

Signify Classified - Internal  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



Scaled data based on original data using  
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions  
(formerly Eaton)

Brand: McGRAW-EDISON

Report Number: P1437588

Luminaire Tested: **GALN-SB5D-735-U-T3LG-HSS**

Issue Date: 03/27/202

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

Report Generated By 670245763



**Test Information**

Test Method: LM-79-08  
Report Number: P1437588  
Test Lab: INNOVATION CENTER(G1)  
Issue Date: 03/27/202  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GALN-SB5D-735-U-T3LG-HSS  
Description: GALLEON II AREA AND ROADWAY HIGH DENSITY LUMINAIRE 900mA 5xLight Square PACKAGE 70CRI 3500K FIXTURE w/ TYPE III LOW GLARE WITH HOUSE SIDE SHIELD  
Light Source: (130) 3500K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

Luminaire Equipment:

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

**Summary**

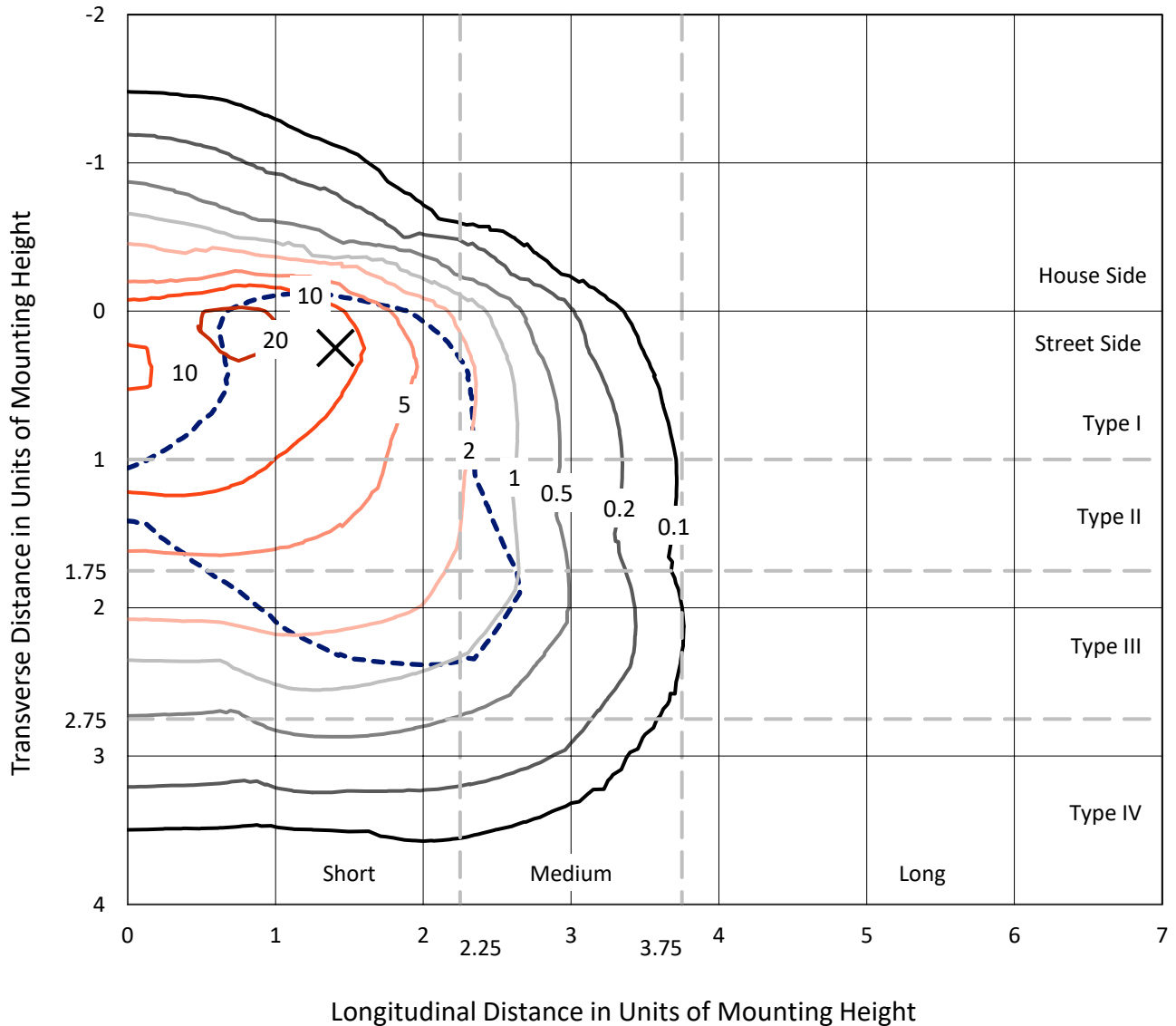
Lumens per Lamp: N/A  
Luminaire Lumens: 39279.8 lumens  
Efficiency: N/A  
Efficacy: 107.6 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type III - Short  
BUG Rating: B3 - U0 - G4

Input Watts (W): 364.9  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: 0.97  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT

REPORT NUMBER: P1437588  
 CATALOG NUMBER: GALN-SB5D-735-U-T3LG-HSS

### Iso-Footcandle Lines of Horizontal Illumination

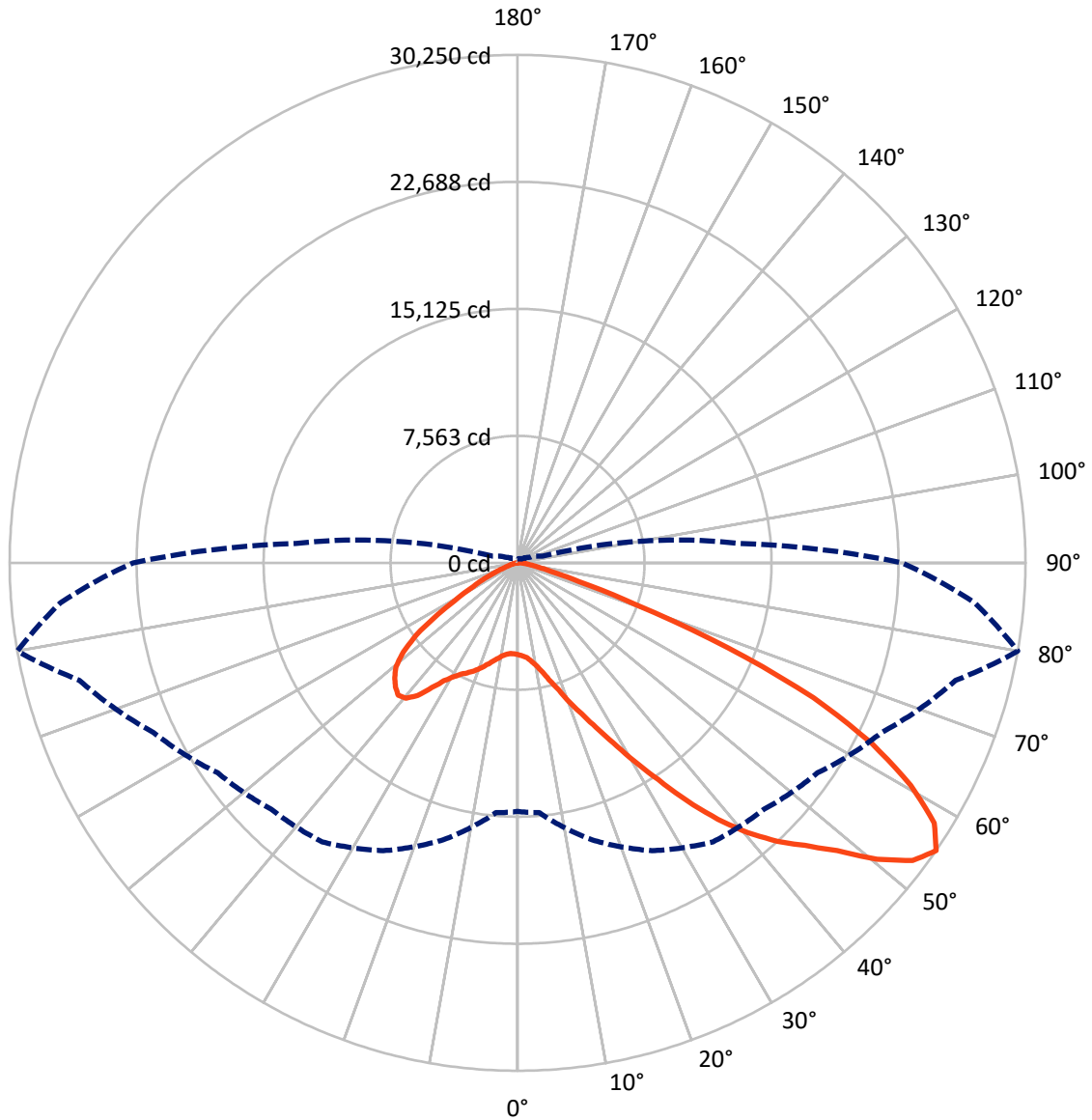
✕ Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 24.2 fc  
 Type III - Short - N/A

REPORT NUMBER: P1437588  
CATALOG NUMBER: GALN-SB5D-735-U-T3LG-HSS

### Luminous Intensity Polar Plot



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

REPORT NUMBER: P1437588  
 CATALOG NUMBER: GALN-SB5D-735-U-T3LG-HSS

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 4774.9   | 0.0    | 4774.9  |
|                    | % Fixture | 12.2     | 0.0    | 12.2    |
| <b>Street Side</b> | Lumens    | 34504.9  | 0.0    | 34504.9 |
|                    | % Fixture | 87.8     | 0.0    | 87.8    |
| <b>Total</b>       | Lumens    | 39279.8  | 0.0    | 39279.8 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 459.2   | 1.2       |
| 10°-20°   | 1210.6  | 3.1       |
| 20°-30°   | 2369.9  | 6.0       |
| 30°-40°   | 4821.5  | 12.3      |
| 40°-50°   | 8128.3  | 20.7      |
| 50°-60°   | 10385.5 | 26.4      |
| 60°-70°   | 8866.8  | 22.6      |
| 70°-80°   | 2833.5  | 7.2       |
| 80°-90°   | 204.6   | 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°    | 39279.8 | 100.0     |
| 0°-180°   | 39279.8 | 100.0     |

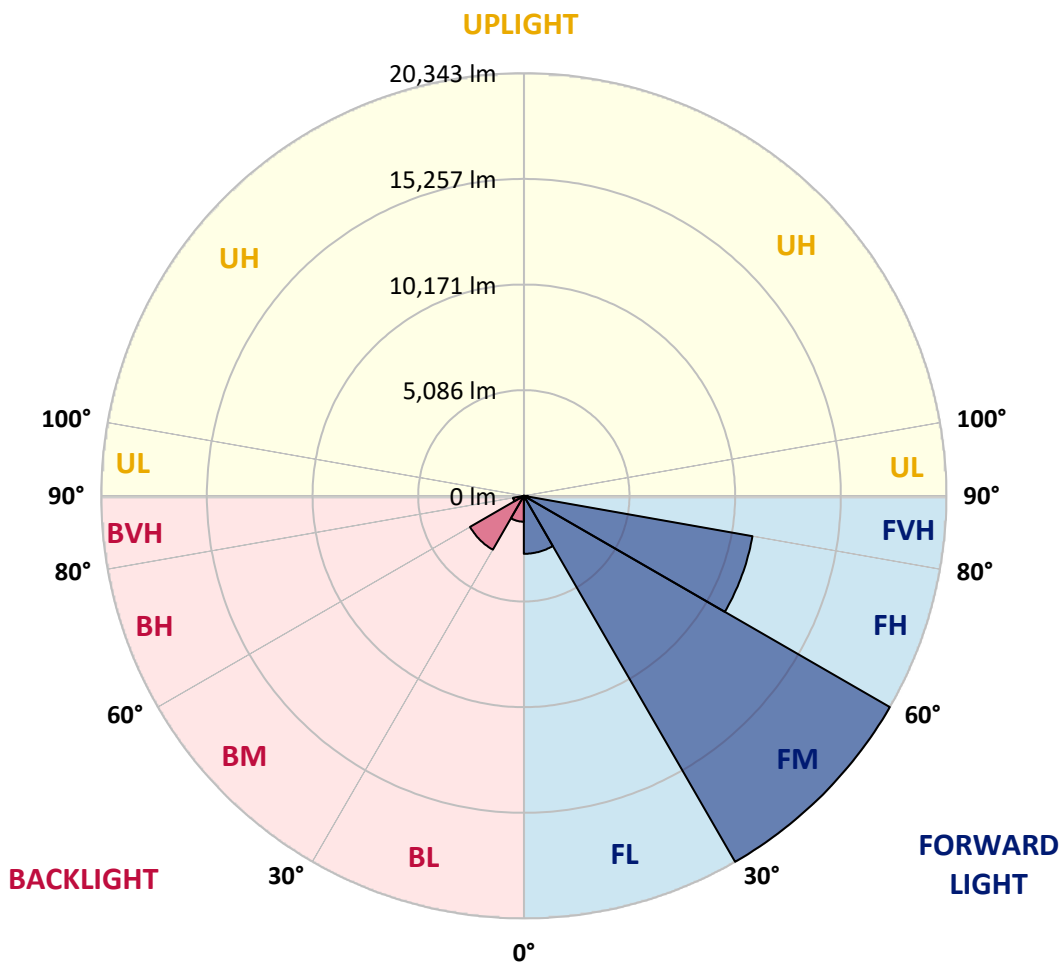


REPORT NUMBER: P1437588  
 CATALOG NUMBER: GALN-SB5D-735-U-T3LG-HSS

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

| Zone           | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |          |
|----------------|---------|-----------|-------------------------|------|----------|
|                |         |           | B                       | U    | G        |
| FL (0°-30°)    | 2792.9  | 7.1       |                         |      |          |
| FM (30°-60°)   | 20342.7 | 51.8      |                         |      |          |
| FH (60°-80°)   | 11175.4 | 28.5      |                         |      | G4/12000 |
| FVH (80°-90°)  | 193.9   | 0.5       |                         |      | G2/225   |
| BL (0°-30°)    | 1246.9  | 3.2       | B3/2500                 |      |          |
| BM (30°-60°)   | 2992.6  | 7.6       | B3/5000                 |      |          |
| BH (60°-80°)   | 524.8   | 1.3       | B2/1000                 |      | G2/1000  |
| BVH (80°-90°)  | 10.7    | 0.0       |                         |      | G1/100   |
| UL (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |          |
| UH (100°-180°) | 0.0     | 0.0       |                         | U0/0 |          |

**BUG Rating: B3-U0-G4**  
 Type III Short





REPORT NUMBER: P1437588

CATALOG NUMBER: GALN-SB5D-735-U-T3LG-HSS

**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 65°     | 75°     | 80°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 5471.6  | 5471.6  | 5471.6  | 5471.6  | 5471.6  | 5471.6  | 5471.6  | 5471.6  | 5471.6  | 5471.6  | 5471.6  |
| 2.5°  | 5505.1  | 5516.3  | 5505.1  | 5516.3  | 5538.6  | 5527.4  | 5572.1  | 5560.9  | 5560.9  | 5549.8  | 5505.1  |
| 5°    | 5192.4  | 5203.6  | 5225.9  | 5281.8  | 5359.9  | 5438.1  | 5538.6  | 5605.6  | 5672.6  | 5661.4  | 5616.8  |
| 7.5°  | 4578.3  | 4600.6  | 4690.0  | 4801.6  | 5058.4  | 5292.9  | 5549.8  | 5717.3  | 5862.4  | 5907.1  | 5873.6  |
| 10°   | 4232.1  | 4254.5  | 4310.3  | 4422.0  | 4656.5  | 5047.3  | 5549.8  | 5895.9  | 6152.8  | 6242.1  | 6253.3  |
| 12.5° | 4198.6  | 4209.8  | 4254.5  | 4377.3  | 4578.3  | 4913.3  | 5538.6  | 6130.4  | 6565.9  | 6699.9  | 6744.6  |
| 15°   | 4221.0  | 4243.3  | 4288.0  | 4388.5  | 4623.0  | 5002.6  | 5627.9  | 6498.9  | 7113.1  | 7302.9  | 7314.1  |
| 17.5° | 4310.3  | 4332.6  | 4388.5  | 4500.1  | 4757.0  | 5237.1  | 5907.1  | 6878.6  | 7771.9  | 7984.1  | 8106.9  |
| 20°   | 4489.0  | 4500.1  | 4567.1  | 4712.3  | 5002.6  | 5527.4  | 6320.3  | 7392.3  | 8564.7  | 8877.4  | 8966.7  |
| 22.5° | 4723.5  | 4757.0  | 4846.3  | 5024.9  | 5393.4  | 5929.4  | 6889.8  | 8017.6  | 9435.7  | 9759.6  | 9915.9  |
| 25°   | 4980.3  | 5024.9  | 5158.9  | 5449.3  | 5918.3  | 6543.6  | 7593.3  | 8843.9  | 10463.1 | 10853.9 | 11066.1 |
| 27.5° | 5505.1  | 5516.3  | 5605.6  | 5974.1  | 6577.1  | 7347.6  | 8486.6  | 9904.7  | 11669.0 | 12126.9 | 12361.4 |
| 30°   | 6655.3  | 6666.4  | 6588.3  | 6688.8  | 7302.9  | 8296.7  | 9536.2  | 11144.2 | 13076.0 | 13712.5 | 13902.4 |
| 32.5° | 8062.3  | 8118.1  | 8106.9  | 8039.9  | 8319.1  | 9245.9  | 10786.9 | 12629.4 | 14728.7 | 15398.7 | 15577.3 |
| 35°   | 9659.1  | 9793.1  | 9759.6  | 9737.2  | 9770.7  | 10463.1 | 12216.2 | 14270.9 | 16604.7 | 17419.8 | 17565.0 |
| 37.5° | 11222.4 | 11255.9 | 11412.2 | 11602.0 | 11624.4 | 12104.5 | 13868.9 | 16012.8 | 18346.6 | 19385.1 | 19608.5 |
| 40°   | 12428.4 | 12540.0 | 12930.9 | 13310.5 | 13701.4 | 14081.0 | 15231.2 | 17419.8 | 19731.3 | 21127.1 | 21227.6 |
| 42.5° | 13366.4 | 13634.4 | 14203.9 | 14795.7 | 15588.5 | 16012.8 | 16526.5 | 18413.6 | 20859.1 | 22679.3 | 22634.6 |
| 45°   | 14505.4 | 14617.0 | 15421.0 | 16202.7 | 17006.7 | 17654.3 | 17643.2 | 19251.1 | 21741.3 | 24008.1 | 23728.9 |
| 47.5° | 15275.8 | 15409.8 | 16504.2 | 17419.8 | 18246.1 | 18570.0 | 18637.0 | 20155.6 | 22958.4 | 25616.1 | 24957.2 |
| 50°   | 15689.0 | 15923.5 | 17118.3 | 18279.6 | 19173.0 | 19273.5 | 19575.0 | 21339.3 | 24555.3 | 27748.9 | 26509.4 |
| 52.5° | 15733.7 | 15957.0 | 17330.5 | 18826.8 | 19798.3 | 19999.3 | 20513.0 | 22679.3 | 26107.4 | 29457.4 | 27402.7 |
| 55°   | 14806.8 | 14940.8 | 17073.7 | 18916.1 | 20289.6 | 20758.6 | 21808.3 | 23918.8 | 27011.9 | 30250.2 | 27324.6 |
| 57.5° | 13935.9 | 14069.9 | 15923.5 | 18759.8 | 20792.1 | 21752.4 | 23192.9 | 24767.4 | 26308.4 | 29267.5 | 25582.6 |
| 60°   | 13187.7 | 13254.7 | 14940.8 | 18034.0 | 20982.0 | 22723.9 | 24387.8 | 23929.9 | 24488.3 | 26911.4 | 22601.1 |
| 62.5° | 11780.7 | 11825.4 | 13824.2 | 16727.5 | 20602.3 | 23472.1 | 24800.9 | 22154.4 | 22489.4 | 23661.9 | 19094.8 |
| 65°   | 8899.7  | 9067.2  | 10898.6 | 15744.8 | 19977.0 | 23818.3 | 23840.6 | 19988.1 | 19642.0 | 19362.8 | 15019.0 |
| 67.5° | 6041.1  | 6230.9  | 7336.4  | 14159.2 | 18960.8 | 23963.4 | 21975.8 | 17185.3 | 14963.2 | 13522.7 | 9837.7  |
| 70°   | 4824.0  | 4824.0  | 5203.6  | 11378.7 | 16548.8 | 22109.8 | 19664.3 | 12975.5 | 9502.7  | 7470.4  | 5270.6  |
| 72.5° | 3171.3  | 3182.5  | 3539.8  | 7224.8  | 11736.0 | 16861.5 | 16035.2 | 7503.9  | 4935.6  | 3807.8  | 2601.8  |
| 75°   | 1150.2  | 1150.2  | 1552.2  | 2892.1  | 6208.6  | 10038.7 | 9770.7  | 3584.5  | 2680.0  | 2077.0  | 1574.5  |
| 77.5° | 614.2   | 636.5   | 748.2   | 1194.8  | 2378.5  | 4087.0  | 3819.0  | 1831.3  | 1518.7  | 1295.3  | 982.7   |
| 80°   | 413.2   | 424.3   | 502.5   | 737.0   | 1150.2  | 1574.5  | 1228.3  | 1027.3  | 1027.3  | 871.0   | 658.8   |
| 82.5° | 223.3   | 234.5   | 335.0   | 480.2   | 614.2   | 737.0   | 591.8   | 603.0   | 725.8   | 591.8   | 379.7   |
| 85°   | 156.3   | 156.3   | 256.8   | 346.2   | 346.2   | 357.3   | 256.8   | 379.7   | 424.3   | 368.5   | 256.8   |
| 87.5° | 89.3    | 89.3    | 145.2   | 167.5   | 167.5   | 156.3   | 78.2    | 134.0   | 167.5   | 189.8   | 111.7   |
| 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: P1437588

CATALOG NUMBER: GALN-SB5D-735-U-T3LG-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°     | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 5471.6  | 5471.6  | 5471.6 | 5471.6 | 5471.6 | 5471.6 | 5471.6 | 5471.6 | 5471.6 | 5471.6 | 5471.6 |
| 2.5°  | 5493.9  | 5460.4  | 5393.4 | 5259.4 | 5192.4 | 5103.1 | 5024.9 | 4924.5 | 4902.1 | 4891.0 | 4846.3 |
| 5°    | 5583.3  | 5516.3  | 5315.3 | 5024.9 | 4779.3 | 4544.8 | 4310.3 | 4176.3 | 4064.6 | 4008.8 | 3997.6 |
| 7.5°  | 5806.6  | 5672.6  | 5304.1 | 4790.5 | 4332.6 | 3930.6 | 3584.5 | 3283.0 | 3126.6 | 2992.6 | 3003.8 |
| 10°   | 6141.6  | 5929.4  | 5326.4 | 4567.1 | 3886.0 | 3238.3 | 2735.8 | 2300.3 | 1987.6 | 1842.5 | 1831.3 |
| 12.5° | 6588.3  | 6286.8  | 5404.6 | 4343.8 | 3338.8 | 2434.3 | 1797.8 | 1541.0 | 1474.0 | 1462.8 | 1451.7 |
| 15°   | 7135.4  | 6711.1  | 5482.8 | 4053.5 | 2601.8 | 1686.1 | 1462.8 | 1407.0 | 1395.8 | 1384.7 | 1384.7 |
| 17.5° | 7794.3  | 7202.4  | 5527.4 | 3562.1 | 1898.3 | 1451.7 | 1373.5 | 1340.0 | 1328.8 | 1317.7 | 1317.7 |
| 20°   | 8620.6  | 7749.6  | 5583.3 | 2936.8 | 1608.0 | 1395.8 | 1306.5 | 1261.8 | 1250.7 | 1250.7 | 1239.5 |
| 22.5° | 9435.7  | 8363.7  | 5538.6 | 2389.6 | 1552.2 | 1328.8 | 1228.3 | 1183.7 | 1161.3 | 1161.3 | 1150.2 |
| 25°   | 10373.7 | 8989.1  | 5404.6 | 2155.1 | 1541.0 | 1273.0 | 1150.2 | 1083.2 | 1049.7 | 1038.5 | 1038.5 |
| 27.5° | 11445.7 | 9703.7  | 5192.4 | 2166.3 | 1541.0 | 1228.3 | 1049.7 | 960.3  | 938.0  | 915.7  | 915.7  |
| 30°   | 12674.0 | 10574.7 | 5036.1 | 2311.5 | 1563.3 | 1183.7 | 960.3  | 848.7  | 815.2  | 792.8  | 804.0  |
| 32.5° | 14081.0 | 11546.2 | 5024.9 | 2546.0 | 1596.8 | 1116.7 | 859.8  | 737.0  | 703.5  | 692.3  | 703.5  |
| 35°   | 15677.8 | 12752.2 | 5281.8 | 2724.6 | 1507.5 | 971.5  | 737.0  | 636.5  | 603.0  | 603.0  | 614.2  |
| 37.5° | 17453.3 | 14136.9 | 5627.9 | 2680.0 | 1217.2 | 770.5  | 636.5  | 558.3  | 524.8  | 536.0  | 547.2  |
| 40°   | 19072.5 | 15220.0 | 5683.8 | 2289.1 | 915.7  | 658.8  | 547.2  | 491.3  | 469.0  | 480.2  | 491.3  |
| 42.5° | 20300.8 | 16091.0 | 5147.8 | 1775.5 | 770.5  | 558.3  | 469.0  | 424.3  | 413.2  | 435.5  | 435.5  |
| 45°   | 21294.6 | 16437.2 | 4299.1 | 1317.7 | 681.2  | 480.2  | 413.2  | 390.8  | 368.5  | 379.7  | 379.7  |
| 47.5° | 22333.1 | 16493.0 | 3506.3 | 1060.8 | 603.0  | 435.5  | 379.7  | 357.3  | 335.0  | 335.0  | 335.0  |
| 50°   | 23338.1 | 16359.0 | 2680.0 | 938.0  | 558.3  | 390.8  | 346.2  | 323.8  | 301.5  | 290.3  | 290.3  |
| 52.5° | 23583.8 | 15287.0 | 1965.3 | 871.0  | 513.7  | 368.5  | 323.8  | 301.5  | 279.2  | 268.0  | 268.0  |
| 55°   | 22902.6 | 13254.7 | 1541.0 | 781.7  | 469.0  | 335.0  | 301.5  | 279.2  | 245.7  | 234.5  | 234.5  |
| 57.5° | 20658.1 | 10105.7 | 1228.3 | 670.0  | 424.3  | 323.8  | 279.2  | 256.8  | 223.3  | 212.2  | 212.2  |
| 60°   | 17743.7 | 7168.9  | 993.8  | 547.2  | 390.8  | 290.3  | 256.8  | 223.3  | 201.0  | 178.7  | 178.7  |
| 62.5° | 14516.5 | 5147.8  | 804.0  | 457.8  | 368.5  | 256.8  | 234.5  | 201.0  | 156.3  | 122.8  | 122.8  |
| 65°   | 11133.1 | 3696.1  | 625.3  | 368.5  | 335.0  | 223.3  | 201.0  | 167.5  | 122.8  | 89.3   | 89.3   |
| 67.5° | 7202.4  | 2389.6  | 469.0  | 323.8  | 256.8  | 189.8  | 156.3  | 134.0  | 111.7  | 78.2   | 67.0   |
| 70°   | 3796.6  | 1395.8  | 346.2  | 279.2  | 189.8  | 145.2  | 134.0  | 111.7  | 89.3   | 55.8   | 55.8   |
| 72.5° | 1965.3  | 915.7   | 256.8  | 245.7  | 145.2  | 100.5  | 111.7  | 89.3   | 67.0   | 33.5   | 33.5   |
| 75°   | 1261.8  | 614.2   | 189.8  | 201.0  | 89.3   | 78.2   | 78.2   | 55.8   | 33.5   | 22.3   | 11.2   |
| 77.5° | 815.2   | 413.2   | 134.0  | 167.5  | 55.8   | 44.7   | 44.7   | 22.3   | 11.2   | 0.0    | 0.0    |
| 80°   | 480.2   | 256.8   | 89.3   | 111.7  | 22.3   | 22.3   | 11.2   | 0.0    | 0.0    | 0.0    | 0.0    |
| 82.5° | 245.7   | 134.0   | 44.7   | 44.7   | 11.2   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 156.3   | 67.0    | 11.2   | 11.2   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 78.2    | 22.3    | 11.2   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 90°   | 0.0     | 0.0     | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

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



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

Report Prepared for

Cooper Lighting Solutions

McGraw-Edison

Report Number: SP1-2407-184-5

Test Date: 10/10/2024

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

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

**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-5  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 10/15/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: McGraw-Edison  
 Catalog Number: **GSS-SB1A-735-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 70 CRI 3500K CCT 26 LEDS

**Spectral Parameters**

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

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



**Test Conditions**

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

REPORT NUMBER: SP1-2407-184-5

| 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           |

REPORT NUMBER: SP1-2407-184-5

CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 3500K 4-step quadrangle

REPORT NUMBER: SP1-2407-184-5

**Photopic Flux vs. Wavelength**



**Photopic Lumens: NR**

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

REPORT NUMBER: SP1-2407-184-5

**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: NR**

**S/P: 1.29**

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

REPORT NUMBER: SP1-2407-184-5

Melanopic Flux vs. Wavelength



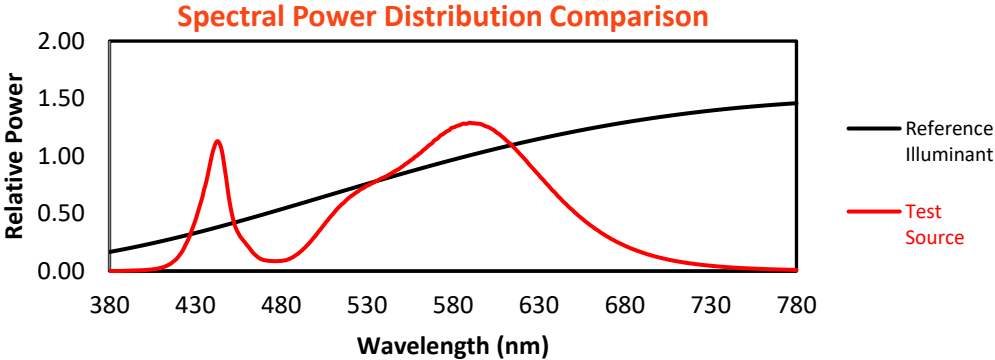
Melanopic Lumens: NR

M/P: 2.36

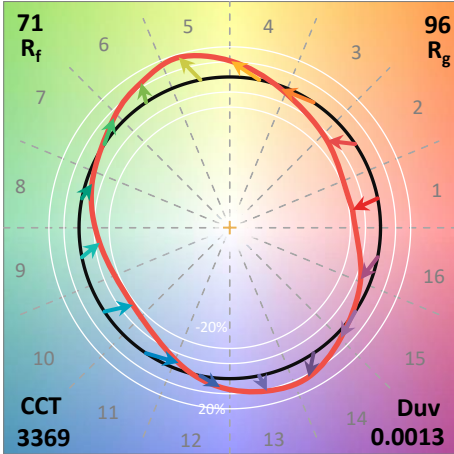
| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|-------------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

**Summary**

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



**Color Vector Graphics**



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

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



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)