

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: P1438572

Luminaire Tested: **GALN-SB8D-940-U-T4LG-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: P1438572  
 Test Lab: INNOVATION CENTER(G1)  
 Issue Date: 03/27/202  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: McGRAW-EDISON  
 Catalog Number: GALN-SB8D-940-U-T4LG-HSS  
 Description: GALLEON II AREA AND ROADWAY HIGH DENSITY LUMINAIRE 900mA 8xLight  
 Square PACKAGE 90CRI 4000K FIXTURE w/ TYPE IV LOW GLARE WITH HOUSE SIDE  
 SHIELD  
 Light Source: (208) 4000K CCT, 90 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**

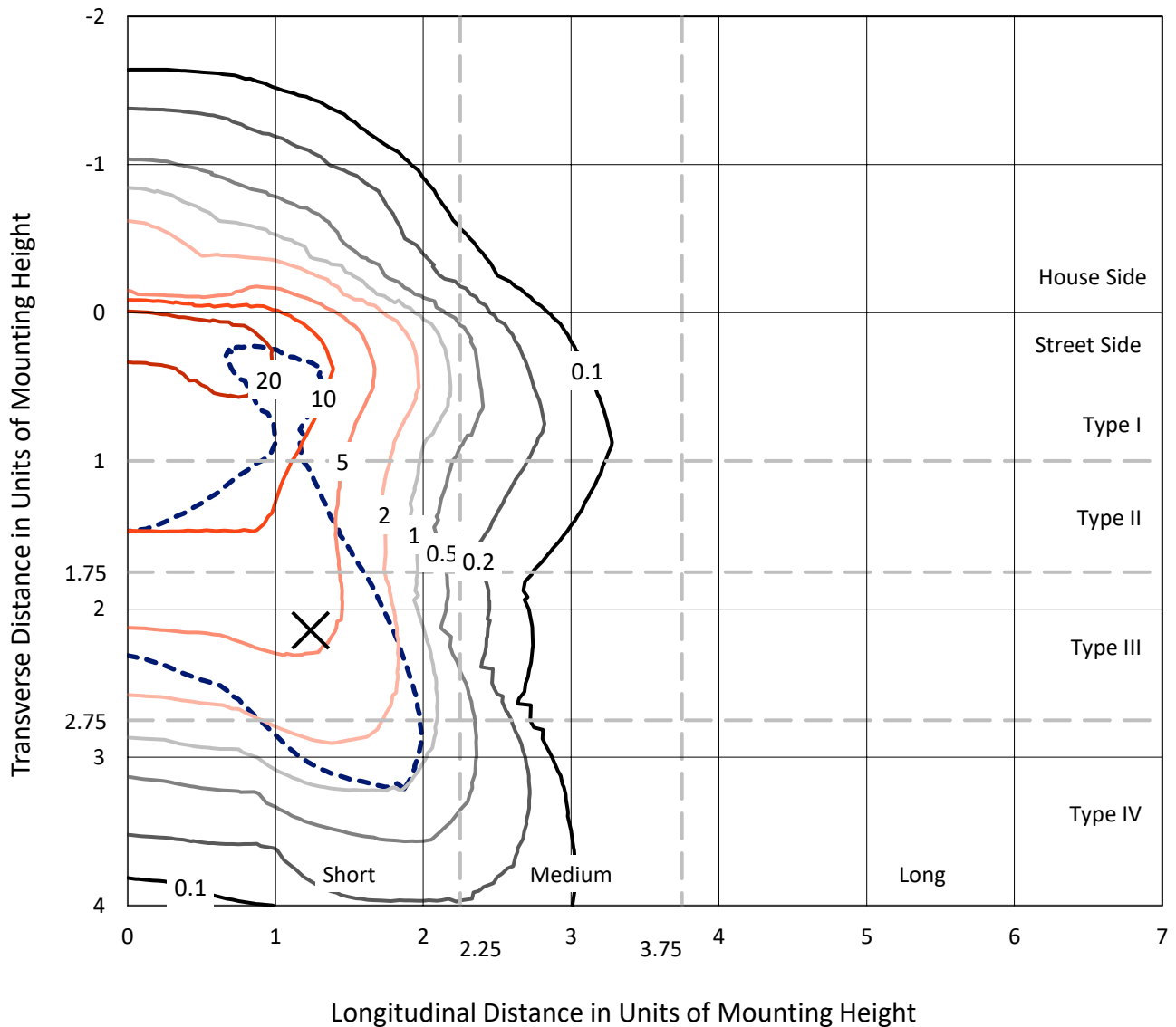
Lumens per Lamp: N/A  
 Luminaire Lumens: 43241.6 lumens  
 Efficiency: N/A  
 Efficacy: 73.9 lumens/watt  
 Luminous Opening: Rectangular (W 1.5' x L: 1.5' x H: 0')  
 IES Classification: Type IV - Short  
 BUG Rating: B2 - U0 - G5

Input Watts (W): 584.9  
 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

REPORT NUMBER: P1438572  
 CATALOG NUMBER: GALN-SB8D-940-U-T4LG-HSS

### Iso-Footcandle Lines of Horizontal Illumination

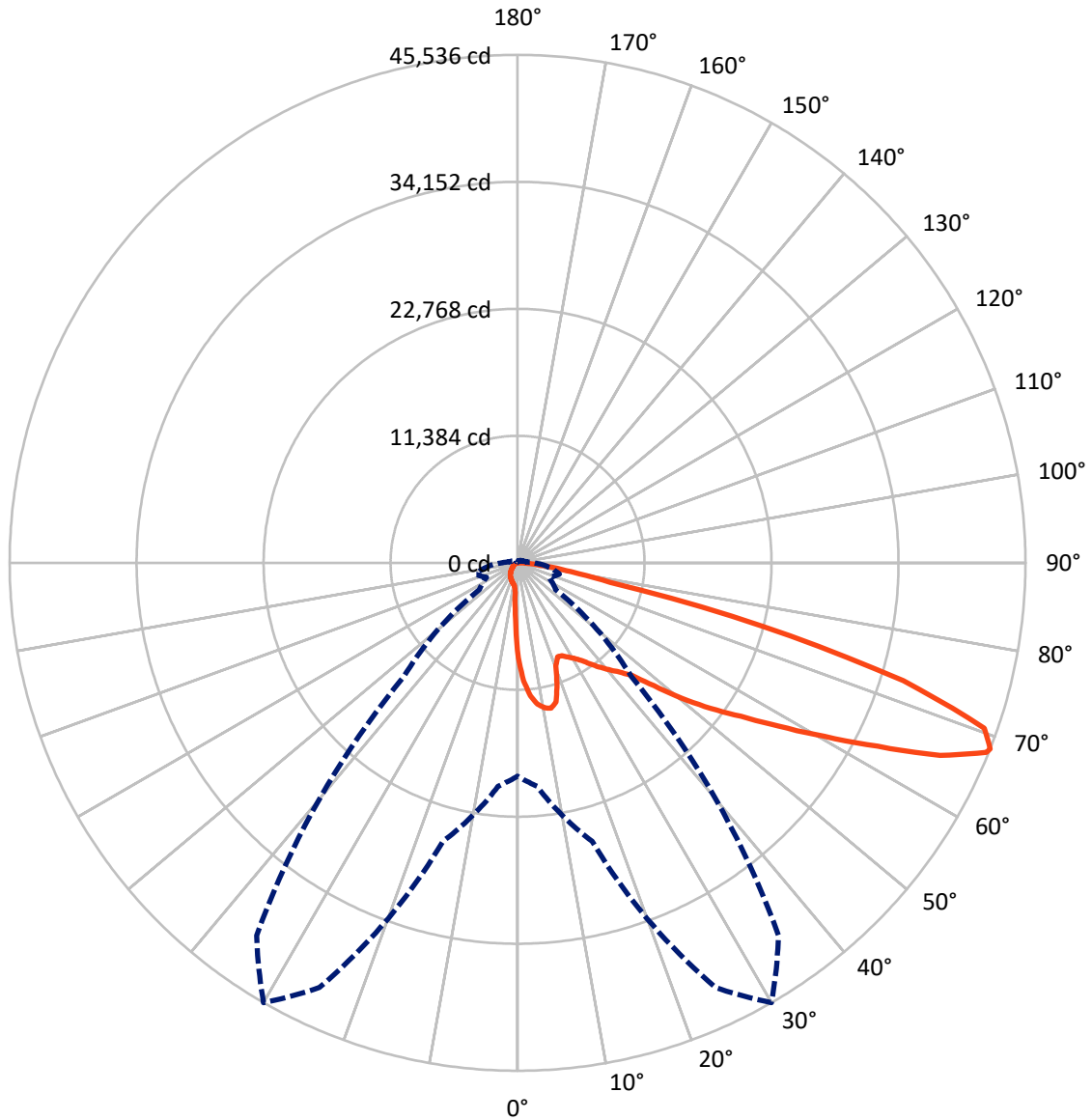
✕ Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 32.6 fc  
 Type IV - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 30-Deg Lateral      - - - Horizontal Cone Through 68-Deg Vertical

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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 3300.5   | 0.0    | 3300.5  |
|                    | % Fixture | 7.6      | 0.0    | 7.6     |
| <b>Street Side</b> | Lumens    | 39941.2  | 0.0    | 39941.2 |
|                    | % Fixture | 92.4     | 0.0    | 92.4    |
| <b>Total</b>       | Lumens    | 43241.6  | 0.0    | 43241.6 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 735.7   | 1.7       |
| 10°-20°   | 2100.5  | 4.9       |
| 20°-30°   | 3300.9  | 7.6       |
| 30°-40°   | 5177.2  | 12.0      |
| 40°-50°   | 7738.4  | 17.9      |
| 50°-60°   | 10294.6 | 23.8      |
| 60°-70°   | 9951.7  | 23.0      |
| 70°-80°   | 3577.3  | 8.3       |
| 80°-90°   | 365.1   | 0.8       |
| 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°    | 43241.6 | 100.0     |
| 0°-180°   | 43241.6 | 100.0     |

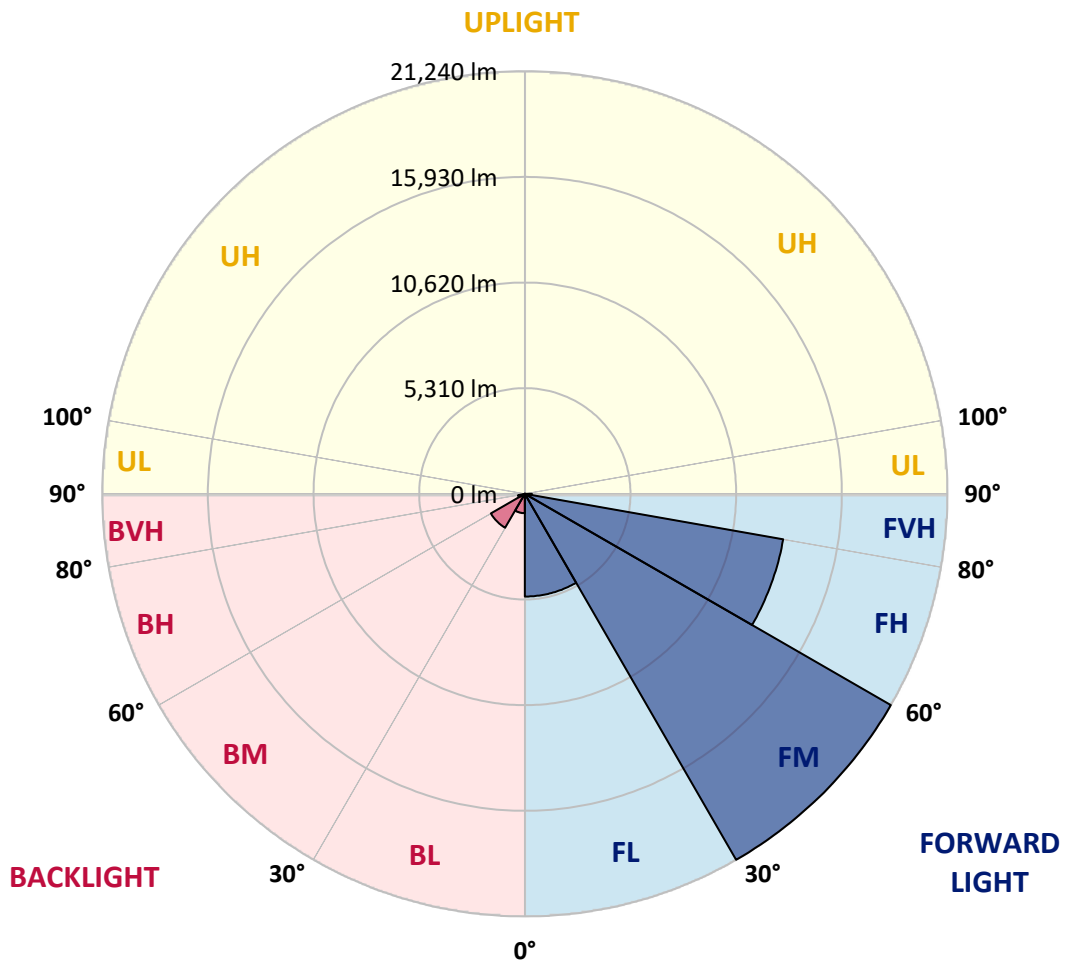


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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |        |
|----------------|---------|-----------|-------------------------|------|--------|
|                |         |           | B                       | U    | G      |
| FL (0°-30°)    | 5163.0  | 11.9      |                         |      |        |
| FM (30°-60°)   | 21240.3 | 49.1      |                         |      |        |
| FH (60°-80°)   | 13185.7 | 30.5      |                         |      | G5     |
| FVH (80°-90°)  | 352.1   | 0.8       |                         |      | G3/500 |
| BL (0°-30°)    | 974.2   | 2.3       | B2/1000                 |      |        |
| BM (30°-60°)   | 1970.1  | 4.6       | B2/2500                 |      |        |
| BH (60°-80°)   | 343.3   | 0.8       | B1/500                  |      | G1/500 |
| BVH (80°-90°)  | 13.0    | 0.0       |                         |      | G1/100 |
| UL (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |        |
| UH (100°-180°) | 0.0     | 0.0       |                         | U0/0 |        |

**BUG Rating: B2-U0-G5**  
 Type IV Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 30°     | 35°     | 45°     | 55°     | 65°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 8526.7  | 8526.7  | 8526.7  | 8526.7  | 8526.7  | 8526.7  | 8526.7  | 8526.7  | 8526.7  | 8526.7  | 8526.7  |
| 2.5°  | 10898.2 | 10898.2 | 10820.4 | 10716.7 | 10600.1 | 10561.2 | 10340.9 | 10029.9 | 9706.0  | 9330.2  | 8785.9  |
| 5°    | 12297.7 | 12284.7 | 12129.2 | 12129.2 | 11973.7 | 11831.2 | 11610.9 | 11157.3 | 10639.0 | 9965.1  | 9019.2  |
| 7.5°  | 12919.7 | 12945.6 | 12880.8 | 12880.8 | 12790.1 | 12686.4 | 12556.8 | 12116.3 | 11507.2 | 10600.1 | 9252.4  |
| 10°   | 13140.0 | 13152.9 | 13152.9 | 13243.7 | 13217.7 | 13204.8 | 13191.8 | 12945.6 | 12310.6 | 11248.0 | 9498.6  |
| 12.5° | 12608.7 | 12673.5 | 12854.9 | 13256.6 | 13386.2 | 13528.7 | 13723.1 | 13645.4 | 13204.8 | 12064.4 | 9874.4  |
| 15°   | 10898.2 | 10911.1 | 11416.5 | 12414.3 | 12945.6 | 13489.9 | 14241.5 | 14397.0 | 14111.9 | 12945.6 | 10263.2 |
| 17.5° | 8993.2  | 9032.1  | 9433.8  | 10548.3 | 11403.5 | 12660.5 | 14539.5 | 15174.5 | 15070.8 | 13813.8 | 10626.0 |
| 20°   | 8202.8  | 8254.6  | 8449.0  | 9148.7  | 9796.7  | 10962.9 | 14241.5 | 15913.1 | 15952.0 | 14682.1 | 10962.9 |
| 22.5° | 8021.4  | 8060.2  | 8215.7  | 8760.0  | 9161.7  | 9939.2  | 13230.7 | 16496.3 | 16949.8 | 15679.9 | 11364.7 |
| 25°   | 7969.5  | 8008.4  | 8241.6  | 8837.7  | 9213.5  | 9861.5  | 12310.6 | 16807.3 | 18129.0 | 16716.5 | 11753.4 |
| 27.5° | 7930.6  | 7982.5  | 8358.3  | 9122.8  | 9563.4  | 10185.4 | 12142.2 | 16872.0 | 19256.4 | 17818.0 | 12388.4 |
| 30°   | 7982.5  | 8060.2  | 8552.7  | 9420.9  | 9926.3  | 10626.0 | 12543.9 | 16936.8 | 20500.4 | 19075.0 | 13191.8 |
| 32.5° | 8189.8  | 8254.6  | 8850.7  | 9822.6  | 10405.7 | 11196.2 | 13230.7 | 17325.6 | 21679.7 | 20357.9 | 13956.4 |
| 35°   | 8423.1  | 8513.8  | 9226.5  | 10392.8 | 11092.5 | 11986.7 | 14163.7 | 18090.2 | 22807.1 | 21576.0 | 14746.8 |
| 37.5° | 8708.2  | 8811.8  | 9667.1  | 11040.7 | 11844.1 | 12854.9 | 15174.5 | 19152.8 | 23804.9 | 22573.8 | 15537.3 |
| 40°   | 9096.9  | 9213.5  | 10172.5 | 11727.5 | 12595.7 | 13606.5 | 16172.3 | 20202.4 | 24569.4 | 23169.9 | 16055.7 |
| 42.5° | 10626.0 | 10781.5 | 11183.2 | 12401.3 | 13373.2 | 14409.9 | 17157.1 | 21200.2 | 24854.5 | 23364.3 | 16159.3 |
| 45°   | 13476.9 | 13632.4 | 13528.7 | 13762.0 | 14409.9 | 15381.8 | 18232.7 | 22159.1 | 24893.4 | 23312.5 | 16107.5 |
| 47.5° | 16340.7 | 16522.2 | 16431.5 | 16301.9 | 16444.4 | 16910.9 | 19437.8 | 22768.2 | 24686.1 | 23286.5 | 16107.5 |
| 50°   | 19075.0 | 18971.3 | 18984.3 | 18945.4 | 19075.0 | 19321.2 | 20604.1 | 22884.8 | 24634.2 | 23532.7 | 16250.0 |
| 52.5° | 20539.3 | 20591.2 | 20915.1 | 21394.6 | 21679.7 | 21925.9 | 21938.8 | 23066.2 | 24258.4 | 23118.1 | 16081.6 |
| 55°   | 21977.7 | 22081.4 | 22833.0 | 23649.4 | 24284.3 | 24750.9 | 23273.6 | 22949.6 | 22016.6 | 21731.5 | 15200.4 |
| 57.5° | 23597.5 | 23740.1 | 24802.7 | 26487.3 | 27601.7 | 27848.0 | 24595.4 | 20772.6 | 18634.4 | 19748.8 | 13489.9 |
| 60°   | 25826.4 | 25994.9 | 27407.4 | 29934.3 | 31593.0 | 31087.6 | 24699.0 | 17312.6 | 14798.7 | 16392.6 | 11131.4 |
| 62.5° | 27575.8 | 27912.7 | 30465.6 | 34405.0 | 36232.1 | 34625.3 | 22768.2 | 13269.6 | 10340.9 | 11520.2 | 8125.0  |
| 65°   | 25709.8 | 26357.7 | 30517.4 | 39523.6 | 41635.9 | 38785.0 | 19735.9 | 9058.0  | 5831.4  | 7451.2  | 5196.4  |
| 67.5° | 20785.5 | 21692.6 | 27096.4 | 42011.7 | 45342.0 | 40975.0 | 15537.3 | 4807.6  | 3343.3  | 4328.2  | 2734.3  |
| 68°   | 19126.8 | 20111.7 | 25839.4 | 42011.7 | 45536.4 | 40780.6 | 14422.9 | 4159.7  | 3084.1  | 3887.6  | 2371.4  |
| 70°   | 13217.7 | 13917.5 | 19865.5 | 39653.2 | 44396.0 | 37178.1 | 9498.6  | 2384.4  | 2319.6  | 2669.5  | 1568.0  |
| 72.5° | 6479.3  | 7230.9  | 10626.0 | 31424.5 | 36167.3 | 28573.6 | 4328.2  | 1580.9  | 1762.4  | 1956.7  | 1231.1  |
| 75°   | 2578.8  | 2734.3  | 4185.6  | 15498.4 | 22599.7 | 18232.7 | 2267.7  | 1192.2  | 1516.2  | 1529.1  | 971.9   |
| 77.5° | 1477.3  | 1568.0  | 2319.6  | 5701.8  | 8474.9  | 8150.9  | 1464.3  | 855.3   | 1205.1  | 1101.5  | 635.0   |
| 80°   | 829.3   | 842.3   | 1308.8  | 3006.4  | 4846.5  | 4341.1  | 997.8   | 622.0   | 920.1   | 777.5   | 427.6   |
| 82.5° | 414.7   | 466.5   | 829.3   | 1658.7  | 2695.4  | 2760.2  | 531.3   | 440.6   | 738.6   | 557.2   | 349.9   |
| 85°   | 298.0   | 324.0   | 596.1   | 920.1   | 1244.0  | 1866.0  | 324.0   | 220.3   | 557.2   | 375.8   | 246.2   |
| 87.5° | 155.5   | 194.4   | 375.8   | 453.5   | 505.4   | 635.0   | 155.5   | 103.7   | 311.0   | 220.3   | 129.6   |
| 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: P1438572

CATALOG NUMBER: GALN-SB8D-940-U-T4LG-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 8526.7  | 8526.7 | 8526.7 | 8526.7 | 8526.7 | 8526.7 | 8526.7 | 8526.7 | 8526.7 | 8526.7 | 8526.7 |
| 2.5°  | 8526.7  | 8228.7 | 7619.6 | 6906.9 | 6349.7 | 5779.5 | 5313.0 | 4872.4 | 4665.1 | 4639.2 | 4691.0 |
| 5°    | 8487.9  | 7839.9 | 6453.4 | 5092.7 | 3978.3 | 3200.8 | 2773.1 | 2552.8 | 2436.2 | 2384.4 | 2397.3 |
| 7.5°  | 8410.1  | 7425.3 | 5209.3 | 3447.0 | 2578.8 | 2241.8 | 2138.2 | 2099.3 | 2086.3 | 2086.3 | 2086.3 |
| 10°   | 8332.4  | 6868.0 | 3991.2 | 2526.9 | 2112.2 | 2021.5 | 1995.6 | 1995.6 | 1982.7 | 1982.7 | 1995.6 |
| 12.5° | 8293.5  | 6349.7 | 3097.1 | 2112.2 | 1969.7 | 1930.8 | 1904.9 | 1892.0 | 1892.0 | 1892.0 | 1904.9 |
| 15°   | 8202.8  | 5779.5 | 2501.0 | 1956.7 | 1879.0 | 1827.2 | 1814.2 | 1801.2 | 1801.2 | 1801.2 | 1801.2 |
| 17.5° | 8125.0  | 5222.3 | 2177.0 | 1853.1 | 1788.3 | 1736.4 | 1723.5 | 1710.5 | 1710.5 | 1723.5 | 1723.5 |
| 20°   | 8008.4  | 4691.0 | 1956.7 | 1749.4 | 1697.6 | 1645.7 | 1632.8 | 1619.8 | 1632.8 | 1632.8 | 1632.8 |
| 22.5° | 7865.8  | 4250.4 | 1827.2 | 1671.7 | 1606.9 | 1555.0 | 1555.0 | 1555.0 | 1555.0 | 1555.0 | 1568.0 |
| 25°   | 7775.1  | 3939.4 | 1736.4 | 1580.9 | 1516.2 | 1477.3 | 1464.3 | 1464.3 | 1490.2 | 1490.2 | 1503.2 |
| 27.5° | 7917.7  | 3861.7 | 1749.4 | 1555.0 | 1438.4 | 1399.5 | 1386.6 | 1386.6 | 1412.5 | 1425.4 | 1438.4 |
| 30°   | 8345.3  | 4004.2 | 1904.9 | 1632.8 | 1386.6 | 1321.8 | 1308.8 | 1308.8 | 1347.7 | 1360.6 | 1373.6 |
| 32.5° | 8837.7  | 4302.2 | 2138.2 | 1736.4 | 1347.7 | 1244.0 | 1218.1 | 1218.1 | 1257.0 | 1269.9 | 1282.9 |
| 35°   | 9511.6  | 4768.8 | 2449.2 | 1827.2 | 1373.6 | 1166.3 | 1114.4 | 1114.4 | 1140.4 | 1166.3 | 1179.2 |
| 37.5° | 10379.8 | 5533.3 | 2812.0 | 1892.0 | 1373.6 | 1075.6 | 1010.8 | 997.8  | 1023.7 | 1023.7 | 1036.7 |
| 40°   | 11286.9 | 6531.1 | 3187.8 | 1892.0 | 1308.8 | 984.9  | 920.1  | 881.2  | 894.1  | 881.2  | 894.1  |
| 42.5° | 11792.3 | 7334.5 | 3511.8 | 1775.3 | 1231.1 | 894.1  | 829.3  | 777.5  | 764.6  | 738.6  | 751.6  |
| 45°   | 12077.4 | 7697.4 | 3421.1 | 1645.7 | 1153.3 | 829.3  | 751.6  | 686.8  | 660.9  | 622.0  | 622.0  |
| 47.5° | 12077.4 | 7736.3 | 2928.6 | 1542.1 | 1075.6 | 777.5  | 673.8  | 609.1  | 570.2  | 531.3  | 544.3  |
| 50°   | 11934.8 | 7386.4 | 2319.6 | 1438.4 | 984.9  | 725.7  | 609.1  | 557.2  | 505.4  | 479.5  | 479.5  |
| 52.5° | 11338.7 | 6246.0 | 1775.3 | 1308.8 | 881.2  | 660.9  | 544.3  | 492.4  | 440.6  | 427.6  | 427.6  |
| 55°   | 10315.0 | 4587.3 | 1438.4 | 1179.2 | 790.5  | 609.1  | 492.4  | 453.5  | 401.7  | 375.8  | 375.8  |
| 57.5° | 8384.2  | 3136.0 | 1192.2 | 1062.6 | 699.8  | 544.3  | 440.6  | 401.7  | 336.9  | 311.0  | 311.0  |
| 60°   | 6220.1  | 2047.5 | 1010.8 | 933.0  | 596.1  | 492.4  | 388.8  | 336.9  | 285.1  | 259.2  | 246.2  |
| 62.5° | 4198.6  | 1386.6 | 842.3  | 738.6  | 505.4  | 427.6  | 336.9  | 285.1  | 220.3  | 168.5  | 168.5  |
| 65°   | 2617.6  | 1075.6 | 699.8  | 583.1  | 440.6  | 375.8  | 285.1  | 220.3  | 155.5  | 116.6  | 103.7  |
| 67.5° | 1503.2  | 868.2  | 570.2  | 453.5  | 375.8  | 298.0  | 220.3  | 181.4  | 129.6  | 90.7   | 77.8   |
| 68°   | 1386.6  | 829.3  | 531.3  | 427.6  | 349.9  | 285.1  | 207.3  | 168.5  | 116.6  | 77.8   | 77.8   |
| 70°   | 1127.4  | 738.6  | 453.5  | 349.9  | 298.0  | 233.3  | 181.4  | 142.5  | 90.7   | 51.8   | 51.8   |
| 72.5° | 997.8   | 622.0  | 388.8  | 272.1  | 207.3  | 194.4  | 142.5  | 103.7  | 64.8   | 38.9   | 25.9   |
| 75°   | 816.4   | 492.4  | 311.0  | 207.3  | 142.5  | 142.5  | 103.7  | 64.8   | 25.9   | 0.0    | 0.0    |
| 77.5° | 531.3   | 362.8  | 246.2  | 129.6  | 77.8   | 90.7   | 64.8   | 25.9   | 0.0    | 0.0    | 0.0    |
| 80°   | 349.9   | 272.1  | 168.5  | 64.8   | 38.9   | 38.9   | 13.0   | 0.0    | 0.0    | 0.0    | 0.0    |
| 82.5° | 246.2   | 181.4  | 103.7  | 25.9   | 13.0   | 13.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 155.5   | 77.8   | 38.9   | 13.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 64.8    | 25.9   | 13.0   | 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    |

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



LM-79-08: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

McGRAW-EDISON

Report Number: SP1-2106-271-4

Luminaire Tested: GFLD-SA1-A-940-U-WR-X-BK

Test Date: 06/15/2021

**Test Information**

Test Method: LM-79-08  
 Report Number: SP1-2106-271-4  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1  
 Measurement Geometry: 4π  
 Issue Date: 06/15/2021  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: MCGRAW-EDISON  
 Catalog Number: **GFLD-SA1-A-940-U-WR-X-BK**  
 Description: MCGRAW EDISON

N6, BLACK

**Spectral Parameters**

CCT (K): 3952  
 CIE u': 0.2242  
 CIE v': 0.5064  
 Duv: 0.0032  
 CIE x: 0.3848  
 CIE y: 0.3864  
 CIE z: 0.2287  
 Peak Wavelength (nm): 614  
 Dominant Wavelength (nm): 577  
 Purity: 31.6  
 Rf: 92.2  
 Rg: 98.9

CRI (Ra): 92.2

|          |           |
|----------|-----------|
| R1: 92.0 | R9: 63.3  |
| R2: 93.7 | R10: 84.3 |
| R3: 94.4 | R11: 92.7 |
| R4: 93.1 | R12: 75.6 |
| R5: 91.2 | R13: 92.2 |
| R6: 91.1 | R14: 96.5 |
| R7: 95.4 |           |
| R8: 86.5 |           |

**Test Conditions**  
 Stabilization Time: 72M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 24.8/42%  
 Sphere Temperature (°C): 24.9



REPORT NUMBER: SP1-2106-271-4

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | 76INCH SPHERE IN0058  | 1/31/2021        | 7/31/2021            |
| Power Meter                    | XITRON 2801 IN0071    | 12/1/2020        | 12/1/2021            |
| AC Power Source                | CHROMA 61603 IN0063   | 12/1/2020        | 12/1/2021            |
| DC Power Source                | AGILENT E3634A IN0208 | 12/1/2020        | 12/1/2021            |
| Sphere Thermometer             | ONSET IN0085          | 12/1/2020        | 12/1/2021            |
| Room Thermometer               | ONSET IN0046          | 12/1/2020        | 12/1/2021            |

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**CIE 1931 Chromaticity Diagram**



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



Point lies inside the ANSI 4000K 4-step quadrangle

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**Photopic Flux vs. Wavelength**

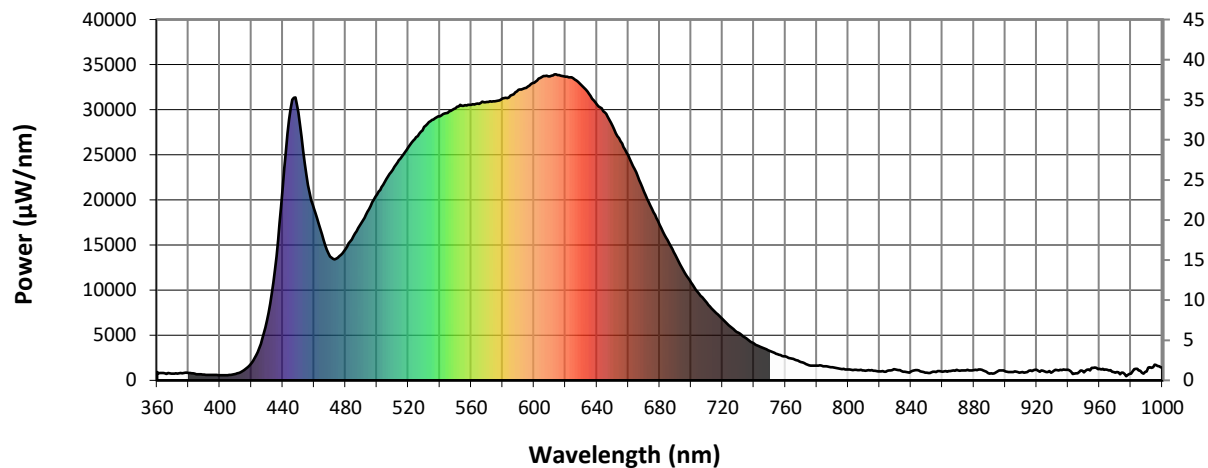


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| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360    | 910           | NR            | 490    | 17463         | NR            | 620    | 33665         | NR            | 750    | 3275          | NR            | 880    | 1122          | NR            |
| 365    | 784           | NR            | 495    | 18986         | NR            | 625    | 33477         | NR            | 755    | 2901          | NR            | 885    | 1170          | NR            |
| 370    | 741           | NR            | 500    | 20627         | NR            | 630    | 32742         | NR            | 760    | 2665          | NR            | 890    | 751           | NR            |
| 375    | 805           | NR            | 505    | 21980         | NR            | 635    | 31767         | NR            | 765    | 2371          | NR            | 895    | 990           | NR            |
| 380    | 830           | NR            | 510    | 23346         | NR            | 640    | 30561         | NR            | 770    | 2039          | NR            | 900    | 982           | NR            |
| 385    | 690           | NR            | 515    | 24600         | NR            | 645    | 29699         | NR            | 775    | 1676          | NR            | 905    | 936           | NR            |
| 390    | 625           | NR            | 520    | 25854         | NR            | 650    | 28202         | NR            | 780    | 1616          | NR            | 910    | 888           | NR            |
| 395    | 599           | NR            | 525    | 26952         | NR            | 655    | 26484         | NR            | 785    | 1573          | NR            | 915    | 1068          | NR            |
| 400    | 568           | NR            | 530    | 28081         | NR            | 660    | 24930         | NR            | 790    | 1452          | NR            | 920    | 1179          | NR            |
| 405    | 577           | NR            | 535    | 28884         | NR            | 665    | 23070         | NR            | 795    | 1263          | NR            | 925    | 1008          | NR            |
| 410    | 720           | NR            | 540    | 29271         | NR            | 670    | 20926         | NR            | 800    | 1203          | NR            | 930    | 927           | NR            |
| 415    | 1084          | NR            | 545    | 29657         | NR            | 675    | 19011         | NR            | 805    | 1175          | NR            | 935    | 1185          | NR            |
| 420    | 1884          | NR            | 550    | 30152         | NR            | 680    | 17237         | NR            | 810    | 1108          | NR            | 940    | 1166          | NR            |
| 425    | 3574          | NR            | 555    | 30445         | NR            | 685    | 15540         | NR            | 815    | 1125          | NR            | 945    | 779           | NR            |
| 430    | 6636          | NR            | 560    | 30559         | NR            | 690    | 13894         | NR            | 820    | 988           | NR            | 950    | 905           | NR            |
| 435    | 12267         | NR            | 565    | 30663         | NR            | 695    | 12196         | NR            | 825    | 1070          | NR            | 955    | 1369          | NR            |
| 440    | 21326         | NR            | 570    | 30877         | NR            | 700    | 10840         | NR            | 830    | 1219          | NR            | 960    | 1280          | NR            |
| 445    | 30150         | NR            | 575    | 30916         | NR            | 705    | 9613          | NR            | 835    | 944           | NR            | 965    | 1177          | NR            |
| 450    | 29740         | NR            | 580    | 31248         | NR            | 710    | 8583          | NR            | 840    | 983           | NR            | 970    | 868           | NR            |
| 455    | 22827         | NR            | 585    | 31581         | NR            | 715    | 7631          | NR            | 845    | 1097          | NR            | 975    | 843           | NR            |
| 460    | 19023         | NR            | 590    | 32218         | NR            | 720    | 6779          | NR            | 850    | 856           | NR            | 980    | 744           | NR            |
| 465    | 16163         | NR            | 595    | 32417         | NR            | 725    | 5950          | NR            | 855    | 949           | NR            | 985    | 1113          | NR            |
| 470    | 13739         | NR            | 600    | 32976         | NR            | 730    | 5282          | NR            | 860    | 954           | NR            | 990    | 1002          | NR            |
| 475    | 13571         | NR            | 605    | 33620         | NR            | 735    | 4673          | NR            | 865    | 1019          | NR            | 995    | 1732          | NR            |
| 480    | 14597         | NR            | 610    | 33704         | NR            | 740    | 4087          | NR            | 870    | 1089          | NR            | 1000   | 1390          | NR            |
| 485    | 15964         | NR            | 615    | 33846         | NR            | 745    | 3658          | NR            | 875    | 1089          | NR            |        |               |               |

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**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: 3705.7**

**S/P: 1.75**

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360    | 910           | NR            | 490    | 17463         | NR            | 620    | 33665         | NR            | 750    | 3275          | NR            | 880    | 1122          | NR            |
| 365    | 784           | NR            | 495    | 18986         | NR            | 625    | 33477         | NR            | 755    | 2901          | NR            | 885    | 1170          | NR            |
| 370    | 741           | NR            | 500    | 20627         | NR            | 630    | 32742         | NR            | 760    | 2665          | NR            | 890    | 751           | NR            |
| 375    | 805           | NR            | 505    | 21980         | NR            | 635    | 31767         | NR            | 765    | 2371          | NR            | 895    | 990           | NR            |
| 380    | 830           | NR            | 510    | 23346         | NR            | 640    | 30561         | NR            | 770    | 2039          | NR            | 900    | 982           | NR            |
| 385    | 690           | NR            | 515    | 24600         | NR            | 645    | 29699         | NR            | 775    | 1676          | NR            | 905    | 936           | NR            |
| 390    | 625           | NR            | 520    | 25854         | NR            | 650    | 28202         | NR            | 780    | 1616          | NR            | 910    | 888           | NR            |
| 395    | 599           | NR            | 525    | 26952         | NR            | 655    | 26484         | NR            | 785    | 1573          | NR            | 915    | 1068          | NR            |
| 400    | 568           | NR            | 530    | 28081         | NR            | 660    | 24930         | NR            | 790    | 1452          | NR            | 920    | 1179          | NR            |
| 405    | 577           | NR            | 535    | 28884         | NR            | 665    | 23070         | NR            | 795    | 1263          | NR            | 925    | 1008          | NR            |
| 410    | 720           | NR            | 540    | 29271         | NR            | 670    | 20926         | NR            | 800    | 1203          | NR            | 930    | 927           | NR            |
| 415    | 1084          | NR            | 545    | 29657         | NR            | 675    | 19011         | NR            | 805    | 1175          | NR            | 935    | 1185          | NR            |
| 420    | 1884          | NR            | 550    | 30152         | NR            | 680    | 17237         | NR            | 810    | 1108          | NR            | 940    | 1166          | NR            |
| 425    | 3574          | NR            | 555    | 30445         | NR            | 685    | 15540         | NR            | 815    | 1125          | NR            | 945    | 779           | NR            |
| 430    | 6636          | NR            | 560    | 30559         | NR            | 690    | 13894         | NR            | 820    | 988           | NR            | 950    | 905           | NR            |
| 435    | 12267         | NR            | 565    | 30663         | NR            | 695    | 12196         | NR            | 825    | 1070          | NR            | 955    | 1369          | NR            |
| 440    | 21326         | NR            | 570    | 30877         | NR            | 700    | 10840         | NR            | 830    | 1219          | NR            | 960    | 1280          | NR            |
| 445    | 30150         | NR            | 575    | 30916         | NR            | 705    | 9613          | NR            | 835    | 944           | NR            | 965    | 1177          | NR            |
| 450    | 29740         | NR            | 580    | 31248         | NR            | 710    | 8583          | NR            | 840    | 983           | NR            | 970    | 868           | NR            |
| 455    | 22827         | NR            | 585    | 31581         | NR            | 715    | 7631          | NR            | 845    | 1097          | NR            | 975    | 843           | NR            |
| 460    | 19023         | NR            | 590    | 32218         | NR            | 720    | 6779          | NR            | 850    | 856           | NR            | 980    | 744           | NR            |
| 465    | 16163         | NR            | 595    | 32417         | NR            | 725    | 5950          | NR            | 855    | 949           | NR            | 985    | 1113          | NR            |
| 470    | 13739         | NR            | 600    | 32976         | NR            | 730    | 5282          | NR            | 860    | 954           | NR            | 990    | 1002          | NR            |
| 475    | 13571         | NR            | 605    | 33620         | NR            | 735    | 4673          | NR            | 865    | 1019          | NR            | 995    | 1732          | NR            |
| 480    | 14597         | NR            | 610    | 33704         | NR            | 740    | 4087          | NR            | 870    | 1089          | NR            | 1000   | 1390          | NR            |
| 485    | 15964         | NR            | 615    | 33846         | NR            | 745    | 3658          | NR            | 875    | 1089          | NR            |        |               |               |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 1498.3 S/P: 0.71**

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360    | 910           | NR            | 490    | 17463         | NR            | 620    | 33665         | NR            | 750    | 3275          | NR            | 880    | 1122          | NR            |
| 365    | 784           | NR            | 495    | 18986         | NR            | 625    | 33477         | NR            | 755    | 2901          | NR            | 885    | 1170          | NR            |
| 370    | 741           | NR            | 500    | 20627         | NR            | 630    | 32742         | NR            | 760    | 2665          | NR            | 890    | 751           | NR            |
| 375    | 805           | NR            | 505    | 21980         | NR            | 635    | 31767         | NR            | 765    | 2371          | NR            | 895    | 990           | NR            |
| 380    | 830           | NR            | 510    | 23346         | NR            | 640    | 30561         | NR            | 770    | 2039          | NR            | 900    | 982           | NR            |
| 385    | 690           | NR            | 515    | 24600         | NR            | 645    | 29699         | NR            | 775    | 1676          | NR            | 905    | 936           | NR            |
| 390    | 625           | NR            | 520    | 25854         | NR            | 650    | 28202         | NR            | 780    | 1616          | NR            | 910    | 888           | NR            |
| 395    | 599           | NR            | 525    | 26952         | NR            | 655    | 26484         | NR            | 785    | 1573          | NR            | 915    | 1068          | NR            |
| 400    | 568           | NR            | 530    | 28081         | NR            | 660    | 24930         | NR            | 790    | 1452          | NR            | 920    | 1179          | NR            |
| 405    | 577           | NR            | 535    | 28884         | NR            | 665    | 23070         | NR            | 795    | 1263          | NR            | 925    | 1008          | NR            |
| 410    | 720           | NR            | 540    | 29271         | NR            | 670    | 20926         | NR            | 800    | 1203          | NR            | 930    | 927           | NR            |
| 415    | 1084          | NR            | 545    | 29657         | NR            | 675    | 19011         | NR            | 805    | 1175          | NR            | 935    | 1185          | NR            |
| 420    | 1884          | NR            | 550    | 30152         | NR            | 680    | 17237         | NR            | 810    | 1108          | NR            | 940    | 1166          | NR            |
| 425    | 3574          | NR            | 555    | 30445         | NR            | 685    | 15540         | NR            | 815    | 1125          | NR            | 945    | 779           | NR            |
| 430    | 6636          | NR            | 560    | 30559         | NR            | 690    | 13894         | NR            | 820    | 988           | NR            | 950    | 905           | NR            |
| 435    | 12267         | NR            | 565    | 30663         | NR            | 695    | 12196         | NR            | 825    | 1070          | NR            | 955    | 1369          | NR            |
| 440    | 21326         | NR            | 570    | 30877         | NR            | 700    | 10840         | NR            | 830    | 1219          | NR            | 960    | 1280          | NR            |
| 445    | 30150         | NR            | 575    | 30916         | NR            | 705    | 9613          | NR            | 835    | 944           | NR            | 965    | 1177          | NR            |
| 450    | 29740         | NR            | 580    | 31248         | NR            | 710    | 8583          | NR            | 840    | 983           | NR            | 970    | 868           | NR            |
| 455    | 22827         | NR            | 585    | 31581         | NR            | 715    | 7631          | NR            | 845    | 1097          | NR            | 975    | 843           | NR            |
| 460    | 19023         | NR            | 590    | 32218         | NR            | 720    | 6779          | NR            | 850    | 856           | NR            | 980    | 744           | NR            |
| 465    | 16163         | NR            | 595    | 32417         | NR            | 725    | 5950          | NR            | 855    | 949           | NR            | 985    | 1113          | NR            |
| 470    | 13739         | NR            | 600    | 32976         | NR            | 730    | 5282          | NR            | 860    | 954           | NR            | 990    | 1002          | NR            |
| 475    | 13571         | NR            | 605    | 33620         | NR            | 735    | 4673          | NR            | 865    | 1019          | NR            | 995    | 1732          | NR            |
| 480    | 14597         | NR            | 610    | 33704         | NR            | 740    | 4087          | NR            | 870    | 1089          | NR            | 1000   | 1390          | NR            |
| 485    | 15964         | NR            | 615    | 33846         | NR            | 745    | 3658          | NR            | 875    | 1089          | NR            |        |               |               |

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**Summary**

$R_f = 92.2$   
 $R_g = 98.9$   
 CIE  $R_a = 92.2$   
 $R_9 = 63.3$



**Color Vector Graphics**



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

|            |             |            |            |
|------------|-------------|------------|------------|
| CES01 = 85 | CES26 = 93  | CES51 = 97 | CES76 = 86 |
| CES02 = 61 | CES27 = 92  | CES52 = 98 | CES77 = 90 |
| CES03 = 31 | CES28 = 96  | CES53 = 95 | CES78 = 84 |
| CES04 = 69 | CES29 = 95  | CES54 = 95 | CES79 = 97 |
| CES05 = 49 | CES30 = 97  | CES55 = 94 | CES80 = 94 |
| CES06 = 50 | CES31 = 96  | CES56 = 94 | CES81 = 91 |
| CES07 = 42 | CES32 = 91  | CES57 = 93 | CES82 = 97 |
| CES08 = 41 | CES33 = 98  | CES58 = 93 | CES83 = 98 |
| CES09 = 29 | CES34 = 93  | CES59 = 96 | CES84 = 94 |
| CES10 = 74 | CES35 = 96  | CES60 = 94 | CES85 = 86 |
| CES11 = 57 | CES36 = 85  | CES61 = 93 | CES86 = 90 |
| CES12 = 63 | CES37 = 94  | CES62 = 90 | CES87 = 92 |
| CES13 = 43 | CES38 = 91  | CES63 = 92 | CES88 = 96 |
| CES14 = 74 | CES39 = 99  | CES64 = 90 | CES89 = 88 |
| CES15 = 71 | CES40 = 98  | CES65 = 88 | CES90 = 96 |
| CES16 = 47 | CES41 = 98  | CES66 = 88 | CES91 = 76 |
| CES17 = 49 | CES42 = 95  | CES67 = 87 | CES92 = 82 |
| CES18 = 56 | CES43 = 95  | CES68 = 88 | CES93 = 89 |
| CES19 = 71 | CES44 = 100 | CES69 = 90 | CES94 = 83 |
| CES20 = 66 | CES45 = 97  | CES70 = 86 | CES95 = 84 |
| CES21 = 85 | CES46 = 97  | CES71 = 82 | CES96 = 92 |
| CES22 = 78 | CES47 = 98  | CES72 = 94 | CES97 = 95 |
| CES23 = 91 | CES48 = 93  | CES73 = 81 | CES98 = 93 |
| CES24 = 90 | CES49 = 96  | CES74 = 94 | CES99 = 92 |
| CES25 = 71 | CES50 = 98  | CES75 = 83 |            |



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Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)