

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: P1437946

Luminaire Tested: **GALN-SB5B-935-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: P1437946  
 Test Lab: INNOVATION CENTER(G1)  
 Issue Date: 03/27/202  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: McGRAW-EDISON  
 Catalog Number: GALN-SB5B-935-U-T3LG-HSS  
 Description: GALLEON II AREA AND ROADWAY HIGH DENSITY LUMINAIRE 450mA 5xLight Square PACKAGE 90CRI 3500K FIXTURE w/ TYPE III LOW GLARE WITH HOUSE SIDE SHIELD  
 Light Source: (130) 3500K 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**

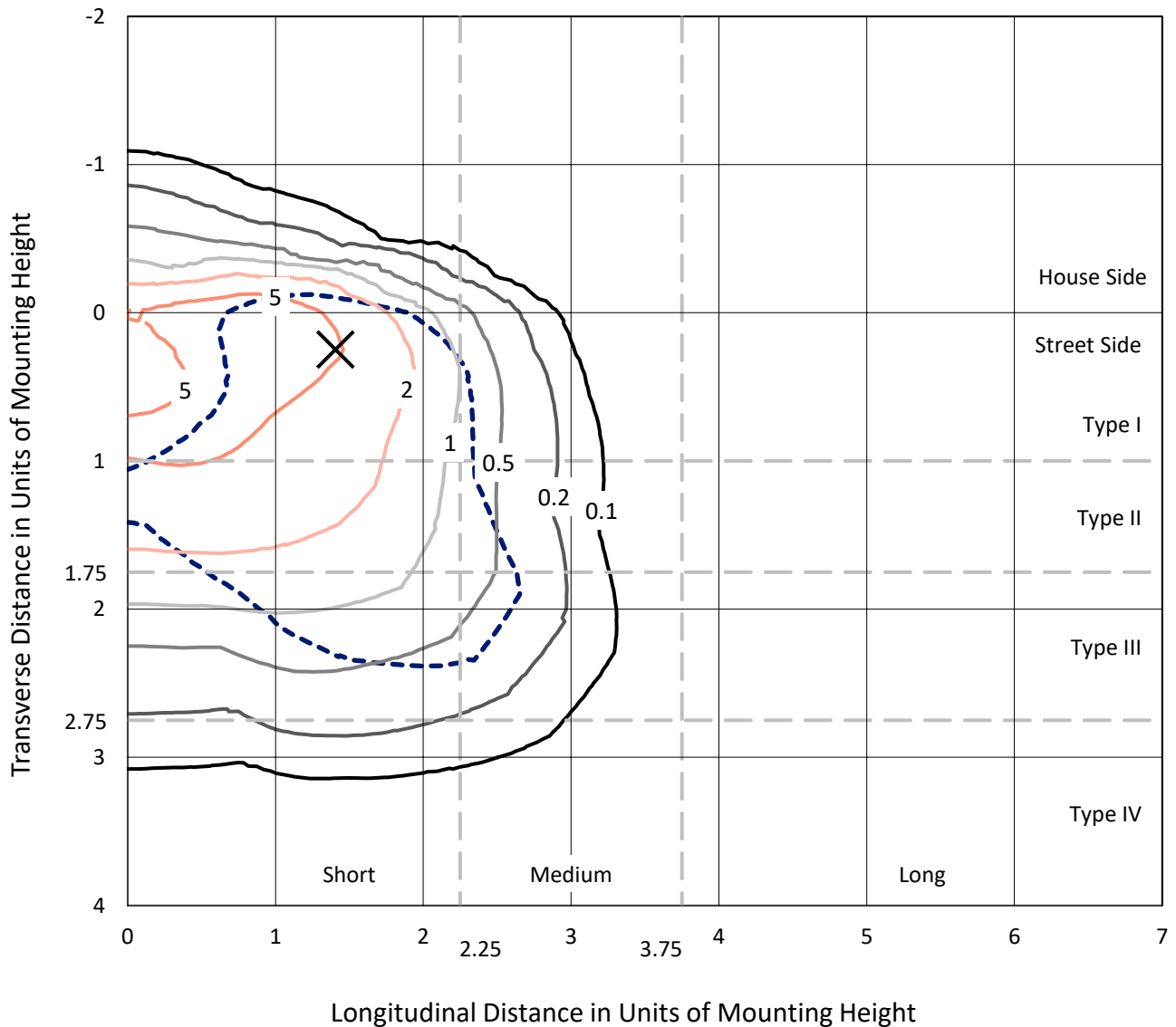
Lumens per Lamp: N/A  
 Luminaire Lumens: 15134.7 lumens  
 Efficiency: N/A  
 Efficacy: 82.8 lumens/watt  
 Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
 IES Classification: Type III - Short  
 BUG Rating: B2 - U0 - G2

Input Watts (W): 182.7  
 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: P1437946  
 CATALOG NUMBER: GALN-SB5B-935-U-T3LG-HSS

### Iso-Footcandle Lines of Horizontal Illumination

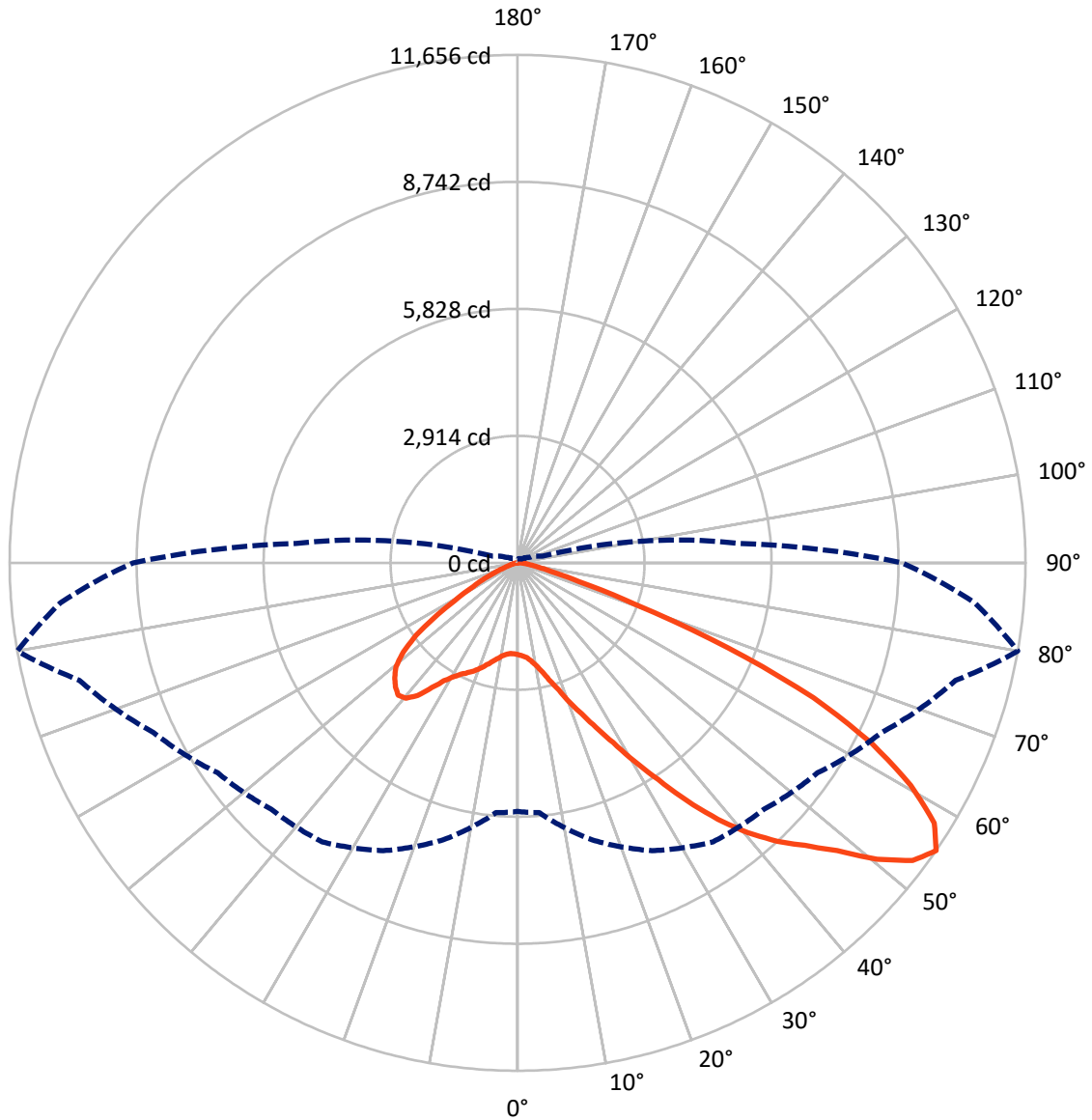
✕ Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 9.3 fc  
 Type III - Short - N/A

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### Luminous Intensity Polar Plot



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

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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 1839.8   | 0.0    | 1839.8  |
|                    | % Fixture | 12.2     | 0.0    | 12.2    |
| <b>Street Side</b> | Lumens    | 13294.9  | 0.0    | 13294.9 |
|                    | % Fixture | 87.8     | 0.0    | 87.8    |
| <b>Total</b>       | Lumens    | 15134.7  | 0.0    | 15134.7 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 176.9   | 1.2       |
| 10°-20°   | 466.4   | 3.1       |
| 20°-30°   | 913.1   | 6.0       |
| 30°-40°   | 1857.7  | 12.3      |
| 40°-50°   | 3131.9  | 20.7      |
| 50°-60°   | 4001.6  | 26.4      |
| 60°-70°   | 3416.4  | 22.6      |
| 70°-80°   | 1091.7  | 7.2       |
| 80°-90°   | 78.8    | 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°    | 15134.7 | 100.0     |
| 0°-180°   | 15134.7 | 100.0     |

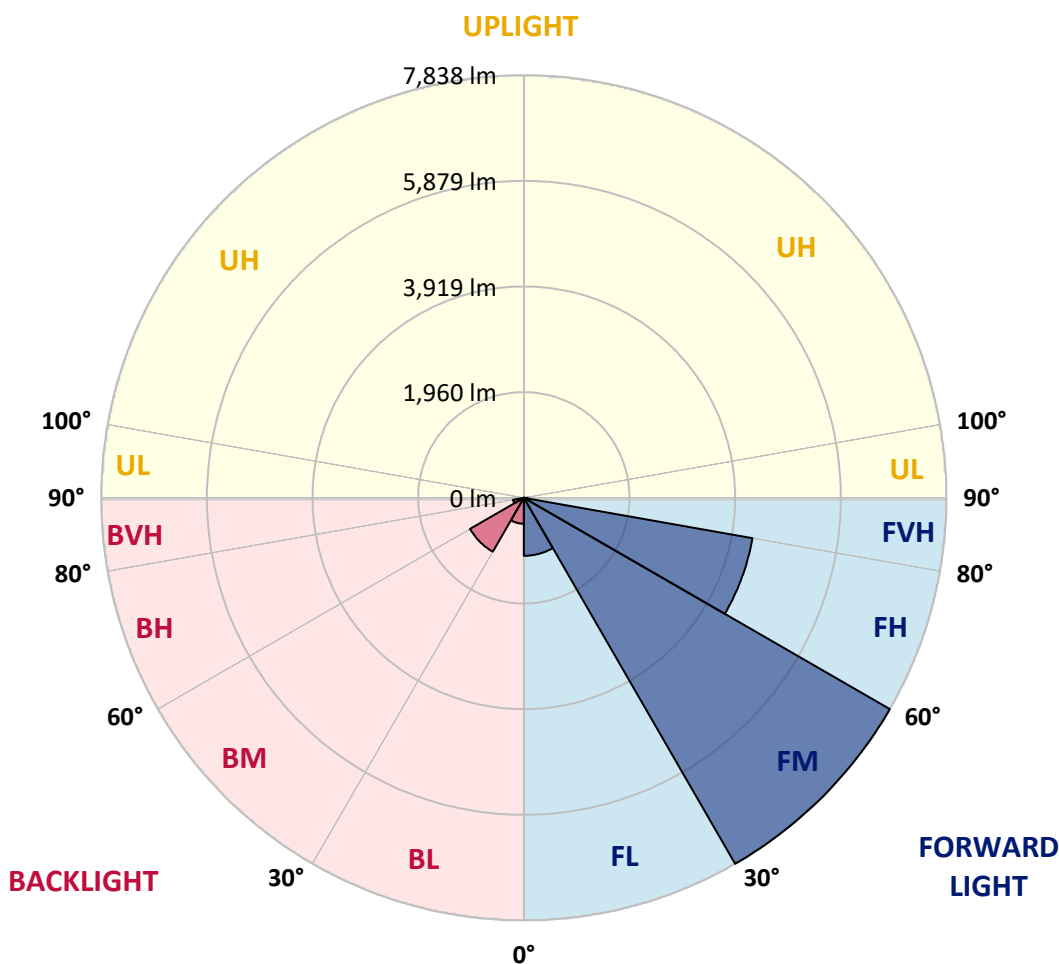


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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 1076.1 | 7.1       |                         |      |         |
| FM (30°-60°)   | 7838.1 | 51.8      |                         |      |         |
| FH (60°-80°)   | 4305.9 | 28.5      |                         |      | G2/5000 |
| FVH (80°-90°)  | 74.7   | 0.5       |                         |      | G1/100  |
| BL (0°-30°)    | 480.4  | 3.2       | B1/500                  |      |         |
| BM (30°-60°)   | 1153.1 | 7.6       | B2/2500                 |      |         |
| BH (60°-80°)   | 202.2  | 1.3       | B1/500                  |      | G1/500  |
| BVH (80°-90°)  | 4.1    | 0.0       |                         |      | G0/10   |
| UL (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B2-U0-G2**  
 Type III Short





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CATALOG NUMBER: GALN-SB5B-935-U-T3LG-HSS

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°    | 75°     | 80°     | 85°     |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|
| 0°    | 2108.2 | 2108.2 | 2108.2 | 2108.2 | 2108.2 | 2108.2 | 2108.2 | 2108.2 | 2108.2  | 2108.2  | 2108.2  |
| 2.5°  | 2121.1 | 2125.5 | 2121.1 | 2125.5 | 2134.1 | 2129.8 | 2147.0 | 2142.7 | 2142.7  | 2138.4  | 2121.1  |
| 5°    | 2000.7 | 2005.0 | 2013.6 | 2035.1 | 2065.2 | 2095.3 | 2134.1 | 2159.9 | 2185.7  | 2181.4  | 2164.2  |
| 7.5°  | 1764.0 | 1772.6 | 1807.1 | 1850.1 | 1949.0 | 2039.4 | 2138.4 | 2202.9 | 2258.8  | 2276.0  | 2263.1  |
| 10°   | 1630.7 | 1639.3 | 1660.8 | 1703.8 | 1794.2 | 1944.7 | 2138.4 | 2271.7 | 2370.7  | 2405.1  | 2409.4  |
| 12.5° | 1617.8 | 1622.1 | 1639.3 | 1686.6 | 1764.0 | 1893.1 | 2134.1 | 2362.1 | 2529.9  | 2581.5  | 2598.7  |
| 15°   | 1626.4 | 1635.0 | 1652.2 | 1690.9 | 1781.2 | 1927.5 | 2168.5 | 2504.1 | 2740.7  | 2813.9  | 2818.2  |
| 17.5° | 1660.8 | 1669.4 | 1690.9 | 1733.9 | 1832.9 | 2017.9 | 2276.0 | 2650.4 | 2994.6  | 3076.3  | 3123.6  |
| 20°   | 1729.6 | 1733.9 | 1759.7 | 1815.7 | 1927.5 | 2129.8 | 2435.2 | 2848.3 | 3300.0  | 3420.5  | 3454.9  |
| 22.5° | 1820.0 | 1832.9 | 1867.3 | 1936.1 | 2078.1 | 2284.6 | 2654.7 | 3089.2 | 3635.6  | 3760.4  | 3820.6  |
| 25°   | 1918.9 | 1936.1 | 1987.8 | 2099.6 | 2280.3 | 2521.3 | 2925.7 | 3407.6 | 4031.5  | 4182.1  | 4263.8  |
| 27.5° | 2121.1 | 2125.5 | 2159.9 | 2301.9 | 2534.2 | 2831.1 | 3269.9 | 3816.3 | 4496.1  | 4672.5  | 4762.9  |
| 30°   | 2564.3 | 2568.6 | 2538.5 | 2577.2 | 2813.9 | 3196.8 | 3674.4 | 4293.9 | 5038.3  | 5283.5  | 5356.7  |
| 32.5° | 3106.4 | 3127.9 | 3123.6 | 3097.8 | 3205.4 | 3562.5 | 4156.2 | 4866.2 | 5675.0  | 5933.2  | 6002.0  |
| 35°   | 3721.7 | 3773.3 | 3760.4 | 3751.8 | 3764.7 | 4031.5 | 4707.0 | 5498.6 | 6397.9  | 6712.0  | 6767.9  |
| 37.5° | 4324.0 | 4337.0 | 4397.2 | 4470.3 | 4478.9 | 4663.9 | 5343.7 | 6169.8 | 7069.1  | 7469.2  | 7555.2  |
| 40°   | 4788.7 | 4831.7 | 4982.3 | 5128.6 | 5279.2 | 5425.5 | 5868.7 | 6712.0 | 7602.6  | 8140.4  | 8179.1  |
| 42.5° | 5150.1 | 5253.4 | 5472.8 | 5700.9 | 6006.3 | 6169.8 | 6367.7 | 7094.9 | 8037.1  | 8738.4  | 8721.2  |
| 45°   | 5589.0 | 5632.0 | 5941.8 | 6243.0 | 6552.8 | 6802.3 | 6798.0 | 7417.6 | 8377.0  | 9250.4  | 9142.9  |
| 47.5° | 5885.9 | 5937.5 | 6359.1 | 6712.0 | 7030.3 | 7155.1 | 7180.9 | 7766.1 | 8846.0  | 9870.0  | 9616.2  |
| 50°   | 6045.1 | 6135.4 | 6595.8 | 7043.2 | 7387.4 | 7426.2 | 7542.3 | 8222.1 | 9461.3  | 10691.8 | 10214.2 |
| 52.5° | 6062.3 | 6148.3 | 6677.5 | 7254.1 | 7628.4 | 7705.8 | 7903.8 | 8738.4 | 10059.3 | 11350.1 | 10558.4 |
| 55°   | 5705.2 | 5756.8 | 6578.6 | 7288.5 | 7817.7 | 7998.4 | 8402.8 | 9216.0 | 10407.8 | 11655.6 | 10528.3 |
| 57.5° | 5369.6 | 5421.2 | 6135.4 | 7228.3 | 8011.3 | 8381.3 | 8936.4 | 9543.0 | 10136.8 | 11276.9 | 9857.1  |
| 60°   | 5081.3 | 5107.1 | 5756.8 | 6948.6 | 8084.5 | 8755.7 | 9396.7 | 9220.3 | 9435.5  | 10369.1 | 8708.3  |
| 62.5° | 4539.2 | 4556.4 | 5326.5 | 6445.2 | 7938.2 | 9043.9 | 9555.9 | 8536.2 | 8665.3  | 9117.1  | 7357.3  |
| 65°   | 3429.1 | 3493.7 | 4199.3 | 6066.6 | 7697.2 | 9177.3 | 9185.9 | 7701.5 | 7568.2  | 7460.6  | 5786.9  |
| 67.5° | 2327.7 | 2400.8 | 2826.8 | 5455.6 | 7305.7 | 9233.2 | 8467.4 | 6621.6 | 5765.4  | 5210.4  | 3790.5  |
| 70°   | 1858.7 | 1858.7 | 2005.0 | 4384.3 | 6376.4 | 8519.0 | 7576.8 | 4999.5 | 3661.5  | 2878.4  | 2030.8  |
| 72.5° | 1221.9 | 1226.2 | 1363.9 | 2783.7 | 4522.0 | 6496.8 | 6178.4 | 2891.3 | 1901.7  | 1467.2  | 1002.5  |
| 75°   | 443.2  | 443.2  | 598.1  | 1114.4 | 2392.2 | 3868.0 | 3764.7 | 1381.1 | 1032.6  | 800.3   | 606.7   |
| 77.5° | 236.6  | 245.2  | 288.3  | 460.4  | 916.4  | 1574.7 | 1471.5 | 705.6  | 585.1   | 499.1   | 378.6   |
| 80°   | 159.2  | 163.5  | 193.6  | 284.0  | 443.2  | 606.7  | 473.3  | 395.8  | 395.8   | 335.6   | 253.8   |
| 82.5° | 86.1   | 90.4   | 129.1  | 185.0  | 236.6  | 284.0  | 228.0  | 232.3  | 279.7   | 228.0   | 146.3   |
| 85°   | 60.2   | 60.2   | 99.0   | 133.4  | 133.4  | 137.7  | 99.0   | 146.3  | 163.5   | 142.0   | 99.0    |
| 87.5° | 34.4   | 34.4   | 55.9   | 64.5   | 64.5   | 60.2   | 30.1   | 51.6   | 64.5    | 73.1    | 43.0    |
| 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: P1437946

CATALOG NUMBER: GALN-SB5B-935-U-T3LG-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 2108.2 | 2108.2 | 2108.2 | 2108.2 | 2108.2 | 2108.2 | 2108.2 | 2108.2 | 2108.2 | 2108.2 | 2108.2 |
| 2.5°  | 2116.8 | 2103.9 | 2078.1 | 2026.5 | 2000.7 | 1966.3 | 1936.1 | 1897.4 | 1888.8 | 1884.5 | 1867.3 |
| 5°    | 2151.3 | 2125.5 | 2048.0 | 1936.1 | 1841.5 | 1751.1 | 1660.8 | 1609.1 | 1566.1 | 1544.6 | 1540.3 |
| 7.5°  | 2237.3 | 2185.7 | 2043.7 | 1845.8 | 1669.4 | 1514.5 | 1381.1 | 1264.9 | 1204.7 | 1153.1 | 1157.4 |
| 10°   | 2366.4 | 2284.6 | 2052.3 | 1759.7 | 1497.3 | 1247.7 | 1054.1 | 886.3  | 765.9  | 709.9  | 705.6  |
| 12.5° | 2538.5 | 2422.3 | 2082.4 | 1673.7 | 1286.5 | 938.0  | 692.7  | 593.7  | 567.9  | 563.6  | 559.3  |
| 15°   | 2749.3 | 2585.8 | 2112.5 | 1561.8 | 1002.5 | 649.7  | 563.6  | 542.1  | 537.8  | 533.5  | 533.5  |
| 17.5° | 3003.2 | 2775.1 | 2129.8 | 1372.5 | 731.4  | 559.3  | 529.2  | 516.3  | 512.0  | 507.7  | 507.7  |
| 20°   | 3321.6 | 2986.0 | 2151.3 | 1131.6 | 619.6  | 537.8  | 503.4  | 486.2  | 481.9  | 481.9  | 477.6  |
| 22.5° | 3635.6 | 3222.6 | 2134.1 | 920.7  | 598.1  | 512.0  | 473.3  | 456.1  | 447.5  | 447.5  | 443.2  |
| 25°   | 3997.1 | 3463.5 | 2082.4 | 830.4  | 593.7  | 490.5  | 443.2  | 417.3  | 404.4  | 400.1  | 400.1  |
| 27.5° | 4410.1 | 3738.9 | 2000.7 | 834.7  | 593.7  | 473.3  | 404.4  | 370.0  | 361.4  | 352.8  | 352.8  |
| 30°   | 4883.4 | 4074.5 | 1940.4 | 890.6  | 602.4  | 456.1  | 370.0  | 327.0  | 314.1  | 305.5  | 309.8  |
| 32.5° | 5425.5 | 4448.8 | 1936.1 | 981.0  | 615.3  | 430.3  | 331.3  | 284.0  | 271.1  | 266.8  | 271.1  |
| 35°   | 6040.8 | 4913.5 | 2035.1 | 1049.8 | 580.8  | 374.3  | 284.0  | 245.2  | 232.3  | 232.3  | 236.6  |
| 37.5° | 6724.9 | 5447.0 | 2168.5 | 1032.6 | 469.0  | 296.9  | 245.2  | 215.1  | 202.2  | 206.5  | 210.8  |
| 40°   | 7348.7 | 5864.4 | 2190.0 | 882.0  | 352.8  | 253.8  | 210.8  | 189.3  | 180.7  | 185.0  | 189.3  |
| 42.5° | 7822.0 | 6199.9 | 1983.5 | 684.1  | 296.9  | 215.1  | 180.7  | 163.5  | 159.2  | 167.8  | 167.8  |
| 45°   | 8204.9 | 6333.3 | 1656.5 | 507.7  | 262.5  | 185.0  | 159.2  | 150.6  | 142.0  | 146.3  | 146.3  |
| 47.5° | 8605.1 | 6354.8 | 1351.0 | 408.7  | 232.3  | 167.8  | 146.3  | 137.7  | 129.1  | 129.1  | 129.1  |
| 50°   | 8992.3 | 6303.2 | 1032.6 | 361.4  | 215.1  | 150.6  | 133.4  | 124.8  | 116.2  | 111.9  | 111.9  |
| 52.5° | 9086.9 | 5890.2 | 757.2  | 335.6  | 197.9  | 142.0  | 124.8  | 116.2  | 107.6  | 103.3  | 103.3  |
| 55°   | 8824.5 | 5107.1 | 593.7  | 301.2  | 180.7  | 129.1  | 116.2  | 107.6  | 94.7   | 90.4   | 90.4   |
| 57.5° | 7959.7 | 3893.8 | 473.3  | 258.2  | 163.5  | 124.8  | 107.6  | 99.0   | 86.1   | 81.7   | 81.7   |
| 60°   | 6836.7 | 2762.2 | 382.9  | 210.8  | 150.6  | 111.9  | 99.0   | 86.1   | 77.4   | 68.8   | 68.8   |
| 62.5° | 5593.3 | 1983.5 | 309.8  | 176.4  | 142.0  | 99.0   | 90.4   | 77.4   | 60.2   | 47.3   | 47.3   |
| 65°   | 4289.6 | 1424.1 | 240.9  | 142.0  | 129.1  | 86.1   | 77.4   | 64.5   | 47.3   | 34.4   | 34.4   |
| 67.5° | 2775.1 | 920.7  | 180.7  | 124.8  | 99.0   | 73.1   | 60.2   | 51.6   | 43.0   | 30.1   | 25.8   |
| 70°   | 1462.9 | 537.8  | 133.4  | 107.6  | 73.1   | 55.9   | 51.6   | 43.0   | 34.4   | 21.5   | 21.5   |
| 72.5° | 757.2  | 352.8  | 99.0   | 94.7   | 55.9   | 38.7   | 43.0   | 34.4   | 25.8   | 12.9   | 12.9   |
| 75°   | 486.2  | 236.6  | 73.1   | 77.4   | 34.4   | 30.1   | 30.1   | 21.5   | 12.9   | 8.6    | 4.3    |
| 77.5° | 314.1  | 159.2  | 51.6   | 64.5   | 21.5   | 17.2   | 17.2   | 8.6    | 4.3    | 0.0    | 0.0    |
| 80°   | 185.0  | 99.0   | 34.4   | 43.0   | 8.6    | 8.6    | 4.3    | 0.0    | 0.0    | 0.0    | 0.0    |
| 82.5° | 94.7   | 51.6   | 17.2   | 17.2   | 4.3    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 60.2   | 25.8   | 4.3    | 4.3    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 30.1   | 8.6    | 4.3    | 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: SP1-2106-271-3

Luminaire Tested: GFLD-SA1-A-935-U-WR-X-BK

Test Date: 06/15/2021

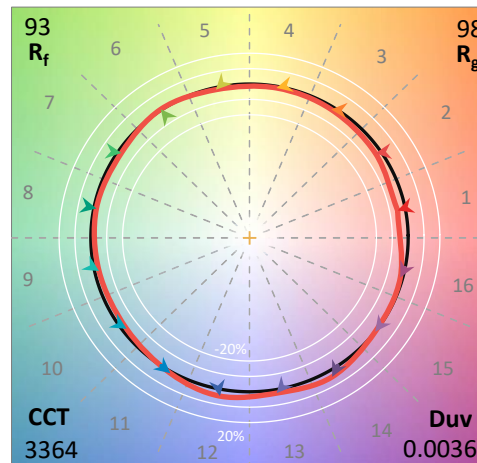
**Test Information**

Test Method: LM-79-08  
 Report Number: SP1-2106-271-3  
 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-935-U-WR-X-BK**  
 Description: MCGRAW EDISON

N6, BLACK

**Spectral Parameters**

|                           |        |           |      |      |      |
|---------------------------|--------|-----------|------|------|------|
| CCT (K):                  | 3364   | CRI (Ra): | 92.0 | R9:  | 59.7 |
| CIE u':                   | 0.2376 | R1:       | 91.7 | R10: | 85.2 |
| CIE v':                   | 0.5188 | R2:       | 94.0 | R11: | 92.8 |
| Duv:                      | 0.0036 | R3:       | 95.5 | R12: | 78.2 |
| CIE x:                    | 0.4173 | R4:       | 93.0 | R13: | 92.0 |
| CIE y:                    | 0.4050 | R5:       | 90.9 | R14: | 96.9 |
| CIE z:                    | 0.1777 | R6:       | 92.2 |      |      |
| Peak Wavelength (nm):     | 622    | R7:       | 94.8 |      |      |
| Dominant Wavelength (nm): | 580    | R8:       | 84.1 |      |      |
| Purity:                   | 46.9   |           |      |      |      |
| Rf:                       | 92.6   |           |      |      |      |
| Rg:                       | 98.3   |           |      |      |      |



**Test Conditions**  
 Stabilization Time: 76M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 24.8/44%  
 Sphere Temperature (°C): 24.9

REPORT NUMBER: SP1-2106-271-3

| 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 3500K 4-step quadrangle

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**Photopic Flux vs. Wavelength**



#####

| 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    | 792           | NR            | 490    | 14205         | NR            | 620    | 36151         | NR            | 750    | 3427          | NR            | 880    | 712           | NR            |
| 365    | 640           | NR            | 495    | 15647         | NR            | 625    | 36077         | NR            | 755    | 3047          | NR            | 885    | 942           | NR            |
| 370    | 630           | NR            | 500    | 17088         | NR            | 630    | 35451         | NR            | 760    | 2790          | NR            | 890    | 952           | NR            |
| 375    | 684           | NR            | 505    | 18475         | NR            | 635    | 34417         | NR            | 765    | 2433          | NR            | 895    | 764           | NR            |
| 380    | 731           | NR            | 510    | 19780         | NR            | 640    | 33166         | NR            | 770    | 2178          | NR            | 900    | 743           | NR            |
| 385    | 664           | NR            | 515    | 21055         | NR            | 645    | 32124         | NR            | 775    | 1893          | NR            | 905    | 776           | NR            |
| 390    | 595           | NR            | 520    | 22268         | NR            | 650    | 30559         | NR            | 780    | 1724          | NR            | 910    | 659           | NR            |
| 395    | 520           | NR            | 525    | 23497         | NR            | 655    | 28656         | NR            | 785    | 1549          | NR            | 915    | 701           | NR            |
| 400    | 491           | NR            | 530    | 24653         | NR            | 660    | 27033         | NR            | 790    | 1451          | NR            | 920    | 728           | NR            |
| 405    | 489           | NR            | 535    | 25661         | NR            | 665    | 25030         | NR            | 795    | 1317          | NR            | 925    | 793           | NR            |
| 410    | 585           | NR            | 540    | 26289         | NR            | 670    | 22820         | NR            | 800    | 1124          | NR            | 930    | 877           | NR            |
| 415    | 826           | NR            | 545    | 26945         | NR            | 675    | 20678         | NR            | 805    | 1116          | NR            | 935    | 923           | NR            |
| 420    | 1336          | NR            | 550    | 27713         | NR            | 680    | 18748         | NR            | 810    | 1105          | NR            | 940    | 1001          | NR            |
| 425    | 2406          | NR            | 555    | 28230         | NR            | 685    | 16904         | NR            | 815    | 1073          | NR            | 945    | 604           | NR            |
| 430    | 4355          | NR            | 560    | 28678         | NR            | 690    | 15203         | NR            | 820    | 977           | NR            | 950    | 424           | NR            |
| 435    | 7911          | NR            | 565    | 29242         | NR            | 695    | 13356         | NR            | 825    | 882           | NR            | 955    | 550           | NR            |
| 440    | 13821         | NR            | 570    | 29806         | NR            | 700    | 11948         | NR            | 830    | 875           | NR            | 960    | 709           | NR            |
| 445    | 19836         | NR            | 575    | 30322         | NR            | 705    | 10482         | NR            | 835    | 944           | NR            | 965    | 755           | NR            |
| 450    | 19902         | NR            | 580    | 31125         | NR            | 710    | 9351          | NR            | 840    | 956           | NR            | 970    | 426           | NR            |
| 455    | 15697         | NR            | 585    | 31838         | NR            | 715    | 8217          | NR            | 845    | 875           | NR            | 975    | 556           | NR            |
| 460    | 13589         | NR            | 590    | 32845         | NR            | 720    | 7313          | NR            | 850    | 801           | NR            | 980    | 1040          | NR            |
| 465    | 11857         | NR            | 595    | 33487         | NR            | 725    | 6460          | NR            | 855    | 890           | NR            | 985    | 833           | NR            |
| 470    | 10336         | NR            | 600    | 34359         | NR            | 730    | 5680          | NR            | 860    | 706           | NR            | 990    | 964           | NR            |
| 475    | 10504         | NR            | 605    | 35281         | NR            | 735    | 4904          | NR            | 865    | 902           | NR            | 995    | 953           | NR            |
| 480    | 11526         | NR            | 610    | 35679         | NR            | 740    | 4372          | NR            | 870    | 879           | NR            | 1000   | 950           | NR            |
| 485    | 12831         | NR            | 615    | 36113         | NR            | 745    | 3858          | NR            | 875    | 769           | NR            |        |               |               |

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**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: 3109.5**

**S/P: 1.54**

| 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    | 792           | NR            | 490    | 14205         | NR            | 620    | 36151         | NR            | 750    | 3427          | NR            | 880    | 712           | NR            |
| 365    | 640           | NR            | 495    | 15647         | NR            | 625    | 36077         | NR            | 755    | 3047          | NR            | 885    | 942           | NR            |
| 370    | 630           | NR            | 500    | 17088         | NR            | 630    | 35451         | NR            | 760    | 2790          | NR            | 890    | 952           | NR            |
| 375    | 684           | NR            | 505    | 18475         | NR            | 635    | 34417         | NR            | 765    | 2433          | NR            | 895    | 764           | NR            |
| 380    | 731           | NR            | 510    | 19780         | NR            | 640    | 33166         | NR            | 770    | 2178          | NR            | 900    | 743           | NR            |
| 385    | 664           | NR            | 515    | 21055         | NR            | 645    | 32124         | NR            | 775    | 1893          | NR            | 905    | 776           | NR            |
| 390    | 595           | NR            | 520    | 22268         | NR            | 650    | 30559         | NR            | 780    | 1724          | NR            | 910    | 659           | NR            |
| 395    | 520           | NR            | 525    | 23497         | NR            | 655    | 28656         | NR            | 785    | 1549          | NR            | 915    | 701           | NR            |
| 400    | 491           | NR            | 530    | 24653         | NR            | 660    | 27033         | NR            | 790    | 1451          | NR            | 920    | 728           | NR            |
| 405    | 489           | NR            | 535    | 25661         | NR            | 665    | 25030         | NR            | 795    | 1317          | NR            | 925    | 793           | NR            |
| 410    | 585           | NR            | 540    | 26289         | NR            | 670    | 22820         | NR            | 800    | 1124          | NR            | 930    | 877           | NR            |
| 415    | 826           | NR            | 545    | 26945         | NR            | 675    | 20678         | NR            | 805    | 1116          | NR            | 935    | 923           | NR            |
| 420    | 1336          | NR            | 550    | 27713         | NR            | 680    | 18748         | NR            | 810    | 1105          | NR            | 940    | 1001          | NR            |
| 425    | 2406          | NR            | 555    | 28230         | NR            | 685    | 16904         | NR            | 815    | 1073          | NR            | 945    | 604           | NR            |
| 430    | 4355          | NR            | 560    | 28678         | NR            | 690    | 15203         | NR            | 820    | 977           | NR            | 950    | 424           | NR            |
| 435    | 7911          | NR            | 565    | 29242         | NR            | 695    | 13356         | NR            | 825    | 882           | NR            | 955    | 550           | NR            |
| 440    | 13821         | NR            | 570    | 29806         | NR            | 700    | 11948         | NR            | 830    | 875           | NR            | 960    | 709           | NR            |
| 445    | 19836         | NR            | 575    | 30322         | NR            | 705    | 10482         | NR            | 835    | 944           | NR            | 965    | 755           | NR            |
| 450    | 19902         | NR            | 580    | 31125         | NR            | 710    | 9351          | NR            | 840    | 956           | NR            | 970    | 426           | NR            |
| 455    | 15697         | NR            | 585    | 31838         | NR            | 715    | 8217          | NR            | 845    | 875           | NR            | 975    | 556           | NR            |
| 460    | 13589         | NR            | 590    | 32845         | NR            | 720    | 7313          | NR            | 850    | 801           | NR            | 980    | 1040          | NR            |
| 465    | 11857         | NR            | 595    | 33487         | NR            | 725    | 6460          | NR            | 855    | 890           | NR            | 985    | 833           | NR            |
| 470    | 10336         | NR            | 600    | 34359         | NR            | 730    | 5680          | NR            | 860    | 706           | NR            | 990    | 964           | NR            |
| 475    | 10504         | NR            | 605    | 35281         | NR            | 735    | 4904          | NR            | 865    | 902           | NR            | 995    | 953           | NR            |
| 480    | 11526         | NR            | 610    | 35679         | NR            | 740    | 4372          | NR            | 870    | 879           | NR            | 1000   | 950           | NR            |
| 485    | 12831         | NR            | 615    | 36113         | NR            | 745    | 3858          | NR            | 875    | 769           | NR            |        |               |               |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 1210.8 S/P: 0.6**

| 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    | 792           | NR            | 490    | 14205         | NR            | 620    | 36151         | NR            | 750    | 3427          | NR            | 880    | 712           | NR            |
| 365    | 640           | NR            | 495    | 15647         | NR            | 625    | 36077         | NR            | 755    | 3047          | NR            | 885    | 942           | NR            |
| 370    | 630           | NR            | 500    | 17088         | NR            | 630    | 35451         | NR            | 760    | 2790          | NR            | 890    | 952           | NR            |
| 375    | 684           | NR            | 505    | 18475         | NR            | 635    | 34417         | NR            | 765    | 2433          | NR            | 895    | 764           | NR            |
| 380    | 731           | NR            | 510    | 19780         | NR            | 640    | 33166         | NR            | 770    | 2178          | NR            | 900    | 743           | NR            |
| 385    | 664           | NR            | 515    | 21055         | NR            | 645    | 32124         | NR            | 775    | 1893          | NR            | 905    | 776           | NR            |
| 390    | 595           | NR            | 520    | 22268         | NR            | 650    | 30559         | NR            | 780    | 1724          | NR            | 910    | 659           | NR            |
| 395    | 520           | NR            | 525    | 23497         | NR            | 655    | 28656         | NR            | 785    | 1549          | NR            | 915    | 701           | NR            |
| 400    | 491           | NR            | 530    | 24653         | NR            | 660    | 27033         | NR            | 790    | 1451          | NR            | 920    | 728           | NR            |
| 405    | 489           | NR            | 535    | 25661         | NR            | 665    | 25030         | NR            | 795    | 1317          | NR            | 925    | 793           | NR            |
| 410    | 585           | NR            | 540    | 26289         | NR            | 670    | 22820         | NR            | 800    | 1124          | NR            | 930    | 877           | NR            |
| 415    | 826           | NR            | 545    | 26945         | NR            | 675    | 20678         | NR            | 805    | 1116          | NR            | 935    | 923           | NR            |
| 420    | 1336          | NR            | 550    | 27713         | NR            | 680    | 18748         | NR            | 810    | 1105          | NR            | 940    | 1001          | NR            |
| 425    | 2406          | NR            | 555    | 28230         | NR            | 685    | 16904         | NR            | 815    | 1073          | NR            | 945    | 604           | NR            |
| 430    | 4355          | NR            | 560    | 28678         | NR            | 690    | 15203         | NR            | 820    | 977           | NR            | 950    | 424           | NR            |
| 435    | 7911          | NR            | 565    | 29242         | NR            | 695    | 13356         | NR            | 825    | 882           | NR            | 955    | 550           | NR            |
| 440    | 13821         | NR            | 570    | 29806         | NR            | 700    | 11948         | NR            | 830    | 875           | NR            | 960    | 709           | NR            |
| 445    | 19836         | NR            | 575    | 30322         | NR            | 705    | 10482         | NR            | 835    | 944           | NR            | 965    | 755           | NR            |
| 450    | 19902         | NR            | 580    | 31125         | NR            | 710    | 9351          | NR            | 840    | 956           | NR            | 970    | 426           | NR            |
| 455    | 15697         | NR            | 585    | 31838         | NR            | 715    | 8217          | NR            | 845    | 875           | NR            | 975    | 556           | NR            |
| 460    | 13589         | NR            | 590    | 32845         | NR            | 720    | 7313          | NR            | 850    | 801           | NR            | 980    | 1040          | NR            |
| 465    | 11857         | NR            | 595    | 33487         | NR            | 725    | 6460          | NR            | 855    | 890           | NR            | 985    | 833           | NR            |
| 470    | 10336         | NR            | 600    | 34359         | NR            | 730    | 5680          | NR            | 860    | 706           | NR            | 990    | 964           | NR            |
| 475    | 10504         | NR            | 605    | 35281         | NR            | 735    | 4904          | NR            | 865    | 902           | NR            | 995    | 953           | NR            |
| 480    | 11526         | NR            | 610    | 35679         | NR            | 740    | 4372          | NR            | 870    | 879           | NR            | 1000   | 950           | NR            |
| 485    | 12831         | NR            | 615    | 36113         | NR            | 745    | 3858          | NR            | 875    | 769           | NR            |        |               |               |

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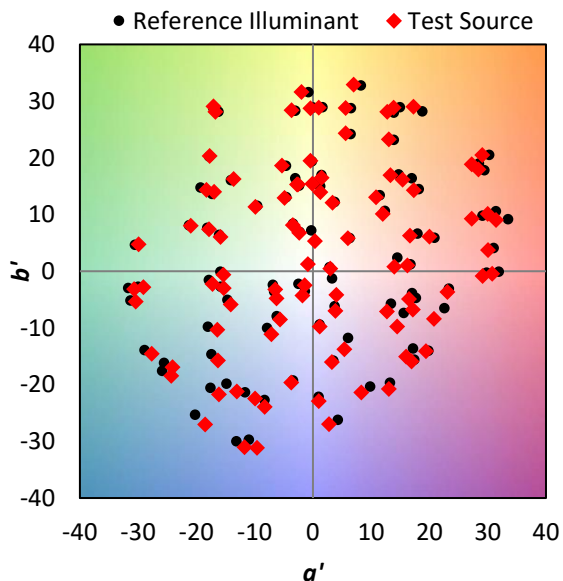
TM-30-18

**Summary**

$R_f = 92.6$   
 $R_g = 98.3$   
 CIE  $R_a = 92.0$   
 $R_9 = 59.7$



**Color Vector Graphics**



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 94 | CES51 = 97 | CES76 = 88 |
| CES02 = 62 | CES27 = 93 | CES52 = 98 | CES77 = 91 |
| CES03 = 31 | CES28 = 96 | CES53 = 96 | CES78 = 87 |
| CES04 = 70 | CES29 = 96 | CES54 = 95 | CES79 = 96 |
| CES05 = 50 | CES30 = 97 | CES55 = 94 | CES80 = 95 |
| CES06 = 51 | CES31 = 96 | CES56 = 94 | CES81 = 88 |
| CES07 = 42 | CES32 = 92 | CES57 = 93 | CES82 = 98 |
| CES08 = 41 | CES33 = 98 | CES58 = 94 | CES83 = 97 |
| CES09 = 29 | CES34 = 95 | CES59 = 96 | CES84 = 95 |
| CES10 = 75 | CES35 = 97 | CES60 = 94 | CES85 = 86 |
| CES11 = 58 | CES36 = 87 | CES61 = 93 | CES86 = 87 |
| CES12 = 64 | CES37 = 95 | CES62 = 91 | CES87 = 92 |
| CES13 = 43 | CES38 = 92 | CES63 = 93 | CES88 = 96 |
| CES14 = 74 | CES39 = 99 | CES64 = 91 | CES89 = 87 |
| CES15 = 71 | CES40 = 98 | CES65 = 89 | CES90 = 96 |
| CES16 = 48 | CES41 = 98 | CES66 = 89 | CES91 = 80 |
| CES17 = 49 | CES42 = 96 | CES67 = 88 | CES92 = 82 |
| CES18 = 56 | CES43 = 97 | CES68 = 90 | CES93 = 89 |
| CES19 = 71 | CES44 = 99 | CES69 = 91 | CES94 = 82 |
| CES20 = 66 | CES45 = 98 | CES70 = 88 | CES95 = 85 |
| CES21 = 86 | CES46 = 97 | CES71 = 85 | CES96 = 92 |
| CES22 = 78 | CES47 = 97 | CES72 = 95 | CES97 = 96 |
| CES23 = 91 | CES48 = 93 | CES73 = 84 | CES98 = 94 |
| CES24 = 90 | CES49 = 97 | CES74 = 94 | CES99 = 91 |
| CES25 = 71 | CES50 = 98 | CES75 = 86 |            |



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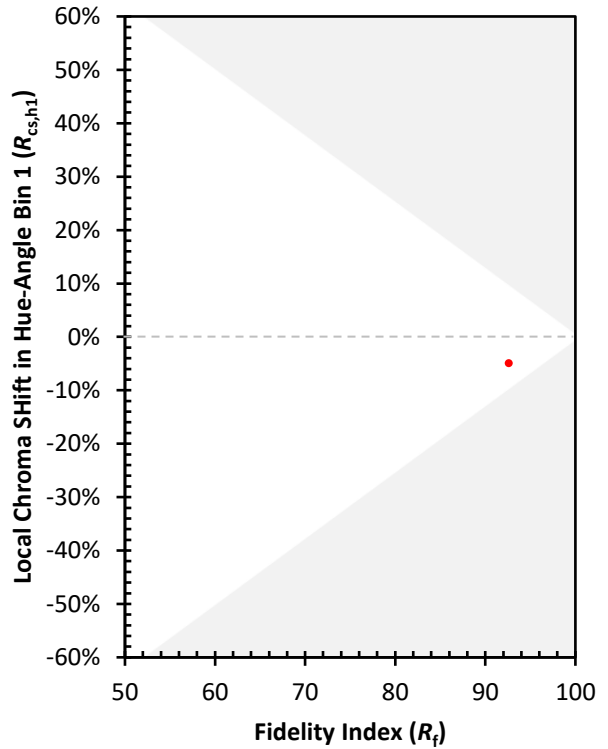
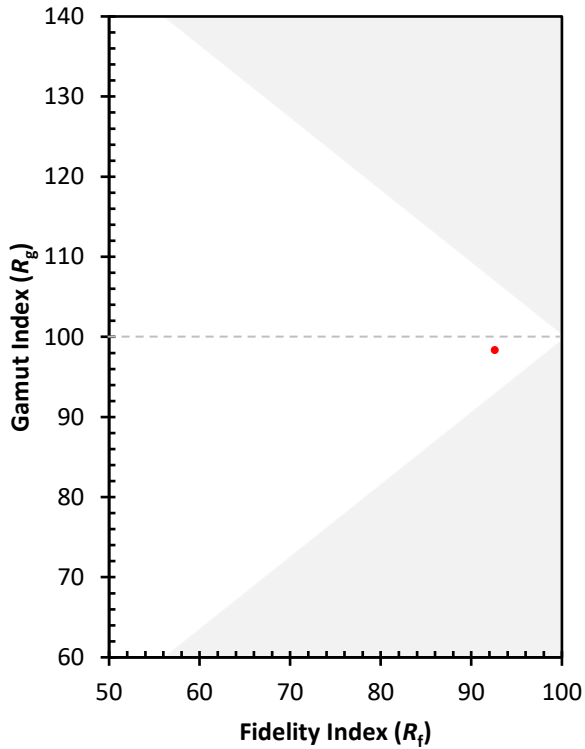
Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)