

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: P1457039

Luminaire Tested: GLAN-SB7A-730-U-T4LG

Issue Date: 05/20/2026

**Test Information**

Test Method: LM-79-2024  
Report Number: P1457039  
Test Lab: INNOVATION CENTER(G1)  
Issue Date: 5/21/2026  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: STREETWORKS  
Catalog Number: GLAN-SB7A-730-U-T4LG  
Description: GALLEON II AREA AND ROADWAY HIGH DENSITY LUMINAIRE 350mA 7xLight Square  
PACKAGE 70CRI 3000K FIXTURE w/ TYPE IV LOW GLARE  
Light Source: (182) 3000K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

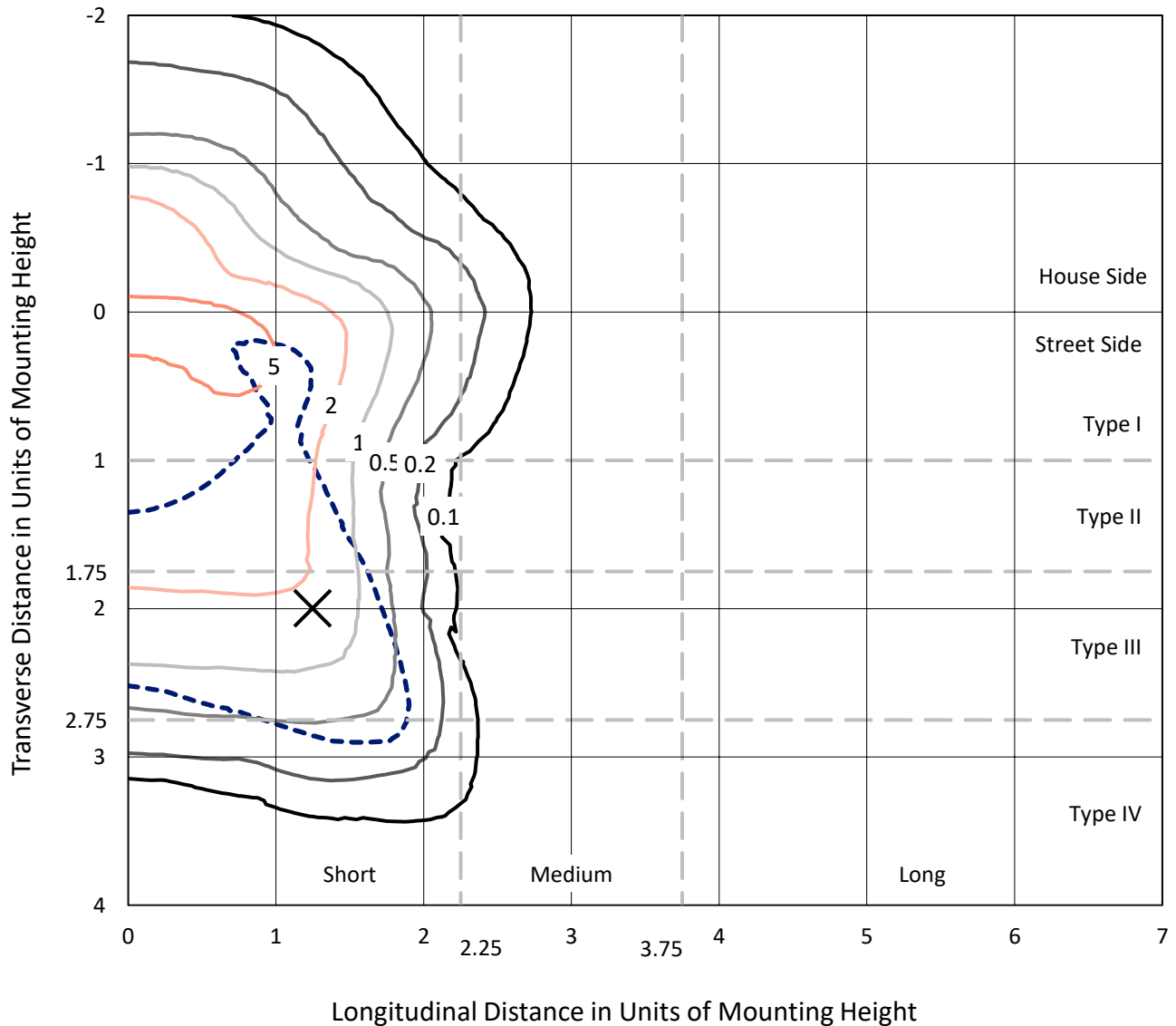
Lumens per Lamp: N/A  
Luminaire Lumens: 31213.8 lumens  
Efficiency: N/A  
Efficacy: 156.8 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1.5' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B3 - U0 - G4  
  
Input Watts (W): 199.1  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.97  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT

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### Iso-Footcandle Lines of Horizontal Illumination

× Max cd  
 - - - 1/2 Max cd

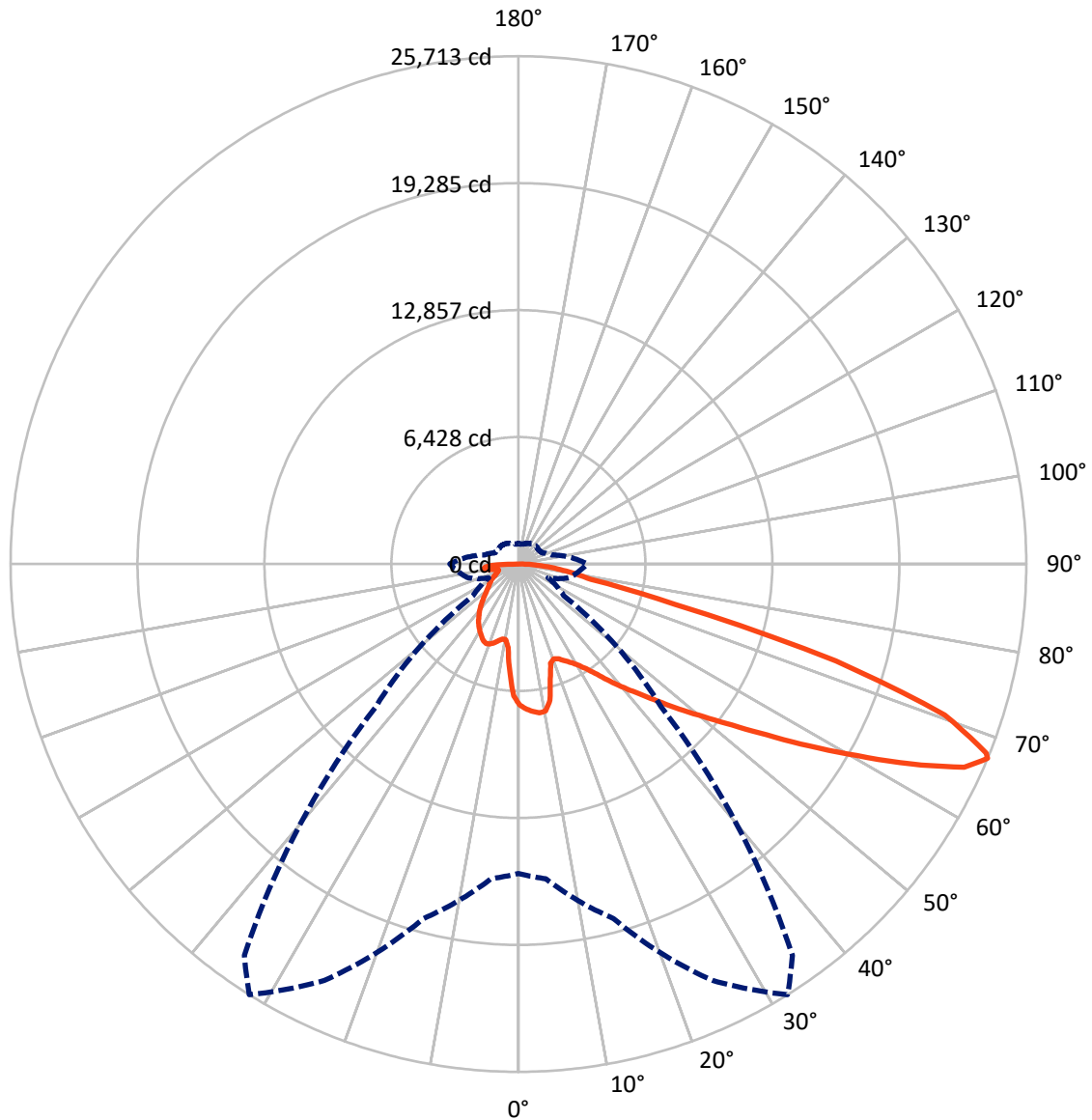


Based on 30 foot mounting height. Maximum calculated value = 8.6 fc  
 Type IV - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 32-Deg Lateral      - - - Horizontal Cone Through 67-Deg Vertical

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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 7389.8   | 0.0    | 7389.8  |
|                    | % Fixture | 23.7     | 0.0    | 23.7    |
| <b>Street Side</b> | Lumens    | 23824.1  | 0.0    | 23824.1 |
|                    | % Fixture | 76.3     | 0.0    | 76.3    |
| <b>Total</b>       | Lumens    | 31213.8  | 0.0    | 31213.8 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 623.1   | 2.0       |
| 10°-20°   | 1654.5  | 5.3       |
| 20°-30°   | 2701.9  | 8.7       |
| 30°-40°   | 3982.3  | 12.8      |
| 40°-50°   | 5491.8  | 17.6      |
| 50°-60°   | 6937.8  | 22.2      |
| 60°-70°   | 6714.5  | 21.5      |
| 70°-80°   | 2396.4  | 7.7       |
| 80°-90°   | 711.6   | 2.3       |
| 90°-100°  | 0.0     | 0.0       |
| 100°-110° | 0.0     | 0.0       |
| 110°-120° | 0.0     | 0.0       |
| 120°-130° | 0.0     | 0.0       |
| 130°-140° | 0.0     | 0.0       |
| 140°-150° | 0.0     | 0.0       |
| 150°-160° | 0.0     | 0.0       |
| 160°-170° | 0.0     | 0.0       |
| 170°-180° | 0.0     | 0.0       |
| 0°-90°    | 31213.8 | 100.0     |
| 0°-180°   | 31213.8 | 100.0     |



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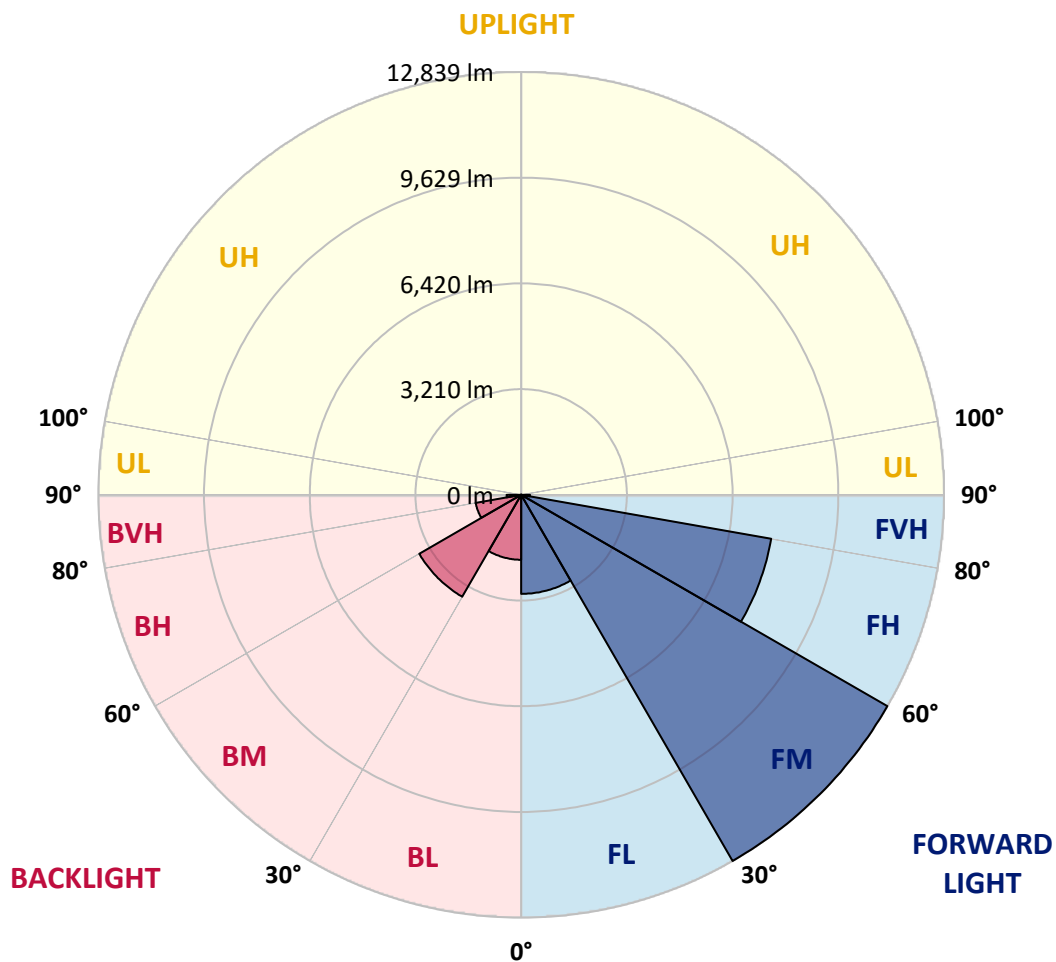
CATALOG NUMBER: GLAN-SB7A-730-U-T4LG

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |          |
|------|-------------|---------|-----------|-------------------------|------|----------|
|      |             |         |           | B                       | U    | G        |
| FL   | (0°-30°)    | 3007.5  | 9.6       |                         |      |          |
| FM   | (30°-60°)   | 12839.2 | 41.1      |                         |      |          |
| FH   | (60°-80°)   | 7709.2  | 24.7      |                         |      | G4/12000 |
| FVH  | (80°-90°)   | 268.2   | 0.9       |                         |      | G3/500   |
| BL   | (0°-30°)    | 1972.0  | 6.3       | B3/2500                 |      |          |
| BM   | (30°-60°)   | 3572.6  | 11.4      | B3/5000                 |      |          |
| BH   | (60°-80°)   | 1401.7  | 4.5       | B3/2500                 |      | G3/2500  |
| BVH  | (80°-90°)   | 443.5   | 1.4       |                         |      | G3/500   |
| UL   | (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |          |
| UH   | (100°-180°) | 0.0     | 0.0       |                         | U0/0 |          |

**BUG Rating: B3-U0-G4**

Type IV Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 32°     | 35°     | 45°     | 55°     | 65°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 7131.7  | 7131.7  | 7131.7  | 7131.7  | 7131.7  | 7131.7  | 7131.7  | 7131.7  | 7131.7  | 7131.7  | 7131.7  |
| 2.5°  | 7402.0  | 7381.2  | 7360.5  | 7374.3  | 7346.6  | 7339.7  | 7305.0  | 7291.1  | 7249.6  | 7242.6  | 7166.4  |
| 5°    | 7554.5  | 7512.9  | 7506.0  | 7519.9  | 7492.1  | 7492.1  | 7464.4  | 7443.6  | 7381.2  | 7346.6  | 7235.7  |
| 7.5°  | 7554.5  | 7547.6  | 7561.4  | 7610.0  | 7616.9  | 7616.9  | 7616.9  | 7623.8  | 7561.4  | 7512.9  | 7339.7  |
| 10°   | 7124.8  | 7055.5  | 7208.0  | 7450.6  | 7568.4  | 7637.7  | 7762.4  | 7838.7  | 7790.2  | 7755.5  | 7519.9  |
| 12.5° | 5842.6  | 5849.6  | 6092.1  | 6611.9  | 7083.2  | 7284.2  | 7804.0  | 8081.3  | 8102.0  | 8046.6  | 7748.6  |
| 15°   | 4955.5  | 4990.1  | 5114.9  | 5489.2  | 6029.8  | 6327.8  | 7561.4  | 8296.1  | 8462.4  | 8407.0  | 8025.8  |
| 17.5° | 4685.2  | 4706.0  | 4761.4  | 4976.3  | 5281.2  | 5523.8  | 6903.0  | 8434.7  | 8899.1  | 8829.8  | 8337.7  |
| 20°   | 4643.6  | 4657.5  | 4726.8  | 4907.0  | 5114.9  | 5253.5  | 6230.7  | 8323.8  | 9308.0  | 9280.3  | 8621.8  |
| 22.5° | 4650.5  | 4664.4  | 4754.5  | 5004.0  | 5218.9  | 5336.7  | 6015.9  | 8067.4  | 9737.7  | 9765.4  | 8912.9  |
| 25°   | 4664.4  | 4671.3  | 4809.9  | 5142.6  | 5412.9  | 5558.5  | 6154.5  | 7838.7  | 10098.1 | 10333.7 | 9231.8  |
| 27.5° | 4740.6  | 4761.4  | 4948.6  | 5322.8  | 5641.6  | 5808.0  | 6480.2  | 7914.9  | 10493.2 | 10978.3 | 9612.9  |
| 30°   | 4948.6  | 4962.4  | 5191.1  | 5579.3  | 5925.8  | 6099.1  | 6868.4  | 8219.9  | 10978.3 | 11643.7 | 9987.2  |
| 32.5° | 5274.3  | 5288.2  | 5551.5  | 5953.5  | 6327.8  | 6535.7  | 7374.3  | 8802.0  | 11518.9 | 12343.7 | 10361.5 |
| 35°   | 5724.8  | 5731.7  | 6029.8  | 6459.5  | 6854.5  | 7090.2  | 7963.4  | 9460.5  | 12080.3 | 12939.7 | 10638.7 |
| 37.5° | 6258.5  | 6307.0  | 6611.9  | 7062.4  | 7526.8  | 7741.6  | 8656.5  | 10229.8 | 12579.3 | 13445.7 | 10798.1 |
| 40°   | 6993.1  | 7007.0  | 7305.0  | 7741.6  | 8233.7  | 8441.7  | 9349.6  | 10957.5 | 13126.8 | 13743.7 | 10943.7 |
| 42.5° | 7748.6  | 7866.4  | 8115.9  | 8601.1  | 8968.4  | 9134.7  | 10139.7 | 11622.9 | 13563.5 | 13757.5 | 10881.3 |
| 45°   | 8760.5  | 8850.6  | 9100.1  | 9529.8  | 9897.1  | 10091.2 | 10992.2 | 12232.8 | 13785.3 | 13639.7 | 10742.7 |
| 47.5° | 9917.9  | 9973.3  | 10174.3 | 10562.5 | 10971.4 | 11110.0 | 11879.3 | 12579.3 | 13868.4 | 13556.5 | 10680.3 |
| 50°   | 11283.3 | 11283.3 | 11428.8 | 11761.5 | 12135.7 | 12329.8 | 12697.1 | 12787.2 | 14111.0 | 13411.0 | 10839.7 |
| 52.5° | 12433.8 | 12489.2 | 12683.3 | 13154.6 | 13528.8 | 13750.6 | 13334.8 | 13106.0 | 13618.9 | 12600.1 | 10888.2 |
| 55°   | 13535.8 | 13598.1 | 14034.8 | 14623.9 | 15261.5 | 15504.1 | 14131.8 | 12946.6 | 11962.5 | 11414.9 | 10555.5 |
| 57.5° | 14589.2 | 14720.9 | 15268.4 | 16418.9 | 17382.3 | 17361.5 | 15143.7 | 11518.9 | 9765.4  | 10105.0 | 9827.8  |
| 60°   | 16058.5 | 16197.2 | 17070.4 | 18519.0 | 19697.2 | 19205.1 | 15157.5 | 9585.2  | 7610.0  | 8067.4  | 8462.4  |
| 62.5° | 17285.3 | 17520.9 | 18803.1 | 21215.0 | 22296.2 | 21526.9 | 13903.1 | 7339.7  | 5052.5  | 5627.8  | 6542.6  |
| 65°   | 17174.4 | 17486.3 | 19475.4 | 23197.2 | 24812.1 | 24098.2 | 12066.4 | 4643.6  | 2606.0  | 3846.6  | 4581.2  |
| 67°   | 15663.5 | 16003.1 | 18581.3 | 23266.5 | 25713.1 | 24188.3 | 10188.2 | 2807.0  | 1656.4  | 2668.3  | 3181.2  |
| 67.5° | 14797.1 | 15296.2 | 18137.8 | 23134.8 | 25546.7 | 23807.1 | 9342.6  | 2349.5  | 1559.4  | 2481.2  | 2897.1  |
| 70°   | 9100.1  | 9904.0  | 13612.0 | 20452.6 | 22899.2 | 19925.9 | 5191.1  | 1330.7  | 1268.3  | 1663.4  | 2003.0  |
| 72.5° | 2737.6  | 2980.2  | 5253.5  | 13119.9 | 16807.1 | 14769.4 | 2335.7  | 1025.8  | 1136.6  | 1337.6  | 1545.6  |
| 75°   | 1330.7  | 1420.8  | 2169.3  | 5364.4  | 8185.2  | 8143.6  | 1303.0  | 880.2   | 1053.5  | 1122.8  | 1219.8  |
| 77.5° | 852.5   | 907.9   | 1351.5  | 3001.0  | 3749.5  | 3340.6  | 942.6   | 769.3   | 935.7   | 921.8   | 907.9   |
| 80°   | 533.7   | 561.4   | 866.3   | 1739.6  | 2765.4  | 2307.9  | 693.1   | 630.7   | 804.0   | 713.9   | 644.6   |
| 82.5° | 346.5   | 381.2   | 554.5   | 1060.4  | 1975.3  | 1718.8  | 457.4   | 450.5   | 665.4   | 568.3   | 499.0   |
| 85°   | 228.7   | 256.4   | 353.5   | 623.8   | 1171.3  | 1226.7  | 298.0   | 311.9   | 512.9   | 429.7   | 381.2   |
| 87.5° | 83.2    | 104.0   | 180.2   | 277.2   | 547.5   | 679.2   | 124.8   | 117.8   | 249.5   | 201.0   | 159.4   |
| 90°   | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     |



REPORT NUMBER: P1457039

CATALOG NUMBER: GLAN-SB7A-730-U-T4LG

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 7131.7 | 7131.7 | 7131.7 | 7131.7 | 7131.7 | 7131.7 | 7131.7 | 7131.7 | 7131.7 | 7131.7 | 7131.7 |
| 2.5°  | 7152.5 | 7131.7 | 7034.7 | 6951.5 | 6889.2 | 6806.0 | 6715.9 | 6611.9 | 6542.6 | 6556.5 | 6535.7 |
| 5°    | 7187.2 | 7131.7 | 6944.6 | 6660.4 | 6383.2 | 6036.7 | 5593.1 | 5329.7 | 5128.8 | 5024.8 | 5052.5 |
| 7.5°  | 7263.4 | 7166.4 | 6771.3 | 6196.1 | 5475.3 | 4768.4 | 4331.7 | 4082.2 | 3964.4 | 3915.9 | 3908.9 |
| 10°   | 7395.1 | 7228.8 | 6549.6 | 5475.3 | 4532.7 | 4054.5 | 3895.1 | 3825.8 | 3811.9 | 3811.9 | 3805.0 |
| 12.5° | 7554.5 | 7291.1 | 6175.3 | 4775.3 | 4082.2 | 3908.9 | 3881.2 | 3888.1 | 3908.9 | 3929.7 | 3895.1 |
| 15°   | 7748.6 | 7318.9 | 5710.9 | 4352.5 | 3992.1 | 3950.5 | 3992.1 | 4040.6 | 4075.3 | 4103.0 | 4068.3 |
| 17.5° | 7942.6 | 7291.1 | 5274.3 | 4151.5 | 4006.0 | 4061.4 | 4144.6 | 4220.8 | 4241.6 | 4283.2 | 4255.5 |
| 20°   | 8081.3 | 7194.1 | 4900.0 | 4075.3 | 4040.6 | 4165.4 | 4269.3 | 4352.5 | 4394.1 | 4421.8 | 4394.1 |
| 22.5° | 8185.2 | 7069.4 | 4629.7 | 3999.0 | 4040.6 | 4193.1 | 4317.9 | 4414.9 | 4463.4 | 4491.1 | 4456.5 |
| 25°   | 8275.3 | 6896.1 | 4421.8 | 3888.1 | 3957.5 | 4103.0 | 4241.6 | 4338.6 | 4408.0 | 4449.5 | 4428.7 |
| 27.5° | 8386.2 | 6757.5 | 4227.8 | 3721.8 | 3784.2 | 3922.8 | 4068.3 | 4186.2 | 4317.9 | 4387.2 | 4373.3 |
| 30°   | 8511.0 | 6688.2 | 4040.6 | 3541.6 | 3583.2 | 3721.8 | 3895.1 | 4054.5 | 4234.7 | 4324.8 | 4324.8 |
| 32.5° | 8656.5 | 6639.7 | 3867.4 | 3368.3 | 3403.0 | 3555.5 | 3721.8 | 3867.4 | 4061.4 | 4207.0 | 4200.0 |
| 35°   | 8718.9 | 6584.2 | 3728.7 | 3208.9 | 3278.2 | 3403.0 | 3534.7 | 3631.7 | 3832.7 | 4006.0 | 4019.8 |
| 37.5° | 8781.3 | 6563.4 | 3659.4 | 3084.2 | 3139.6 | 3236.7 | 3306.0 | 3354.5 | 3541.6 | 3721.8 | 3728.7 |
| 40°   | 8857.5 | 6660.4 | 3707.9 | 3001.0 | 2952.5 | 3049.5 | 3084.2 | 3111.9 | 3208.9 | 3326.8 | 3326.8 |
| 42.5° | 8809.0 | 6729.8 | 3818.8 | 2924.8 | 2723.8 | 2834.7 | 2848.5 | 2841.6 | 2848.5 | 2855.5 | 2848.5 |
| 45°   | 8684.2 | 6660.4 | 3818.8 | 2807.0 | 2481.2 | 2599.0 | 2592.1 | 2557.4 | 2502.0 | 2356.5 | 2335.7 |
| 47.5° | 8656.5 | 6618.9 | 3673.3 | 2612.9 | 2238.6 | 2335.7 | 2349.5 | 2280.2 | 2120.8 | 1968.3 | 1919.8 |
| 50°   | 8774.3 | 6695.1 | 3444.6 | 2377.2 | 2030.7 | 2113.9 | 2148.5 | 2030.7 | 1850.5 | 1691.1 | 1663.4 |
| 52.5° | 8947.6 | 6792.1 | 3111.9 | 2120.8 | 1857.4 | 1940.6 | 1982.2 | 1850.5 | 1663.4 | 1538.6 | 1524.8 |
| 55°   | 8926.8 | 6792.1 | 2737.6 | 1885.2 | 1725.8 | 1788.1 | 1857.4 | 1718.8 | 1573.3 | 1504.0 | 1497.0 |
| 57.5° | 8476.3 | 6535.7 | 2460.4 | 1718.8 | 1601.0 | 1656.4 | 1746.5 | 1614.9 | 1476.2 | 1490.1 | 1510.9 |
| 60°   | 7596.1 | 5870.3 | 2252.5 | 1607.9 | 1490.1 | 1545.6 | 1642.6 | 1490.1 | 1309.9 | 1261.4 | 1261.4 |
| 62.5° | 6258.5 | 4837.7 | 2086.2 | 1497.0 | 1386.1 | 1455.5 | 1504.0 | 1303.0 | 1185.2 | 1129.7 | 1129.7 |
| 65°   | 4692.1 | 3742.6 | 1912.9 | 1406.9 | 1296.0 | 1372.3 | 1316.8 | 1219.8 | 1102.0 | 1060.4 | 1067.3 |
| 67°   | 3479.2 | 2904.0 | 1767.3 | 1330.7 | 1240.6 | 1275.3 | 1233.7 | 1164.4 | 1046.5 | 1011.9 | 1046.5 |
| 67.5° | 3125.8 | 2758.4 | 1732.7 | 1309.9 | 1226.7 | 1254.5 | 1212.9 | 1157.4 | 1032.7 | 998.0  | 1032.7 |
| 70°   | 2148.5 | 2120.8 | 1545.6 | 1212.9 | 1150.5 | 1122.8 | 1143.6 | 1074.3 | 970.3  | 956.4  | 991.1  |
| 72.5° | 1635.7 | 1691.1 | 1386.1 | 1129.7 | 1067.3 | 1032.7 | 1081.2 | 1011.9 | 907.9  | 928.7  | 963.4  |
| 75°   | 1282.2 | 1365.4 | 1240.6 | 1011.9 | 970.3  | 977.2  | 1074.3 | 1046.5 | 963.4  | 984.2  | 991.1  |
| 77.5° | 949.5  | 1102.0 | 1060.4 | 880.2  | 845.6  | 942.6  | 1212.9 | 1296.0 | 1150.5 | 1115.9 | 1067.3 |
| 80°   | 693.1  | 790.1  | 894.1  | 727.7  | 706.9  | 907.9  | 1497.0 | 1656.4 | 1420.8 | 1282.2 | 1247.5 |
| 82.5° | 512.9  | 554.5  | 734.7  | 582.2  | 512.9  | 810.9  | 1663.4 | 1947.5 | 1691.1 | 1427.7 | 1386.1 |
| 85°   | 367.3  | 429.7  | 582.2  | 429.7  | 339.6  | 665.4  | 1628.7 | 1906.0 | 1677.2 | 1351.5 | 1316.8 |
| 87.5° | 131.7  | 187.1  | 249.5  | 194.1  | 173.3  | 457.4  | 1344.6 | 1372.3 | 1046.5 | 478.2  | 485.2  |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

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



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

Report Prepared for

Cooper Lighting Solutions

McGraw-Edison

Report Number: SP1-2407-184-4

Test Date: 10/10/2024

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

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

**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-4  
 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-730-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 70 CRI 3000K CCT 26 LEDS

**Spectral Parameters**

CCT (K): 2985  
 CIE u': 0.2504  
 CIE v': 0.5243  
 Duv: 0.0019  
 CIE x: 0.4408  
 CIE y: 0.4101  
 CIE z: 0.1491  
 Peak Wavelength (nm): 595  
 Dominant Wavelength (nm): 582  
 Purity: 55.41818  
 Rf: 73.8  
 Rg: 94.4

|           |      |      |       |
|-----------|------|------|-------|
| CRI (Ra): | 70.8 |      |       |
| R1:       | 66.3 | R9:  | -43.2 |
| R2:       | 80.6 | R10: | 57.6  |
| R3:       | 94.5 | R11: | 64.8  |
| R4:       | 68.2 | R12: | 53.5  |
| R5:       | 66.5 | R13: | 68.7  |
| R6:       | 74.7 | R14: | 97.0  |
| R7:       | 76.2 | R15: | 56.4  |
| R8:       | 39.6 |      |       |



**Test Conditions**

Stabilization Time: 36M  
 Operation Time: 1H 36M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-4

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 6/18/2024        | 12/18/2024           |
| Power Meter                    | INXT2011004           | 2/8/2024         | 2/8/2025             |
| AC Power Source                | IN0063                | 10/24/2023       | 10/24/2024           |
| DC Power Source                | IN0208                | 10/24/2023       | 10/24/2024           |
| Sphere Thermometer             | IN0085                | 10/24/2023       | 10/24/2024           |
| Room Thermometer               | IN0046                | 10/24/2023       | 10/24/2024           |

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CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 3000K 4-step quadrangle

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**Photopic Flux vs. Wavelength**



Photopic Luminous Efficacy Function

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

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**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: NR**

**S/P: 1.19**

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

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: NR**

**M/P: 2.13**

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

**Summary**

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



**Color Vector Graphics**

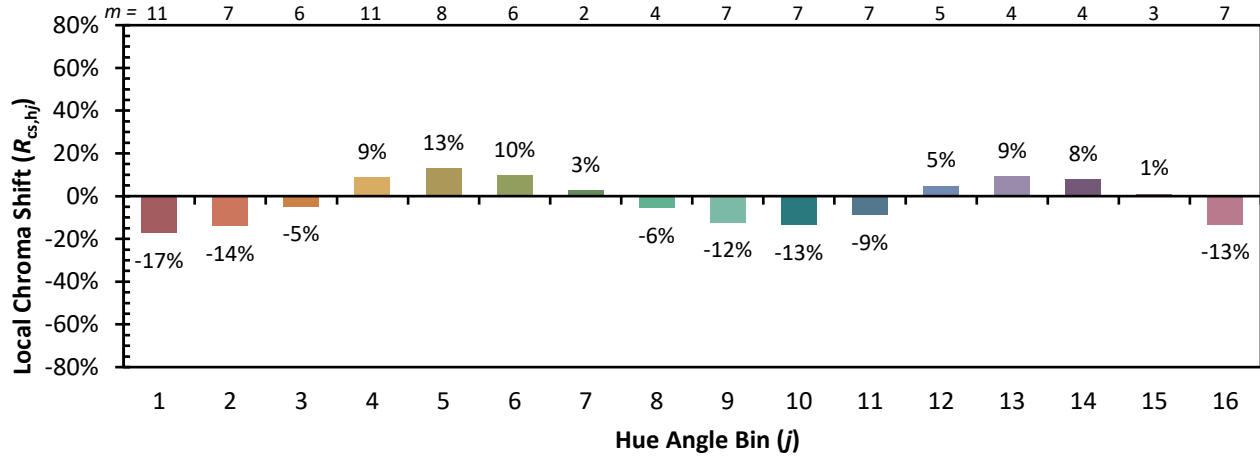


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

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



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)