 | 5979.4 | 5496.7 | 5040.9 | 4826.4 | 4799.6 | 4853.2 |
| 5°    | 8781.4  | 8111.0 | 6676.5 | 5268.8 | 4115.9 | 3311.5 | 2869.0 | 2641.1 | 2520.5 | 2466.8 | 2480.2 |
| 7.5°  | 8700.9  | 7682.0 | 5389.5 | 3566.2 | 2667.9 | 2319.4 | 2212.1 | 2171.9 | 2158.5 | 2158.5 | 2158.5 |
| 10°   | 8620.5  | 7105.5 | 4129.3 | 2614.3 | 2185.3 | 2091.4 | 2064.6 | 2064.6 | 2051.2 | 2051.2 | 2064.6 |
| 12.5° | 8580.3  | 6569.3 | 3204.2 | 2185.3 | 2037.8 | 1997.6 | 1970.8 | 1957.4 | 1957.4 | 1957.4 | 1970.8 |
| 15°   | 8486.4  | 5979.4 | 2587.5 | 2024.4 | 1944.0 | 1890.3 | 1876.9 | 1863.5 | 1863.5 | 1863.5 | 1863.5 |
| 17.5° | 8406.0  | 5402.9 | 2252.3 | 1917.2 | 1850.1 | 1796.5 | 1783.1 | 1769.7 | 1769.7 | 1783.1 | 1783.1 |
| 20°   | 8285.3  | 4853.2 | 2024.4 | 1809.9 | 1756.3 | 1702.6 | 1689.2 | 1675.8 | 1689.2 | 1689.2 | 1689.2 |
| 22.5° | 8137.9  | 4397.4 | 1890.3 | 1729.5 | 1662.4 | 1608.8 | 1608.8 | 1608.8 | 1608.8 | 1608.8 | 1622.2 |
| 25°   | 8044.0  | 4075.6 | 1796.5 | 1635.6 | 1568.6 | 1528.4 | 1515.0 | 1515.0 | 1541.8 | 1541.8 | 1555.2 |
| 27.5° | 8191.5  | 3995.2 | 1809.9 | 1608.8 | 1488.1 | 1447.9 | 1434.5 | 1434.5 | 1461.3 | 1474.7 | 1488.1 |
| 30°   | 8633.9  | 4142.7 | 1970.8 | 1689.2 | 1434.5 | 1367.5 | 1354.1 | 1354.1 | 1394.3 | 1407.7 | 1421.1 |
| 32.5° | 9143.4  | 4451.0 | 2212.1 | 1796.5 | 1394.3 | 1287.0 | 1260.2 | 1260.2 | 1300.4 | 1313.9 | 1327.3 |
| 35°   | 9840.5  | 4933.7 | 2533.9 | 1890.3 | 1421.1 | 1206.6 | 1153.0 | 1153.0 | 1179.8 | 1206.6 | 1220.0 |
| 37.5° | 10738.8 | 5724.7 | 2909.3 | 1957.4 | 1421.1 | 1112.8 | 1045.7 | 1032.3 | 1059.1 | 1059.1 | 1072.5 |
| 40°   | 11677.2 | 6757.0 | 3298.0 | 1957.4 | 1354.1 | 1018.9 | 951.9  | 911.7  | 925.1  | 911.7  | 925.1  |
| 42.5° | 12200.1 | 7588.2 | 3633.2 | 1836.7 | 1273.6 | 925.1  | 858.0  | 804.4  | 791.0  | 764.2  | 777.6  |
| 45°   | 12495.0 | 7963.6 | 3539.4 | 1702.6 | 1193.2 | 858.0  | 777.6  | 710.6  | 683.7  | 643.5  | 643.5  |
| 47.5° | 12495.0 | 8003.8 | 3029.9 | 1595.4 | 1112.8 | 804.4  | 697.1  | 630.1  | 589.9  | 549.7  | 563.1  |
| 50°   | 12347.6 | 7641.8 | 2399.8 | 1488.1 | 1018.9 | 750.8  | 630.1  | 576.5  | 522.9  | 496.0  | 496.0  |
| 52.5° | 11730.9 | 6462.0 | 1836.7 | 1354.1 | 911.7  | 683.7  | 563.1  | 509.5  | 455.8  | 442.4  | 442.4  |
| 55°   | 10671.7 | 4746.0 | 1488.1 | 1220.0 | 817.8  | 630.1  | 509.5  | 469.2  | 415.6  | 388.8  | 388.8  |
| 57.5° | 8674.1  | 3244.4 | 1233.4 | 1099.3 | 724.0  | 563.1  | 455.8  | 415.6  | 348.6  | 321.8  | 321.8  |
| 60°   | 6435.2  | 2118.3 | 1045.7 | 965.3  | 616.7  | 509.5  | 402.2  | 348.6  | 294.9  | 268.1  | 254.7  |
| 62.5° | 4343.8  | 1434.5 | 871.4  | 764.2  | 522.9  | 442.4  | 348.6  | 294.9  | 227.9  | 174.3  | 174.3  |
| 65°   | 2708.2  | 1112.8 | 724.0  | 603.3  | 455.8  | 388.8  | 294.9  | 227.9  | 160.9  | 120.7  | 107.3  |
| 67.5° | 1555.2  | 898.2  | 589.9  | 469.2  | 388.8  | 308.4  | 227.9  | 187.7  | 134.1  | 93.8   | 80.4   |
| 68°   | 1434.5  | 858.0  | 549.7  | 442.4  | 362.0  | 294.9  | 214.5  | 174.3  | 120.7  | 80.4   | 80.4   |
| 70°   | 1166.4  | 764.2  | 469.2  | 362.0  | 308.4  | 241.3  | 187.7  | 147.5  | 93.8   | 53.6   | 53.6   |
| 72.5° | 1032.3  | 643.5  | 402.2  | 281.5  | 214.5  | 201.1  | 147.5  | 107.3  | 67.0   | 40.2   | 26.8   |
| 75°   | 844.6   | 509.5  | 321.8  | 214.5  | 147.5  | 147.5  | 107.3  | 67.0   | 26.8   | 0.0    | 0.0    |
| 77.5° | 549.7   | 375.4  | 254.7  | 134.1  | 80.4   | 93.8   | 67.0   | 26.8   | 0.0    | 0.0    | 0.0    |
| 80°   | 362.0   | 281.5  | 174.3  | 67.0   | 40.2   | 40.2   | 13.4   | 0.0    | 0.0    | 0.0    | 0.0    |
| 82.5° | 254.7   | 187.7  | 107.3  | 26.8   | 13.4   | 13.4   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 160.9   | 80.4   | 40.2   | 13.4   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 67.0    | 26.8   | 13.4   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 90°   | 0.0     | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

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: SP1-2407-184-5

Test Date: 10/10/2024

Luminaire Tested: GSS-SB1A-735-U-5WQ

Data in this report applies to families of products including GSS-SB1A-735-U-5WQ

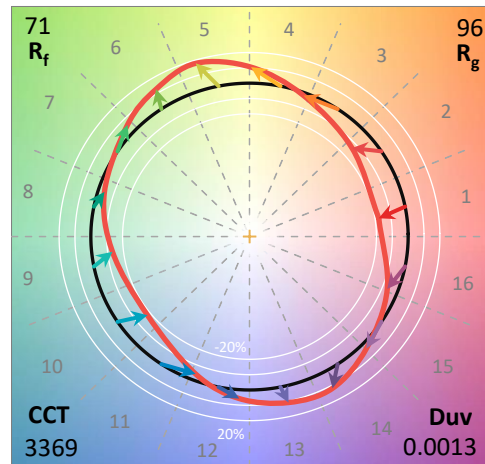
**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-5  
 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-735-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 70 CRI 3500K CCT 26 LEDS

**Spectral Parameters**

CCT (K): 3369  
 CIE u': 0.2386  
 CIE v': 0.5156  
 Duv: 0.0013  
 CIE x: 0.4143  
 CIE y: 0.3980  
 CIE z: 0.1877  
 Peak Wavelength (nm): 590  
 Dominant Wavelength (nm): 580  
 Purity: 43.80166  
 Rf: 71.4  
 Rg: 96

|           |      |      |       |
|-----------|------|------|-------|
| CRI (Ra): | 70.1 |      |       |
| R1:       | 66.6 | R9:  | -40.2 |
| R2:       | 77.6 | R10: | 49.1  |
| R3:       | 88.5 | R11: | 66.3  |
| R4:       | 69.5 | R12: | 45.7  |
| R5:       | 66.4 | R13: | 68.0  |
| R6:       | 69.6 | R14: | 93.4  |
| R7:       | 77.5 | R15: | 57.6  |
| R8:       | 44.9 |      |       |



**Test Conditions**

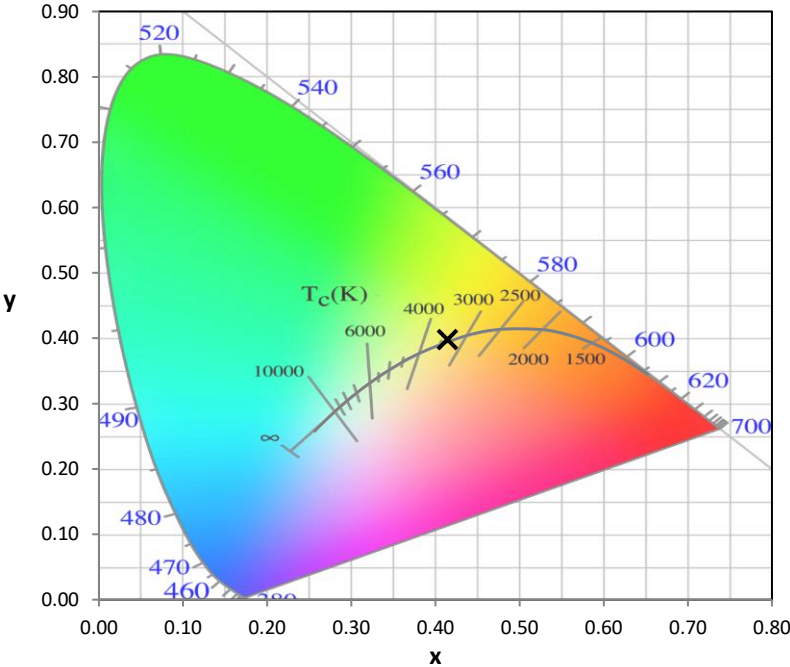
Stabilization Time: 21M  
 Operation Time: 1H 21M  
 Sphere Temperature (°C): 25.2

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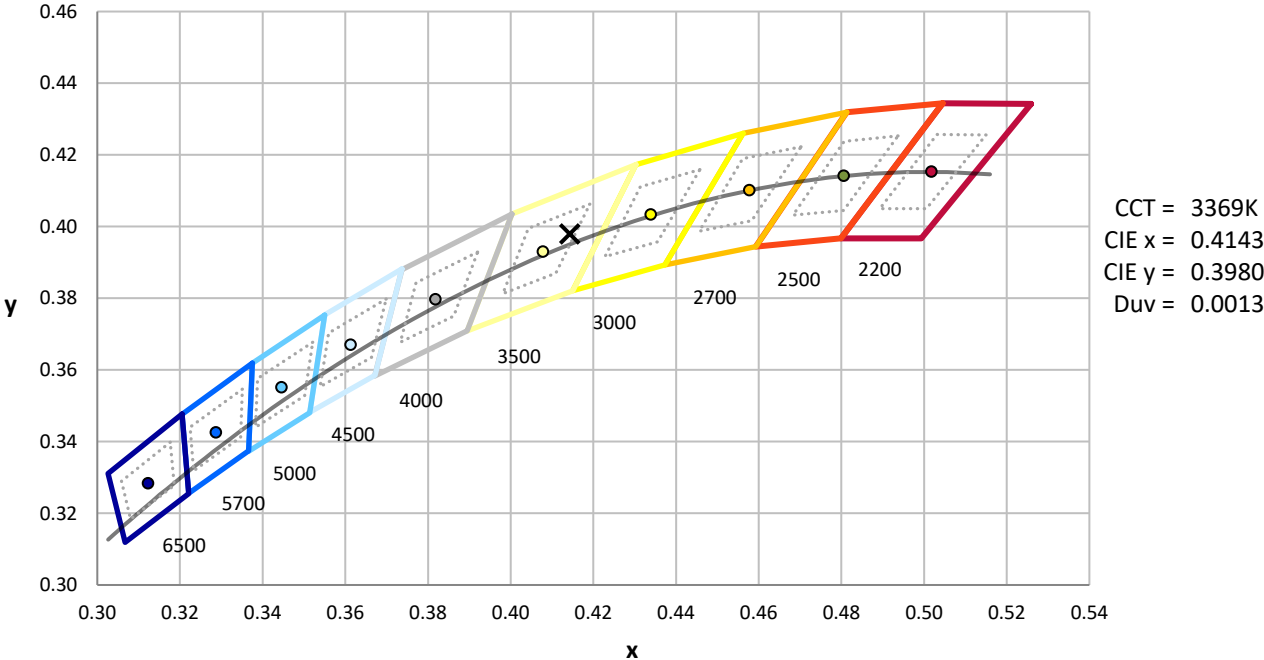
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| 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**



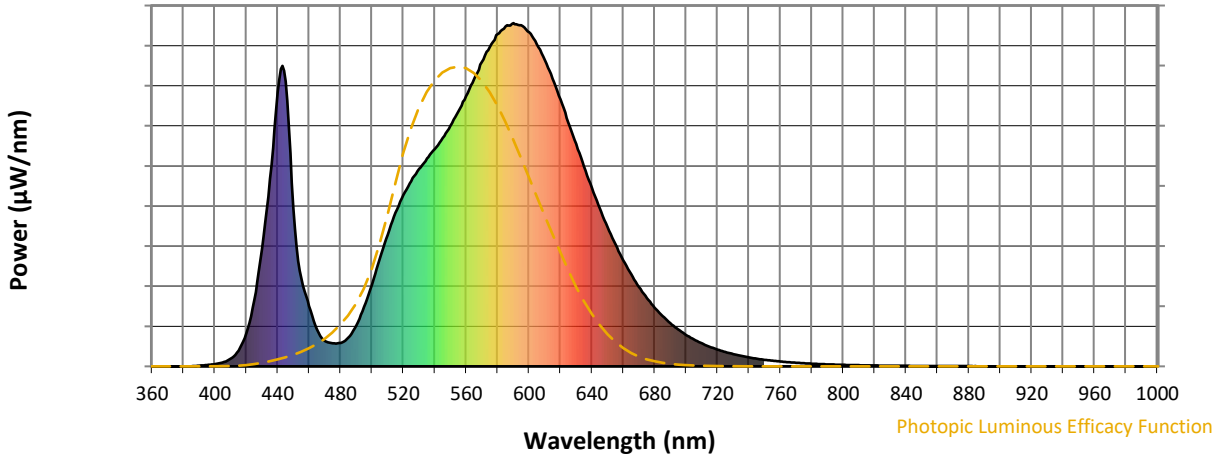
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 3500K 4-step quadrangle

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**Photopic Flux vs. Wavelength**

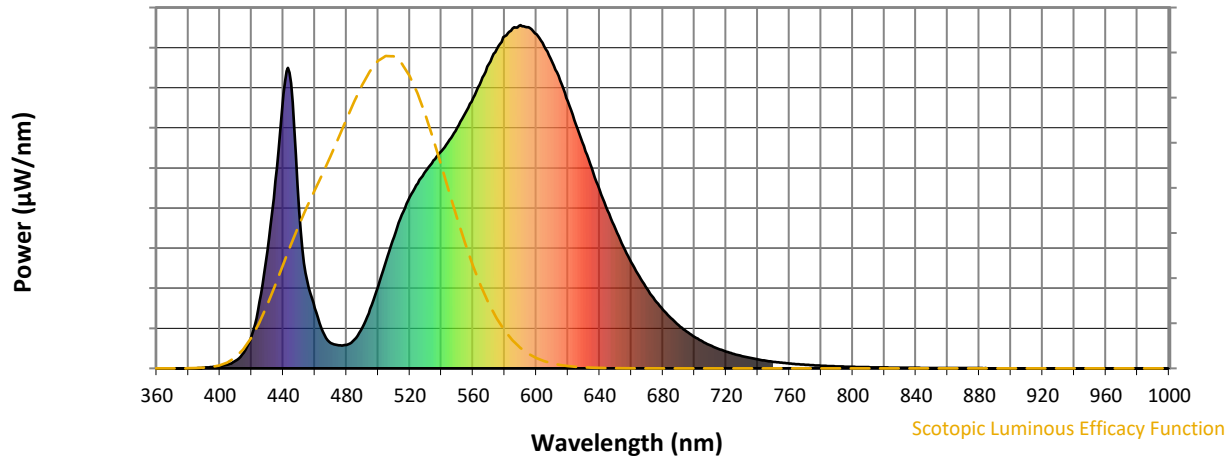


**Photopic Lumens: NR**

| $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) |
|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|
| 360               | 0                           | NR                      | 490               | 119                         | NR                      | 620               | 778                         | NR                      | 750               | 19                          | NR                      | 880               | 1                           | NR                      |
| 365               | 0                           | NR                      | 495               | 173                         | NR                      | 625               | 711                         | NR                      | 755               | 16                          | NR                      | 885               | 0                           | NR                      |
| 370               | 0                           | NR                      | 500               | 239                         | NR                      | 630               | 648                         | NR                      | 760               | 14                          | NR                      | 890               | 0                           | NR                      |
| 375               | 0                           | NR                      | 505               | 313                         | NR                      | 635               | 582                         | NR                      | 765               | 12                          | NR                      | 895               | 0                           | NR                      |
| 380               | 0                           | NR                      | 510               | 383                         | NR                      | 640               | 520                         | NR                      | 770               | 11                          | NR                      | 900               | 0                           | NR                      |
| 385               | 0                           | NR                      | 515               | 448                         | NR                      | 645               | 460                         | NR                      | 775               | 9                           | NR                      | 905               | 0                           | NR                      |
| 390               | 2                           | NR                      | 520               | 500                         | NR                      | 650               | 406                         | NR                      | 780               | 8                           | NR                      | 910               | 0                           | NR                      |
| 395               | 4                           | NR                      | 525               | 539                         | NR                      | 655               | 355                         | NR                      | 785               | 7                           | NR                      | 915               | 0                           | NR                      |
| 400               | 6                           | NR                      | 530               | 575                         | NR                      | 660               | 309                         | NR                      | 790               | 6                           | NR                      | 920               | 0                           | NR                      |
| 405               | 11                          | NR                      | 535               | 606                         | NR                      | 665               | 269                         | NR                      | 795               | 5                           | NR                      | 925               | 0                           | NR                      |
| 410               | 22                          | NR                      | 540               | 633                         | NR                      | 670               | 231                         | NR                      | 800               | 4                           | NR                      | 930               | 0                           | NR                      |
| 415               | 45                          | NR                      | 545               | 666                         | NR                      | 675               | 199                         | NR                      | 805               | 4                           | NR                      | 935               | 0                           | NR                      |
| 420               | 96                          | NR                      | 550               | 701                         | NR                      | 680               | 171                         | NR                      | 810               | 3                           | NR                      | 940               | 0                           | NR                      |
| 425               | 193                         | NR                      | 555               | 743                         | NR                      | 685               | 147                         | NR                      | 815               | 3                           | NR                      | 945               | 0                           | NR                      |
| 430               | 341                         | NR                      | 560               | 788                         | NR                      | 690               | 126                         | NR                      | 820               | 3                           | NR                      | 950               | 0                           | NR                      |
| 435               | 547                         | NR                      | 565               | 837                         | NR                      | 695               | 107                         | NR                      | 825               | 2                           | NR                      | 955               | 0                           | NR                      |
| 440               | 799                         | NR                      | 570               | 887                         | NR                      | 700               | 92                          | NR                      | 830               | 2                           | NR                      | 960               | 0                           | NR                      |
| 445               | 831                         | NR                      | 575               | 931                         | NR                      | 705               | 78                          | NR                      | 835               | 2                           | NR                      | 965               | 0                           | NR                      |
| 450               | 461                         | NR                      | 580               | 967                         | NR                      | 710               | 67                          | NR                      | 840               | 2                           | NR                      | 970               | 0                           | NR                      |
| 455               | 256                         | NR                      | 585               | 990                         | NR                      | 715               | 57                          | NR                      | 845               | 1                           | NR                      | 975               | 0                           | NR                      |
| 460               | 176                         | NR                      | 590               | 1000                        | NR                      | 720               | 49                          | NR                      | 850               | 1                           | NR                      | 980               | 0                           | NR                      |
| 465               | 107                         | NR                      | 595               | 994                         | NR                      | 725               | 42                          | NR                      | 855               | 1                           | NR                      | 985               | 0                           | NR                      |
| 470               | 74                          | NR                      | 600               | 973                         | NR                      | 730               | 36                          | NR                      | 860               | 1                           | NR                      | 990               | 0                           | NR                      |
| 475               | 67                          | NR                      | 605               | 938                         | NR                      | 735               | 31                          | NR                      | 865               | 1                           | NR                      | 995               | 0                           | NR                      |
| 480               | 68                          | NR                      | 610               | 892                         | NR                      | 740               | 26                          | NR                      | 870               | 1                           | NR                      | 1000              | 0                           | NR                      |
| 485               | 84                          | NR                      | 615               | 838                         | NR                      | 745               | 22                          | NR                      | 875               | 1                           | NR                      |                   |                             |                         |

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**Scotopic Flux vs. Wavelength**



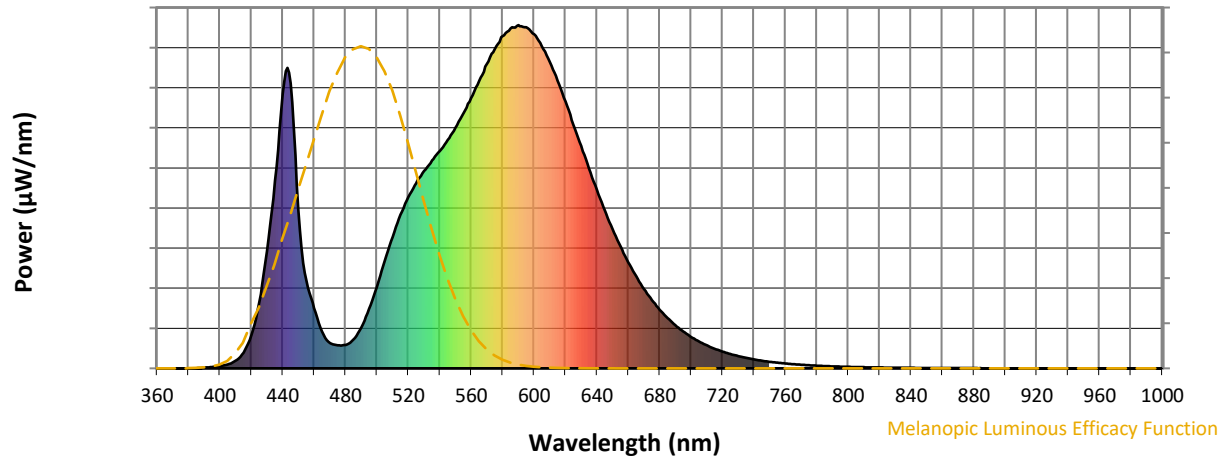
**Scotopic Lumens: NR**

**S/P: 1.29**

| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 119                      | NR            | 620    | 778                      | NR            | 750    | 19                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 173                      | NR            | 625    | 711                      | NR            | 755    | 16                       | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 239                      | NR            | 630    | 648                      | NR            | 760    | 14                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 313                      | NR            | 635    | 582                      | NR            | 765    | 12                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 383                      | NR            | 640    | 520                      | NR            | 770    | 11                       | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 448                      | NR            | 645    | 460                      | NR            | 775    | 9                        | NR            | 905    | 0                        | NR            |
| 390    | 2                        | NR            | 520    | 500                      | NR            | 650    | 406                      | NR            | 780    | 8                        | NR            | 910    | 0                        | NR            |
| 395    | 4                        | NR            | 525    | 539                      | NR            | 655    | 355                      | NR            | 785    | 7                        | NR            | 915    | 0                        | NR            |
| 400    | 6                        | NR            | 530    | 575                      | NR            | 660    | 309                      | NR            | 790    | 6                        | NR            | 920    | 0                        | NR            |
| 405    | 11                       | NR            | 535    | 606                      | NR            | 665    | 269                      | NR            | 795    | 5                        | NR            | 925    | 0                        | NR            |
| 410    | 22                       | NR            | 540    | 633                      | NR            | 670    | 231                      | NR            | 800    | 4                        | NR            | 930    | 0                        | NR            |
| 415    | 45                       | NR            | 545    | 666                      | NR            | 675    | 199                      | NR            | 805    | 4                        | NR            | 935    | 0                        | NR            |
| 420    | 96                       | NR            | 550    | 701                      | NR            | 680    | 171                      | NR            | 810    | 3                        | NR            | 940    | 0                        | NR            |
| 425    | 193                      | NR            | 555    | 743                      | NR            | 685    | 147                      | NR            | 815    | 3                        | NR            | 945    | 0                        | NR            |
| 430    | 341                      | NR            | 560    | 788                      | NR            | 690    | 126                      | NR            | 820    | 3                        | NR            | 950    | 0                        | NR            |
| 435    | 547                      | NR            | 565    | 837                      | NR            | 695    | 107                      | NR            | 825    | 2                        | NR            | 955    | 0                        | NR            |
| 440    | 799                      | NR            | 570    | 887                      | NR            | 700    | 92                       | NR            | 830    | 2                        | NR            | 960    | 0                        | NR            |
| 445    | 831                      | NR            | 575    | 931                      | NR            | 705    | 78                       | NR            | 835    | 2                        | NR            | 965    | 0                        | NR            |
| 450    | 461                      | NR            | 580    | 967                      | NR            | 710    | 67                       | NR            | 840    | 2                        | NR            | 970    | 0                        | NR            |
| 455    | 256                      | NR            | 585    | 990                      | NR            | 715    | 57                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 176                      | NR            | 590    | 1000                     | NR            | 720    | 49                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 107                      | NR            | 595    | 994                      | NR            | 725    | 42                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 74                       | NR            | 600    | 973                      | NR            | 730    | 36                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 67                       | NR            | 605    | 938                      | NR            | 735    | 31                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 68                       | NR            | 610    | 892                      | NR            | 740    | 26                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 84                       | NR            | 615    | 838                      | NR            | 745    | 22                       | NR            | 875    | 1                        | NR            |        |                          |               |

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Melanopic Flux vs. Wavelength



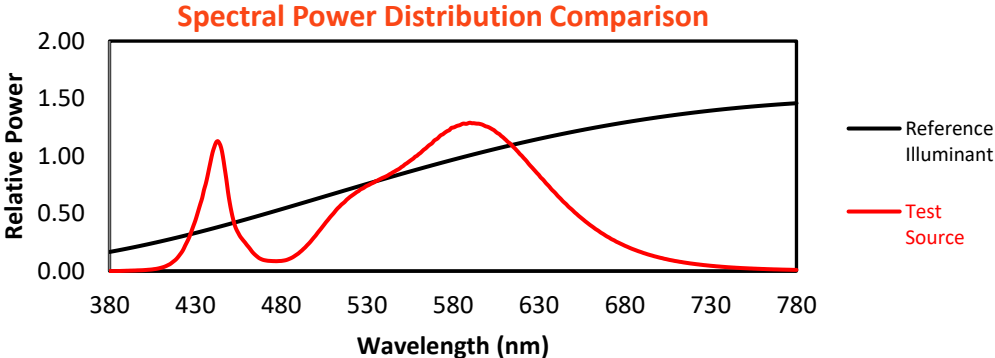
Melanopic Lumens: NR

M/P: 2.36

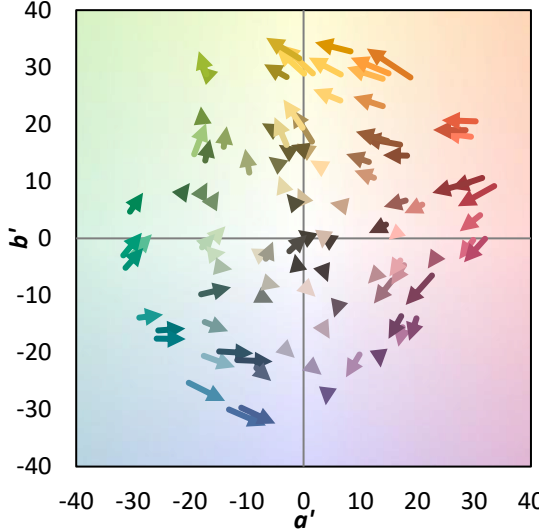
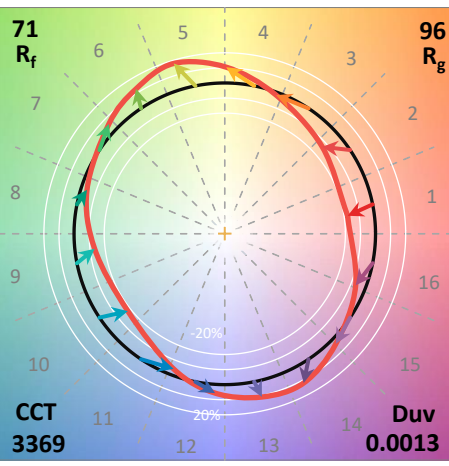
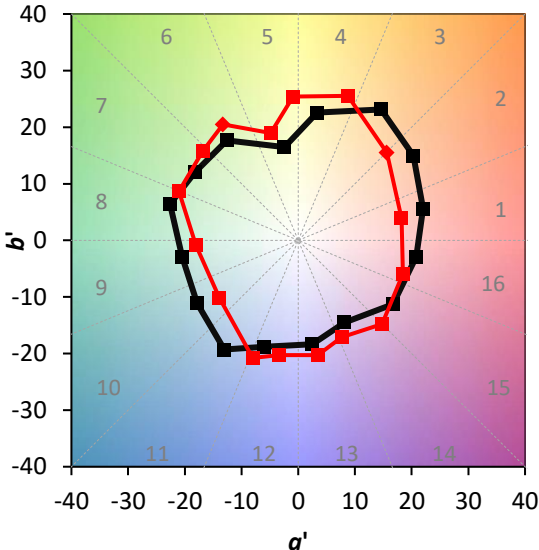
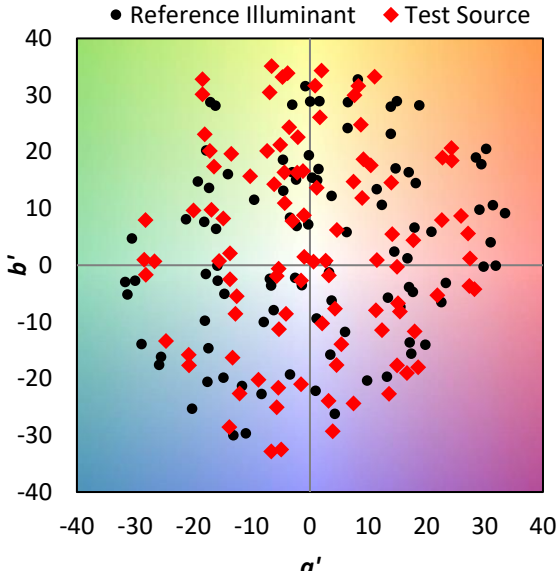
| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 119                      | NR            | 620    | 778                      | NR            | 750    | 19                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 173                      | NR            | 625    | 711                      | NR            | 755    | 16                       | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 239                      | NR            | 630    | 648                      | NR            | 760    | 14                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 313                      | NR            | 635    | 582                      | NR            | 765    | 12                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 383                      | NR            | 640    | 520                      | NR            | 770    | 11                       | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 448                      | NR            | 645    | 460                      | NR            | 775    | 9                        | NR            | 905    | 0                        | NR            |
| 390    | 2                        | NR            | 520    | 500                      | NR            | 650    | 406                      | NR            | 780    | 8                        | NR            | 910    | 0                        | NR            |
| 395    | 4                        | NR            | 525    | 539                      | NR            | 655    | 355                      | NR            | 785    | 7                        | NR            | 915    | 0                        | NR            |
| 400    | 6                        | NR            | 530    | 575                      | NR            | 660    | 309                      | NR            | 790    | 6                        | NR            | 920    | 0                        | NR            |
| 405    | 11                       | NR            | 535    | 606                      | NR            | 665    | 269                      | NR            | 795    | 5                        | NR            | 925    | 0                        | NR            |
| 410    | 22                       | NR            | 540    | 633                      | NR            | 670    | 231                      | NR            | 800    | 4                        | NR            | 930    | 0                        | NR            |
| 415    | 45                       | NR            | 545    | 666                      | NR            | 675    | 199                      | NR            | 805    | 4                        | NR            | 935    | 0                        | NR            |
| 420    | 96                       | NR            | 550    | 701                      | NR            | 680    | 171                      | NR            | 810    | 3                        | NR            | 940    | 0                        | NR            |
| 425    | 193                      | NR            | 555    | 743                      | NR            | 685    | 147                      | NR            | 815    | 3                        | NR            | 945    | 0                        | NR            |
| 430    | 341                      | NR            | 560    | 788                      | NR            | 690    | 126                      | NR            | 820    | 3                        | NR            | 950    | 0                        | NR            |
| 435    | 547                      | NR            | 565    | 837                      | NR            | 695    | 107                      | NR            | 825    | 2                        | NR            | 955    | 0                        | NR            |
| 440    | 799                      | NR            | 570    | 887                      | NR            | 700    | 92                       | NR            | 830    | 2                        | NR            | 960    | 0                        | NR            |
| 445    | 831                      | NR            | 575    | 931                      | NR            | 705    | 78                       | NR            | 835    | 2                        | NR            | 965    | 0                        | NR            |
| 450    | 461                      | NR            | 580    | 967                      | NR            | 710    | 67                       | NR            | 840    | 2                        | NR            | 970    | 0                        | NR            |
| 455    | 256                      | NR            | 585    | 990                      | NR            | 715    | 57                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 176                      | NR            | 590    | 1000                     | NR            | 720    | 49                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 107                      | NR            | 595    | 994                      | NR            | 725    | 42                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 74                       | NR            | 600    | 973                      | NR            | 730    | 36                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 67                       | NR            | 605    | 938                      | NR            | 735    | 31                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 68                       | NR            | 610    | 892                      | NR            | 740    | 26                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 84                       | NR            | 615    | 838                      | NR            | 745    | 22                       | NR            | 875    | 1                        | NR            |        |                          |               |

**Summary**

$R_f = 71.4$   
 $R_g = 96$   
 $CIE R_a = 70.1$   
 $R_9 = -40.2$

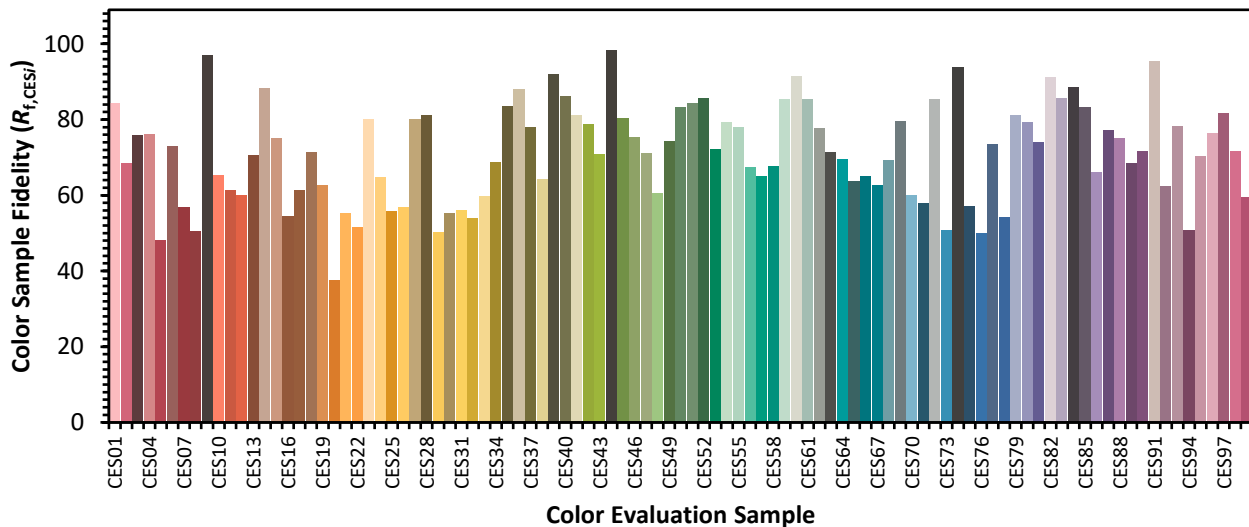


**Color Vector Graphics**

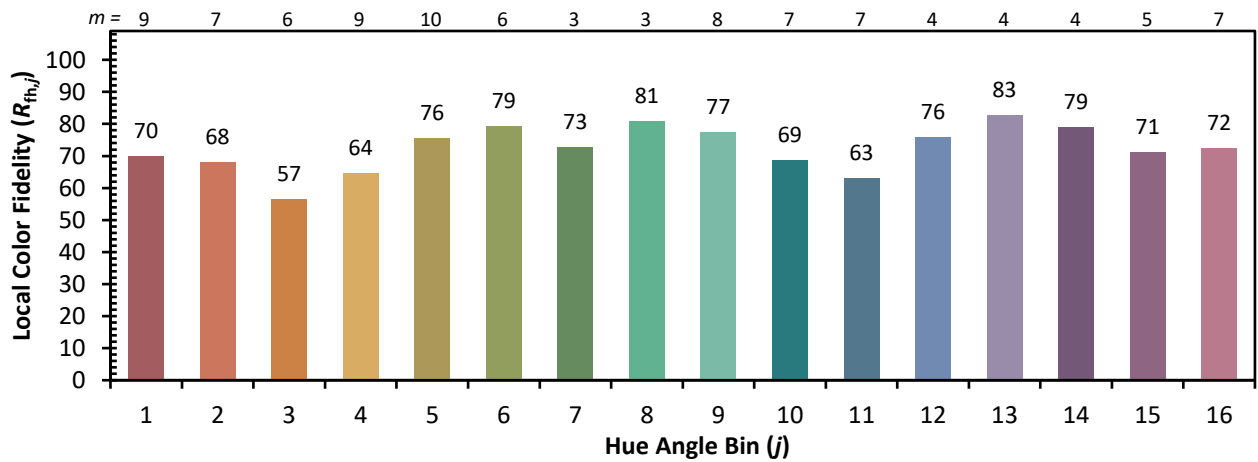
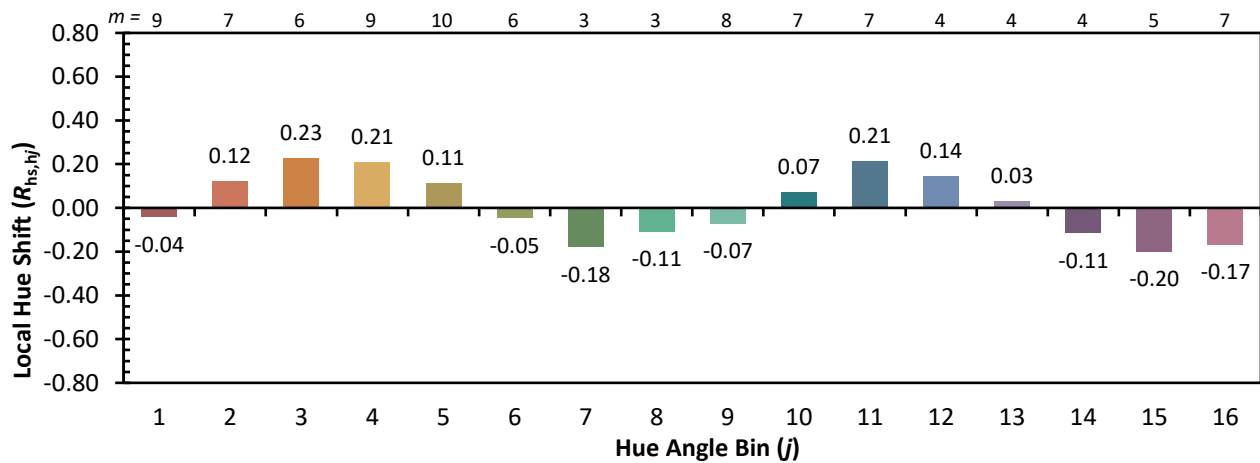
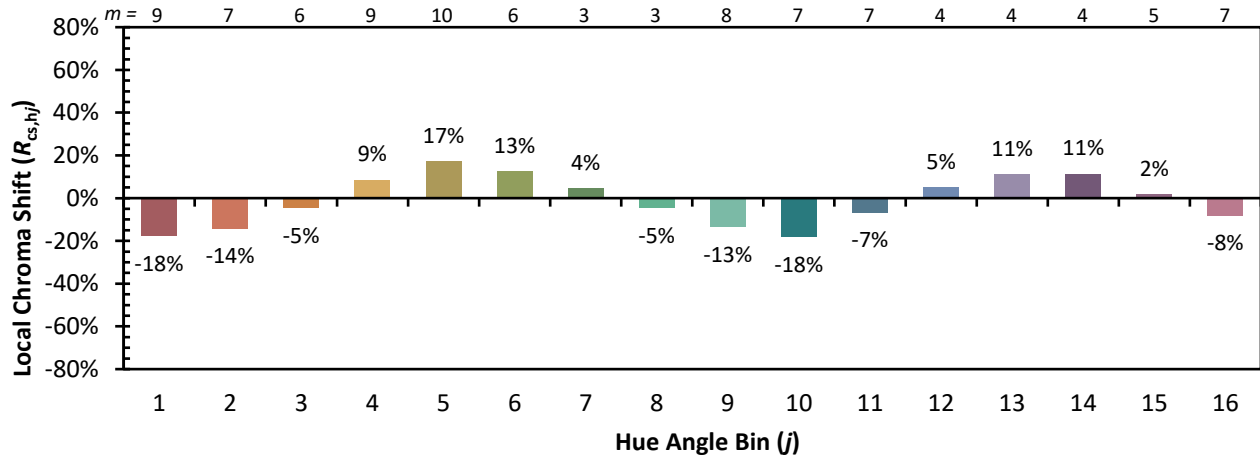


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

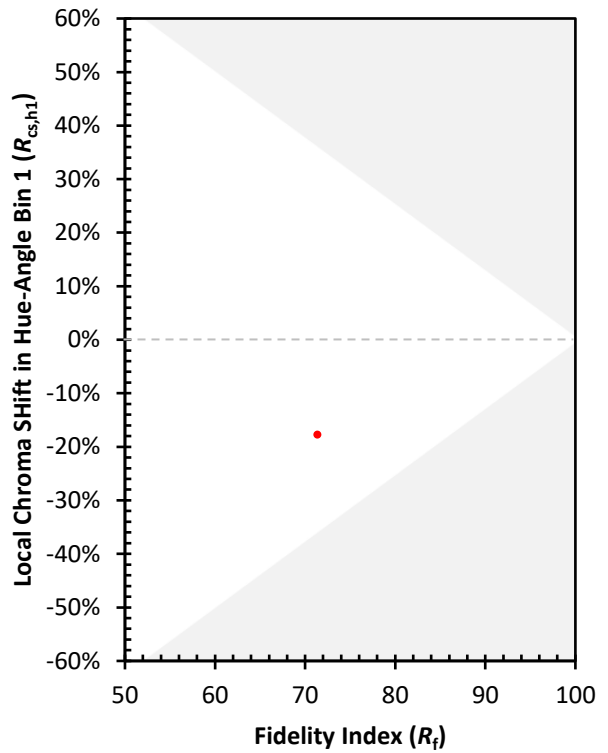
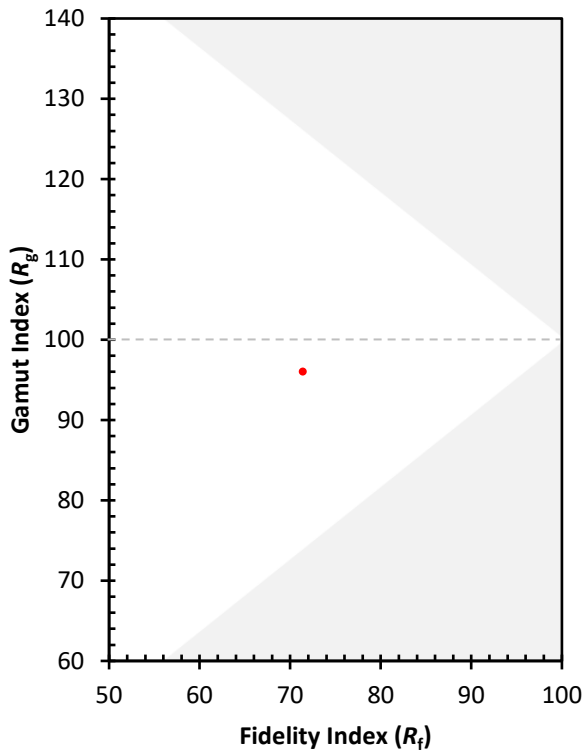
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 57 | CES51 = 84 | CES76 = 50 |
| CES02 = 62 | CES27 = 80 | CES52 = 86 | CES77 = 74 |
| CES03 = 31 | CES28 = 81 | CES53 = 72 | CES78 = 54 |
| CES04 = 70 | CES29 = 50 | CES54 = 79 | CES79 = 81 |
| CES05 = 48 | CES30 = 55 | CES55 = 78 | CES80 = 79 |
| CES06 = 51 | CES31 = 56 | CES56 = 67 | CES81 = 74 |
| CES07 = 40 | CES32 = 54 | CES57 = 65 | CES82 = 91 |
| CES08 = 39 | CES33 = 60 | CES58 = 68 | CES83 = 86 |
| CES09 = 29 | CES34 = 69 | CES59 = 85 | CES84 = 89 |
| CES10 = 75 | CES35 = 83 | CES60 = 91 | CES85 = 83 |
| CES11 = 58 | CES36 = 88 | CES61 = 85 | CES86 = 66 |
| CES12 = 64 | CES37 = 78 | CES62 = 78 | CES87 = 77 |
| CES13 = 43 | CES38 = 64 | CES63 = 71 | CES88 = 75 |
| CES14 = 74 | CES39 = 92 | CES64 = 70 | CES89 = 68 |
| CES15 = 71 | CES40 = 86 | CES65 = 64 | CES90 = 72 |
| CES16 = 47 | CES41 = 81 | CES66 = 65 | CES91 = 95 |
| CES17 = 50 | CES42 = 79 | CES67 = 63 | CES92 = 62 |
| CES18 = 56 | CES43 = 71 | CES68 = 69 | CES93 = 78 |
| CES19 = 72 | CES44 = 98 | CES69 = 80 | CES94 = 51 |
| CES20 = 65 | CES45 = 80 | CES70 = 60 | CES95 = 70 |
| CES21 = 87 | CES46 = 75 | CES71 = 58 | CES96 = 76 |
| CES22 = 79 | CES47 = 71 | CES72 = 85 | CES97 = 82 |
| CES23 = 92 | CES48 = 61 | CES73 = 51 | CES98 = 72 |
| CES24 = 91 | CES49 = 74 | CES74 = 94 | CES99 = 60 |
| CES25 = 72 | CES50 = 83 | CES75 = 57 |            |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)