

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: STREETWORKS

Report Number: P1063902

Luminaire Tested: **GLAN-SA8B-740-U-T4BC**

Issue Date: 08/07/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1063902  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 08/07/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: GLAN-SA8B-740-U-T4BC  
Description: GALLEON II AREA AND ROADWAY LUMINAIRE 800mA 8xLight Square PACKAGE  
70CRI 4000K FIXTURE w/ TYPE IV ANGLED BACKLIGHT CONTROL  
Light Source: (112) 4000K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 36224.4 lumens  
Efficiency: N/A  
Efficacy: 128.1 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1.5' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B0 - U0 - G5

Input Watts (W): 282.8  
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

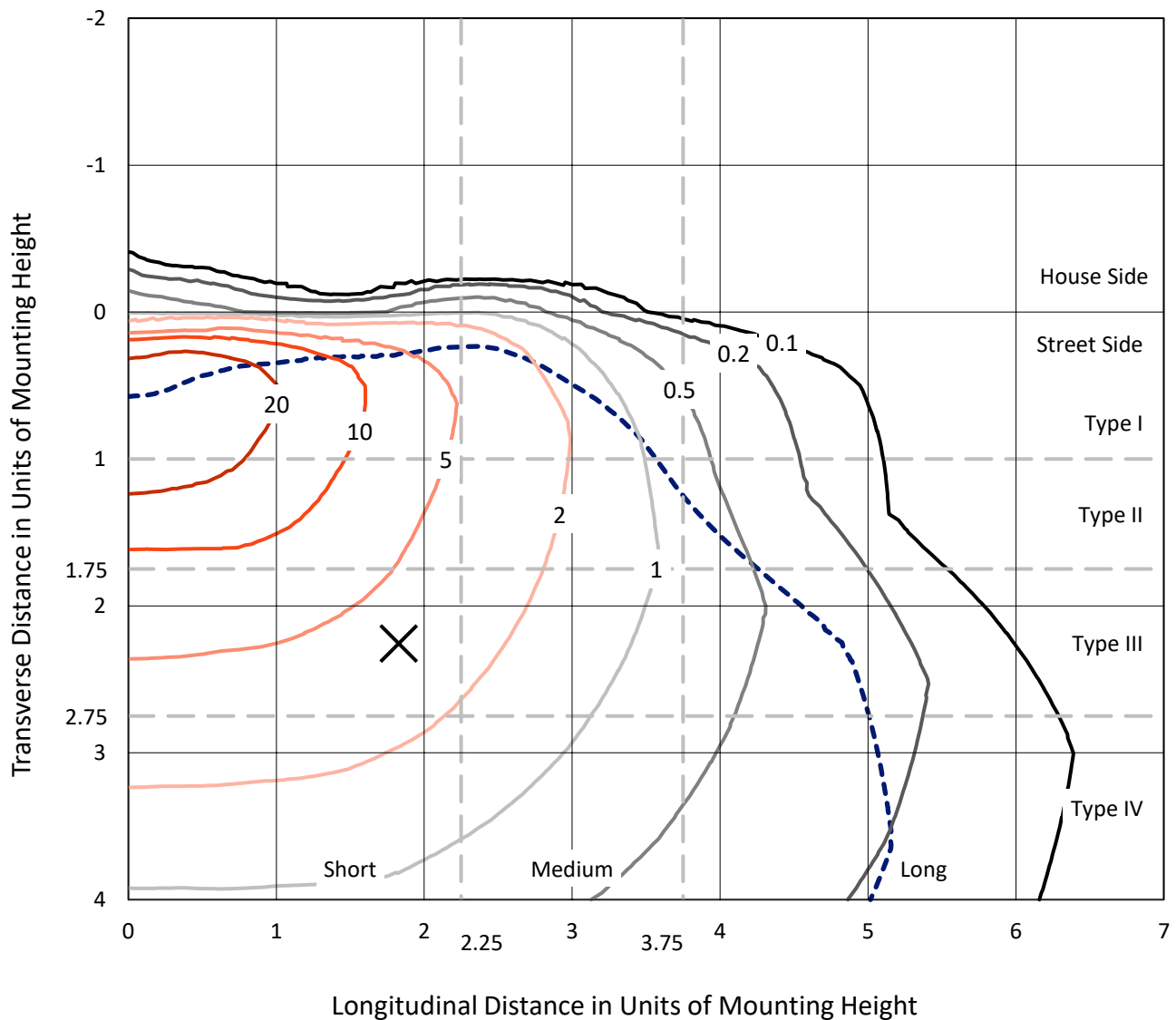


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## Iso-Footcandle Lines of Horizontal Illumination

× Max cd  
 - - - 1/2 Max cd

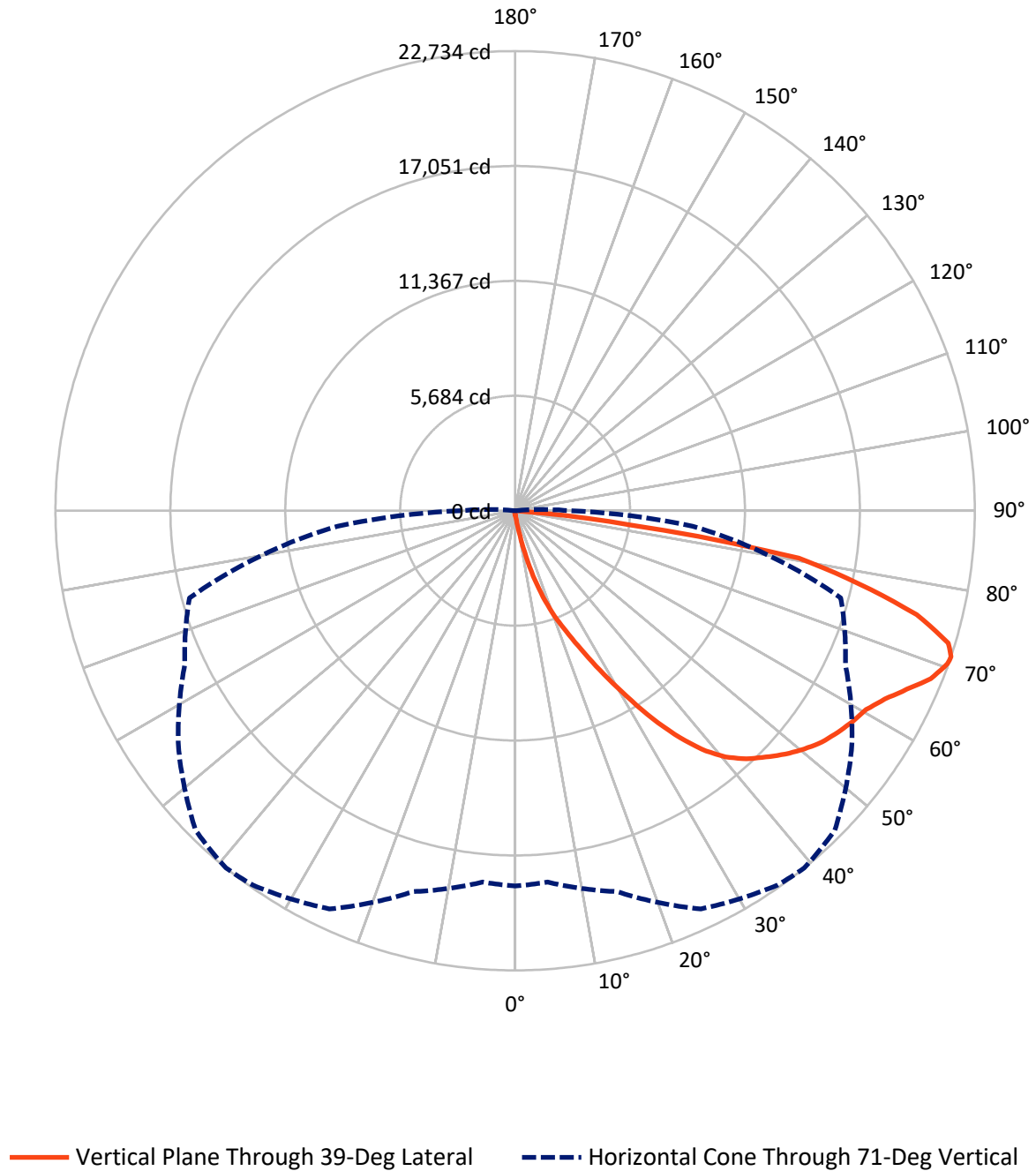


Based on 15 foot mounting height. Maximum calculated value = 37.2 fc  
 Type IV - Short - N/A

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## Luminous Intensity Polar Plot



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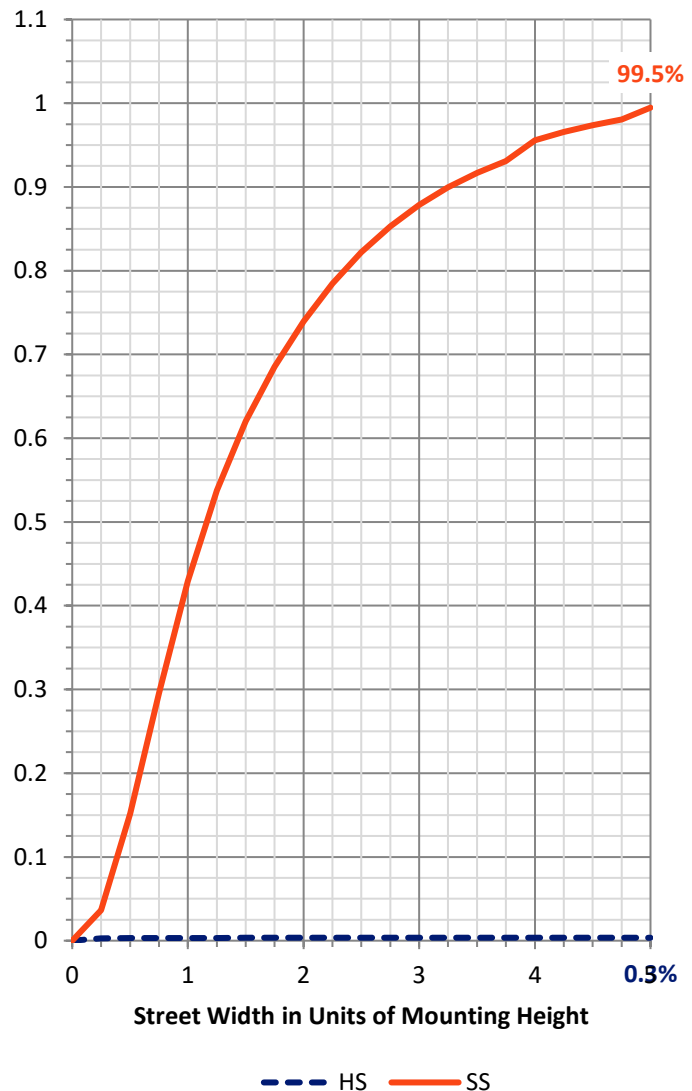
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 128.7    | 0.0    | 128.7   |
|                    | % Fixture | 0.4      | 0.0    | 0.4     |
| <b>Street Side</b> | Lumens    | 36095.6  | 0.0    | 36095.6 |
|                    | % Fixture | 99.6     | 0.0    | 99.6    |
| <b>Total</b>       | Lumens    | 36224.4  | 0.0    | 36224.4 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 30.3    | 0.1       |
| 10°-20°   | 387.2   | 1.1       |
| 20°-30°   | 1378.8  | 3.8       |
| 30°-40°   | 3323.0  | 9.2       |
| 40°-50°   | 5561.3  | 15.4      |
| 50°-60°   | 7142.8  | 19.7      |
| 60°-70°   | 9039.3  | 25.0      |
| 70°-80°   | 8058.9  | 22.2      |
| 80°-90°   | 1302.7  | 3.6       |
| 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°    | 36224.4 | 100.0     |
| 0°-180°   | 36224.4 | 100.0     |



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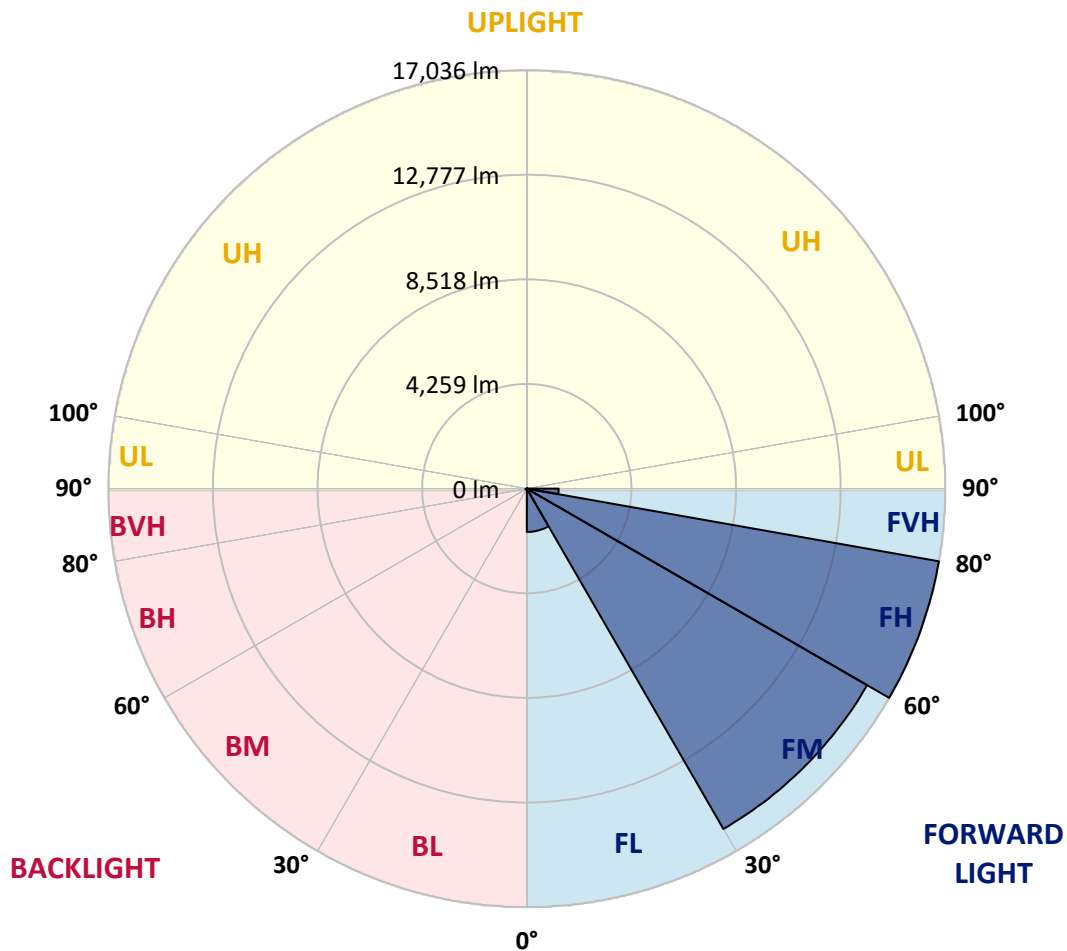
CATALOG NUMBER: GLAN-SA8B-740-U-T4BC

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |        |
|------|-------------|---------|-----------|-------------------------|------|--------|
|      |             |         |           | B                       | U    | G      |
| FL   | (0°-30°)    | 1765.1  | 4.9       |                         |      |        |
| FM   | (30°-60°)   | 15997.4 | 44.2      |                         |      |        |
| FH   | (60°-80°)   | 17036.4 | 47.0      |                         |      | G5     |
| FVH  | (80°-90°)   | 1296.8  | 3.6       |                         |      | G5     |
| BL   | (0°-30°)    | 31.1    | 0.1       | B0/110                  |      |        |
| BM   | (30°-60°)   | 29.8    | 0.1       | B0/220                  |      |        |
| BH   | (60°-80°)   | 61.9    | 0.2       | B0/110                  |      | G0/110 |
| BVH  | (80°-90°)   | 5.9     | 0.0       |                         |      | G0/10  |
| UL   | (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |        |
| UH   | (100°-180°) | 0.0     | 0.0       |                         | U0/0 |        |

**BUG Rating: B0-U0-G5**

Type IV Short



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 39°     | 45°     | 55°     | 65°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 198.6   | 198.6   | 198.6   | 198.6   | 198.6   | 198.6   | 198.6   | 198.6   | 198.6   | 198.6   | 198.6   |
| 2.5°  | 228.1   | 228.1   | 228.1   | 220.7   | 220.7   | 218.2   | 215.8   | 215.8   | 210.9   | 208.4   | 203.5   |
| 5°    | 345.8   | 338.4   | 321.2   | 311.4   | 291.8   | 279.6   | 267.3   | 250.1   | 233.0   | 220.7   | 206.0   |
| 7.5°  | 782.3   | 799.4   | 743.0   | 637.6   | 529.7   | 483.1   | 404.6   | 326.1   | 269.7   | 233.0   | 208.4   |
| 10°   | 1993.6  | 1983.8  | 1792.6  | 1581.7  | 1221.2  | 1076.5  | 843.6   | 532.1   | 348.2   | 255.0   | 210.9   |
| 12.5° | 3391.4  | 3381.6  | 3156.0  | 2869.1  | 2393.3  | 2091.7  | 1650.3  | 993.1   | 500.2   | 289.4   | 210.9   |
| 15°   | 4566.0  | 4526.8  | 4455.6  | 4171.2  | 3614.5  | 3362.0  | 2778.3  | 1755.8  | 809.2   | 348.2   | 215.8   |
| 17.5° | 5343.3  | 5309.0  | 5242.8  | 5139.8  | 4786.7  | 4487.5  | 4019.1  | 2758.7  | 1309.5  | 451.2   | 225.6   |
| 20°   | 6056.9  | 6032.4  | 5978.5  | 5958.8  | 5730.8  | 5571.4  | 5183.9  | 3911.3  | 2040.2  | 613.0   | 240.3   |
| 22.5° | 7037.8  | 6986.3  | 7008.4  | 6890.7  | 6667.5  | 6476.2  | 6238.4  | 5117.7  | 2932.8  | 882.8   | 267.3   |
| 25°   | 8239.4  | 8214.9  | 8153.5  | 8070.2  | 7761.2  | 7594.4  | 7229.1  | 6255.5  | 3930.9  | 1235.9  | 296.7   |
| 27.5° | 9691.1  | 9664.1  | 9649.4  | 9458.1  | 9102.5  | 8921.1  | 8411.0  | 7329.6  | 5054.0  | 1731.2  | 336.0   |
| 30°   | 11363.5 | 11375.7 | 11280.1 | 11034.9 | 10620.5 | 10365.4 | 9840.7  | 8455.2  | 6204.1  | 2312.4  | 377.6   |
| 32.5° | 13094.7 | 13070.2 | 12923.1 | 12633.7 | 12263.4 | 12025.6 | 11358.6 | 9688.6  | 7410.5  | 3080.0  | 426.7   |
| 35°   | 14960.8 | 14914.2 | 14526.8 | 14195.8 | 13879.4 | 13580.3 | 12972.1 | 11120.7 | 8617.0  | 3940.7  | 492.9   |
| 37.5° | 16844.1 | 16625.9 | 15848.5 | 15429.2 | 15211.0 | 14965.7 | 14399.3 | 12648.4 | 9816.1  | 4901.9  | 573.8   |
| 40°   | 18266.4 | 18097.2 | 17175.2 | 16402.7 | 16228.6 | 16020.2 | 15598.4 | 13967.7 | 11091.3 | 5934.3  | 671.9   |
| 42.5° | 19053.6 | 18960.4 | 18131.5 | 17368.9 | 16959.4 | 16775.5 | 16415.0 | 15120.2 | 12351.7 | 7074.6  | 814.1   |
| 45°   | 19389.5 | 19244.8 | 18690.6 | 18335.1 | 17682.8 | 17378.7 | 16949.6 | 15990.8 | 13668.5 | 8369.3  | 1012.8  |
| 47.5° | 19286.5 | 19203.1 | 18805.9 | 18935.8 | 18462.6 | 17989.3 | 17359.1 | 16657.8 | 14794.1 | 9855.4  | 1285.0  |
| 50°   | 18639.1 | 18568.0 | 18445.4 | 19149.2 | 19090.3 | 18531.2 | 17888.8 | 17185.0 | 15713.7 | 11388.0 | 1706.7  |
| 52.5° | 17408.1 | 17378.7 | 17692.6 | 18982.4 | 19445.9 | 19009.4 | 18398.8 | 17650.9 | 16571.9 | 12989.3 | 2310.0  |
| 55°   | 15821.6 | 15941.7 | 16839.2 | 18722.5 | 19627.4 | 19362.5 | 18850.0 | 18087.4 | 17261.0 | 14421.4 | 3200.1  |
| 57.5° | 15169.3 | 15201.2 | 16321.8 | 18538.6 | 19708.3 | 19674.0 | 19289.0 | 18504.3 | 17893.7 | 15566.5 | 4558.6  |
| 60°   | 15931.9 | 15882.9 | 16473.8 | 18678.4 | 19870.1 | 19953.5 | 19678.9 | 18891.7 | 18443.0 | 16549.9 | 6368.3  |
| 62.5° | 17310.0 | 17283.1 | 17471.9 | 19274.3 | 20343.4 | 20512.6 | 20220.8 | 19171.3 | 18928.5 | 17197.2 | 8433.1  |
| 65°   | 18541.0 | 18484.6 | 18835.3 | 20331.1 | 21174.7 | 21294.9 | 21039.8 | 19649.4 | 19141.8 | 17668.1 | 10372.8 |
| 67.5° | 19073.2 | 19060.9 | 19624.9 | 21336.5 | 22047.7 | 22177.6 | 21954.5 | 20309.1 | 19092.8 | 17817.6 | 11228.6 |
| 70°   | 18830.4 | 18783.8 | 19686.2 | 21763.2 | 22540.6 | 22687.7 | 22471.9 | 20554.3 | 18560.7 | 17344.4 | 9960.8  |
| 71°   | 18563.1 | 18438.1 | 19502.3 | 21733.8 | 22609.2 | 22734.3 | 22356.7 | 20331.1 | 18026.1 | 16672.5 | 8810.7  |
| 72.5° | 17734.3 | 17756.3 | 18997.2 | 21427.3 | 22444.9 | 22408.2 | 21704.4 | 19531.7 | 17381.2 | 15147.2 | 7077.0  |
| 75°   | 15694.0 | 15824.0 | 17361.5 | 20139.9 | 20978.5 | 20510.2 | 19433.6 | 18004.0 | 16086.4 | 10860.8 | 4914.2  |
| 77.5° | 12825.0 | 13018.7 | 14708.3 | 17663.2 | 17425.3 | 17378.7 | 17334.6 | 15863.2 | 13737.2 | 5833.8  | 3418.4  |
| 80°   | 6123.1  | 6542.5  | 8872.0  | 12609.2 | 13698.0 | 14225.2 | 13894.1 | 12783.3 | 10622.9 | 2778.3  | 2042.7  |
| 82.5° | 399.7   | 394.8   | 559.1   | 1059.3  | 4465.4  | 5772.5  | 9171.2  | 9136.9  | 7405.6  | 1353.6  | 833.7   |
| 85°   | 188.8   | 193.7   | 213.3   | 242.8   | 282.0   | 309.0   | 426.7   | 2501.2  | 3543.4  | 644.9   | 181.5   |
| 87.5° | 110.3   | 112.8   | 132.4   | 169.2   | 220.7   | 245.2   | 291.8   | 375.2   | 461.0   | 355.6   | 39.2    |
| 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: GLAN-SA8B-740-U-T4BC

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 198.6  | 198.6 | 198.6 | 198.6 | 198.6 | 198.6 | 198.6 | 198.6 | 198.6 | 198.6 | 198.6 |
| 2.5°  | 201.1  | 198.6 | 191.3 | 183.9 | 176.6 | 171.7 | 169.2 | 171.7 | 171.7 | 174.1 | 174.1 |
| 5°    | 201.1  | 193.7 | 181.5 | 166.7 | 156.9 | 147.1 | 142.2 | 139.8 | 142.2 | 142.2 | 142.2 |
| 7.5°  | 198.6  | 186.4 | 169.2 | 152.0 | 139.8 | 127.5 | 122.6 | 120.2 | 120.2 | 122.6 | 122.6 |
| 10°   | 193.7  | 181.5 | 159.4 | 139.8 | 125.1 | 110.3 | 103.0 | 95.6  | 95.6  | 95.6  | 98.1  |
| 12.5° | 191.3  | 174.1 | 147.1 | 127.5 | 107.9 | 90.7  | 76.0  | 68.7  | 71.1  | 71.1  | 71.1  |
| 15°   | 186.4  | 166.7 | 139.8 | 115.3 | 90.7  | 68.7  | 56.4  | 49.0  | 51.5  | 53.9  | 51.5  |
| 17.5° | 186.4  | 164.3 | 130.0 | 100.5 | 71.1  | 51.5  | 41.7  | 36.8  | 36.8  | 39.2  | 39.2  |
| 20°   | 186.4  | 159.4 | 122.6 | 85.8  | 53.9  | 39.2  | 29.4  | 27.0  | 27.0  | 31.9  | 34.3  |
| 22.5° | 191.3  | 159.4 | 112.8 | 71.1  | 44.1  | 29.4  | 22.1  | 19.6  | 22.1  | 27.0  | 29.4  |
| 25°   | 198.6  | 156.9 | 103.0 | 63.8  | 36.8  | 22.1  | 17.2  | 12.3  | 14.7  | 19.6  | 22.1  |
| 27.5° | 206.0  | 154.5 | 93.2  | 56.4  | 29.4  | 17.2  | 12.3  | 9.8   | 7.4   | 9.8   | 9.8   |
| 30°   | 213.3  | 154.5 | 83.4  | 46.6  | 24.5  | 12.3  | 7.4   | 4.9   | 2.5   | 0.0   | 0.0   |
| 32.5° | 218.2  | 149.6 | 76.0  | 36.8  | 19.6  | 9.8   | 4.9   | 2.5   | 0.0   | 0.0   | 0.0   |
| 35°   | 223.1  | 144.7 | 66.2  | 29.4  | 14.7  | 7.4   | 2.5   | 0.0   | 0.0   | 0.0   | 0.0   |
| 37.5° | 228.1  | 137.3 | 56.4  | 24.5  | 12.3  | 4.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 40°   | 233.0  | 127.5 | 46.6  | 22.1  | 7.4   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 42.5° | 237.9  | 120.2 | 39.2  | 17.2  | 4.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 45°   | 250.1  | 115.3 | 31.9  | 14.7  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 47.5° | 272.2  | 110.3 | 29.4  | 9.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 50°   | 304.1  | 105.4 | 27.0  | 7.4   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 52.5° | 348.2  | 103.0 | 24.5  | 4.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 55°   | 426.7  | 100.5 | 22.1  | 4.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 57.5° | 561.6  | 98.1  | 22.1  | 4.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 60°   | 860.7  | 93.2  | 22.1  | 4.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 62.5° | 1537.5 | 90.7  | 19.6  | 4.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 65°   | 2680.2 | 93.2  | 19.6  | 4.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 67.5° | 3842.6 | 98.1  | 17.2  | 7.4   | 2.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 70°   | 3288.4 | 85.8  | 17.2  | 9.8   | 4.9   | 2.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 71°   | 2680.2 | 76.0  | 17.2  | 9.8   | 4.9   | 2.5   | 2.5   | 0.0   | 0.0   | 0.0   | 0.0   |
| 72.5° | 1723.9 | 58.9  | 14.7  | 9.8   | 4.9   | 4.9   | 2.5   | 0.0   | 0.0   | 0.0   | 0.0   |
| 75°   | 728.3  | 49.0  | 14.7  | 9.8   | 7.4   | 4.9   | 4.9   | 2.5   | 0.0   | 0.0   | 0.0   |
| 77.5° | 311.4  | 36.8  | 14.7  | 12.3  | 9.8   | 7.4   | 7.4   | 4.9   | 2.5   | 0.0   | 0.0   |
| 80°   | 117.7  | 29.4  | 17.2  | 14.7  | 12.3  | 12.3  | 9.8   | 4.9   | 2.5   | 0.0   | 0.0   |
| 82.5° | 53.9   | 24.5  | 17.2  | 14.7  | 14.7  | 12.3  | 9.8   | 7.4   | 4.9   | 0.0   | 0.0   |
| 85°   | 34.3   | 22.1  | 17.2  | 14.7  | 14.7  | 12.3  | 12.3  | 7.4   | 4.9   | 0.0   | 0.0   |
| 87.5° | 27.0   | 22.1  | 17.2  | 17.2  | 14.7  | 14.7  | 9.8   | 7.4   | 2.5   | 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   |



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

Report Prepared for

Cooper Lighting Solutions

McGraw-Edison

Report Number: SP1-2407-184-1

Test Date: 10/09/2024

Luminaire Tested: GSS-SB1A-740-U-5WQ

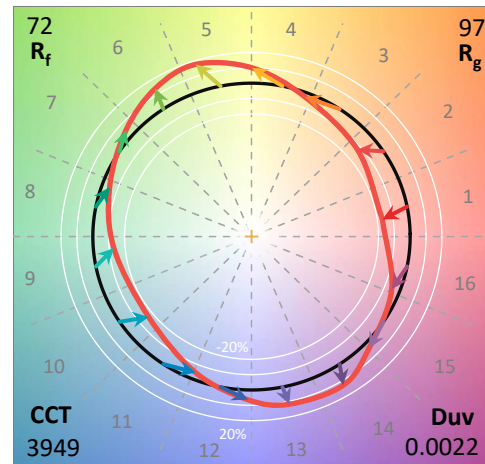
Data in this report applies to families of products including GSS-SB1A-740-U-5WQ

### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-1  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 10/15/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: McGraw-Edison  
 Catalog Number: **GSS-SB1A-740-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 70 CRI  
 4000K CCT 26 LEDS

### Spectral Parameters

|                           |          |           |      |      |       |
|---------------------------|----------|-----------|------|------|-------|
| CCT (K):                  | 3949     | CRI (Ra): | 70.7 |      |       |
| CIE u':                   | 0.2248   | R1:       | 68.0 | R9:  | -36.7 |
| CIE v':                   | 0.5053   | R2:       | 76.0 | R10: | 45.1  |
| Duv:                      | 0.0022   | R3:       | 84.3 | R11: | 70.7  |
| CIE x:                    | 0.3844   | R4:       | 72.0 | R12: | 47.1  |
| CIE y:                    | 0.3840   | R5:       | 68.6 | R13: | 68.5  |
| CIE z:                    | 0.2316   | R6:       | 68.3 | R14: | 91.1  |
| Peak Wavelength (nm):     | 440      | R7:       | 77.9 | R15: | 58.7  |
| Dominant Wavelength (nm): | 578      | R8:       | 50.3 |      |       |
| Purity:                   | 30.60026 |           |      |      |       |
| Rf:                       | 71.8     |           |      |      |       |
| Rg:                       | 96.5     |           |      |      |       |



### Test Conditions

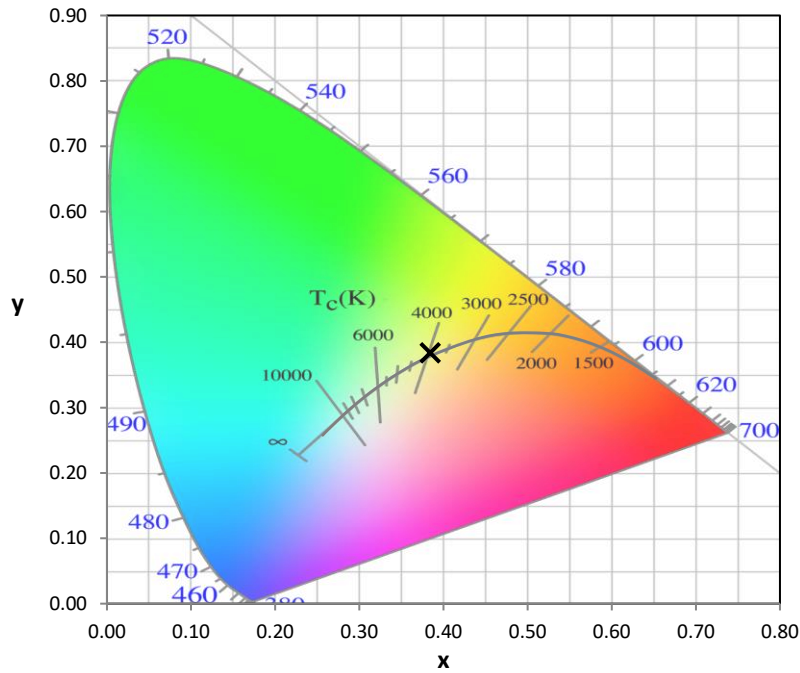
Stabilization Time: 34M  
 Operation Time: 1H 34M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-1

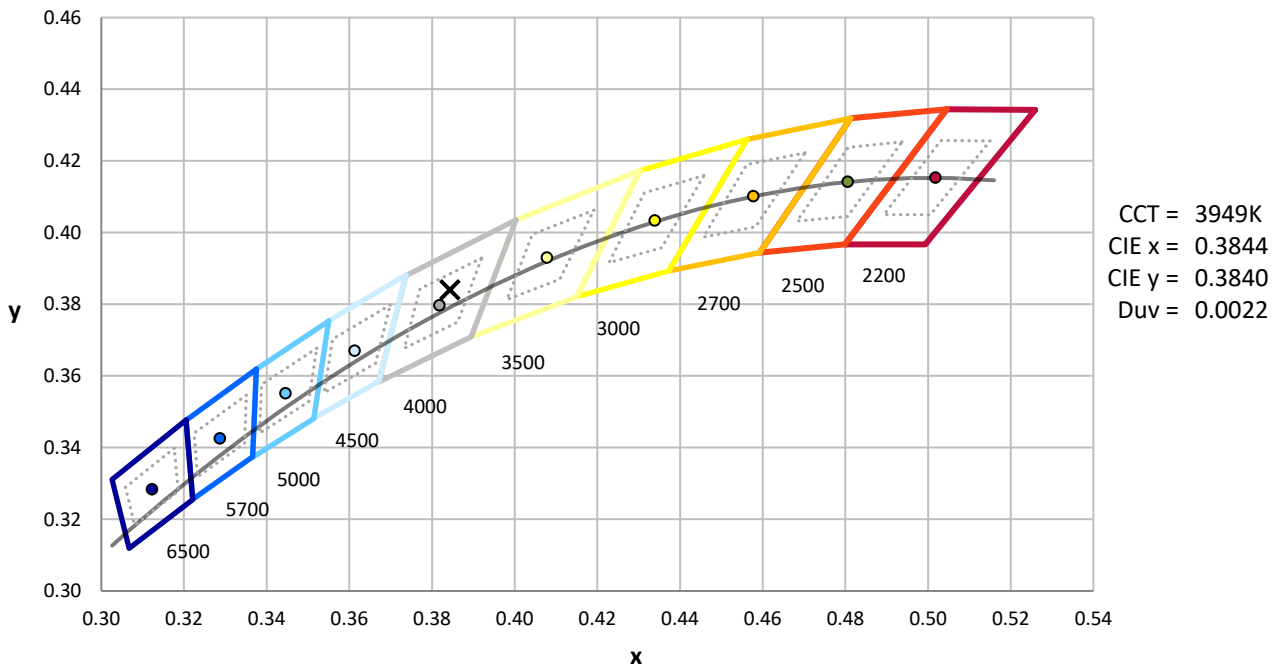
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date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



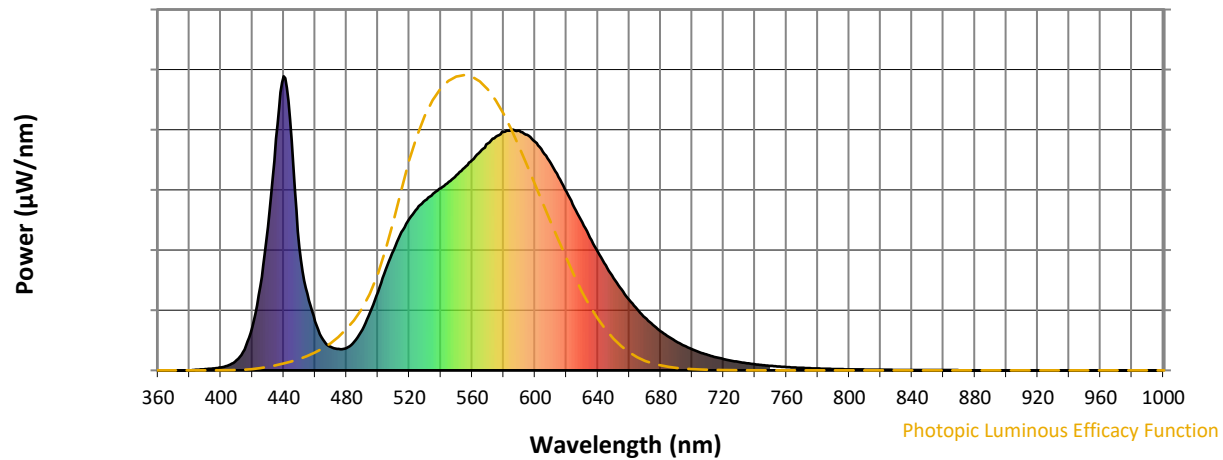
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 4000K 4-step quadrangle

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### Photopic Flux vs. Wavelength

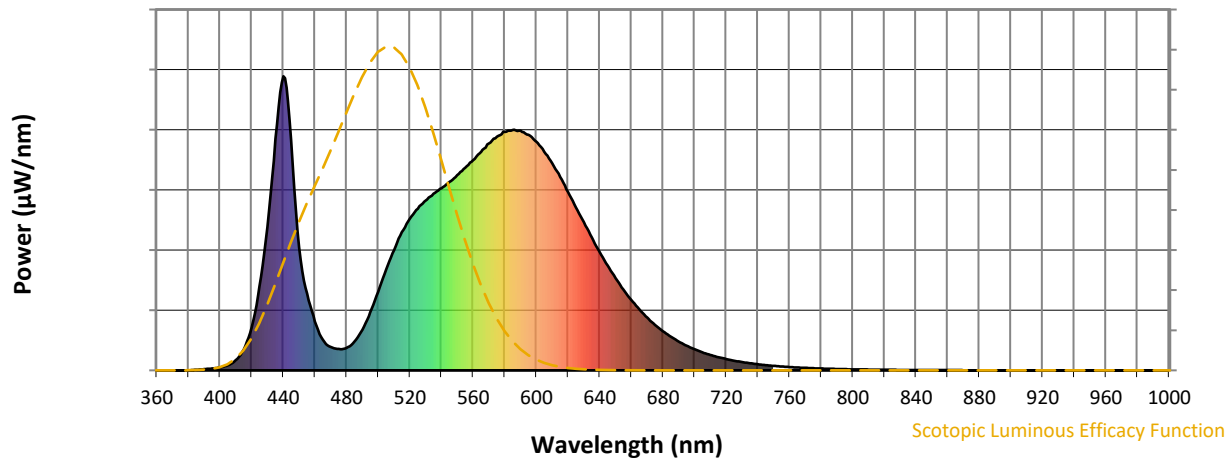


### Photopic Lumens: NR

| $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|
| 360               | 0                             | NR                             | 490               | 139                           | NR                             | 620               | 607                           | NR                             | 750               | 15                            | NR                             | 880               | 0                             | NR                             |
| 365               | 0                             | NR                             | 495               | 198                           | NR                             | 625               | 554                           | NR                             | 755               | 13                            | NR                             | 885               | 0                             | NR                             |
| 370               | 0                             | NR                             | 500               | 267                           | NR                             | 630               | 504                           | NR                             | 760               | 11                            | NR                             | 890               | 0                             | NR                             |
| 375               | 0                             | NR                             | 505               | 343                           | NR                             | 635               | 452                           | NR                             | 765               | 10                            | NR                             | 895               | 0                             | NR                             |
| 380               | 0                             | NR                             | 510               | 410                           | NR                             | 640               | 403                           | NR                             | 770               | 8                             | NR                             | 900               | 0                             | NR                             |
| 385               | 2                             | NR                             | 515               | 470                           | NR                             | 645               | 357                           | NR                             | 775               | 7                             | NR                             | 905               | 0                             | NR                             |
| 390               | 4                             | NR                             | 520               | 516                           | NR                             | 650               | 314                           | NR                             | 780               | 6                             | NR                             | 910               | 0                             | NR                             |
| 395               | 7                             | NR                             | 525               | 550                           | NR                             | 655               | 275                           | NR                             | 785               | 5                             | NR                             | 915               | 0                             | NR                             |
| 400               | 10                            | NR                             | 530               | 578                           | NR                             | 660               | 240                           | NR                             | 790               | 5                             | NR                             | 920               | 0                             | NR                             |
| 405               | 17                            | NR                             | 535               | 601                           | NR                             | 665               | 208                           | NR                             | 795               | 4                             | NR                             | 925               | 0                             | NR                             |
| 410               | 35                            | NR                             | 540               | 620                           | NR                             | 670               | 179                           | NR                             | 800               | 4                             | NR                             | 930               | 0                             | NR                             |
| 415               | 70                            | NR                             | 545               | 641                           | NR                             | 675               | 155                           | NR                             | 805               | 3                             | NR                             | 935               | 0                             | NR                             |
| 420               | 147                           | NR                             | 550               | 664                           | NR                             | 680               | 133                           | NR                             | 810               | 3                             | NR                             | 940               | 0                             | NR                             |
| 425               | 285                           | NR                             | 555               | 689                           | NR                             | 685               | 114                           | NR                             | 815               | 2                             | NR                             | 945               | 0                             | NR                             |
| 430               | 487                           | NR                             | 560               | 715                           | NR                             | 690               | 98                            | NR                             | 820               | 2                             | NR                             | 950               | 0                             | NR                             |
| 435               | 787                           | NR                             | 565               | 743                           | NR                             | 695               | 84                            | NR                             | 825               | 2                             | NR                             | 955               | 0                             | NR                             |
| 440               | 1000                          | NR                             | 570               | 771                           | NR                             | 700               | 72                            | NR                             | 830               | 2                             | NR                             | 960               | 0                             | NR                             |
| 445               | 783                           | NR                             | 575               | 794                           | NR                             | 705               | 61                            | NR                             | 835               | 1                             | NR                             | 965               | 0                             | NR                             |
| 450               | 417                           | NR                             | 580               | 811                           | NR                             | 710               | 52                            | NR                             | 840               | 1                             | NR                             | 970               | 0                             | NR                             |
| 455               | 261                           | NR                             | 585               | 817                           | NR                             | 715               | 45                            | NR                             | 845               | 1                             | NR                             | 975               | 0                             | NR                             |
| 460               | 167                           | NR                             | 590               | 815                           | NR                             | 720               | 39                            | NR                             | 850               | 1                             | NR                             | 980               | 0                             | NR                             |
| 465               | 104                           | NR                             | 595               | 801                           | NR                             | 725               | 33                            | NR                             | 855               | 1                             | NR                             | 985               | 0                             | NR                             |
| 470               | 79                            | NR                             | 600               | 777                           | NR                             | 730               | 28                            | NR                             | 860               | 1                             | NR                             | 990               | 0                             | NR                             |
| 475               | 73                            | NR                             | 605               | 744                           | NR                             | 735               | 24                            | NR                             | 865               | 1                             | NR                             | 995               | 0                             | NR                             |
| 480               | 76                            | NR                             | 610               | 704                           | NR                             | 740               | 21                            | NR                             | 870               | 1                             | NR                             | 1000              | 0                             | NR                             |
| 485               | 98                            | NR                             | 615               | 657                           | NR                             | 745               | 18                            | NR                             | 875               | 1                             | NR                             |                   |                               |                                |

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### Scotopic Flux vs. Wavelength



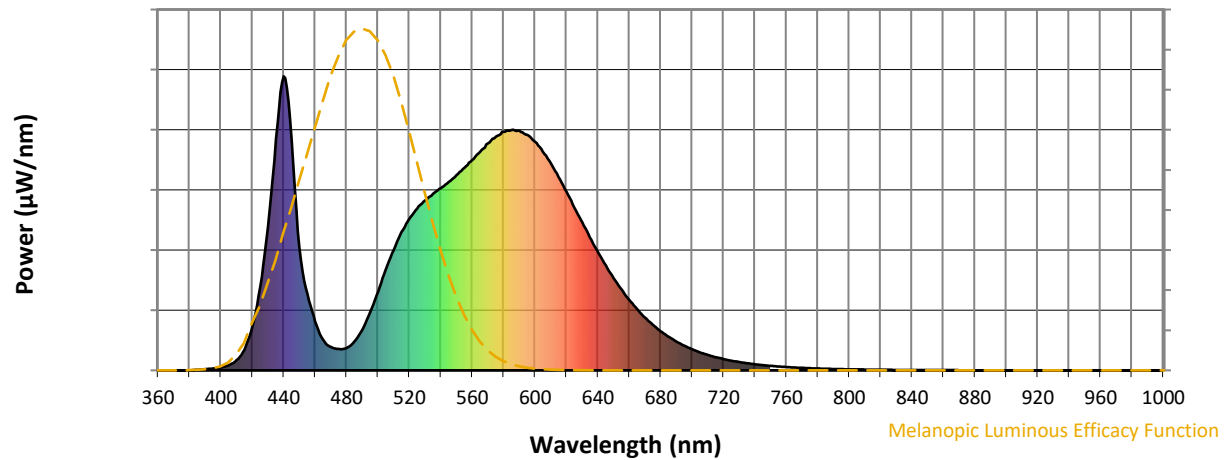
Scotopic Lumens: NR

S/P: 1.47

| 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    | 139                      | NR            | 620    | 607                      | NR            | 750    | 15                       | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 198                      | NR            | 625    | 554                      | NR            | 755    | 13                       | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 267                      | NR            | 630    | 504                      | NR            | 760    | 11                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 343                      | NR            | 635    | 452                      | NR            | 765    | 10                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 410                      | NR            | 640    | 403                      | NR            | 770    | 8                        | NR            | 900    | 0                        | NR            |
| 385    | 2                        | NR            | 515    | 470                      | NR            | 645    | 357                      | NR            | 775    | 7                        | NR            | 905    | 0                        | NR            |
| 390    | 4                        | NR            | 520    | 516                      | NR            | 650    | 314                      | NR            | 780    | 6                        | NR            | 910    | 0                        | NR            |
| 395    | 7                        | NR            | 525    | 550                      | NR            | 655    | 275                      | NR            | 785    | 5                        | NR            | 915    | 0                        | NR            |
| 400    | 10                       | NR            | 530    | 578                      | NR            | 660    | 240                      | NR            | 790    | 5                        | NR            | 920    | 0                        | NR            |
| 405    | 17                       | NR            | 535    | 601                      | NR            | 665    | 208                      | NR            | 795    | 4                        | NR            | 925    | 0                        | NR            |
| 410    | 35                       | NR            | 540    | 620                      | NR            | 670    | 179                      | NR            | 800    | 4                        | NR            | 930    | 0                        | NR            |
| 415    | 70                       | NR            | 545    | 641                      | NR            | 675    | 155                      | NR            | 805    | 3                        | NR            | 935    | 0                        | NR            |
| 420    | 147                      | NR            | 550    | 664                      | NR            | 680    | 133                      | NR            | 810    | 3                        | NR            | 940    | 0                        | NR            |
| 425    | 285                      | NR            | 555    | 689                      | NR            | 685    | 114                      | NR            | 815    | 2                        | NR            | 945    | 0                        | NR            |
| 430    | 487                      | NR            | 560    | 715                      | NR            | 690    | 98                       | NR            | 820    | 2                        | NR            | 950    | 0                        | NR            |
| 435    | 787                      | NR            | 565    | 743                      | NR            | 695    | 84                       | NR            | 825    | 2                        | NR            | 955    | 0                        | NR            |
| 440    | 1000                     | NR            | 570    | 771                      | NR            | 700    | 72                       | NR            | 830    | 2                        | NR            | 960    | 0                        | NR            |
| 445    | 783                      | NR            | 575    | 794                      | NR            | 705    | 61                       | NR            | 835    | 1                        | NR            | 965    | 0                        | NR            |
| 450    | 417                      | NR            | 580    | 811                      | NR            | 710    | 52                       | NR            | 840    | 1                        | NR            | 970    | 0                        | NR            |
| 455    | 261                      | NR            | 585    | 817                      | NR            | 715    | 45                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 167                      | NR            | 590    | 815                      | NR            | 720    | 39                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 104                      | NR            | 595    | 801                      | NR            | 725    | 33                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 79                       | NR            | 600    | 777                      | NR            | 730    | 28                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 73                       | NR            | 605    | 744                      | NR            | 735    | 24                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 76                       | NR            | 610    | 704                      | NR            | 740    | 21                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 98                       | NR            | 615    | 657                      | NR            | 745    | 18                       | NR            | 875    | 1                        | NR            |        |                          |               |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.78

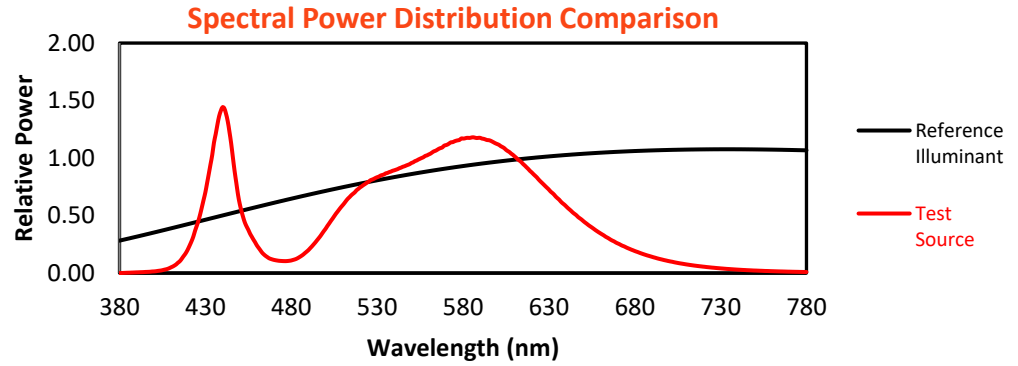
| $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|----------------------------------------|--------------------------------|-------------------|----------------------------------------|--------------------------------|-------------------|----------------------------------------|--------------------------------|-------------------|----------------------------------------|--------------------------------|-------------------|----------------------------------------|--------------------------------|
| 360               | 0                                      | NR                             | 490               | 139                                    | NR                             | 620               | 607                                    | NR                             | 750               | 15                                     | NR                             | 880               | 0                                      | NR                             |
| 365               | 0                                      | NR                             | 495               | 198                                    | NR                             | 625               | 554                                    | NR                             | 755               | 13                                     | NR                             | 885               | 0                                      | NR                             |
| 370               | 0                                      | NR                             | 500               | 267                                    | NR                             | 630               | 504                                    | NR                             | 760               | 11                                     | NR                             | 890               | 0                                      | NR                             |
| 375               | 0                                      | NR                             | 505               | 343                                    | NR                             | 635               | 452                                    | NR                             | 765               | 10                                     | NR                             | 895               | 0                                      | NR                             |
| 380               | 0                                      | NR                             | 510               | 410                                    | NR                             | 640               | 403                                    | NR                             | 770               | 8                                      | NR                             | 900               | 0                                      | NR                             |
| 385               | 2                                      | NR                             | 515               | 470                                    | NR                             | 645               | 357                                    | NR                             | 775               | 7                                      | NR                             | 905               | 0                                      | NR                             |
| 390               | 4                                      | NR                             | 520               | 516                                    | NR                             | 650               | 314                                    | NR                             | 780               | 6                                      | NR                             | 910               | 0                                      | NR                             |
| 395               | 7                                      | NR                             | 525               | 550                                    | NR                             | 655               | 275                                    | NR                             | 785               | 5                                      | NR                             | 915               | 0                                      | NR                             |
| 400               | 10                                     | NR                             | 530               | 578                                    | NR                             | 660               | 240                                    | NR                             | 790               | 5                                      | NR                             | 920               | 0                                      | NR                             |
| 405               | 17                                     | NR                             | 535               | 601                                    | NR                             | 665               | 208                                    | NR                             | 795               | 4                                      | NR                             | 925               | 0                                      | NR                             |
| 410               | 35                                     | NR                             | 540               | 620                                    | NR                             | 670               | 179                                    | NR                             | 800               | 4                                      | NR                             | 930               | 0                                      | NR                             |
| 415               | 70                                     | NR                             | 545               | 641                                    | NR                             | 675               | 155                                    | NR                             | 805               | 3                                      | NR                             | 935               | 0                                      | NR                             |
| 420               | 147                                    | NR                             | 550               | 664                                    | NR                             | 680               | 133                                    | NR                             | 810               | 3                                      | NR                             | 940               | 0                                      | NR                             |
| 425               | 285                                    | NR                             | 555               | 689                                    | NR                             | 685               | 114                                    | NR                             | 815               | 2                                      | NR                             | 945               | 0                                      | NR                             |
| 430               | 487                                    | NR                             | 560               | 715                                    | NR                             | 690               | 98                                     | NR                             | 820               | 2                                      | NR                             | 950               | 0                                      | NR                             |
| 435               | 787                                    | NR                             | 565               | 743                                    | NR                             | 695               | 84                                     | NR                             | 825               | 2                                      | NR                             | 955               | 0                                      | NR                             |
| 440               | 1000                                   | NR                             | 570               | 771                                    | NR                             | 700               | 72                                     | NR                             | 830               | 2                                      | NR                             | 960               | 0                                      | NR                             |
| 445               | 783                                    | NR                             | 575               | 794                                    | NR                             | 705               | 61                                     | NR                             | 835               | 1                                      | NR                             | 965               | 0                                      | NR                             |
| 450               | 417                                    | NR                             | 580               | 811                                    | NR                             | 710               | 52                                     | NR                             | 840               | 1                                      | NR                             | 970               | 0                                      | NR                             |
| 455               | 261                                    | NR                             | 585               | 817                                    | NR                             | 715               | 45                                     | NR                             | 845               | 1                                      | NR                             | 975               | 0                                      | NR                             |
| 460               | 167                                    | NR                             | 590               | 815                                    | NR                             | 720               | 39                                     | NR                             | 850               | 1                                      | NR                             | 980               | 0                                      | NR                             |
| 465               | 104                                    | NR                             | 595               | 801                                    | NR                             | 725               | 33                                     | NR                             | 855               | 1                                      | NR                             | 985               | 0                                      | NR                             |
| 470               | 79                                     | NR                             | 600               | 777                                    | NR                             | 730               | 28                                     | NR                             | 860               | 1                                      | NR                             | 990               | 0                                      | NR                             |
| 475               | 73                                     | NR                             | 605               | 744                                    | NR                             | 735               | 24                                     | NR                             | 865               | 1                                      | NR                             | 995               | 0                                      | NR                             |
| 480               | 76                                     | NR                             | 610               | 704                                    | NR                             | 740               | 21                                     | NR                             | 870               | 1                                      | NR                             | 1000              | 0                                      | NR                             |
| 485               | 98                                     | NR                             | 615               | 657                                    | NR                             | 745               | 18                                     | NR                             | 875               | 1                                      | NR                             |                   |                                        |                                |

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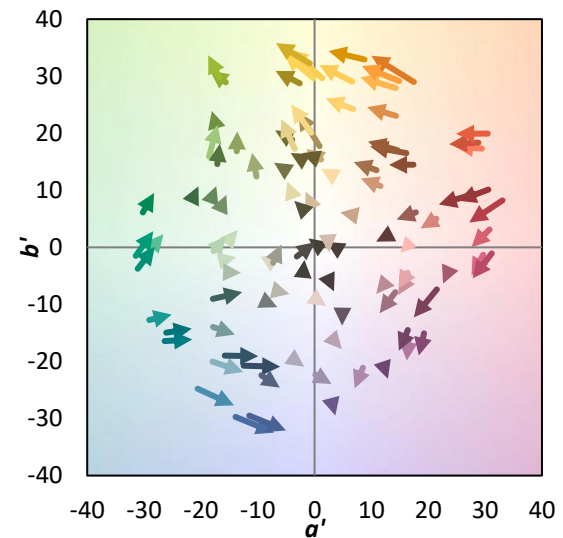
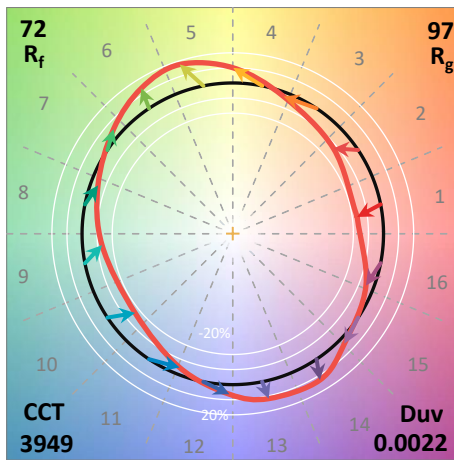
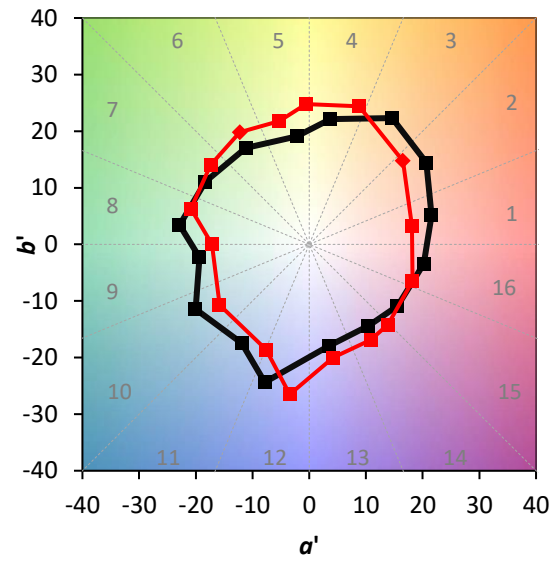
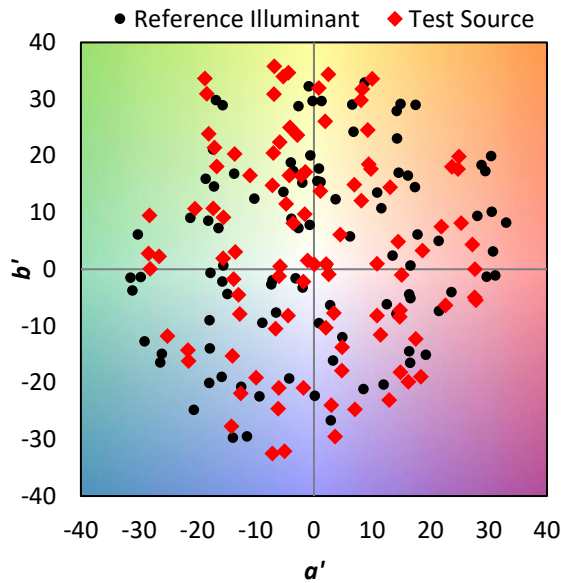
TM-30-18

### Summary

$R_f = 71.8$   
 $R_g = 96.5$   
 $CIE R_a = 70.7$   
 $R_g = -36.7$



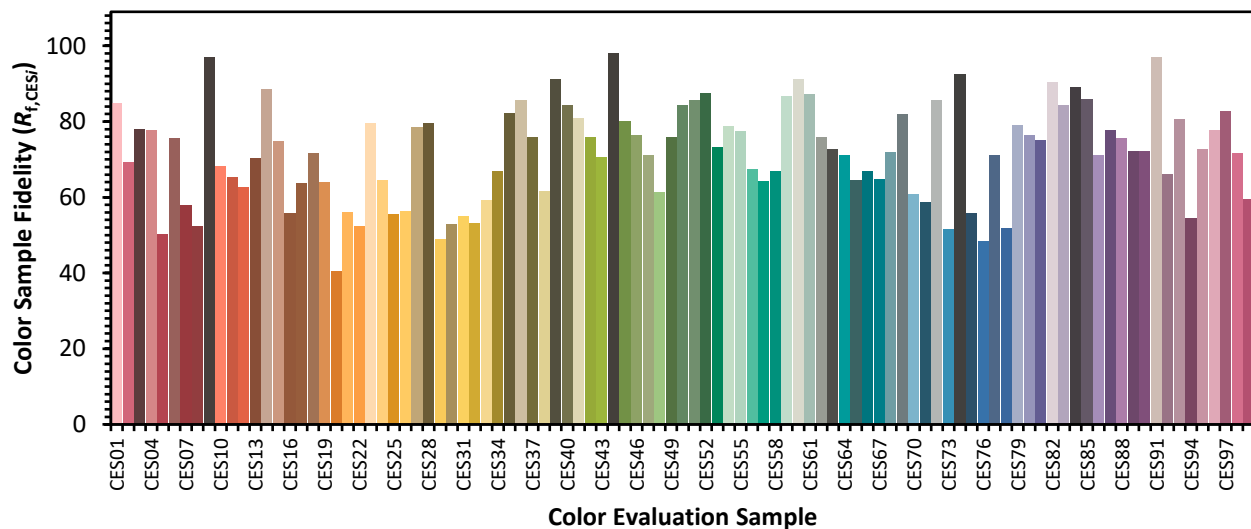
### Color Vector Graphics



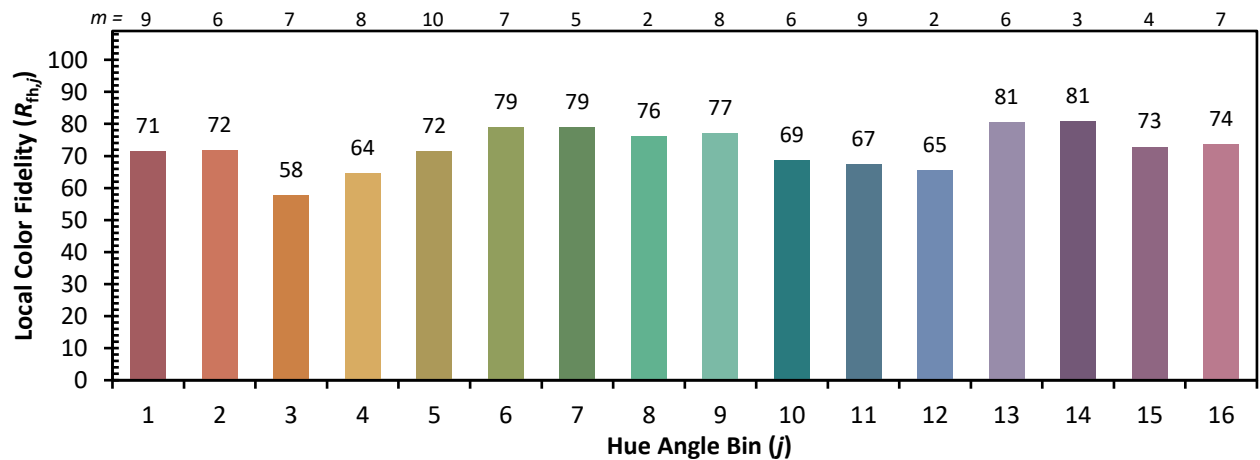
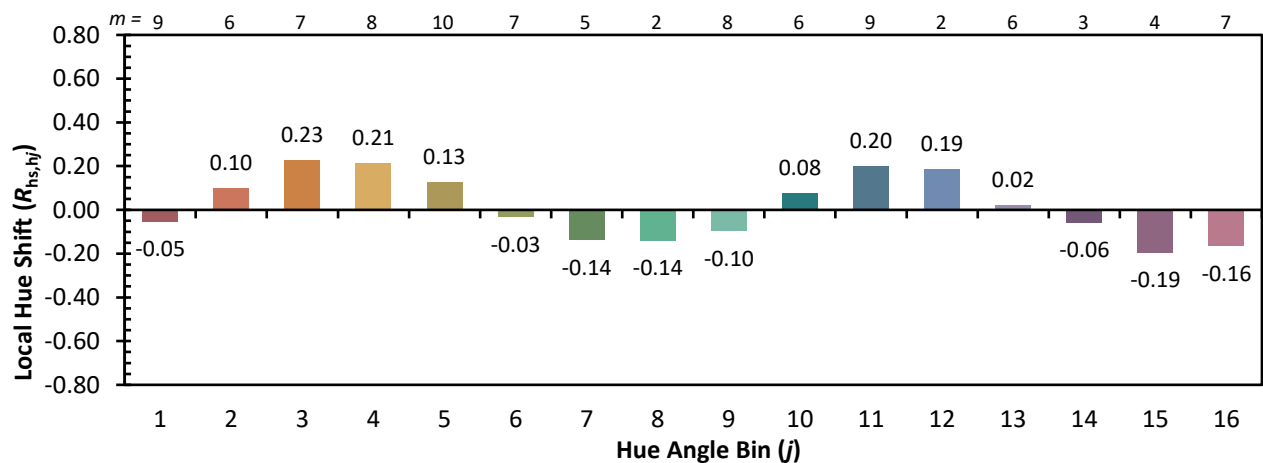
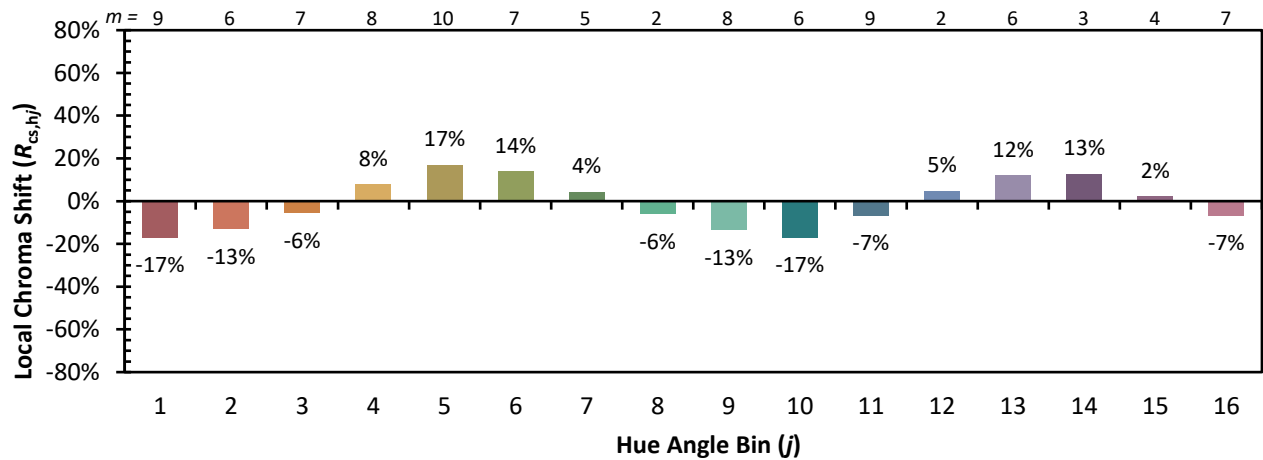


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

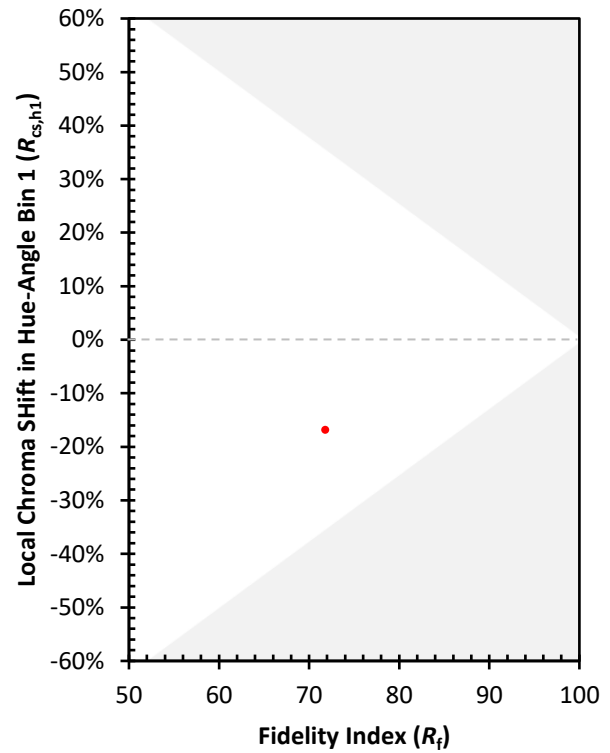
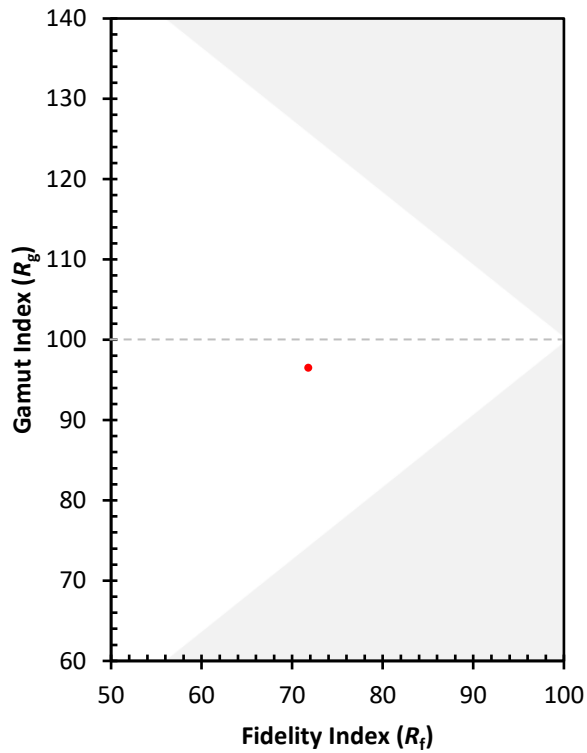
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 56 | CES51 = 86 | CES76 = 48 |
| CES02 = 61 | CES27 = 79 | CES52 = 88 | CES77 = 71 |
| CES03 = 30 | CES28 = 80 | CES53 = 73 | CES78 = 52 |
| CES04 = 70 | CES29 = 49 | CES54 = 79 | CES79 = 79 |
| CES05 = 47 | CES30 = 53 | CES55 = 77 | CES80 = 77 |
| CES06 = 50 | CES31 = 55 | CES56 = 67 | CES81 = 75 |
| CES07 = 40 | CES32 = 53 | CES57 = 64 | CES82 = 90 |
| CES08 = 39 | CES33 = 59 | CES58 = 67 | CES83 = 84 |
| CES09 = 29 | CES34 = 67 | CES59 = 87 | CES84 = 89 |
| CES10 = 74 | CES35 = 82 | CES60 = 91 | CES85 = 86 |
| CES11 = 57 | CES36 = 86 | CES61 = 87 | CES86 = 71 |
| CES12 = 63 | CES37 = 76 | CES62 = 76 | CES87 = 78 |
| CES13 = 42 | CES38 = 62 | CES63 = 73 | CES88 = 76 |
| CES14 = 74 | CES39 = 91 | CES64 = 71 | CES89 = 72 |
| CES15 = 71 | CES40 = 84 | CES65 = 64 | CES90 = 72 |
| CES16 = 46 | CES41 = 81 | CES66 = 67 | CES91 = 97 |
| CES17 = 49 | CES42 = 76 | CES67 = 65 | CES92 = 66 |
| CES18 = 56 | CES43 = 71 | CES68 = 72 | CES93 = 81 |
| CES19 = 72 | CES44 = 98 | CES69 = 82 | CES94 = 55 |
| CES20 = 65 | CES45 = 80 | CES70 = 61 | CES95 = 73 |
| CES21 = 86 | CES46 = 76 | CES71 = 59 | CES96 = 78 |
| CES22 = 78 | CES47 = 71 | CES72 = 86 | CES97 = 83 |
| CES23 = 92 | CES48 = 61 | CES73 = 52 | CES98 = 72 |
| CES24 = 91 | CES49 = 76 | CES74 = 93 | CES99 = 60 |
| CES25 = 72 | CES50 = 84 | CES75 = 56 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)