

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

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Peachtree City, GA 30269

Scaled data based on original data using  
LM-79-2024 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions

Brand: STREETWORKS

Report Number: P1458428

Luminaire Tested: GLAN-SB3B-840-U-T3LG-HSS

Issue Date: 05/20/2026

**Test Information**

Test Method: LM-79-2024  
Report Number: P1458428  
Test Lab: INNOVATION CENTER(G1)  
Issue Date: 5/22/2026  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: STREETWORKS  
Catalog Number: GLAN-SB3B-840-U-T3LG-HSS  
Description: GALLEON II AREA AND ROADWAY HIGH DENSITY LUMINAIRE 450mA 3xLight Square PACKAGE 80CRI 4000K FIXTURE w/ TYPE III LOW GLARE WITH HOUSE SIDE SHIELD  
Light Source: (78) 4000K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

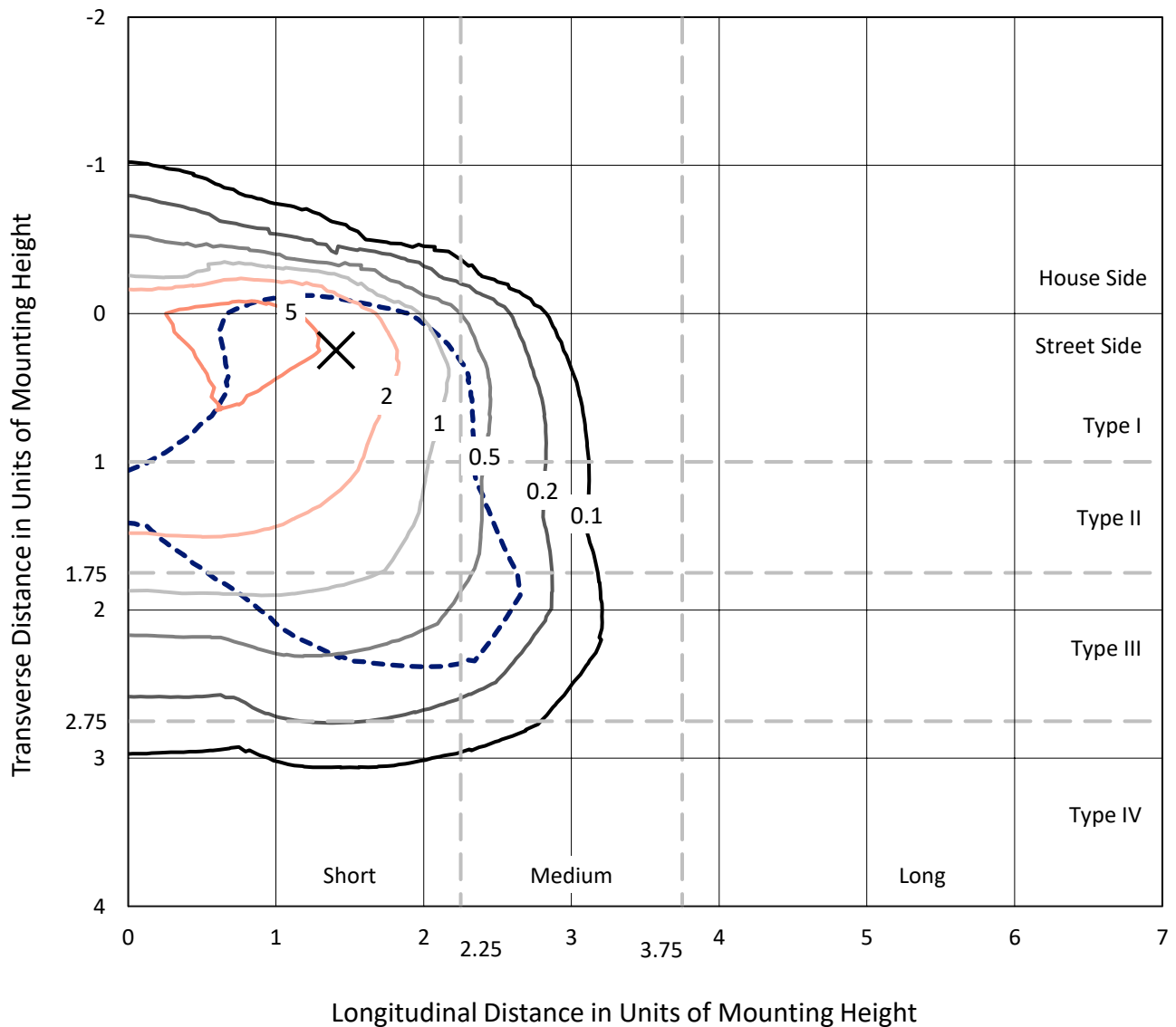
Lumens per Lamp: N/A  
Luminaire Lumens: 12350.1 lumens  
Efficiency: N/A  
Efficacy: 113.1 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 1' x H: 0')  
IES Classification: Type III - Short  
BUG Rating: B1 - U0 - G2

Input Watts (W): 109.2  
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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 CATALOG NUMBER: GLAN-SB3B-840-U-T3LG-HSS

### Iso-Footcandle Lines of Horizontal Illumination

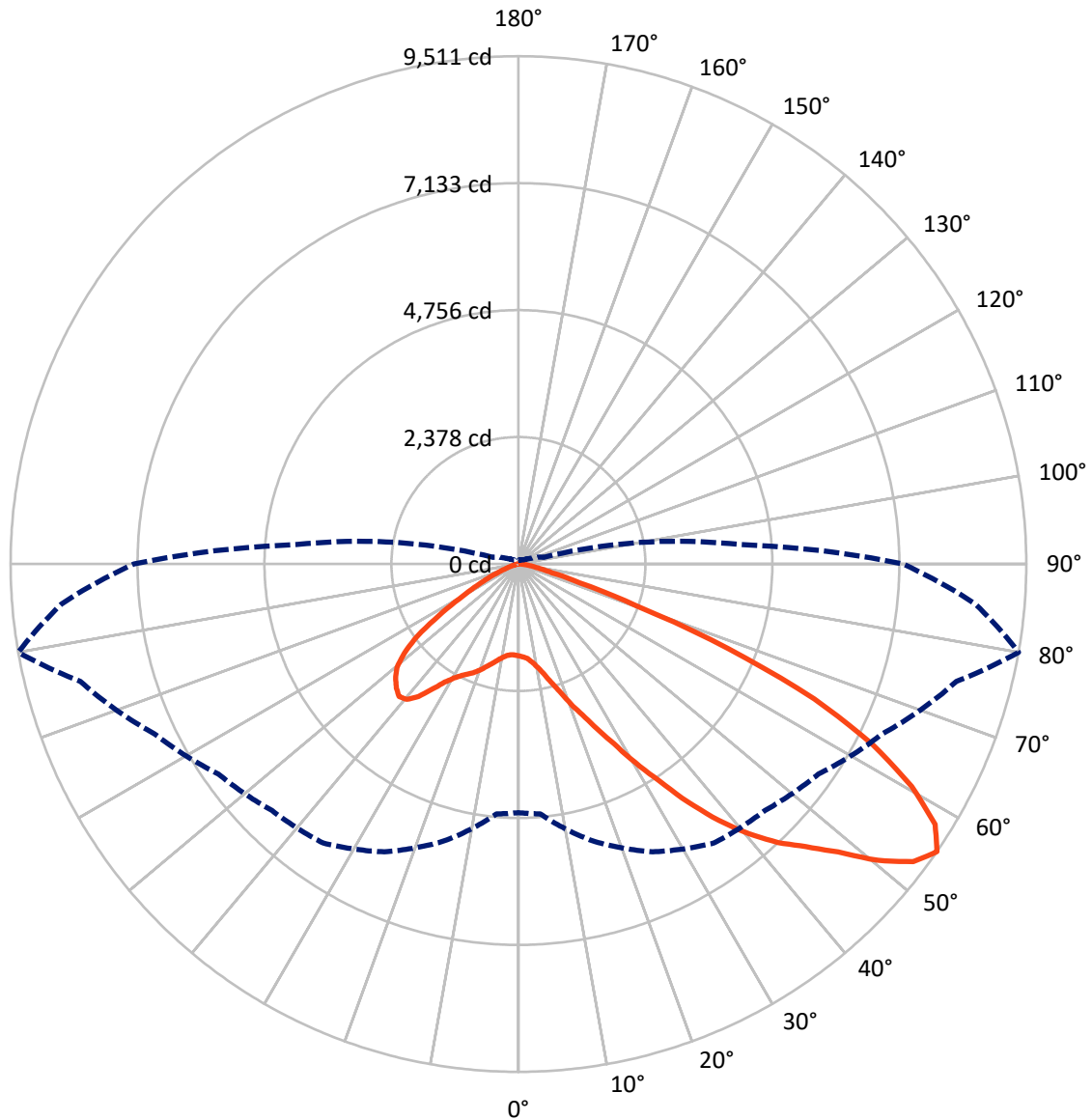
× Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 7.6 fc  
 Type III - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 80-Deg Lateral    - - - Horizontal Cone Through 55-Deg Vertical

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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 1501.3   | 0.0    | 1501.3  |
|                    | % Fixture | 12.2     | 0.0    | 12.2    |
| <b>Street Side</b> | Lumens    | 10848.8  | 0.0    | 10848.8 |
|                    | % Fixture | 87.8     | 0.0    | 87.8    |
| <b>Total</b>       | Lumens    | 12350.1  | 0.0    | 12350.1 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 144.4   | 1.2       |
| 10°-20°   | 380.6   | 3.1       |
| 20°-30°   | 745.1   | 6.0       |
| 30°-40°   | 1515.9  | 12.3      |
| 40°-50°   | 2555.6  | 20.7      |
| 50°-60°   | 3265.3  | 26.4      |
| 60°-70°   | 2787.8  | 22.6      |
| 70°-80°   | 890.9   | 7.2       |
| 80°-90°   | 64.3    | 0.5       |
| 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°    | 12350.1 | 100.0     |
| 0°-180°   | 12350.1 | 100.0     |



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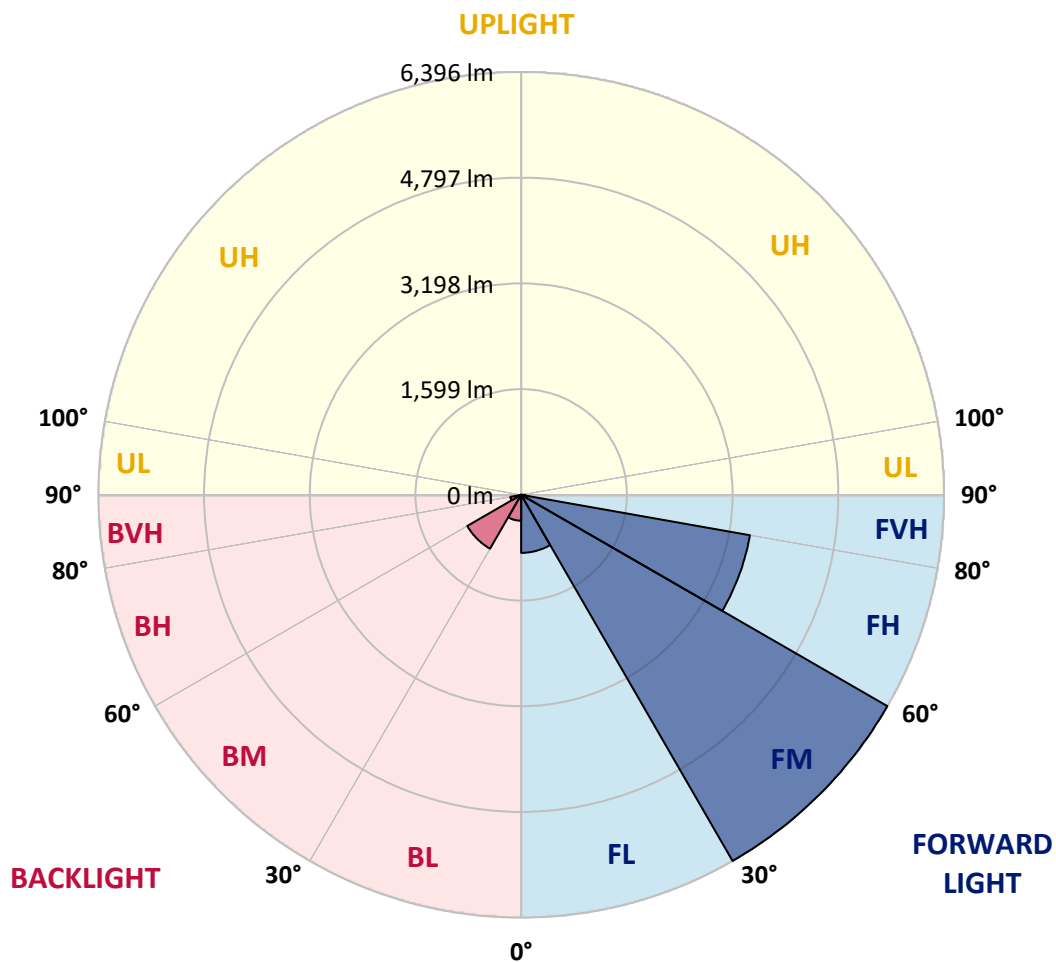
CATALOG NUMBER: GLAN-SB3B-840-U-T3LG-HSS

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

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 878.1  | 7.1       |                         |      |         |
| FM (30°-60°)   | 6396.0 | 51.8      |                         |      |         |
| FH (60°-80°)   | 3513.7 | 28.5      |                         |      | G2/5000 |
| FVH (80°-90°)  | 61.0   | 0.5       |                         |      | G1/100  |
| BL (0°-30°)    | 392.0  | 3.2       | B1/500                  |      |         |
| BM (30°-60°)   | 940.9  | 7.6       | B1/1000                 |      |         |
| BH (60°-80°)   | 165.0  | 1.3       | B1/500                  |      | G1/500  |
| BVH (80°-90°)  | 3.4    | 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 III Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°    | 75°    | 80°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1720.3 | 1720.3 | 1720.3 | 1720.3 | 1720.3 | 1720.3 | 1720.3 | 1720.3 | 1720.3 | 1720.3 | 1720.3 |
| 2.5°  | 1730.9 | 1734.4 | 1730.9 | 1734.4 | 1741.4 | 1737.9 | 1751.9 | 1748.4 | 1748.4 | 1744.9 | 1730.9 |
| 5°    | 1632.6 | 1636.1 | 1643.1 | 1660.7 | 1685.2 | 1709.8 | 1741.4 | 1762.5 | 1783.5 | 1780.0 | 1766.0 |
| 7.5°  | 1439.5 | 1446.5 | 1474.6 | 1509.7 | 1590.4 | 1664.2 | 1744.9 | 1797.6 | 1843.2 | 1857.3 | 1846.7 |
| 10°   | 1330.6 | 1337.7 | 1355.2 | 1390.3 | 1464.1 | 1586.9 | 1744.9 | 1853.8 | 1934.5 | 1962.6 | 1966.1 |
| 12.5° | 1320.1 | 1323.6 | 1337.7 | 1376.3 | 1439.5 | 1544.8 | 1741.4 | 1927.5 | 2064.4 | 2106.5 | 2120.6 |
| 15°   | 1327.1 | 1334.1 | 1348.2 | 1379.8 | 1453.5 | 1572.9 | 1769.5 | 2043.4 | 2236.5 | 2296.1 | 2299.7 |
| 17.5° | 1355.2 | 1362.2 | 1379.8 | 1414.9 | 1495.7 | 1646.6 | 1857.3 | 2162.7 | 2443.6 | 2510.3 | 2548.9 |
| 20°   | 1411.4 | 1414.9 | 1436.0 | 1481.6 | 1572.9 | 1737.9 | 1987.2 | 2324.2 | 2692.9 | 2791.2 | 2819.3 |
| 22.5° | 1485.1 | 1495.7 | 1523.7 | 1579.9 | 1695.8 | 1864.3 | 2166.2 | 2520.8 | 2966.7 | 3068.5 | 3117.7 |
| 25°   | 1565.9 | 1579.9 | 1622.0 | 1713.3 | 1860.8 | 2057.4 | 2387.4 | 2780.6 | 3289.7 | 3412.6 | 3479.3 |
| 27.5° | 1730.9 | 1734.4 | 1762.5 | 1878.3 | 2067.9 | 2310.2 | 2668.3 | 3114.2 | 3668.9 | 3812.9 | 3886.6 |
| 30°   | 2092.5 | 2096.0 | 2071.4 | 2103.0 | 2296.1 | 2608.6 | 2998.3 | 3503.9 | 4111.3 | 4311.4 | 4371.1 |
| 32.5° | 2534.9 | 2552.4 | 2548.9 | 2527.9 | 2615.6 | 2907.0 | 3391.5 | 3970.8 | 4630.9 | 4841.6 | 4897.7 |
| 35°   | 3036.9 | 3079.1 | 3068.5 | 3061.5 | 3072.1 | 3289.7 | 3840.9 | 4487.0 | 5220.7 | 5477.0 | 5522.7 |
| 37.5° | 3528.5 | 3539.0 | 3588.2 | 3647.8 | 3654.9 | 3805.8 | 4360.6 | 5034.7 | 5768.4 | 6095.0 | 6165.2 |
| 40°   | 3907.6 | 3942.8 | 4065.6 | 4185.0 | 4307.9 | 4427.3 | 4788.9 | 5477.0 | 6203.8 | 6642.7 | 6674.3 |
| 42.5° | 4202.6 | 4286.8 | 4465.9 | 4652.0 | 4901.2 | 5034.7 | 5196.2 | 5789.5 | 6558.4 | 7130.7 | 7116.6 |
| 45°   | 4560.7 | 4595.8 | 4848.6 | 5094.3 | 5347.1 | 5550.8 | 5547.2 | 6052.8 | 6835.8 | 7548.5 | 7460.7 |
| 47.5° | 4802.9 | 4845.1 | 5189.1 | 5477.0 | 5736.8 | 5838.7 | 5859.7 | 6337.2 | 7218.4 | 8054.0 | 7846.9 |
| 50°   | 4932.8 | 5006.6 | 5382.2 | 5747.4 | 6028.2 | 6059.8 | 6154.6 | 6709.4 | 7720.5 | 8724.6 | 8334.9 |
| 52.5° | 4946.9 | 5017.1 | 5448.9 | 5919.4 | 6224.9 | 6288.1 | 6449.6 | 7130.7 | 8208.5 | 9261.8 | 8615.8 |
| 55°   | 4655.5 | 4697.6 | 5368.2 | 5947.5 | 6379.3 | 6526.8 | 6856.8 | 7520.4 | 8492.9 | 9511.1 | 8591.2 |
| 57.5° | 4381.6 | 4423.8 | 5006.6 | 5898.3 | 6537.3 | 6839.3 | 7292.2 | 7787.2 | 8271.7 | 9202.1 | 8043.5 |
| 60°   | 4146.4 | 4167.5 | 4697.6 | 5670.1 | 6597.0 | 7144.7 | 7667.8 | 7523.9 | 7699.4 | 8461.3 | 7106.1 |
| 62.5° | 3704.0 | 3718.1 | 4346.5 | 5259.4 | 6477.6 | 7379.9 | 7797.7 | 6965.7 | 7071.0 | 7439.6 | 6003.7 |
| 65°   | 2798.2 | 2850.9 | 3426.7 | 4950.4 | 6281.0 | 7488.8 | 7495.8 | 6284.5 | 6175.7 | 6087.9 | 4722.2 |
| 67.5° | 1899.4 | 1959.1 | 2306.7 | 4451.8 | 5961.5 | 7534.4 | 6909.5 | 5403.3 | 4704.6 | 4251.7 | 3093.1 |
| 70°   | 1516.7 | 1516.7 | 1636.1 | 3577.6 | 5203.2 | 6951.6 | 6182.7 | 4079.7 | 2987.8 | 2348.8 | 1657.2 |
| 72.5° | 997.1  | 1000.6 | 1113.0 | 2271.6 | 3690.0 | 5301.5 | 5041.7 | 2359.3 | 1551.8 | 1197.2 | 818.0  |
| 75°   | 361.6  | 361.6  | 488.0  | 909.3  | 1952.1 | 3156.3 | 3072.1 | 1127.0 | 842.6  | 653.0  | 495.0  |
| 77.5° | 193.1  | 200.1  | 235.2  | 375.7  | 747.8  | 1285.0 | 1200.7 | 575.8  | 477.5  | 407.3  | 309.0  |
| 80°   | 129.9  | 133.4  | 158.0  | 231.7  | 361.6  | 495.0  | 386.2  | 323.0  | 323.0  | 273.9  | 207.1  |
| 82.5° | 70.2   | 73.7   | 105.3  | 151.0  | 193.1  | 231.7  | 186.1  | 189.6  | 228.2  | 186.1  | 119.4  |
| 85°   | 49.2   | 49.2   | 80.8   | 108.8  | 108.8  | 112.3  | 80.8   | 119.4  | 133.4  | 115.9  | 80.8   |
| 87.5° | 28.1   | 28.1   | 45.6   | 52.7   | 52.7   | 49.2   | 24.6   | 42.1   | 52.7   | 59.7   | 35.1   |
| 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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**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1720.3 | 1720.3 | 1720.3 | 1720.3 | 1720.3 | 1720.3 | 1720.3 | 1720.3 | 1720.3 | 1720.3 | 1720.3 |
| 2.5°  | 1727.4 | 1716.8 | 1695.8 | 1653.6 | 1632.6 | 1604.5 | 1579.9 | 1548.3 | 1541.3 | 1537.8 | 1523.7 |
| 5°    | 1755.5 | 1734.4 | 1671.2 | 1579.9 | 1502.7 | 1428.9 | 1355.2 | 1313.1 | 1278.0 | 1260.4 | 1256.9 |
| 7.5°  | 1825.7 | 1783.5 | 1667.7 | 1506.2 | 1362.2 | 1235.8 | 1127.0 | 1032.2 | 983.1  | 940.9  | 944.4  |
| 10°   | 1931.0 | 1864.3 | 1674.7 | 1436.0 | 1221.8 | 1018.2 | 860.2  | 723.2  | 624.9  | 579.3  | 575.8  |
| 12.5° | 2071.4 | 1976.6 | 1699.3 | 1365.7 | 1049.8 | 765.4  | 565.3  | 484.5  | 463.4  | 459.9  | 456.4  |
| 15°   | 2243.5 | 2110.1 | 1723.9 | 1274.5 | 818.0  | 530.1  | 459.9  | 442.4  | 438.9  | 435.4  | 435.4  |
| 17.5° | 2450.6 | 2264.5 | 1737.9 | 1120.0 | 596.9  | 456.4  | 431.8  | 421.3  | 417.8  | 414.3  | 414.3  |
| 20°   | 2710.4 | 2436.6 | 1755.5 | 923.4  | 505.6  | 438.9  | 410.8  | 396.7  | 393.2  | 393.2  | 389.7  |
| 22.5° | 2966.7 | 2629.7 | 1741.4 | 751.3  | 488.0  | 417.8  | 386.2  | 372.2  | 365.1  | 365.1  | 361.6  |
| 25°   | 3261.6 | 2826.3 | 1699.3 | 677.6  | 484.5  | 400.2  | 361.6  | 340.6  | 330.0  | 326.5  | 326.5  |
| 27.5° | 3598.7 | 3051.0 | 1632.6 | 681.1  | 484.5  | 386.2  | 330.0  | 301.9  | 294.9  | 287.9  | 287.9  |
| 30°   | 3984.9 | 3324.8 | 1583.4 | 726.8  | 491.5  | 372.2  | 301.9  | 266.8  | 256.3  | 249.3  | 252.8  |
| 32.5° | 4427.3 | 3630.3 | 1579.9 | 800.5  | 502.1  | 351.1  | 270.3  | 231.7  | 221.2  | 217.7  | 221.2  |
| 35°   | 4929.3 | 4009.5 | 1660.7 | 856.7  | 474.0  | 305.4  | 231.7  | 200.1  | 189.6  | 189.6  | 193.1  |
| 37.5° | 5487.6 | 4444.8 | 1769.5 | 842.6  | 382.7  | 242.3  | 200.1  | 175.5  | 165.0  | 168.5  | 172.0  |
| 40°   | 5996.6 | 4785.4 | 1787.1 | 719.7  | 287.9  | 207.1  | 172.0  | 154.5  | 147.5  | 151.0  | 154.5  |
| 42.5° | 6382.8 | 5059.2 | 1618.5 | 558.2  | 242.3  | 175.5  | 147.5  | 133.4  | 129.9  | 136.9  | 136.9  |
| 45°   | 6695.3 | 5168.1 | 1351.7 | 414.3  | 214.2  | 151.0  | 129.9  | 122.9  | 115.9  | 119.4  | 119.4  |
| 47.5° | 7021.8 | 5185.6 | 1102.4 | 333.5  | 189.6  | 136.9  | 119.4  | 112.3  | 105.3  | 105.3  | 105.3  |
| 50°   | 7337.8 | 5143.5 | 842.6  | 294.9  | 175.5  | 122.9  | 108.8  | 101.8  | 94.8   | 91.3   | 91.3   |
| 52.5° | 7415.1 | 4806.4 | 617.9  | 273.9  | 161.5  | 115.9  | 101.8  | 94.8   | 87.8   | 84.3   | 84.3   |
| 55°   | 7200.9 | 4167.5 | 484.5  | 245.8  | 147.5  | 105.3  | 94.8   | 87.8   | 77.2   | 73.7   | 73.7   |
| 57.5° | 6495.2 | 3177.4 | 386.2  | 210.7  | 133.4  | 101.8  | 87.8   | 80.8   | 70.2   | 66.7   | 66.7   |
| 60°   | 5578.8 | 2254.0 | 312.5  | 172.0  | 122.9  | 91.3   | 80.8   | 70.2   | 63.2   | 56.2   | 56.2   |
| 62.5° | 4564.2 | 1618.5 | 252.8  | 143.9  | 115.9  | 80.8   | 73.7   | 63.2   | 49.2   | 38.6   | 38.6   |
| 65°   | 3500.4 | 1162.1 | 196.6  | 115.9  | 105.3  | 70.2   | 63.2   | 52.7   | 38.6   | 28.1   | 28.1   |
| 67.5° | 2264.5 | 751.3  | 147.5  | 101.8  | 80.8   | 59.7   | 49.2   | 42.1   | 35.1   | 24.6   | 21.1   |
| 70°   | 1193.7 | 438.9  | 108.8  | 87.8   | 59.7   | 45.6   | 42.1   | 35.1   | 28.1   | 17.6   | 17.6   |
| 72.5° | 617.9  | 287.9  | 80.8   | 77.2   | 45.6   | 31.6   | 35.1   | 28.1   | 21.1   | 10.5   | 10.5   |
| 75°   | 396.7  | 193.1  | 59.7   | 63.2   | 28.1   | 24.6   | 24.6   | 17.6   | 10.5   | 7.0    | 3.5    |
| 77.5° | 256.3  | 129.9  | 42.1   | 52.7   | 17.6   | 14.0   | 14.0   | 7.0    | 3.5    | 0.0    | 0.0    |
| 80°   | 151.0  | 80.8   | 28.1   | 35.1   | 7.0    | 7.0    | 3.5    | 0.0    | 0.0    | 0.0    | 0.0    |
| 82.5° | 77.2   | 42.1   | 14.0   | 14.0   | 3.5    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 49.2   | 21.1   | 3.5    | 3.5    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 24.6   | 7.0    | 3.5    | 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    |

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

Report Prepared for

Cooper Lighting Solutions

McGraw-Edison

Report Number: SP1-2407-184-11

Test Date: 10/11/2024

Luminaire Tested: GSS-SB1A-840-U-5WQ

Data in this report applies to families of products including GSS-SB1A-840-U-5WQ

**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-11  
 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-840-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 80 CRI 4000K CCT 26 LEDS

**Spectral Parameters**

CCT (K): 3897  
 CIE u': 0.2249  
 CIE v': 0.5084  
 Duv: 0.0039  
 CIE x: 0.3882  
 CIE y: 0.3900  
 CIE z: 0.2218  
 Peak Wavelength (nm): 445  
 Dominant Wavelength (nm): 577  
 Purity: 33.54925  
 Rf: 81.8  
 Rg: 98.6

|           |      |      |      |
|-----------|------|------|------|
| CRI (Ra): | 80.2 |      |      |
| R1:       | 78.9 | R9:  | 6.7  |
| R2:       | 83.5 | R10: | 61.9 |
| R3:       | 88.3 | R11: | 81.9 |
| R4:       | 82.1 | R12: | 58.9 |
| R5:       | 78.8 | R13: | 79.2 |
| R6:       | 78.4 | R14: | 93.2 |
| R7:       | 85.8 | R15: | 71.9 |
| R8:       | 65.8 |      |      |



**Test Conditions**

Stabilization Time: 24M  
 Operation Time: 1H 24M  
 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 4000K 4-step quadrangle

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**Photopic Flux vs. Wavelength**



**Photopic Lumens: NR**

| 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    | 242                      | NR            | 620    | 792                      | NR            | 750    | 29                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 320                      | NR            | 625    | 748                      | NR            | 755    | 25                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 401                      | NR            | 630    | 703                      | NR            | 760    | 22                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 479                      | NR            | 635    | 651                      | NR            | 765    | 19                       | NR            | 895    | 1                        | NR            |
| 380    | 0                        | NR            | 510    | 546                      | NR            | 640    | 599                      | NR            | 770    | 16                       | NR            | 900    | 1                        | NR            |
| 385    | 0                        | NR            | 515    | 602                      | NR            | 645    | 545                      | NR            | 775    | 14                       | NR            | 905    | 0                        | NR            |
| 390    | 2                        | NR            | 520    | 645                      | NR            | 650    | 493                      | NR            | 780    | 12                       | NR            | 910    | 0                        | NR            |
| 395    | 4                        | NR            | 525    | 674                      | NR            | 655    | 443                      | NR            | 785    | 10                       | NR            | 915    | 0                        | NR            |
| 400    | 6                        | NR            | 530    | 699                      | NR            | 660    | 394                      | NR            | 790    | 9                        | NR            | 920    | 0                        | NR            |
| 405    | 11                       | NR            | 535    | 718                      | NR            | 665    | 349                      | NR            | 795    | 8                        | NR            | 925    | 0                        | NR            |
| 410    | 22                       | NR            | 540    | 732                      | NR            | 670    | 307                      | NR            | 800    | 7                        | NR            | 930    | 0                        | NR            |
| 415    | 43                       | NR            | 545    | 749                      | NR            | 675    | 269                      | NR            | 805    | 6                        | NR            | 935    | 0                        | NR            |
| 420    | 86                       | NR            | 550    | 762                      | NR            | 680    | 235                      | NR            | 810    | 5                        | NR            | 940    | 0                        | NR            |
| 425    | 164                      | NR            | 555    | 778                      | NR            | 685    | 204                      | NR            | 815    | 5                        | NR            | 945    | 0                        | NR            |
| 430    | 288                      | NR            | 560    | 792                      | NR            | 690    | 178                      | NR            | 820    | 4                        | NR            | 950    | 0                        | NR            |
| 435    | 478                      | NR            | 565    | 809                      | NR            | 695    | 153                      | NR            | 825    | 3                        | NR            | 955    | 0                        | NR            |
| 440    | 766                      | NR            | 570    | 827                      | NR            | 700    | 132                      | NR            | 830    | 3                        | NR            | 960    | 0                        | NR            |
| 445    | 1000                     | NR            | 575    | 845                      | NR            | 705    | 114                      | NR            | 835    | 3                        | NR            | 965    | 0                        | NR            |
| 450    | 726                      | NR            | 580    | 862                      | NR            | 710    | 98                       | NR            | 840    | 2                        | NR            | 970    | 0                        | NR            |
| 455    | 425                      | NR            | 585    | 875                      | NR            | 715    | 84                       | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 324                      | NR            | 590    | 887                      | NR            | 720    | 73                       | NR            | 850    | 2                        | NR            | 980    | 0                        | NR            |
| 465    | 225                      | NR            | 595    | 890                      | NR            | 725    | 63                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 157                      | NR            | 600    | 887                      | NR            | 730    | 54                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 147                      | NR            | 605    | 875                      | NR            | 735    | 46                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 154                      | NR            | 610    | 856                      | NR            | 740    | 40                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 184                      | NR            | 615    | 828                      | NR            | 745    | 34                       | NR            | 875    | 1                        | NR            |        |                          |               |

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Scotopic Flux vs. Wavelength



Scotopic Lumens: NR S/P: 1.57

| 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    | 242                      | NR            | 620    | 792                      | NR            | 750    | 29                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 320                      | NR            | 625    | 748                      | NR            | 755    | 25                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 401                      | NR            | 630    | 703                      | NR            | 760    | 22                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 479                      | NR            | 635    | 651                      | NR            | 765    | 19                       | NR            | 895    | 1                        | NR            |
| 380    | 0                        | NR            | 510    | 546                      | NR            | 640    | 599                      | NR            | 770    | 16                       | NR            | 900    | 1                        | NR            |
| 385    | 0                        | NR            | 515    | 602                      | NR            | 645    | 545                      | NR            | 775    | 14                       | NR            | 905    | 0                        | NR            |
| 390    | 2                        | NR            | 520    | 645                      | NR            | 650    | 493                      | NR            | 780    | 12                       | NR            | 910    | 0                        | NR            |
| 395    | 4                        | NR            | 525    | 674                      | NR            | 655    | 443                      | NR            | 785    | 10                       | NR            | 915    | 0                        | NR            |
| 400    | 6                        | NR            | 530    | 699                      | NR            | 660    | 394                      | NR            | 790    | 9                        | NR            | 920    | 0                        | NR            |
| 405    | 11                       | NR            | 535    | 718                      | NR            | 665    | 349                      | NR            | 795    | 8                        | NR            | 925    | 0                        | NR            |
| 410    | 22                       | NR            | 540    | 732                      | NR            | 670    | 307                      | NR            | 800    | 7                        | NR            | 930    | 0                        | NR            |
| 415    | 43                       | NR            | 545    | 749                      | NR            | 675    | 269                      | NR            | 805    | 6                        | NR            | 935    | 0                        | NR            |
| 420    | 86                       | NR            | 550    | 762                      | NR            | 680    | 235                      | NR            | 810    | 5                        | NR            | 940    | 0                        | NR            |
| 425    | 164                      | NR            | 555    | 778                      | NR            | 685    | 204                      | NR            | 815    | 5                        | NR            | 945    | 0                        | NR            |
| 430    | 288                      | NR            | 560    | 792                      | NR            | 690    | 178                      | NR            | 820    | 4                        | NR            | 950    | 0                        | NR            |
| 435    | 478                      | NR            | 565    | 809                      | NR            | 695    | 153                      | NR            | 825    | 3                        | NR            | 955    | 0                        | NR            |
| 440    | 766                      | NR            | 570    | 827                      | NR            | 700    | 132                      | NR            | 830    | 3                        | NR            | 960    | 0                        | NR            |
| 445    | 1000                     | NR            | 575    | 845                      | NR            | 705    | 114                      | NR            | 835    | 3                        | NR            | 965    | 0                        | NR            |
| 450    | 726                      | NR            | 580    | 862                      | NR            | 710    | 98                       | NR            | 840    | 2                        | NR            | 970    | 0                        | NR            |
| 455    | 425                      | NR            | 585    | 875                      | NR            | 715    | 84                       | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 324                      | NR            | 590    | 887                      | NR            | 720    | 73                       | NR            | 850    | 2                        | NR            | 980    | 0                        | NR            |
| 465    | 225                      | NR            | 595    | 890                      | NR            | 725    | 63                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 157                      | NR            | 600    | 887                      | NR            | 730    | 54                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 147                      | NR            | 605    | 875                      | NR            | 735    | 46                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 154                      | NR            | 610    | 856                      | NR            | 740    | 40                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 184                      | NR            | 615    | 828                      | NR            | 745    | 34                       | NR            | 875    | 1                        | NR            |        |                          |               |

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Melanopic Flux vs. Wavelength



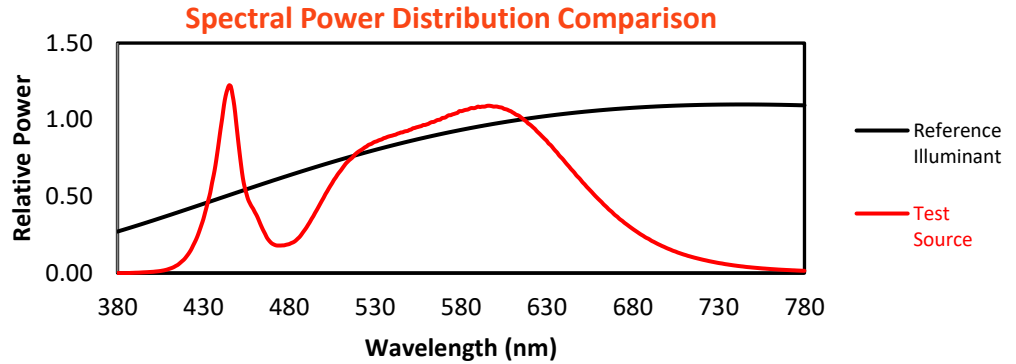
Melanopic Lumens: NR

M/P: 3.06

| 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    | 242                      | NR            | 620    | 792                      | NR            | 750    | 29                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 320                      | NR            | 625    | 748                      | NR            | 755    | 25                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 401                      | NR            | 630    | 703                      | NR            | 760    | 22                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 479                      | NR            | 635    | 651                      | NR            | 765    | 19                       | NR            | 895    | 1                        | NR            |
| 380    | 0                        | NR            | 510    | 546                      | NR            | 640    | 599                      | NR            | 770    | 16                       | NR            | 900    | 1                        | NR            |
| 385    | 0                        | NR            | 515    | 602                      | NR            | 645    | 545                      | NR            | 775    | 14                       | NR            | 905    | 0                        | NR            |
| 390    | 2                        | NR            | 520    | 645                      | NR            | 650    | 493                      | NR            | 780    | 12                       | NR            | 910    | 0                        | NR            |
| 395    | 4                        | NR            | 525    | 674                      | NR            | 655    | 443                      | NR            | 785    | 10                       | NR            | 915    | 0                        | NR            |
| 400    | 6                        | NR            | 530    | 699                      | NR            | 660    | 394                      | NR            | 790    | 9                        | NR            | 920    | 0                        | NR            |
| 405    | 11                       | NR            | 535    | 718                      | NR            | 665    | 349                      | NR            | 795    | 8                        | NR            | 925    | 0                        | NR            |
| 410    | 22                       | NR            | 540    | 732                      | NR            | 670    | 307                      | NR            | 800    | 7                        | NR            | 930    | 0                        | NR            |
| 415    | 43                       | NR            | 545    | 749                      | NR            | 675    | 269                      | NR            | 805    | 6                        | NR            | 935    | 0                        | NR            |
| 420    | 86                       | NR            | 550    | 762                      | NR            | 680    | 235                      | NR            | 810    | 5                        | NR            | 940    | 0                        | NR            |
| 425    | 164                      | NR            | 555    | 778                      | NR            | 685    | 204                      | NR            | 815    | 5                        | NR            | 945    | 0                        | NR            |
| 430    | 288                      | NR            | 560    | 792                      | NR            | 690    | 178                      | NR            | 820    | 4                        | NR            | 950    | 0                        | NR            |
| 435    | 478                      | NR            | 565    | 809                      | NR            | 695    | 153                      | NR            | 825    | 3                        | NR            | 955    | 0                        | NR            |
| 440    | 766                      | NR            | 570    | 827                      | NR            | 700    | 132                      | NR            | 830    | 3                        | NR            | 960    | 0                        | NR            |
| 445    | 1000                     | NR            | 575    | 845                      | NR            | 705    | 114                      | NR            | 835    | 3                        | NR            | 965    | 0                        | NR            |
| 450    | 726                      | NR            | 580    | 862                      | NR            | 710    | 98                       | NR            | 840    | 2                        | NR            | 970    | 0                        | NR            |
| 455    | 425                      | NR            | 585    | 875                      | NR            | 715    | 84                       | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 324                      | NR            | 590    | 887                      | NR            | 720    | 73                       | NR            | 850    | 2                        | NR            | 980    | 0                        | NR            |
| 465    | 225                      | NR            | 595    | 890                      | NR            | 725    | 63                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 157                      | NR            | 600    | 887                      | NR            | 730    | 54                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 147                      | NR            | 605    | 875                      | NR            | 735    | 46                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 154                      | NR            | 610    | 856                      | NR            | 740    | 40                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 184                      | NR            | 615    | 828                      | NR            | 745    | 34                       | NR            | 875    | 1                        | NR            |        |                          |               |

**Summary**

$R_f = 81.8$   
 $R_g = 98.6$   
 CIE  $R_a = 80.2$   
 $R_9 = 6.7$



**Color Vector Graphics**

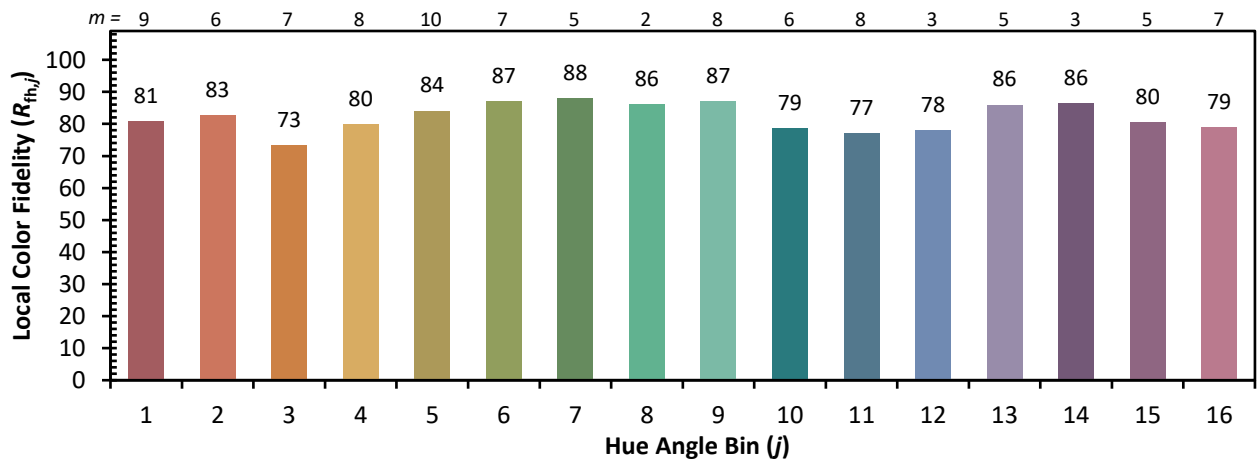


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 73 | CES51 = 93 | CES76 = 66 |
| CES02 = 61 | CES27 = 91 | CES52 = 93 | CES77 = 80 |
| CES03 = 31 | CES28 = 87 | CES53 = 83 | CES78 = 66 |
| CES04 = 69 | CES29 = 71 | CES54 = 89 | CES79 = 88 |
| CES05 = 48 | CES30 = 77 | CES55 = 88 | CES80 = 85 |
| CES06 = 50 | CES31 = 74 | CES56 = 80 | CES81 = 83 |
| CES07 = 41 | CES32 = 70 | CES57 = 79 | CES82 = 93 |
| CES08 = 40 | CES33 = 77 | CES58 = 80 | CES83 = 91 |
| CES09 = 29 | CES34 = 79 | CES59 = 92 | CES84 = 91 |
| CES10 = 74 | CES35 = 88 | CES60 = 95 | CES85 = 84 |
| CES11 = 57 | CES36 = 98 | CES61 = 91 | CES86 = 78 |
| CES12 = 63 | CES37 = 85 | CES62 = 90 | CES87 = 84 |
| CES13 = 42 | CES38 = 85 | CES63 = 81 | CES88 = 85 |
| CES14 = 74 | CES39 = 95 | CES64 = 81 | CES89 = 78 |
| CES15 = 71 | CES40 = 90 | CES65 = 76 | CES90 = 84 |
| CES16 = 47 | CES41 = 90 | CES66 = 78 | CES91 = 85 |
| CES17 = 49 | CES42 = 84 | CES67 = 76 | CES92 = 71 |
| CES18 = 56 | CES43 = 81 | CES68 = 80 | CES93 = 84 |
| CES19 = 71 | CES44 = 99 | CES69 = 86 | CES94 = 65 |
| CES20 = 65 | CES45 = 87 | CES70 = 73 | CES95 = 77 |
| CES21 = 86 | CES46 = 85 | CES71 = 70 | CES96 = 83 |
| CES22 = 78 | CES47 = 84 | CES72 = 90 | CES97 = 87 |
| CES23 = 91 | CES48 = 79 | CES73 = 65 | CES98 = 81 |
| CES24 = 90 | CES49 = 84 | CES74 = 98 | CES99 = 75 |
| CES25 = 71 | CES50 = 91 | CES75 = 68 |            |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)