

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: P1436969

Luminaire Tested: **GALN-SB4A-730-U-T2LG-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: P1436969
 Test Lab: INNOVATION CENTER(G1)
 Issue Date: 03/27/202
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
 Product Line: McGRAW-EDISON
 Catalog Number: GALN-SB4A-730-U-T2LG-HSS
 Description: GALLEON II AREA AND ROADWAY HIGH DENSITY LUMINAIRE 350mA 4xLight Square PACKAGE 70CRI 3000K FIXTURE w/ TYPE II LOW GLARE WITH HOUSE SIDE SHIELD
 Light Source: (104) 3000K 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: 13019.5 lumens
 Efficiency: N/A
 Efficacy: 114.2 lumens/watt
 Luminous Opening: Rectangular (W 1' x L: 1' x H: 0')
 IES Classification: Type II - Short
 BUG Rating: B1 - U0 - G2

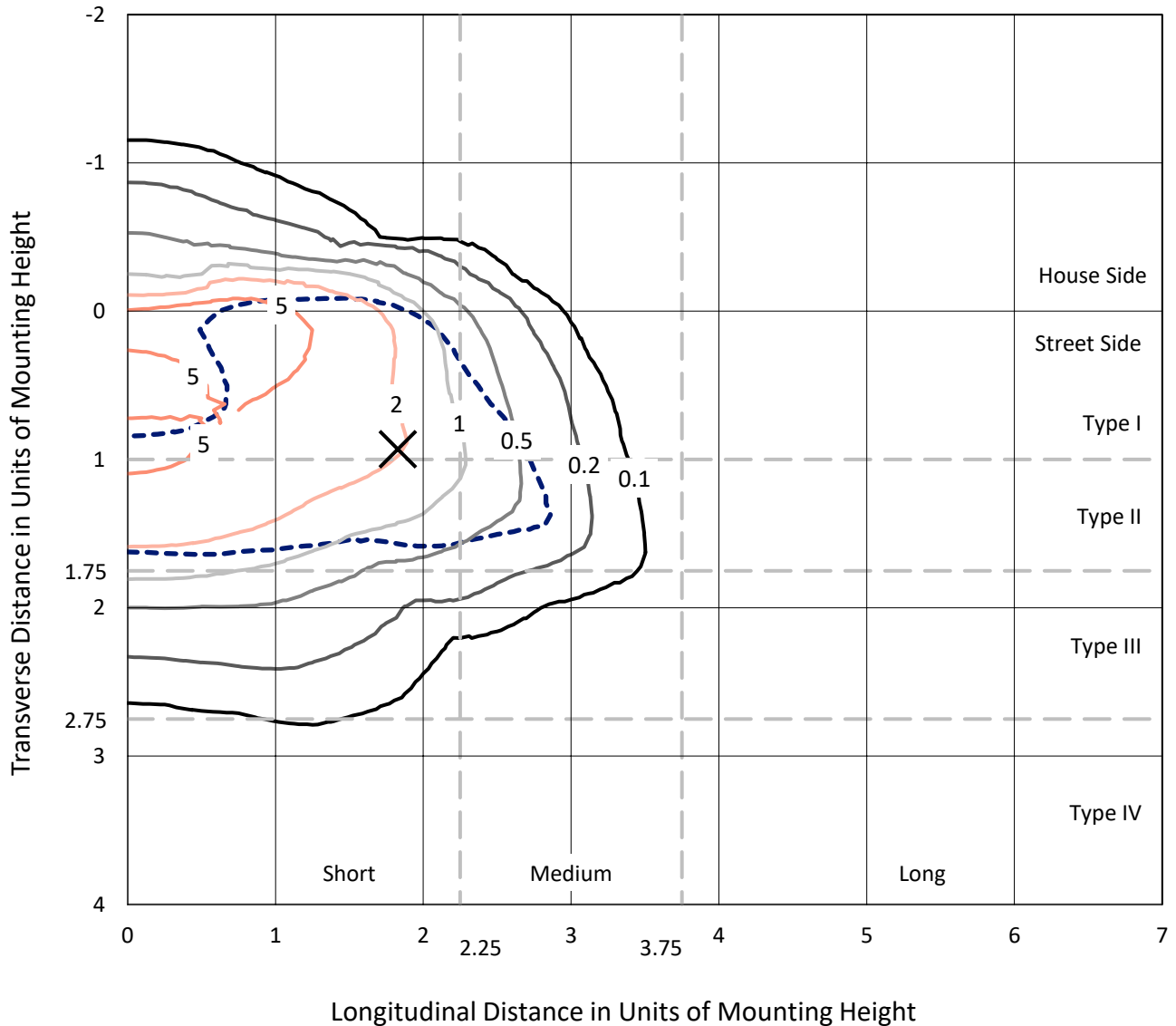
 Input Watts (W): 114
 Input Voltage (V): 120
 Input Current (Ain): NR
 Voltage Rise (V): NR
 Power Factor: 0.97
 Total Harmonic Distortion (THDi): NR
 Frequency (hertz): 60
 Stabilization Time: NR
 Operation Time: NR
 Ambient Temperature (°C): NR
 Test Distance: 28.75 FT



REPORT NUMBER: P1436969
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Iso-Footcandle Lines of Horizontal Illumination

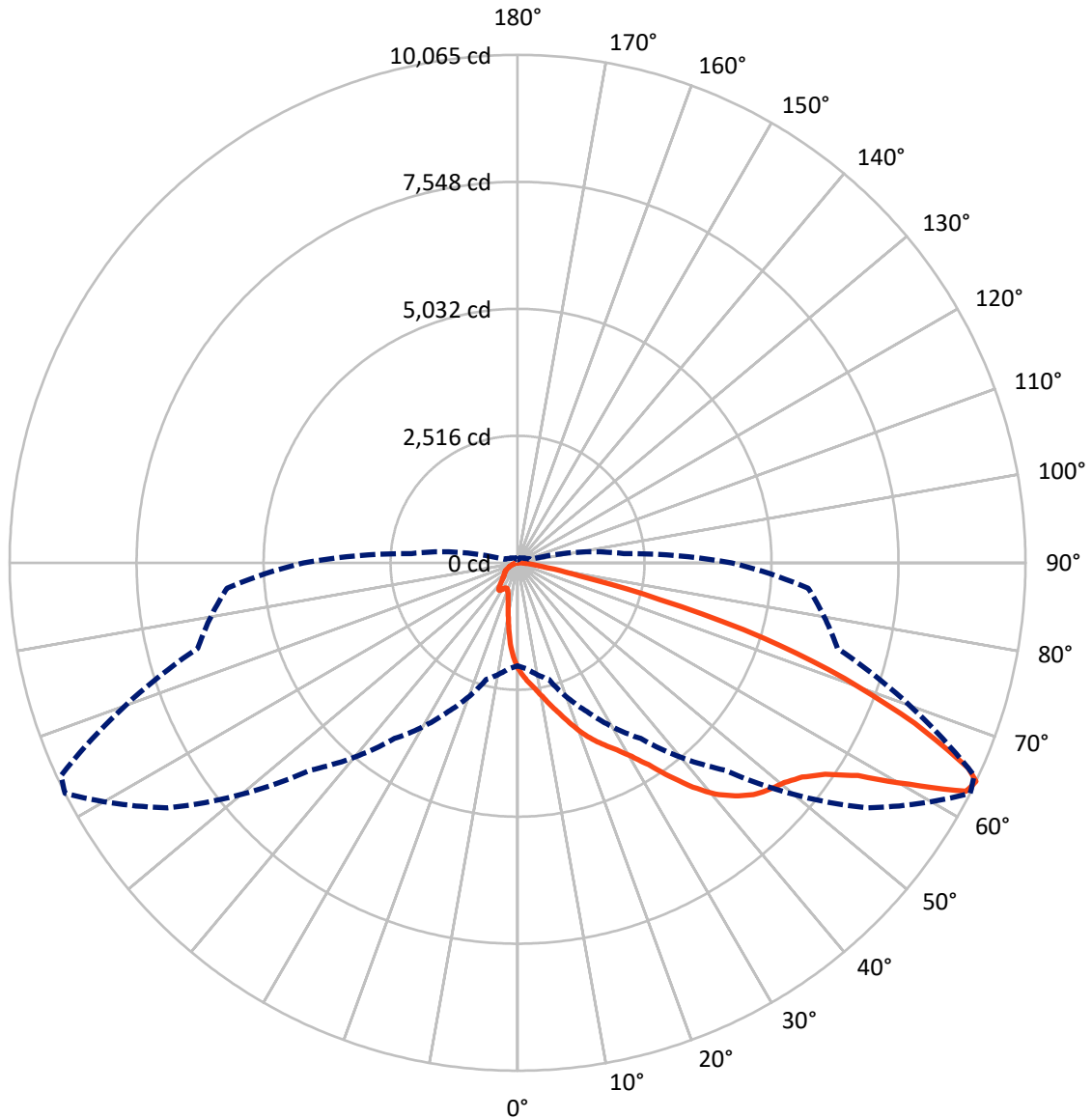
✕ Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 9.3 fc
 Type II - Short - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 63-Deg Lateral - - - Horizontal Cone Through 64-Deg Vertical

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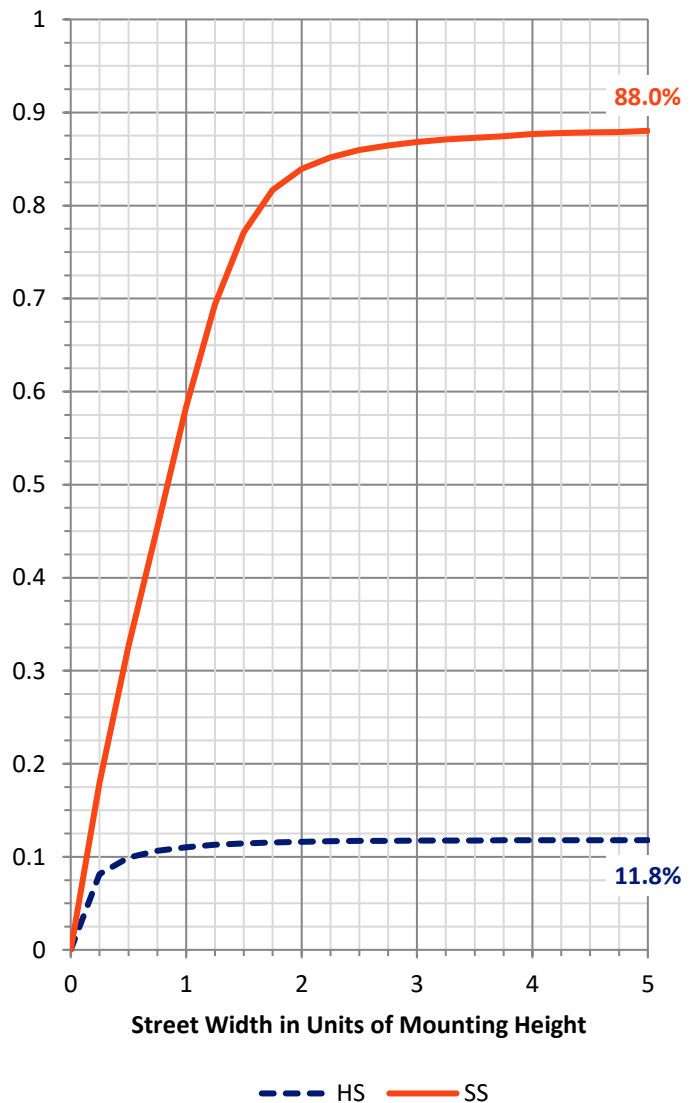
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 1545.0 | 0.0 | 1545.0 |
| | % Fixture | 11.9 | 0.0 | 11.9 |
| Street Side | Lumens | 11474.5 | 0.0 | 11474.5 |
| | % Fixture | 88.1 | 0.0 | 88.1 |
| Total | Lumens | 13019.5 | 0.0 | 13019.5 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

Coefficient of Utilization

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 177.3 | 1.4 |
| 10°-20° | 498.1 | 3.8 |
| 20°-30° | 887.2 | 6.8 |
| 30°-40° | 1694.6 | 13.0 |
| 40°-50° | 2808.9 | 21.6 |
| 50°-60° | 3501.3 | 26.9 |
| 60°-70° | 2610.8 | 20.1 |
| 70°-80° | 748.8 | 5.8 |
| 80°-90° | 92.6 | 0.7 |
| 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° | 13019.5 | 100.0 |
| 0°-180° | 13019.5 | 100.0 |

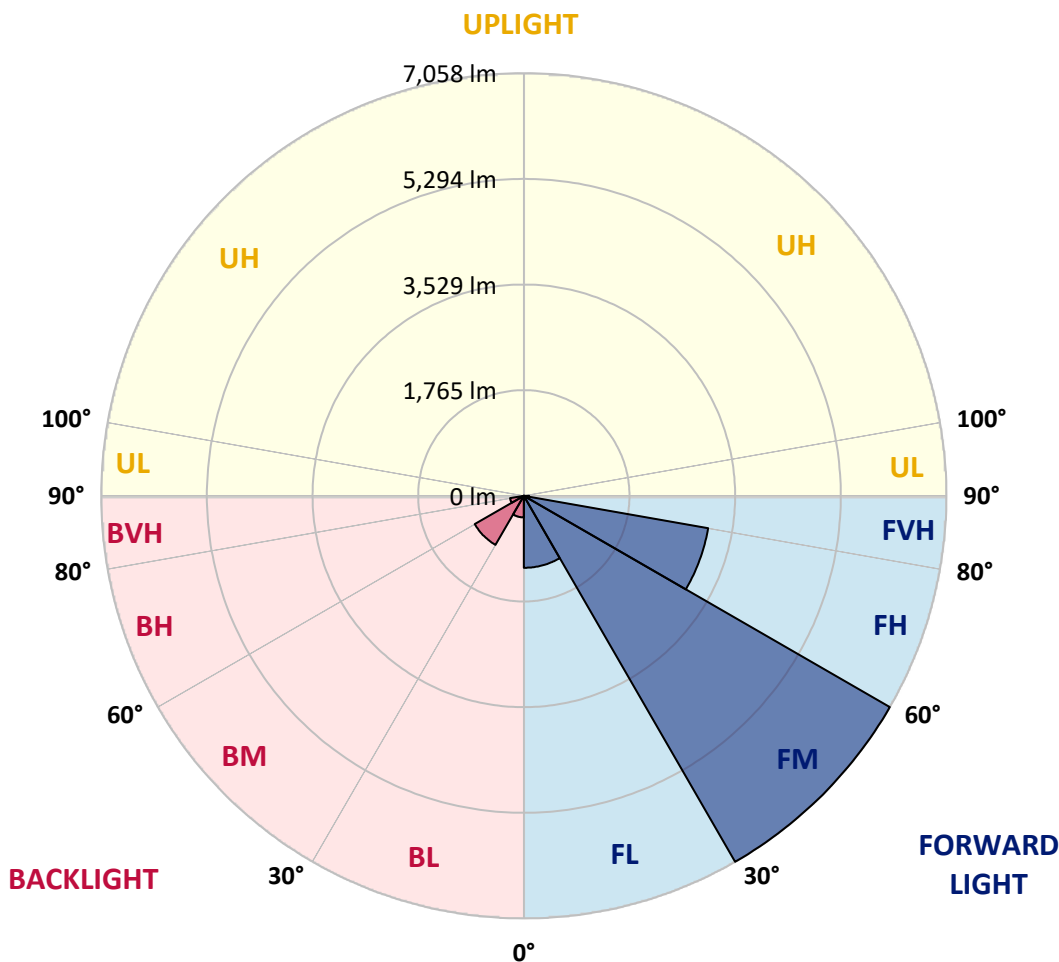


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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 1202.2 | 9.2 | | | |
| FM (30°-60°) | 7058.4 | 54.2 | | | |
| FH (60°-80°) | 3125.9 | 24.0 | | | G2/5000 |
| FVH (80°-90°) | 88.0 | 0.7 | | | G1/100 |
| BL (0°-30°) | 360.5 | 2.8 | B1/500 | | |
| BM (30°-60°) | 946.3 | 7.3 | B1/1000 | | |
| BH (60°-80°) | 233.7 | 1.8 | B1/500 | | G1/500 |
| BVH (80°-90°) | 4.6 | 0.0 | | | G0/10 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B1-U0-G2
 Type II Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 63° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|---------|--------|--------|--------|
| 0° | 2105.1 | 2105.1 | 2105.1 | 2105.1 | 2105.1 | 2105.1 | 2105.1 | 2105.1 | 2105.1 | 2105.1 | 2105.1 |
| 2.5° | 2359.0 | 2351.1 | 2343.3 | 2331.6 | 2316.0 | 2300.4 | 2280.8 | 2253.5 | 2241.8 | 2202.7 | 2155.9 |
| 5° | 2480.0 | 2480.0 | 2476.1 | 2468.3 | 2460.5 | 2444.9 | 2421.4 | 2386.3 | 2370.7 | 2316.0 | 2234.0 |
| 7.5° | 2511.3 | 2515.2 | 2526.9 | 2542.5 | 2566.0 | 2562.0 | 2562.0 | 2523.0 | 2515.2 | 2456.6 | 2347.2 |
| 10° | 2456.6 | 2460.5 | 2491.7 | 2534.7 | 2605.0 | 2671.4 | 2718.3 | 2694.8 | 2683.1 | 2624.5 | 2487.8 |
| 12.5° | 2378.5 | 2378.5 | 2429.3 | 2495.7 | 2605.0 | 2730.0 | 2866.7 | 2890.1 | 2894.0 | 2827.6 | 2663.6 |
| 15° | 2175.4 | 2183.2 | 2265.2 | 2398.0 | 2577.7 | 2772.9 | 3003.4 | 3093.2 | 3116.6 | 3073.7 | 2878.4 |
| 17.5° | 1905.9 | 1913.7 | 1995.7 | 2175.4 | 2444.9 | 2772.9 | 3120.5 | 3327.5 | 3358.8 | 3366.6 | 3151.8 |
| 20° | 1792.7 | 1792.7 | 1839.5 | 1976.2 | 2257.4 | 2698.7 | 3190.8 | 3577.5 | 3647.8 | 3733.7 | 3452.5 |
| 22.5° | 1808.3 | 1808.3 | 1835.6 | 1913.7 | 2140.2 | 2597.2 | 3233.8 | 3800.1 | 3944.6 | 4163.3 | 3839.2 |
| 25° | 1894.2 | 1894.2 | 1917.6 | 1968.4 | 2152.0 | 2581.6 | 3315.8 | 3999.3 | 4229.7 | 4643.7 | 4280.5 |
| 27.5° | 2030.9 | 2027.0 | 2046.5 | 2097.3 | 2265.2 | 2655.8 | 3452.5 | 4198.5 | 4456.2 | 5182.7 | 4788.2 |
| 30° | 2230.1 | 2218.4 | 2226.2 | 2284.8 | 2448.8 | 2827.6 | 3651.7 | 4452.3 | 4714.0 | 5772.4 | 5350.6 |
| 32.5° | 2690.9 | 2687.0 | 2573.8 | 2542.5 | 2718.3 | 3104.9 | 3925.1 | 4768.7 | 5061.6 | 6397.3 | 5928.6 |
| 35° | 3522.8 | 3577.5 | 3417.4 | 3007.3 | 3042.4 | 3475.9 | 4315.6 | 5198.3 | 5467.8 | 7061.2 | 6557.4 |
| 37.5° | 4366.4 | 4366.4 | 4300.0 | 3815.7 | 3569.7 | 3886.0 | 4737.4 | 5639.6 | 5920.8 | 7596.3 | 7162.8 |
| 40° | 5034.3 | 5069.4 | 4991.3 | 4628.1 | 4307.8 | 4354.7 | 5159.2 | 6026.3 | 6284.0 | 7924.4 | 7592.4 |
| 42.5° | 5530.3 | 5522.5 | 5491.2 | 5253.0 | 5073.3 | 4967.9 | 5542.0 | 6315.3 | 6561.3 | 8092.3 | 7861.9 |
| 45° | 6065.3 | 6065.3 | 6022.4 | 5827.1 | 5678.7 | 5588.9 | 5827.1 | 6557.4 | 6815.2 | 8193.9 | 8029.8 |
| 47.5° | 6623.8 | 6616.0 | 6573.1 | 6358.2 | 6198.1 | 6065.3 | 6116.1 | 6713.7 | 6971.4 | 8127.5 | 8057.2 |
| 50° | 6760.5 | 6752.7 | 6850.3 | 6858.2 | 6713.7 | 6459.8 | 6346.5 | 6846.4 | 7073.0 | 8131.4 | 8143.1 |
| 52.5° | 6600.4 | 6647.3 | 6791.8 | 6967.5 | 7131.5 | 6866.0 | 6592.6 | 7057.3 | 7291.7 | 8240.7 | 8357.9 |
| 55° | 6202.0 | 6221.6 | 6498.8 | 6780.0 | 7162.8 | 7256.5 | 6987.0 | 7393.2 | 7600.2 | 8346.2 | 8549.3 |
| 57.5° | 5460.0 | 5534.2 | 5831.0 | 6319.2 | 6901.1 | 7291.7 | 7674.4 | 7955.6 | 8111.8 | 8389.1 | 8443.8 |
| 60° | 4120.4 | 4159.4 | 4803.8 | 5436.5 | 6358.2 | 7010.5 | 8314.9 | 8908.6 | 8889.0 | 7904.8 | 7705.7 |
| 62.5° | 2507.4 | 2542.5 | 3003.4 | 4007.1 | 5167.1 | 6424.6 | 8529.7 | 9974.8 | 9869.3 | 7088.6 | 6487.1 |
| 64° | 2042.6 | 2109.0 | 2394.1 | 3253.3 | 4249.2 | 5811.5 | 8467.2 | 10064.6 | 9982.6 | 6561.3 | 5780.2 |
| 65° | 1745.8 | 1835.6 | 2128.5 | 2823.7 | 3612.6 | 5151.4 | 8295.4 | 9814.7 | 9760.0 | 6241.1 | 5194.4 |
| 67.5° | 1097.5 | 1140.4 | 1573.9 | 2194.9 | 2487.8 | 3296.3 | 7131.5 | 8486.8 | 8584.4 | 5561.5 | 3831.4 |
| 70° | 816.3 | 835.8 | 1081.8 | 1698.9 | 1941.1 | 1917.6 | 4897.6 | 6873.8 | 6897.2 | 4448.4 | 2312.1 |
| 72.5° | 593.6 | 597.6 | 757.7 | 1257.6 | 1519.3 | 1308.4 | 2581.6 | 5108.5 | 4940.5 | 2605.0 | 1261.5 |
| 75° | 394.5 | 410.1 | 531.2 | 886.6 | 1183.4 | 960.8 | 1175.6 | 2909.6 | 2858.9 | 1273.2 | 722.5 |
| 77.5° | 289.0 | 292.9 | 359.3 | 593.6 | 929.5 | 706.9 | 710.8 | 1253.7 | 1292.7 | 757.7 | 457.0 |
| 80° | 164.0 | 171.8 | 234.3 | 363.2 | 605.4 | 484.3 | 398.4 | 605.4 | 695.2 | 515.5 | 304.6 |
| 82.5° | 97.6 | 105.5 | 167.9 | 238.2 | 414.0 | 199.2 | 203.1 | 332.0 | 414.0 | 371.0 | 164.0 |
| 85° | 58.6 | 62.5 | 105.5 | 128.9 | 246.1 | 132.8 | 74.2 | 164.0 | 214.8 | 218.7 | 89.8 |
| 87.5° | 39.1 | 39.1 | 58.6 | 54.7 | 70.3 | 62.5 | 31.2 | 43.0 | 54.7 | 74.2 | 35.2 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |



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CATALOG NUMBER: GALN-SB4A-730-U-T2LG-HSS

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 2105.1 | 2105.1 | 2105.1 | 2105.1 | 2105.1 | 2105.1 | 2105.1 | 2105.1 | 2105.1 | 2105.1 | 2105.1 |
| 2.5° | 2116.8 | 2093.4 | 2023.1 | 1929.3 | 1843.4 | 1777.0 | 1695.0 | 1640.3 | 1589.6 | 1589.6 | 1546.6 |
| 5° | 2167.6 | 2105.1 | 1933.3 | 1718.4 | 1488.0 | 1269.3 | 1128.7 | 972.5 | 921.7 | 878.8 | 886.6 |
| 7.5° | 2253.5 | 2140.2 | 1835.6 | 1449.0 | 1081.8 | 847.5 | 691.3 | 621.0 | 589.7 | 570.2 | 574.1 |
| 10° | 2359.0 | 2202.7 | 1718.4 | 1175.6 | 796.7 | 621.0 | 546.8 | 519.4 | 507.7 | 503.8 | 503.8 |
| 12.5° | 2503.5 | 2276.9 | 1601.3 | 945.1 | 628.8 | 535.1 | 496.0 | 480.4 | 468.7 | 460.9 | 460.9 |
| 15° | 2675.3 | 2370.7 | 1464.6 | 777.2 | 550.7 | 492.1 | 460.9 | 445.2 | 429.6 | 425.7 | 425.7 |
| 17.5° | 2894.0 | 2468.3 | 1343.5 | 667.9 | 511.6 | 460.9 | 429.6 | 410.1 | 398.4 | 394.5 | 394.5 |
| 20° | 3136.2 | 2589.4 | 1222.4 | 605.4 | 484.3 | 429.6 | 398.4 | 382.7 | 371.0 | 363.2 | 367.1 |
| 22.5° | 3444.7 | 2741.7 | 1144.3 | 574.1 | 460.9 | 402.3 | 371.0 | 355.4 | 343.7 | 335.9 | 339.8 |
| 25° | 3784.5 | 2933.1 | 1101.4 | 574.1 | 445.2 | 382.7 | 347.6 | 332.0 | 320.3 | 312.4 | 312.4 |
| 27.5° | 4198.5 | 3147.9 | 1105.3 | 597.6 | 441.3 | 367.1 | 328.1 | 312.4 | 300.7 | 289.0 | 289.0 |
| 30° | 4655.4 | 3401.7 | 1148.2 | 640.5 | 449.1 | 351.5 | 312.4 | 289.0 | 281.2 | 269.5 | 269.5 |
| 32.5° | 5139.7 | 3694.7 | 1257.6 | 695.2 | 441.3 | 332.0 | 289.0 | 269.5 | 257.8 | 250.0 | 250.0 |
| 35° | 5651.3 | 4026.6 | 1394.3 | 718.6 | 402.3 | 304.6 | 269.5 | 250.0 | 242.1 | 238.2 | 234.3 |
| 37.5° | 6139.5 | 4315.6 | 1468.5 | 671.8 | 351.5 | 281.2 | 246.1 | 226.5 | 222.6 | 214.8 | 214.8 |
| 40° | 6518.4 | 4553.9 | 1425.5 | 574.1 | 324.2 | 257.8 | 226.5 | 207.0 | 199.2 | 191.4 | 191.4 |
| 42.5° | 6741.0 | 4639.8 | 1269.3 | 488.2 | 304.6 | 234.3 | 207.0 | 187.5 | 179.7 | 175.8 | 175.8 |
| 45° | 6869.9 | 4628.1 | 1085.7 | 437.4 | 285.1 | 214.8 | 187.5 | 175.8 | 164.0 | 160.1 | 156.2 |
| 47.5° | 6866.0 | 4507.0 | 953.0 | 394.5 | 265.6 | 199.2 | 175.8 | 164.0 | 152.3 | 148.4 | 148.4 |
| 50° | 6838.6 | 4327.4 | 804.5 | 363.2 | 250.0 | 187.5 | 164.0 | 156.2 | 144.5 | 140.6 | 136.7 |
| 52.5° | 6905.0 | 4225.8 | 671.8 | 343.7 | 230.4 | 179.7 | 160.1 | 148.4 | 132.8 | 128.9 | 128.9 |
| 55° | 6987.0 | 4167.2 | 539.0 | 324.2 | 214.8 | 175.8 | 152.3 | 140.6 | 125.0 | 121.1 | 121.1 |
| 57.5° | 6748.8 | 3944.6 | 445.2 | 292.9 | 195.3 | 167.9 | 144.5 | 136.7 | 121.1 | 109.4 | 109.4 |
| 60° | 5998.9 | 3261.1 | 367.1 | 257.8 | 179.7 | 156.2 | 136.7 | 125.0 | 109.4 | 93.7 | 93.7 |
| 62.5° | 4878.0 | 2487.8 | 304.6 | 218.7 | 167.9 | 144.5 | 125.0 | 113.3 | 93.7 | 74.2 | 74.2 |
| 64° | 4237.5 | 2112.9 | 273.4 | 191.4 | 160.1 | 132.8 | 113.3 | 101.5 | 82.0 | 62.5 | 58.6 |
| 65° | 3800.1 | 1866.9 | 253.9 | 179.7 | 156.2 | 125.0 | 109.4 | 97.6 | 74.2 | 58.6 | 54.7 |
| 67.5° | 2675.3 | 1253.7 | 203.1 | 148.4 | 136.7 | 105.5 | 93.7 | 82.0 | 66.4 | 50.8 | 46.9 |
| 70° | 1558.3 | 710.8 | 160.1 | 125.0 | 105.5 | 82.0 | 78.1 | 74.2 | 58.6 | 39.1 | 39.1 |
| 72.5° | 847.5 | 355.4 | 121.1 | 101.5 | 82.0 | 58.6 | 66.4 | 58.6 | 46.9 | 31.2 | 27.3 |
| 75° | 519.4 | 218.7 | 89.8 | 74.2 | 54.7 | 43.0 | 50.8 | 43.0 | 27.3 | 19.5 | 15.6 |
| 77.5° | 347.6 | 140.6 | 66.4 | 50.8 | 35.2 | 27.3 | 35.2 | 23.4 | 11.7 | 3.9 | 3.9 |
| 80° | 214.8 | 97.6 | 43.0 | 31.2 | 19.5 | 11.7 | 7.8 | 3.9 | 3.9 | 0.0 | 0.0 |
| 82.5° | 93.7 | 62.5 | 23.4 | 15.6 | 7.8 | 3.9 | 3.9 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85° | 50.8 | 19.5 | 7.8 | 3.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87.5° | 15.6 | 7.8 | 3.9 | 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: SP1-2407-184-4

Test Date: 10/10/2024

Luminaire Tested: GSS-SB1A-730-U-5WQ

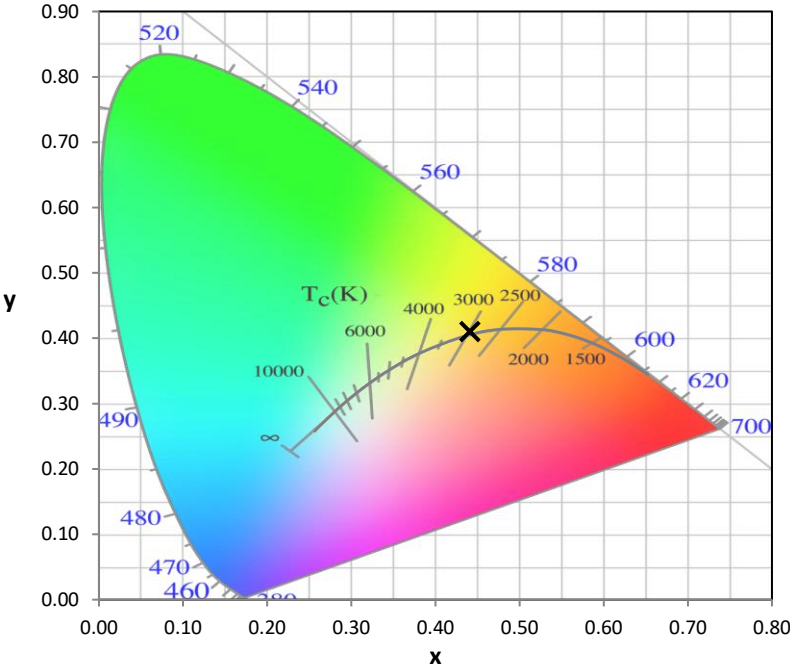
Data in this report applies to families of products including GSS-SB1A-730-U-5WQ

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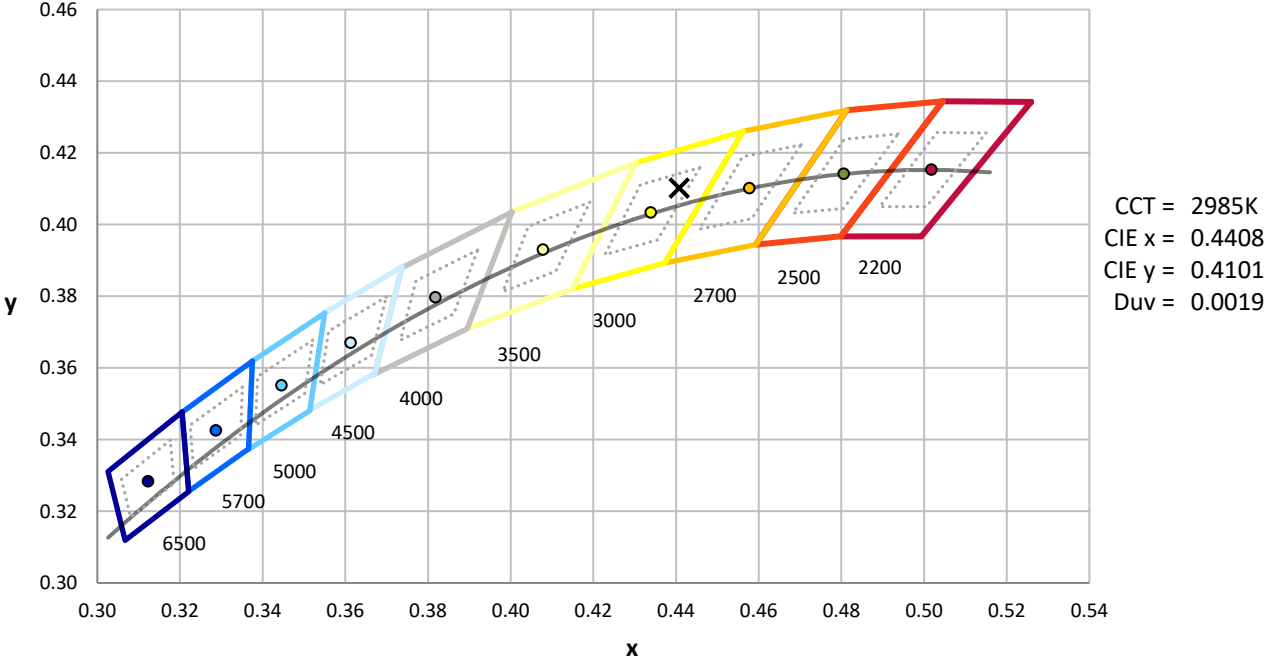
| Measurement and Test Equipment | | | |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 | 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



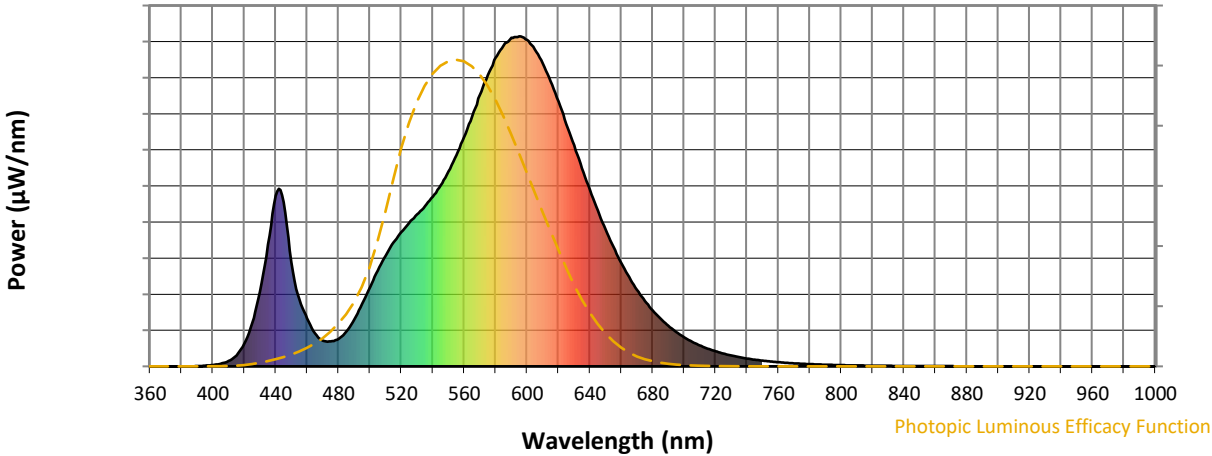
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 3000K 4-step quadrangle

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Photopic Flux vs. Wavelength

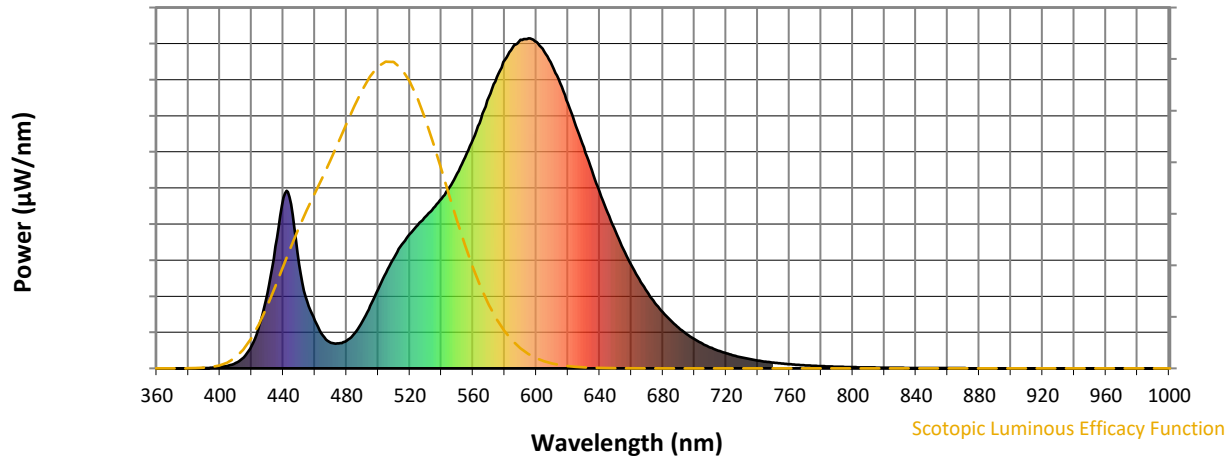


Photopic Lumens: NR

| 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 | 142 | NR | 620 | 803 | NR | 750 | 17 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 189 | NR | 625 | 734 | NR | 755 | 15 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 240 | NR | 630 | 670 | NR | 760 | 13 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 290 | NR | 635 | 600 | NR | 765 | 11 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 335 | NR | 640 | 535 | NR | 770 | 9 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 375 | NR | 645 | 473 | NR | 775 | 8 | NR | 905 | 0 | NR |
| 390 | 1 | NR | 520 | 408 | NR | 650 | 415 | NR | 780 | 7 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 434 | NR | 655 | 362 | NR | 785 | 6 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 461 | NR | 660 | 313 | NR | 790 | 5 | NR | 920 | 0 | NR |
| 405 | 8 | NR | 535 | 486 | NR | 665 | 271 | NR | 795 | 4 | NR | 925 | 0 | NR |
| 410 | 16 | NR | 540 | 514 | NR | 670 | 231 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 33 | NR | 545 | 549 | NR | 675 | 198 | NR | 805 | 3 | NR | 935 | 0 | NR |
| 420 | 69 | NR | 550 | 591 | NR | 680 | 169 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 131 | NR | 555 | 640 | NR | 685 | 144 | NR | 815 | 2 | NR | 945 | 0 | NR |
| 430 | 227 | NR | 560 | 695 | NR | 690 | 123 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 369 | NR | 565 | 757 | NR | 695 | 104 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 517 | NR | 570 | 822 | NR | 700 | 88 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 498 | NR | 575 | 882 | NR | 705 | 75 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 315 | NR | 580 | 935 | NR | 710 | 63 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 204 | NR | 585 | 972 | NR | 715 | 54 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 145 | NR | 590 | 996 | NR | 720 | 46 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 100 | NR | 595 | 1000 | NR | 725 | 39 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 78 | NR | 600 | 989 | NR | 730 | 33 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 76 | NR | 605 | 960 | NR | 735 | 28 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 83 | NR | 610 | 918 | NR | 740 | 24 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 105 | NR | 615 | 864 | NR | 745 | 20 | NR | 875 | 1 | NR | | | |

REPORT NUMBER: SP1-2407-184-4

Scotopic Flux vs. Wavelength



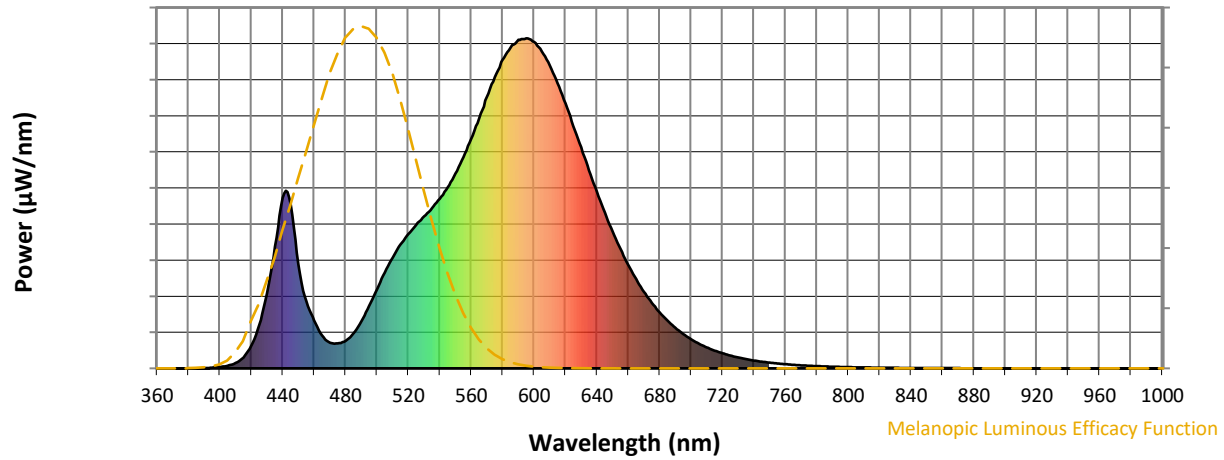
Scotopic Lumens: NR

S/P: 1.19

| 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 | 142 | NR | 620 | 803 | NR | 750 | 17 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 189 | NR | 625 | 734 | NR | 755 | 15 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 240 | NR | 630 | 670 | NR | 760 | 13 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 290 | NR | 635 | 600 | NR | 765 | 11 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 335 | NR | 640 | 535 | NR | 770 | 9 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 375 | NR | 645 | 473 | NR | 775 | 8 | NR | 905 | 0 | NR |
| 390 | 1 | NR | 520 | 408 | NR | 650 | 415 | NR | 780 | 7 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 434 | NR | 655 | 362 | NR | 785 | 6 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 461 | NR | 660 | 313 | NR | 790 | 5 | NR | 920 | 0 | NR |
| 405 | 8 | NR | 535 | 486 | NR | 665 | 271 | NR | 795 | 4 | NR | 925 | 0 | NR |
| 410 | 16 | NR | 540 | 514 | NR | 670 | 231 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 33 | NR | 545 | 549 | NR | 675 | 198 | NR | 805 | 3 | NR | 935 | 0 | NR |
| 420 | 69 | NR | 550 | 591 | NR | 680 | 169 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 131 | NR | 555 | 640 | NR | 685 | 144 | NR | 815 | 2 | NR | 945 | 0 | NR |
| 430 | 227 | NR | 560 | 695 | NR | 690 | 123 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 369 | NR | 565 | 757 | NR | 695 | 104 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 517 | NR | 570 | 822 | NR | 700 | 88 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 498 | NR | 575 | 882 | NR | 705 | 75 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 315 | NR | 580 | 935 | NR | 710 | 63 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 204 | NR | 585 | 972 | NR | 715 | 54 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 145 | NR | 590 | 996 | NR | 720 | 46 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 100 | NR | 595 | 1000 | NR | 725 | 39 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 78 | NR | 600 | 989 | NR | 730 | 33 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 76 | NR | 605 | 960 | NR | 735 | 28 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 83 | NR | 610 | 918 | NR | 740 | 24 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 105 | NR | 615 | 864 | NR | 745 | 20 | NR | 875 | 1 | NR | | | |

REPORT NUMBER: SP1-2407-184-4

Melanopic Flux vs. Wavelength



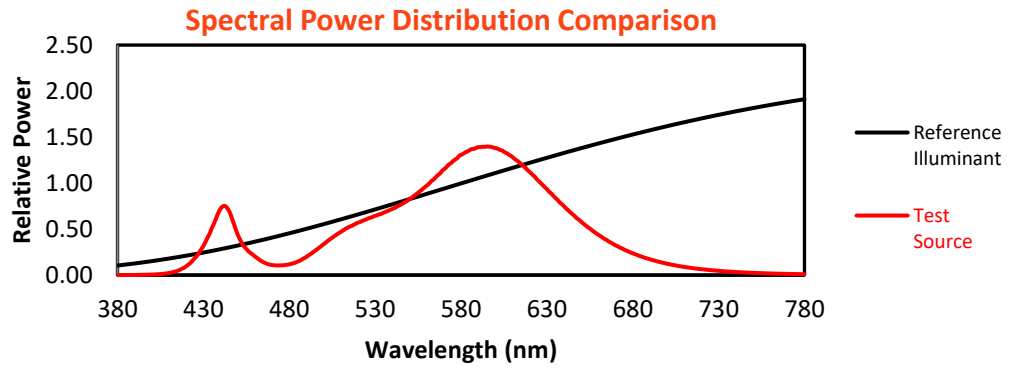
Melanopic Lumens: NR

M/P: 2.13

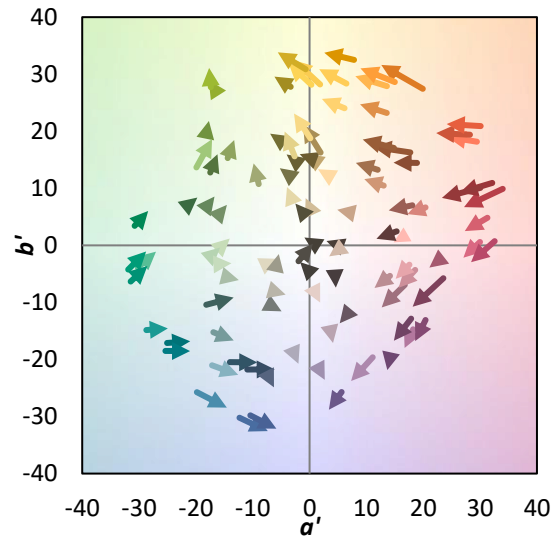
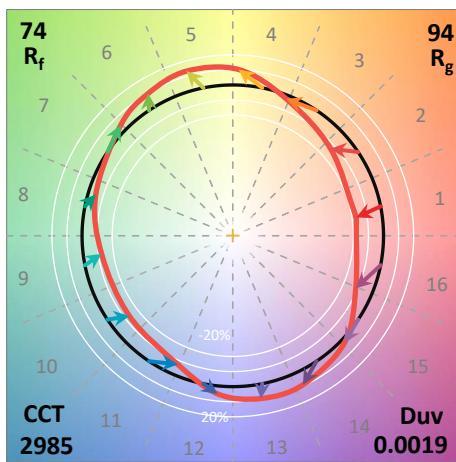
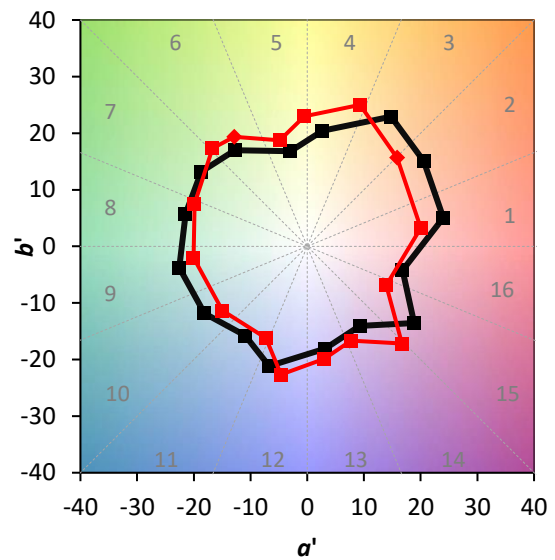
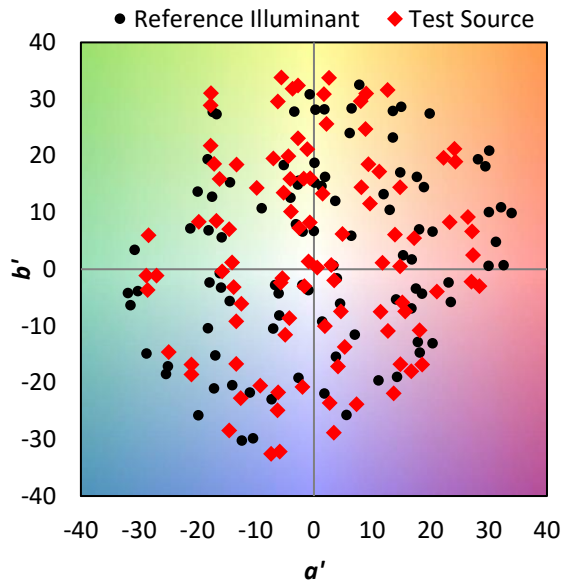
| λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360 | 0 | NR | 490 | 142 | NR | 620 | 803 | NR | 750 | 17 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 189 | NR | 625 | 734 | NR | 755 | 15 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 240 | NR | 630 | 670 | NR | 760 | 13 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 290 | NR | 635 | 600 | NR | 765 | 11 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 335 | NR | 640 | 535 | NR | 770 | 9 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 375 | NR | 645 | 473 | NR | 775 | 8 | NR | 905 | 0 | NR |
| 390 | 1 | NR | 520 | 408 | NR | 650 | 415 | NR | 780 | 7 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 434 | NR | 655 | 362 | NR | 785 | 6 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 461 | NR | 660 | 313 | NR | 790 | 5 | NR | 920 | 0 | NR |
| 405 | 8 | NR | 535 | 486 | NR | 665 | 271 | NR | 795 | 4 | NR | 925 | 0 | NR |
| 410 | 16 | NR | 540 | 514 | NR | 670 | 231 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 33 | NR | 545 | 549 | NR | 675 | 198 | NR | 805 | 3 | NR | 935 | 0 | NR |
| 420 | 69 | NR | 550 | 591 | NR | 680 | 169 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 131 | NR | 555 | 640 | NR | 685 | 144 | NR | 815 | 2 | NR | 945 | 0 | NR |
| 430 | 227 | NR | 560 | 695 | NR | 690 | 123 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 369 | NR | 565 | 757 | NR | 695 | 104 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 517 | NR | 570 | 822 | NR | 700 | 88 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 498 | NR | 575 | 882 | NR | 705 | 75 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 315 | NR | 580 | 935 | NR | 710 | 63 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 204 | NR | 585 | 972 | NR | 715 | 54 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 145 | NR | 590 | 996 | NR | 720 | 46 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 100 | NR | 595 | 1000 | NR | 725 | 39 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 78 | NR | 600 | 989 | NR | 730 | 33 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 76 | NR | 605 | 960 | NR | 735 | 28 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 83 | NR | 610 | 918 | NR | 740 | 24 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 105 | NR | 615 | 864 | NR | 745 | 20 | NR | 875 | 1 | NR | | | |

Summary

$R_f = 73.8$
 $R_g = 94.4$
 $CIE R_a = 70.8$
 $R_g = -43.2$

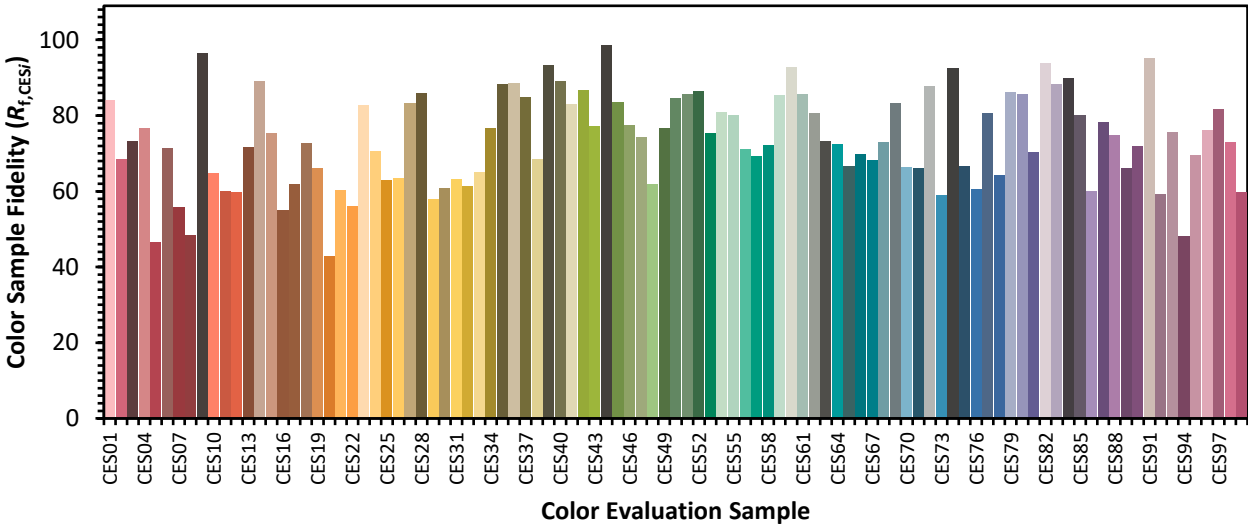


Color Vector Graphics

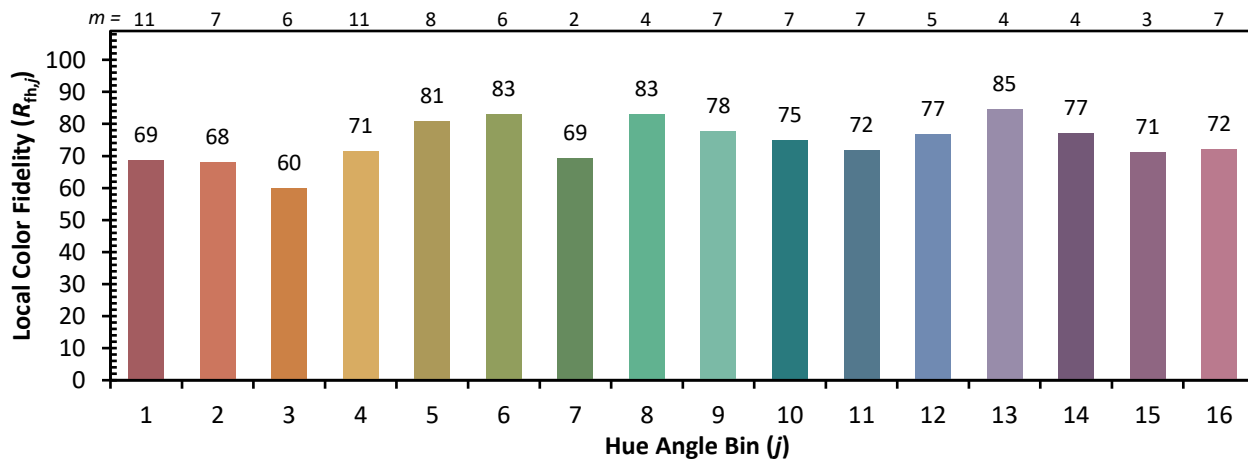
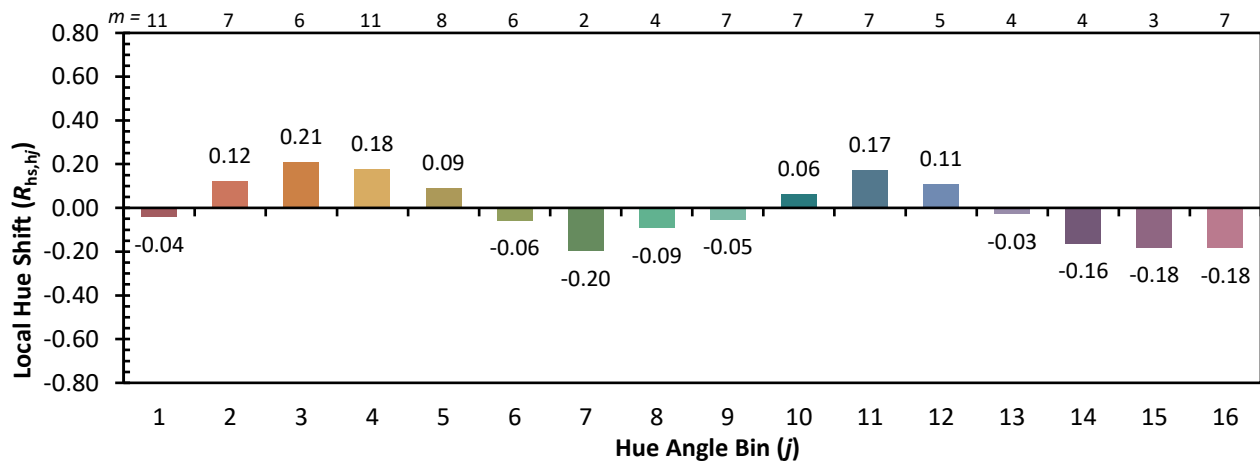
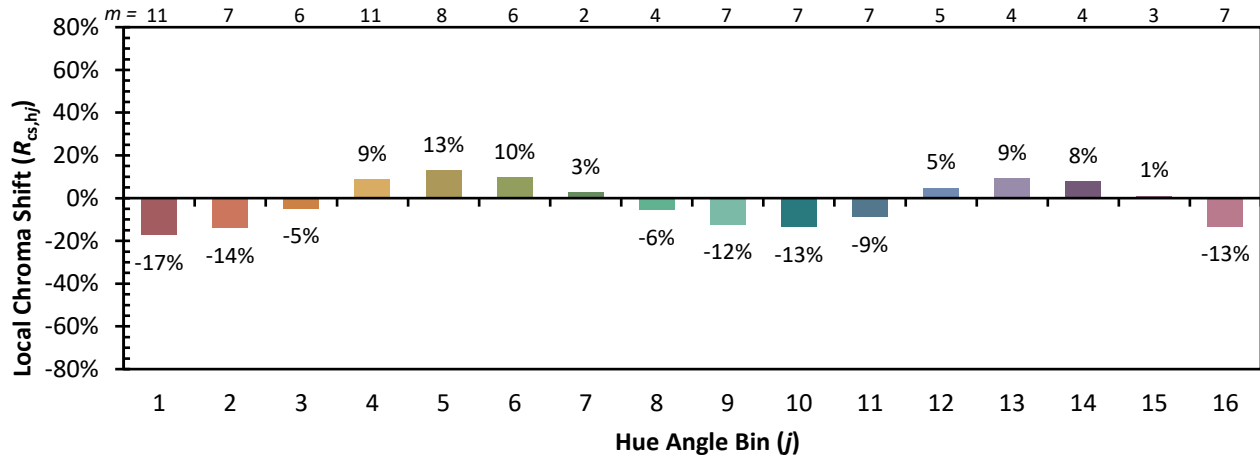


Individual Sample Fidelity Index ($R_{f,i}$)

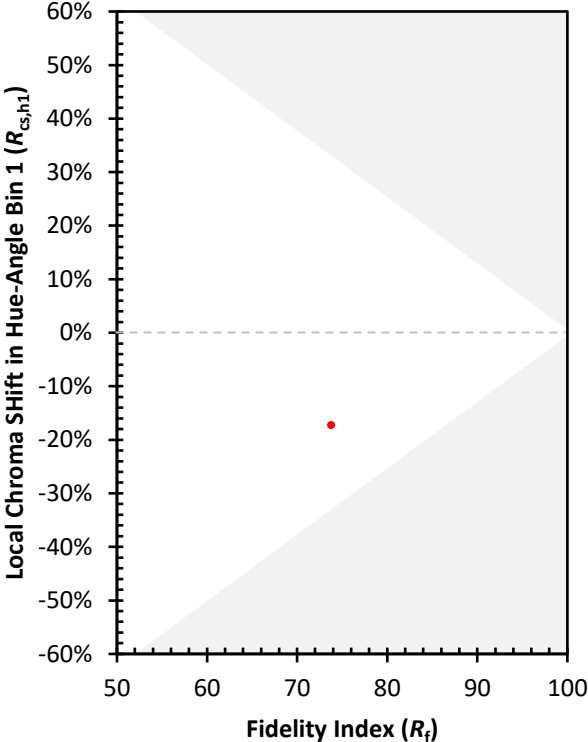
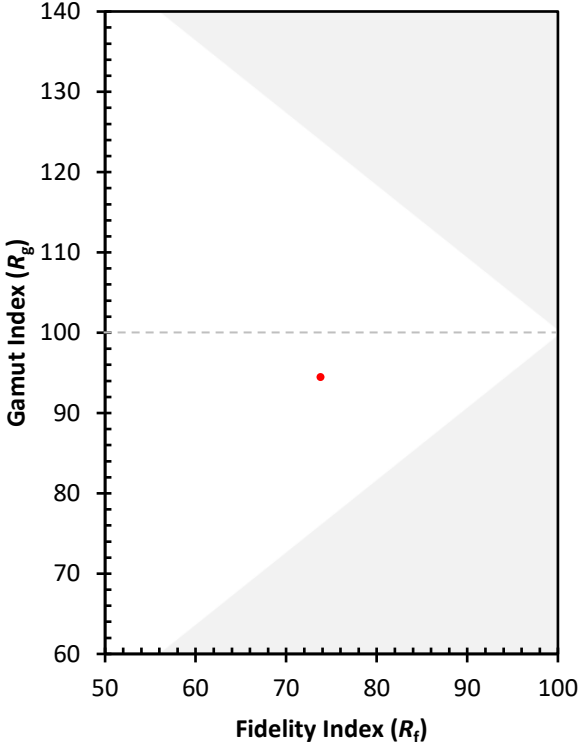
| | | | |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 63 | CES51 = 86 | CES76 = 61 |
| CES02 = 62 | CES27 = 83 | CES52 = 86 | CES77 = 81 |
| CES03 = 31 | CES28 = 86 | CES53 = 75 | CES78 = 64 |
| CES04 = 71 | CES29 = 58 | CES54 = 81 | CES79 = 86 |
| CES05 = 49 | CES30 = 61 | CES55 = 80 | CES80 = 86 |
| CES06 = 51 | CES31 = 63 | CES56 = 71 | CES81 = 70 |
| CES07 = 41 | CES32 = 61 | CES57 = 69 | CES82 = 94 |
| CES08 = 40 | CES33 = 65 | CES58 = 72 | CES83 = 88 |
| CES09 = 29 | CES34 = 77 | CES59 = 85 | CES84 = 90 |
| CES10 = 76 | CES35 = 88 | CES60 = 93 | CES85 = 80 |
| CES11 = 59 | CES36 = 89 | CES61 = 86 | CES86 = 60 |
| CES12 = 65 | CES37 = 85 | CES62 = 81 | CES87 = 78 |
| CES13 = 43 | CES38 = 69 | CES63 = 73 | CES88 = 75 |
| CES14 = 74 | CES39 = 93 | CES64 = 72 | CES89 = 66 |
| CES15 = 71 | CES40 = 89 | CES65 = 67 | CES90 = 72 |
| CES16 = 47 | CES41 = 83 | CES66 = 70 | CES91 = 95 |
| CES17 = 50 | CES42 = 87 | CES67 = 68 | CES92 = 59 |
| CES18 = 56 | CES43 = 77 | CES68 = 73 | CES93 = 76 |
| CES19 = 73 | CES44 = 99 | CES69 = 83 | CES94 = 48 |
| CES20 = 66 | CES45 = 83 | CES70 = 66 | CES95 = 70 |
| CES21 = 87 | CES46 = 77 | CES71 = 66 | CES96 = 76 |
| CES22 = 79 | CES47 = 74 | CES72 = 88 | CES97 = 82 |
| CES23 = 92 | CES48 = 62 | CES73 = 59 | CES98 = 73 |
| CES24 = 91 | CES49 = 77 | CES74 = 93 | CES99 = 60 |
| CES25 = 73 | CES50 = 85 | CES75 = 67 | |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)