

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: P1437027

Luminaire Tested: **GALN-SB9C-735-U-T2LG-HSS**

Issue Date: 03/27/202

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

Report Generated By 670245763



**Test Information**

Test Method: LM-79-08  
Report Number: P1437027  
Test Lab: INNOVATION CENTER(G1)  
Issue Date: 03/27/202  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GALN-SB9C-735-U-T2LG-HSS  
Description: GALLEON II AREA AND ROADWAY HIGH DENSITY LUMINAIRE 615mA 9xLight Square PACKAGE 70CRI 3500K FIXTURE w/ TYPE II LOW GLARE WITH HOUSE SIDE SHIELD  
Light Source: (234) 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               |

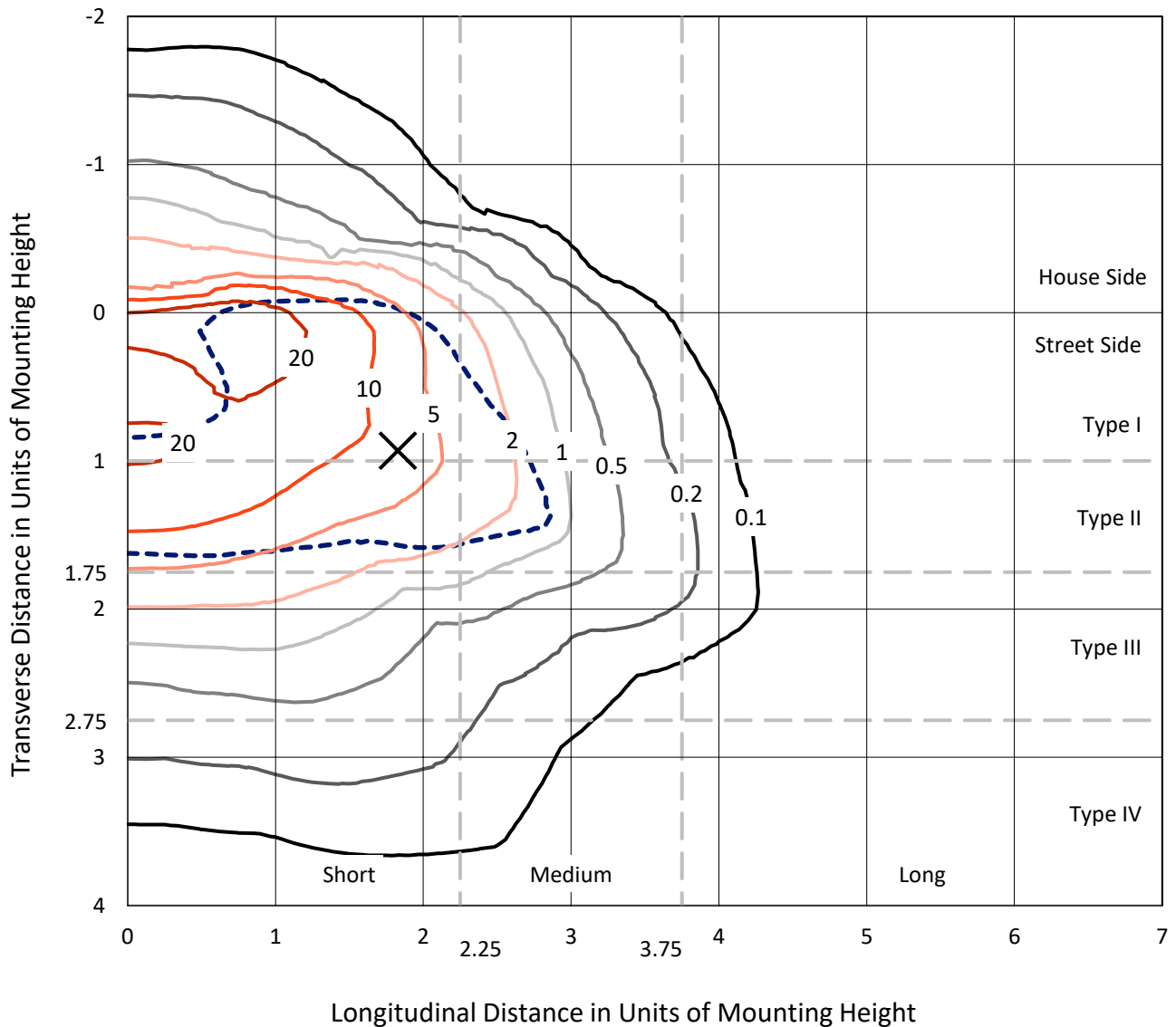
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 49399.4 lumens  
Efficiency: N/A  
Efficacy: 109.8 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1.5' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B3 - U0 - G4  
  
Input Watts (W): 449.8  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.97  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT

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### Iso-Footcandle Lines of Horizontal Illumination

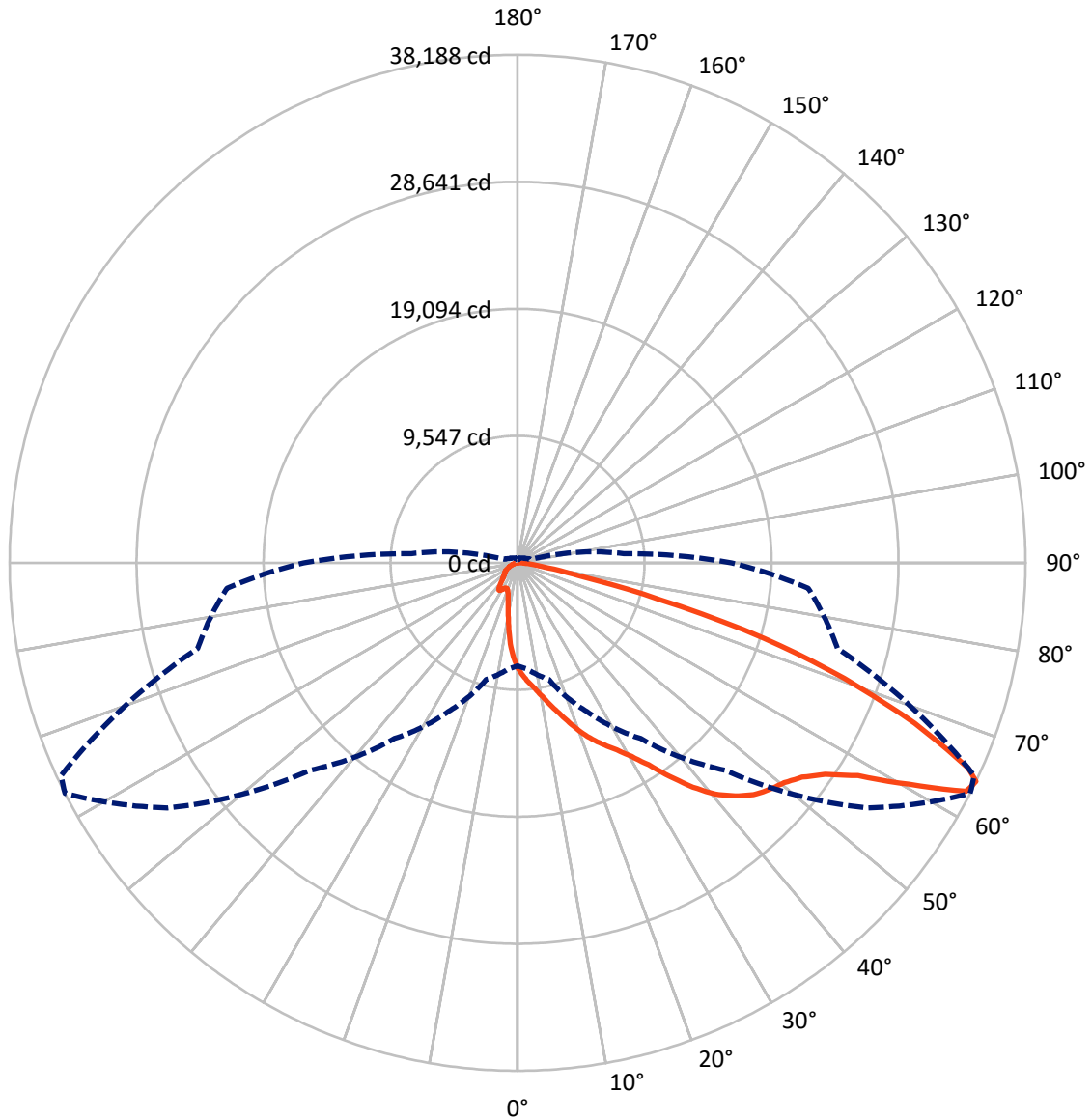
× Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 35.4 fc  
 Type II - Short - N/A

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### Luminous Intensity Polar Plot



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

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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 5862.1   | 0.0    | 5862.1  |
|                    | % Fixture | 11.9     | 0.0    | 11.9    |
| <b>Street Side</b> | Lumens    | 43537.3  | 0.0    | 43537.3 |
|                    | % Fixture | 88.1     | 0.0    | 88.1    |
| <b>Total</b>       | Lumens    | 49399.4  | 0.0    | 49399.4 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 672.6   | 1.4       |
| 10°-20°   | 1890.1  | 3.8       |
| 20°-30°   | 3366.3  | 6.8       |
| 30°-40°   | 6429.7  | 13.0      |
| 40°-50°   | 10657.7 | 21.6      |
| 50°-60°   | 13284.7 | 26.9      |
| 60°-70°   | 9906.0  | 20.1      |
| 70°-80°   | 2841.0  | 5.8       |
| 80°-90°   | 351.3   | 0.7       |
| 90°-100°  | 0.0     | 0.0       |
| 100°-110° | 0.0     | 0.0       |
| 110°-120° | 0.0     | 0.0       |
| 120°-130° | 0.0     | 0.0       |
| 130°-140° | 0.0     | 0.0       |
| 140°-150° | 0.0     | 0.0       |
| 150°-160° | 0.0     | 0.0       |
| 160°-170° | 0.0     | 0.0       |
| 170°-180° | 0.0     | 0.0       |
| 0°-90°    | 49399.4 | 100.0     |
| 0°-180°   | 49399.4 | 100.0     |

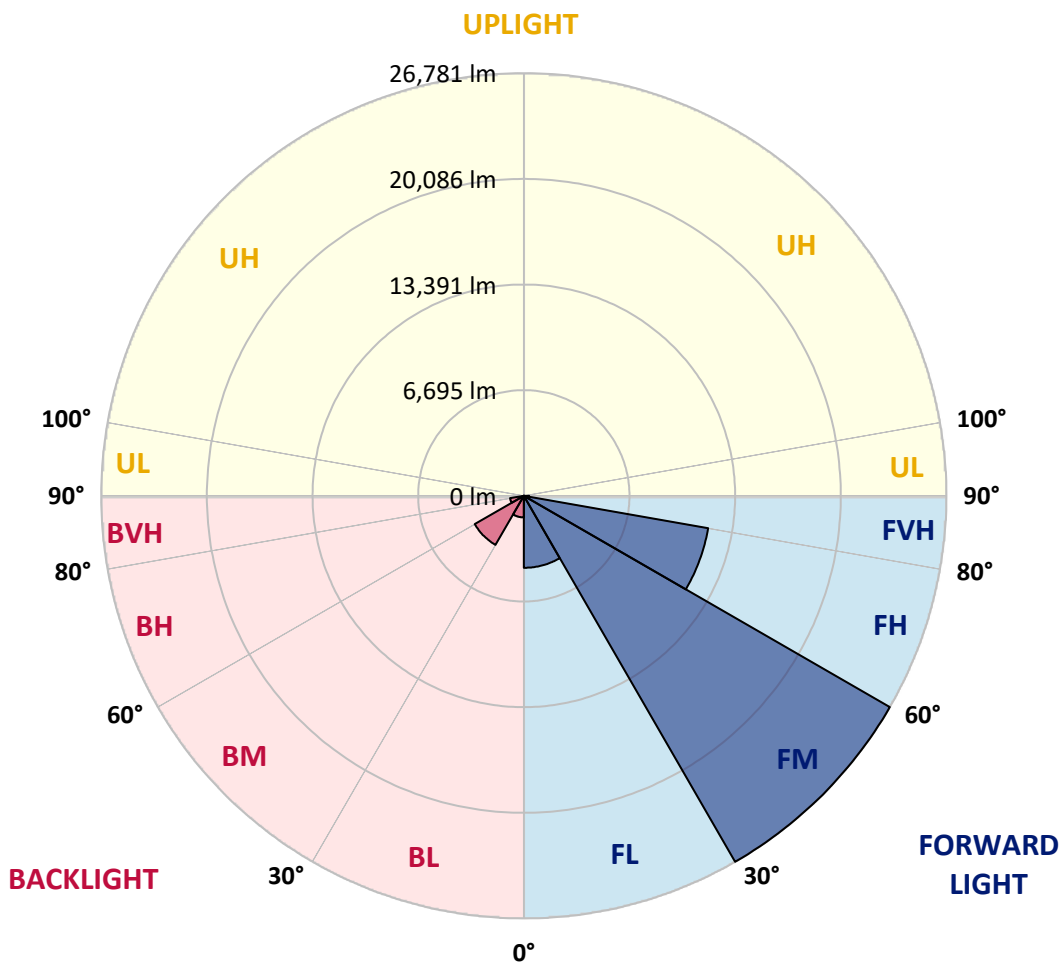


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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |          |
|----------------|---------|-----------|-------------------------|------|----------|
|                |         |           | B                       | U    | G        |
| FL (0°-30°)    | 4561.4  | 9.2       |                         |      |          |
| FM (30°-60°)   | 26781.5 | 54.2      |                         |      |          |
| FH (60°-80°)   | 11860.4 | 24.0      |                         |      | G4/12000 |
| FVH (80°-90°)  | 334.0   | 0.7       |                         |      | G3/500   |
| BL (0°-30°)    | 1367.6  | 2.8       | B3/2500                 |      |          |
| BM (30°-60°)   | 3590.6  | 7.3       | B3/5000                 |      |          |
| BH (60°-80°)   | 886.6   | 1.8       | B2/1000                 |      | G2/1000  |
| BVH (80°-90°)  | 17.3    | 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 II Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 63°     | 65°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 7987.3  | 7987.3  | 7987.3  | 7987.3  | 7987.3  | 7987.3  | 7987.3  | 7987.3  | 7987.3  | 7987.3  | 7987.3  |
| 2.5°  | 8950.5  | 8920.9  | 8891.2  | 8846.8  | 8787.5  | 8728.2  | 8654.1  | 8550.4  | 8506.0  | 8357.8  | 8179.9  |
| 5°    | 9409.9  | 9409.9  | 9395.1  | 9365.4  | 9335.8  | 9276.5  | 9187.6  | 9054.3  | 8995.0  | 8787.5  | 8476.3  |
| 7.5°  | 9528.5  | 9543.3  | 9587.7  | 9647.0  | 9735.9  | 9721.1  | 9721.1  | 9572.9  | 9543.3  | 9321.0  | 8906.1  |
| 10°   | 9321.0  | 9335.8  | 9454.4  | 9617.4  | 9884.1  | 10136.0 | 10313.8 | 10224.9 | 10180.5 | 9958.2  | 9439.5  |
| 12.5° | 9024.6  | 9024.6  | 9217.3  | 9469.2  | 9884.1  | 10358.3 | 10877.0 | 10965.9 | 10980.7 | 10728.8 | 10106.4 |
| 15°   | 8254.0  | 8283.7  | 8594.9  | 9098.7  | 9780.4  | 10521.3 | 11395.6 | 11736.4 | 11825.4 | 11662.4 | 10921.4 |
| 17.5° | 7231.5  | 7261.2  | 7572.4  | 8254.0  | 9276.5  | 10521.3 | 11840.2 | 12625.6 | 12744.1 | 12773.8 | 11958.7 |
| 20°   | 6801.8  | 6801.8  | 6979.6  | 7498.3  | 8565.2  | 10239.8 | 12106.9 | 13574.0 | 13840.7 | 14166.7 | 13099.8 |
| 22.5° | 6861.1  | 6861.1  | 6964.8  | 7261.2  | 8120.7  | 9854.5  | 12269.9 | 14418.6 | 14966.9 | 15796.8 | 14566.8 |
| 25°   | 7187.1  | 7187.1  | 7276.0  | 7468.6  | 8165.1  | 9795.2  | 12581.1 | 15174.4 | 16048.7 | 17619.5 | 16241.3 |
| 27.5° | 7705.7  | 7690.9  | 7765.0  | 7957.7  | 8594.9  | 10076.7 | 13099.8 | 15930.2 | 16908.2 | 19664.5 | 18167.8 |
| 30°   | 8461.5  | 8417.0  | 8446.7  | 8669.0  | 9291.4  | 10728.8 | 13855.5 | 16893.4 | 17886.2 | 21902.1 | 20301.7 |
| 32.5° | 10210.1 | 10195.3 | 9765.6  | 9647.0  | 10313.8 | 11780.9 | 14892.8 | 18093.7 | 19205.1 | 24273.1 | 22494.9 |
| 35°   | 13366.5 | 13574.0 | 12966.4 | 11410.4 | 11543.8 | 13188.7 | 16374.7 | 19723.8 | 20746.2 | 26792.3 | 24880.7 |
| 37.5° | 16567.4 | 16567.4 | 16315.4 | 14477.9 | 13544.3 | 14744.7 | 17975.1 | 21398.3 | 22465.2 | 28822.5 | 27177.6 |
| 40°   | 19101.4 | 19234.7 | 18938.4 | 17560.2 | 16345.1 | 16522.9 | 19575.6 | 22865.3 | 23843.4 | 30067.2 | 28807.6 |
| 42.5° | 20983.3 | 20953.7 | 20835.2 | 19931.2 | 19249.6 | 18849.4 | 21027.8 | 23961.9 | 24895.5 | 30704.4 | 29830.1 |
| 45°   | 23013.5 | 23013.5 | 22850.5 | 22109.6 | 21546.5 | 21205.6 | 22109.6 | 24880.7 | 25858.7 | 31089.7 | 30467.3 |
| 47.5° | 25132.6 | 25103.0 | 24940.0 | 24124.9 | 23517.4 | 23013.5 | 23206.2 | 25473.4 | 26451.5 | 30837.8 | 30571.1 |
| 50°   | 25651.3 | 25621.6 | 25992.1 | 26021.7 | 25473.4 | 24510.2 | 24080.5 | 25977.3 | 26836.8 | 30852.6 | 30897.1 |
| 52.5° | 25043.7 | 25221.5 | 25769.8 | 26436.6 | 27059.0 | 26051.4 | 25014.0 | 26777.5 | 27666.6 | 31267.6 | 31712.1 |
| 55°   | 23532.2 | 23606.3 | 24658.4 | 25725.3 | 27177.6 | 27533.2 | 26510.7 | 28051.9 | 28837.3 | 31667.7 | 32438.2 |
| 57.5° | 20716.6 | 20998.2 | 22124.4 | 23976.7 | 26184.7 | 27666.6 | 29118.8 | 30185.8 | 30778.5 | 31830.7 | 32038.1 |
| 60°   | 15633.8 | 15782.0 | 18227.1 | 20627.7 | 24124.9 | 26599.7 | 31549.1 | 33801.6 | 33727.5 | 29993.1 | 29237.4 |
| 62.5° | 9513.6  | 9647.0  | 11395.6 | 15204.0 | 19605.2 | 24376.8 | 32364.1 | 37847.1 | 37447.0 | 26896.0 | 24613.9 |
| 64°   | 7750.2  | 8002.1  | 9083.9  | 12344.0 | 16122.8 | 22050.3 | 32127.0 | 38187.9 | 37876.7 | 24895.5 | 21931.7 |
| 65°   | 6624.0  | 6964.8  | 8076.2  | 10714.0 | 13707.3 | 19545.9 | 31475.0 | 37239.5 | 37032.0 | 23680.4 | 19708.9 |
| 67.5° | 4164.1  | 4327.1  | 5972.0  | 8328.1  | 9439.5  | 12507.0 | 27059.0 | 32201.1 | 32571.6 | 21101.9 | 14537.2 |
| 70°   | 3097.1  | 3171.2  | 4104.8  | 6446.2  | 7364.9  | 7276.0  | 18582.7 | 26081.0 | 26169.9 | 16878.6 | 8772.7  |
| 72.5° | 2252.4  | 2267.3  | 2874.8  | 4771.6  | 5764.5  | 4964.3  | 9795.2  | 19382.9 | 18745.7 | 9884.1  | 4786.5  |
| 75°   | 1496.7  | 1556.0  | 2015.3  | 3363.9  | 4490.1  | 3645.4  | 4460.4  | 11040.0 | 10847.3 | 4830.9  | 2741.5  |
| 77.5° | 1096.6  | 1111.4  | 1363.3  | 2252.4  | 3526.9  | 2682.2  | 2697.0  | 4756.8  | 4905.0  | 2874.8  | 1733.8  |
| 80°   | 622.4   | 652.0   | 889.1   | 1378.1  | 2296.9  | 1837.5  | 1511.5  | 2296.9  | 2637.7  | 1956.1  | 1155.9  |
| 82.5° | 370.5   | 400.1   | 637.2   | 903.9   | 1570.8  | 755.8   | 770.6   | 1259.6  | 1570.8  | 1407.8  | 622.4   |
| 85°   | 222.3   | 237.1   | 400.1   | 489.0   | 933.6   | 503.8   | 281.6   | 622.4   | 815.0   | 829.8   | 340.8   |
| 87.5° | 148.2   | 148.2   | 222.3   | 207.5   | 266.7   | 237.1   | 118.5   | 163.0   | 207.5   | 281.6   | 133.4   |
| 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: P1437027

CATALOG NUMBER: GALN-SB9C-735-U-T2LG-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°     | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 7987.3  | 7987.3  | 7987.3 | 7987.3 | 7987.3 | 7987.3 | 7987.3 | 7987.3 | 7987.3 | 7987.3 | 7987.3 |
| 2.5°  | 8031.8  | 7942.8  | 7676.1 | 7320.5 | 6994.4 | 6742.5 | 6431.3 | 6223.9 | 6031.2 | 6031.2 | 5868.2 |
| 5°    | 8224.4  | 7987.3  | 7335.3 | 6520.2 | 5645.9 | 4816.1 | 4282.6 | 3689.9 | 3497.2 | 3334.2 | 3363.9 |
| 7.5°  | 8550.4  | 8120.7  | 6964.8 | 5497.8 | 4104.8 | 3215.7 | 2622.9 | 2356.2 | 2237.6 | 2163.5 | 2178.4 |
| 10°   | 8950.5  | 8357.8  | 6520.2 | 4460.4 | 3023.0 | 2356.2 | 2074.6 | 1970.9 | 1926.4 | 1911.6 | 1911.6 |
| 12.5° | 9498.8  | 8639.3  | 6075.7 | 3586.1 | 2385.8 | 2030.2 | 1882.0 | 1822.7 | 1778.2 | 1748.6 | 1748.6 |
| 15°   | 10150.8 | 8995.0  | 5557.0 | 2948.9 | 2089.4 | 1867.2 | 1748.6 | 1689.3 | 1630.1 | 1615.2 | 1615.2 |
| 17.5° | 10980.7 | 9365.4  | 5097.6 | 2534.0 | 1941.3 | 1748.6 | 1630.1 | 1556.0 | 1511.5 | 1496.7 | 1496.7 |
| 20°   | 11899.5 | 9824.8  | 4638.3 | 2296.9 | 1837.5 | 1630.1 | 1511.5 | 1452.2 | 1407.8 | 1378.1 | 1393.0 |
| 22.5° | 13070.1 | 10402.8 | 4341.9 | 2178.4 | 1748.6 | 1526.3 | 1407.8 | 1348.5 | 1304.0 | 1274.4 | 1289.2 |
| 25°   | 14359.4 | 11128.9 | 4178.9 | 2178.4 | 1689.3 | 1452.2 | 1318.9 | 1259.6 | 1215.1 | 1185.5 | 1185.5 |
| 27.5° | 15930.2 | 11943.9 | 4193.7 | 2267.3 | 1674.5 | 1393.0 | 1244.8 | 1185.5 | 1141.0 | 1096.6 | 1096.6 |
| 30°   | 17663.9 | 12907.1 | 4356.7 | 2430.3 | 1704.2 | 1333.7 | 1185.5 | 1096.6 | 1066.9 | 1022.5 | 1022.5 |
| 32.5° | 19501.5 | 14018.5 | 4771.6 | 2637.7 | 1674.5 | 1259.6 | 1096.6 | 1022.5 | 978.0  | 948.4  | 948.4  |
| 35°   | 21442.7 | 15278.1 | 5290.3 | 2726.6 | 1526.3 | 1155.9 | 1022.5 | 948.4  | 918.8  | 903.9  | 889.1  |
| 37.5° | 23295.1 | 16374.7 | 5571.8 | 2548.8 | 1333.7 | 1066.9 | 933.6  | 859.5  | 844.7  | 815.0  | 815.0  |
| 40°   | 24732.5 | 17278.7 | 5408.8 | 2178.4 | 1230.0 | 978.0  | 859.5  | 785.4  | 755.8  | 726.1  | 726.1  |
| 42.5° | 25577.2 | 17604.7 | 4816.1 | 1852.3 | 1155.9 | 889.1  | 785.4  | 711.3  | 681.7  | 666.8  | 666.8  |
| 45°   | 26066.2 | 17560.2 | 4119.6 | 1659.7 | 1081.8 | 815.0  | 711.3  | 666.8  | 622.4  | 607.6  | 592.7  |
| 47.5° | 26051.4 | 17100.8 | 3615.8 | 1496.7 | 1007.7 | 755.8  | 666.8  | 622.4  | 577.9  | 563.1  | 563.1  |
| 50°   | 25947.6 | 16419.2 | 3052.7 | 1378.1 | 948.4  | 711.3  | 622.4  | 592.7  | 548.3  | 533.5  | 518.7  |
| 52.5° | 26199.5 | 16033.9 | 2548.8 | 1304.0 | 874.3  | 681.7  | 607.6  | 563.1  | 503.8  | 489.0  | 489.0  |
| 55°   | 26510.7 | 15811.6 | 2045.0 | 1230.0 | 815.0  | 666.8  | 577.9  | 533.5  | 474.2  | 459.4  | 459.4  |
| 57.5° | 25606.8 | 14966.9 | 1689.3 | 1111.4 | 740.9  | 637.2  | 548.3  | 518.7  | 459.4  | 414.9  | 414.9  |
| 60°   | 22761.6 | 12373.7 | 1393.0 | 978.0  | 681.7  | 592.7  | 518.7  | 474.2  | 414.9  | 355.6  | 355.6  |
| 62.5° | 18508.6 | 9439.5  | 1155.9 | 829.8  | 637.2  | 548.3  | 474.2  | 429.7  | 355.6  | 281.6  | 281.6  |
| 64°   | 16078.3 | 8016.9  | 1037.3 | 726.1  | 607.6  | 503.8  | 429.7  | 385.3  | 311.2  | 237.1  | 222.3  |
| 65°   | 14418.6 | 7083.4  | 963.2  | 681.7  | 592.7  | 474.2  | 414.9  | 370.5  | 281.6  | 222.3  | 207.5  |
| 67.5° | 10150.8 | 4756.8  | 770.6  | 563.1  | 518.7  | 400.1  | 355.6  | 311.2  | 251.9  | 192.6  | 177.8  |
| 70°   | 5912.7  | 2697.0  | 607.6  | 474.2  | 400.1  | 311.2  | 296.4  | 281.6  | 222.3  | 148.2  | 148.2  |
| 72.5° | 3215.7  | 1348.5  | 459.4  | 385.3  | 311.2  | 222.3  | 251.9  | 222.3  | 177.8  | 118.5  | 103.7  |
| 75°   | 1970.9  | 829.8   | 340.8  | 281.6  | 207.5  | 163.0  | 192.6  | 163.0  | 103.7  | 74.1   | 59.3   |
| 77.5° | 1318.9  | 533.5   | 251.9  | 192.6  | 133.4  | 103.7  | 133.4  | 88.9   | 44.5   | 14.8   | 14.8   |
| 80°   | 815.0   | 370.5   | 163.0  | 118.5  | 74.1   | 44.5   | 29.6   | 14.8   | 14.8   | 0.0    | 0.0    |
| 82.5° | 355.6   | 237.1   | 88.9   | 59.3   | 29.6   | 14.8   | 14.8   | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 192.6   | 74.1    | 29.6   | 14.8   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 59.3    | 29.6    | 14.8   | 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

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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 3500K 4-step quadrangle

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**Photopic Flux vs. Wavelength**



**Photopic Lumens: NR**

| $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | $\lambda$ (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            |                |                          |               |

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**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: NR**

**S/P: 1.29**

| $\lambda$ (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            | 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                   |                |                          |                      |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: NR**

**M/P: 2.36**

| $\lambda$ (nm) | Power $W^{\wedge}/nm$ | Lumens ( $\phi/nm$ ) | $\lambda$ (nm) | Power $W^{\wedge}/nm$ | Lumens ( $\phi/nm$ ) | $\lambda$ (nm) | Power $W^{\wedge}/nm$ | Lumens ( $\phi/nm$ ) | $\lambda$ (nm) | Power $W^{\wedge}/nm$ | Lumens ( $\phi/nm$ ) | $\lambda$ (nm) | Power $W^{\wedge}/nm$ | Lumens ( $\phi/nm$ ) |
|----------------|-----------------------|----------------------|----------------|-----------------------|----------------------|----------------|-----------------------|----------------------|----------------|-----------------------|----------------------|----------------|-----------------------|----------------------|
| 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                   |                |                       |                      |

**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)