

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: STREETWORKS

Report Number: P1066003

Luminaire Tested: **NVN-SA2C-727-U-T2BC**

Issue Date: 08/07/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1066003  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 08/07/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: NVN-SA2C-727-U-T2BC  
Description: Navion AREA AND ROADWAY LUMINAIRE 1050mA 2xLight Square PACKAGE  
70CRI 2700K FIXTURE w/ TYPE II ANGLED BACKLIGHT CONTROL  
Light Source: (28) 2700K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 9201.3 lumens  
Efficiency: N/A  
Efficacy: 95.6 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 1' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B0 - U0 - G2

Input Watts (W): 96.2  
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



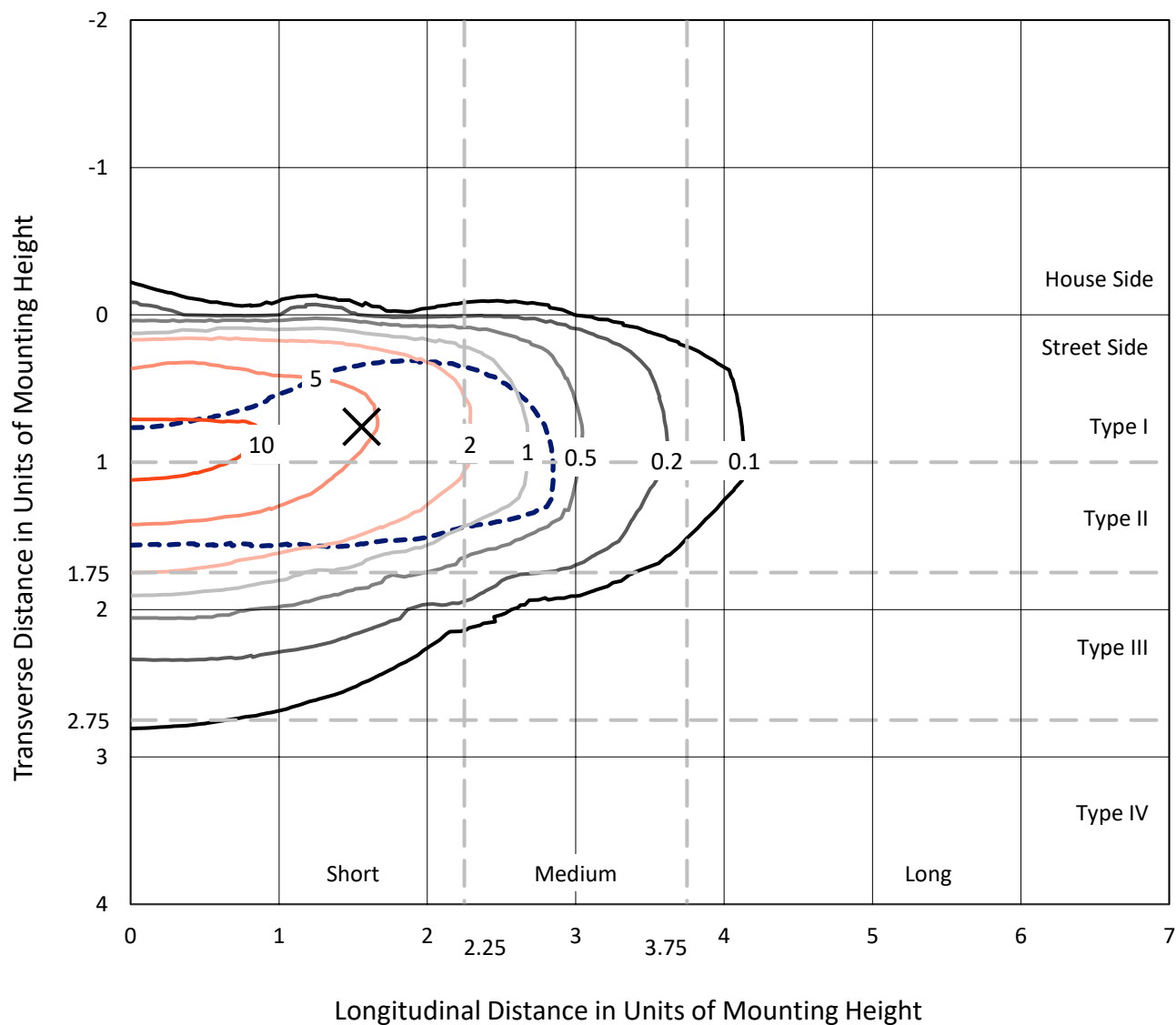
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## Iso-Footcandle Lines of Horizontal Illumination

× Max cd

--- 1/2 Max cd

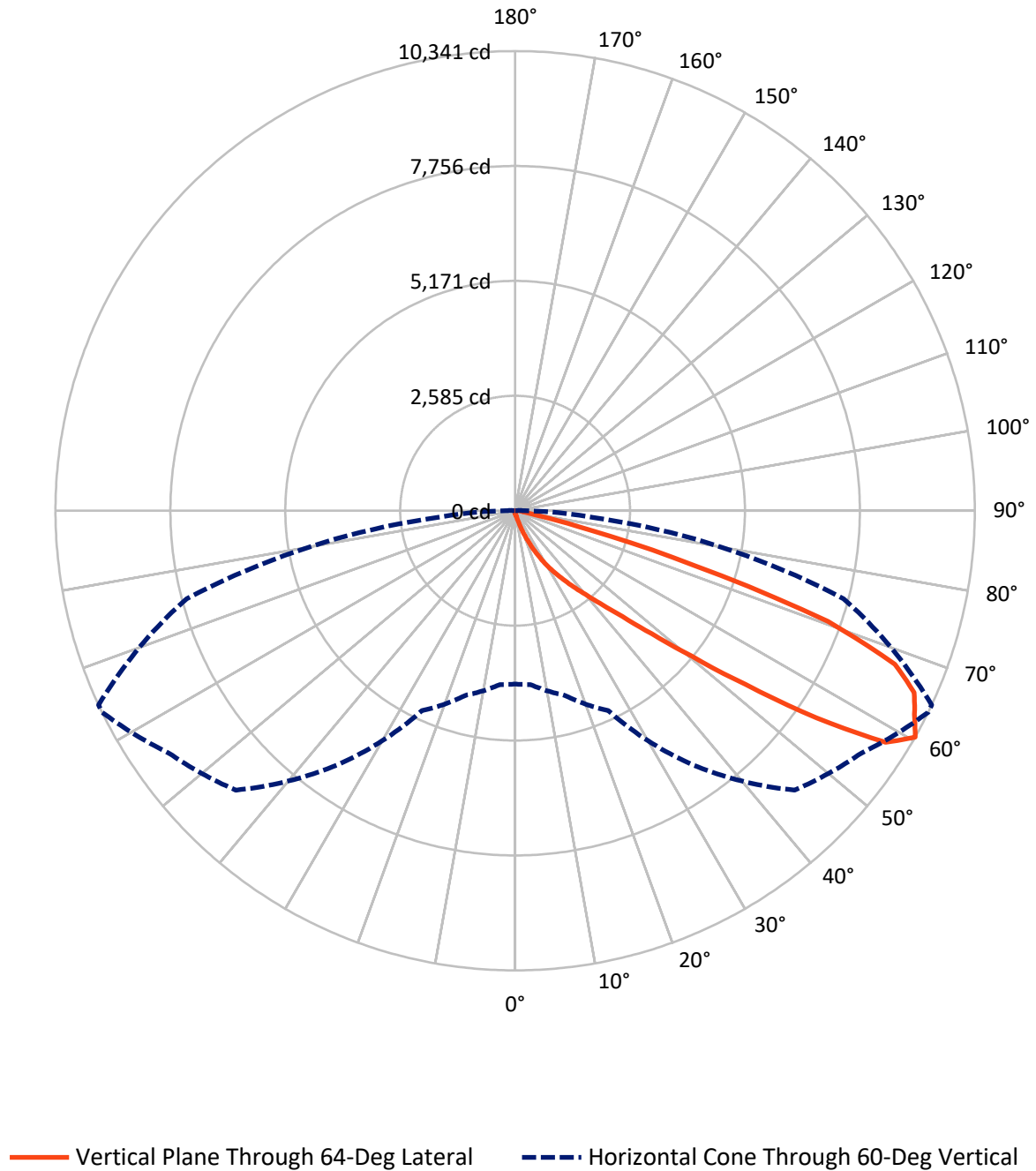


Based on 15 foot mounting height. Maximum calculated value = 13.2 fc  
 Type II - Short - N/A

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## Luminous Intensity Polar Plot



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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 37.3     | 0.0    | 37.3   |
|                    | % Fixture | 0.4      | 0.0    | 0.4    |
| <b>Street Side</b> | Lumens    | 9164.0   | 0.0    | 9164.0 |
|                    | % Fixture | 99.6     | 0.0    | 99.6   |
| <b>Total</b>       | Lumens    | 9201.3   | 0.0    | 9201.3 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 9.2    | 0.1       |
| 10°-20°   | 90.4   | 1.0       |
| 20°-30°   | 300.3  | 3.3       |
| 30°-40°   | 801.3  | 8.7       |
| 40°-50°   | 2036.7 | 22.1      |
| 50°-60°   | 2969.1 | 32.3      |
| 60°-70°   | 2293.3 | 24.9      |
| 70°-80°   | 629.8  | 6.8       |
| 80°-90°   | 71.1   | 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°    | 9201.3 | 100.0     |
| 0°-180°   | 9201.3 | 100.0     |



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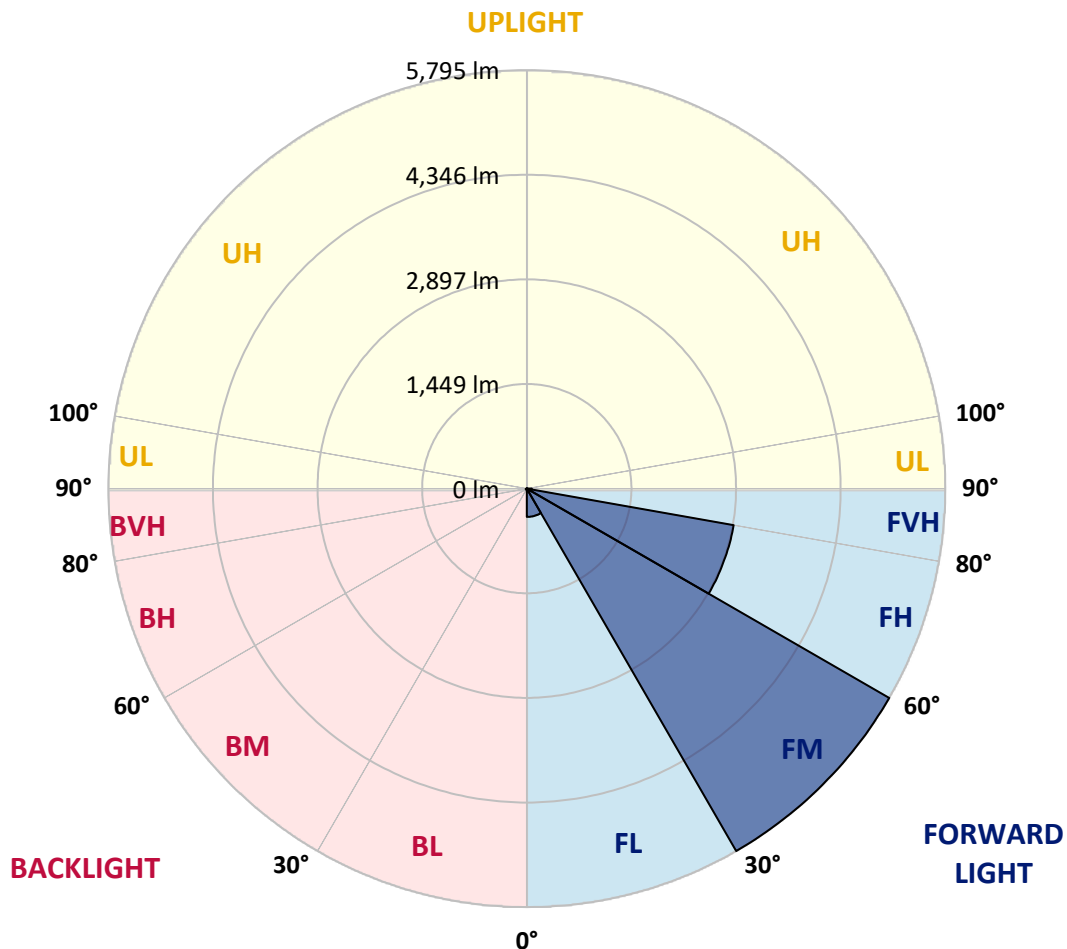
CATALOG NUMBER: NVN-SA2C-727-U-T2BC

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 391.5  | 4.3       |                         |      |         |
| FM   | (30°-60°)   | 5794.8 | 63.0      |                         |      |         |
| FH   | (60°-80°)   | 2908.3 | 31.6      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 69.4   | 0.8       |                         |      | G1/100  |
| BL   | (0°-30°)    | 8.4    | 0.1       | B0/110                  |      |         |
| BM   | (30°-60°)   | 12.4   | 0.1       | B0/220                  |      |         |
| BH   | (60°-80°)   | 14.9   | 0.2       | B0/110                  |      | G0/110  |
| BVH  | (80°-90°)   | 1.7    | 0.0       |                         |      | G0/10   |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B0-U0-G2**

Type II Short



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 64°     | 65°     | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|---------|---------|--------|--------|
| 0°    | 60.8   | 60.8   | 60.8   | 60.8   | 60.8   | 60.8   | 60.8   | 60.8    | 60.8    | 60.8   | 60.8   |
| 2.5°  | 81.0   | 81.0   | 81.0   | 78.5   | 76.0   | 76.0   | 73.5   | 70.9    | 70.9    | 65.9   | 63.3   |
| 5°    | 124.1  | 124.1  | 119.0  | 114.0  | 106.4  | 96.2   | 86.1   | 78.5    | 78.5    | 70.9   | 65.9   |
| 7.5°  | 243.1  | 250.7  | 228.0  | 200.1  | 162.1  | 136.8  | 108.9  | 91.2    | 88.6    | 76.0   | 65.9   |
| 10°   | 526.8  | 521.8  | 486.3  | 417.9  | 329.3  | 238.1  | 152.0  | 111.4   | 106.4   | 81.0   | 65.9   |
| 12.5° | 792.8  | 800.4  | 762.4  | 686.4  | 580.0  | 423.0  | 260.9  | 144.4   | 139.3   | 88.6   | 65.9   |
| 15°   | 1020.7 | 1020.7 | 995.4  | 957.4  | 840.9  | 676.3  | 420.4  | 215.3   | 197.6   | 96.2   | 63.3   |
| 17.5° | 1177.7 | 1175.2 | 1165.1 | 1154.9 | 1086.6 | 916.9  | 643.3  | 344.5   | 303.9   | 114.0  | 63.3   |
| 20°   | 1355.0 | 1347.4 | 1360.1 | 1339.8 | 1286.7 | 1152.4 | 878.9  | 511.6   | 473.6   | 144.4  | 63.3   |
| 22.5° | 1539.9 | 1547.5 | 1557.7 | 1537.4 | 1479.1 | 1362.6 | 1127.1 | 726.9   | 686.4   | 200.1  | 65.9   |
| 25°   | 1775.5 | 1770.4 | 1793.2 | 1775.5 | 1702.0 | 1565.3 | 1360.1 | 962.5   | 904.2   | 278.6  | 70.9   |
| 27.5° | 2064.2 | 2054.1 | 2069.3 | 2023.7 | 1927.4 | 1788.1 | 1567.8 | 1203.1  | 1134.7  | 400.2  | 81.0   |
| 30°   | 2446.7 | 2454.3 | 2385.9 | 2332.7 | 2195.9 | 2011.0 | 1798.3 | 1461.4  | 1390.5  | 544.5  | 91.2   |
| 32.5° | 3049.5 | 2996.3 | 2889.9 | 2674.6 | 2494.8 | 2259.2 | 2028.8 | 1686.8  | 1623.5  | 729.4  | 106.4  |
| 35°   | 3989.1 | 3999.3 | 3766.2 | 3234.4 | 2844.3 | 2570.8 | 2282.0 | 1935.0  | 1889.5  | 939.7  | 126.6  |
| 37.5° | 5133.9 | 5106.1 | 4900.9 | 4229.7 | 3355.9 | 2958.3 | 2570.8 | 2206.1  | 2140.2  | 1167.6 | 152.0  |
| 40°   | 6430.7 | 6314.2 | 6195.2 | 5739.3 | 4422.2 | 3444.6 | 2935.5 | 2520.1  | 2469.5  | 1431.0 | 192.5  |
| 42.5° | 7469.2 | 7438.8 | 7459.0 | 7269.1 | 6200.3 | 4272.8 | 3419.3 | 2905.1  | 2844.3  | 1757.8 | 263.4  |
| 45°   | 7980.8 | 7937.7 | 8059.3 | 8201.1 | 7927.6 | 6035.6 | 4199.4 | 3396.5  | 3315.4  | 2142.7 | 372.3  |
| 47.5° | 7844.0 | 7813.6 | 8074.5 | 8353.1 | 8717.8 | 8079.6 | 5473.3 | 4131.0  | 3991.7  | 2636.6 | 534.4  |
| 50°   | 7170.3 | 7172.8 | 7600.9 | 8120.1 | 8697.6 | 9115.5 | 7360.3 | 5136.5  | 4961.7  | 3292.6 | 787.7  |
| 52.5° | 6514.3 | 6534.6 | 6987.9 | 7745.2 | 8396.2 | 9237.1 | 9016.7 | 6491.5  | 6207.8  | 4065.1 | 1086.6 |
| 55°   | 5840.6 | 5850.7 | 6250.9 | 7317.2 | 8254.3 | 8874.9 | 9867.7 | 8236.6  | 7935.2  | 5027.6 | 1377.8 |
| 57.5° | 5192.2 | 5192.2 | 5341.6 | 6288.9 | 8099.8 | 8841.9 | 9766.4 | 9832.3  | 9586.6  | 6126.8 | 1593.1 |
| 60°   | 3900.5 | 3925.8 | 4298.1 | 4961.7 | 6985.4 | 8890.1 | 9508.1 | 10341.3 | 10341.3 | 7651.5 | 1757.8 |
| 62.5° | 1970.5 | 2008.5 | 2472.0 | 3117.9 | 4792.0 | 8226.5 | 9548.6 | 10085.5 | 10126.1 | 8996.4 | 2132.6 |
| 65°   | 924.5  | 967.5  | 1215.7 | 1671.6 | 2578.4 | 5789.9 | 9128.1 | 9867.7  | 9855.1  | 8740.6 | 2922.8 |
| 67.5° | 663.6  | 676.3  | 759.8  | 975.1  | 1388.0 | 2537.8 | 6967.7 | 9216.8  | 9221.9  | 7426.1 | 3361.0 |
| 70°   | 595.2  | 595.2  | 615.5  | 678.8  | 835.8  | 1134.7 | 3386.3 | 7464.1  | 7826.3  | 5734.2 | 3115.3 |
| 72.5° | 587.6  | 582.5  | 577.5  | 580.0  | 564.8  | 569.9  | 1162.5 | 4214.5  | 4731.2  | 4011.9 | 2484.7 |
| 75°   | 572.4  | 572.4  | 567.3  | 549.6  | 450.8  | 367.3  | 400.2  | 1704.6  | 1970.5  | 2679.7 | 1843.9 |
| 77.5° | 453.4  | 499.0  | 552.1  | 519.2  | 412.8  | 276.1  | 233.0  | 493.9   | 623.1   | 1643.8 | 1337.3 |
| 80°   | 210.2  | 212.8  | 210.2  | 220.4  | 263.4  | 197.6  | 172.2  | 240.6   | 243.1   | 911.8  | 828.2  |
| 82.5° | 152.0  | 154.5  | 146.9  | 131.7  | 116.5  | 106.4  | 141.8  | 177.3   | 190.0   | 417.9  | 309.0  |
| 85°   | 45.6   | 43.1   | 50.7   | 68.4   | 81.0   | 93.7   | 119.0  | 149.4   | 157.0   | 154.5  | 45.6   |
| 87.5° | 20.3   | 20.3   | 25.3   | 35.5   | 48.1   | 70.9   | 103.8  | 136.8   | 139.3   | 159.6  | 12.7   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0     | 0.0     | 0.0    | 0.0    |

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**CANDELA DISTRIBUTION (continued):**

|       | 90°   | 95°   | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|-------|-------|------|------|------|------|------|------|------|------|------|
| 0°    | 60.8  | 60.8  | 60.8 | 60.8 | 60.8 | 60.8 | 60.8 | 60.8 | 60.8 | 60.8 | 60.8 |
| 2.5°  | 63.3  | 60.8  | 58.3 | 55.7 | 53.2 | 50.7 | 48.1 | 48.1 | 50.7 | 50.7 | 50.7 |
| 5°    | 60.8  | 58.3  | 53.2 | 48.1 | 45.6 | 43.1 | 40.5 | 40.5 | 43.1 | 43.1 | 43.1 |
| 7.5°  | 60.8  | 55.7  | 50.7 | 45.6 | 40.5 | 38.0 | 35.5 | 35.5 | 35.5 | 38.0 | 38.0 |
| 10°   | 60.8  | 55.7  | 48.1 | 40.5 | 35.5 | 32.9 | 30.4 | 27.9 | 30.4 | 30.4 | 30.4 |
| 12.5° | 58.3  | 53.2  | 45.6 | 38.0 | 30.4 | 25.3 | 22.8 | 22.8 | 22.8 | 22.8 | 22.8 |
| 15°   | 55.7  | 50.7  | 43.1 | 32.9 | 25.3 | 20.3 | 15.2 | 15.2 | 15.2 | 17.7 | 17.7 |
| 17.5° | 53.2  | 48.1  | 38.0 | 25.3 | 17.7 | 12.7 | 10.1 | 10.1 | 10.1 | 12.7 | 12.7 |
| 20°   | 53.2  | 45.6  | 32.9 | 20.3 | 12.7 | 7.6  | 5.1  | 5.1  | 5.1  | 7.6  | 10.1 |
| 22.5° | 53.2  | 45.6  | 30.4 | 15.2 | 7.6  | 5.1  | 2.5  | 2.5  | 2.5  | 2.5  | 2.5  |
| 25°   | 53.2  | 43.1  | 27.9 | 12.7 | 5.1  | 2.5  | 0.0  | 0.0  | 2.5  | 5.1  | 7.6  |
| 27.5° | 53.2  | 40.5  | 22.8 | 7.6  | 5.1  | 2.5  | 0.0  | 2.5  | 5.1  | 5.1  | 5.1  |
| 30°   | 53.2  | 40.5  | 20.3 | 7.6  | 2.5  | 0.0  | 0.0  | 2.5  | 5.1  | 5.1  | 7.6  |
| 32.5° | 55.7  | 38.0  | 17.7 | 5.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 35°   | 58.3  | 35.5  | 15.2 | 5.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 37.5° | 63.3  | 35.5  | 10.1 | 2.5  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 40°   | 70.9  | 38.0  | 10.1 | 2.5  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 42.5° | 88.6  | 40.5  | 7.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 45°   | 124.1 | 50.7  | 7.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 47.5° | 182.4 | 76.0  | 7.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 50°   | 265.9 | 103.8 | 5.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 52.5° | 326.7 | 103.8 | 5.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 55°   | 324.2 | 65.9  | 2.5  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 57.5° | 248.2 | 45.6  | 2.5  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 60°   | 210.2 | 32.9  | 2.5  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 62.5° | 253.3 | 25.3  | 2.5  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 65°   | 450.8 | 22.8  | 2.5  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 67.5° | 724.4 | 22.8  | 2.5  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 70°   | 810.5 | 22.8  | 2.5  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 72.5° | 633.2 | 20.3  | 2.5  | 2.5  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 75°   | 347.0 | 17.7  | 2.5  | 2.5  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 77.5° | 174.8 | 12.7  | 5.1  | 2.5  | 2.5  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 80°   | 73.5  | 10.1  | 5.1  | 2.5  | 2.5  | 2.5  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 82.5° | 25.3  | 10.1  | 5.1  | 5.1  | 2.5  | 2.5  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 85°   | 12.7  | 7.6   | 7.6  | 5.1  | 5.1  | 2.5  | 2.5  | 0.0  | 0.0  | 0.0  | 0.0  |
| 87.5° | 7.6   | 7.6   | 7.6  | 5.1  | 5.1  | 2.5  | 2.5  | 0.0  | 0.0  | 0.0  | 2.5  |
| 90°   | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

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

Report Prepared for

Cooper Lighting Solutions

McGraw-Edison

Report Number: SP1-2407-184-3

Test Date: 10/09/2024

Luminaire Tested: GSS-SB1A-727-U-5WQ

Data in this report applies to families of products including GSS-SB1A-727-U-5WQ

### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-3  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 10/15/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: McGraw-Edison  
 Catalog Number: **GSS-SB1A-727-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 70 CRI  
 2700K CCT 26 LEDS

### Spectral Parameters

|                           |          |           |      |      |       |
|---------------------------|----------|-----------|------|------|-------|
| CCT (K):                  | 2672     | CRI (Ra): | 71.1 |      |       |
| CIE u':                   | 0.2638   | R1:       | 68.3 | R9:  | -27.8 |
| CIE v':                   | 0.5276   | R2:       | 79.8 | R10: | 54.4  |
| Duv:                      | -0.0002  | R3:       | 91.2 | R11: | 65.8  |
| CIE x:                    | 0.4619   | R4:       | 69.4 | R12: | 45.6  |
| CIE y:                    | 0.4106   | R5:       | 66.5 | R13: | 69.8  |
| CIE z:                    | 0.1275   | R6:       | 72.6 | R14: | 94.5  |
| Peak Wavelength (nm):     | 601      | R7:       | 77.0 | R15: | 60.1  |
| Dominant Wavelength (nm): | 584      | R8:       | 44.1 |      |       |
| Purity:                   | 61.88407 |           |      |      |       |
| Rf:                       | 67.9     |           |      |      |       |
| Rg:                       | 98.6     |           |      |      |       |



### 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 2700K 4-step quadrangle

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### Photopic Flux vs. Wavelength



### Photopic Lumens: NR

| $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|
| 360               | 0                             | NR                             | 490               | 52                            | NR                             | 620               | 888                           | NR                             | 750               | 27                            | NR                             | 880               | 1                             | NR                             |
| 365               | 0                             | NR                             | 495               | 87                            | NR                             | 625               | 834                           | NR                             | 755               | 23                            | NR                             | 885               | 1                             | NR                             |
| 370               | 0                             | NR                             | 500               | 135                           | NR                             | 630               | 776                           | NR                             | 760               | 20                            | NR                             | 890               | 1                             | NR                             |
| 375               | 0                             | NR                             | 505               | 196                           | NR                             | 635               | 712                           | NR                             | 765               | 17                            | NR                             | 895               | 0                             | NR                             |
| 380               | 0                             | NR                             | 510               | 258                           | NR                             | 640               | 648                           | NR                             | 770               | 15                            | NR                             | 900               | 0                             | NR                             |
| 385               | 1                             | NR                             | 515               | 317                           | NR                             | 645               | 583                           | NR                             | 775               | 12                            | NR                             | 905               | 0                             | NR                             |
| 390               | 2                             | NR                             | 520               | 368                           | NR                             | 650               | 523                           | NR                             | 780               | 11                            | NR                             | 910               | 0                             | NR                             |
| 395               | 4                             | NR                             | 525               | 408                           | NR                             | 655               | 465                           | NR                             | 785               | 9                             | NR                             | 915               | 0                             | NR                             |
| 400               | 6                             | NR                             | 530               | 443                           | NR                             | 660               | 410                           | NR                             | 790               | 8                             | NR                             | 920               | 0                             | NR                             |
| 405               | 11                            | NR                             | 535               | 473                           | NR                             | 665               | 360                           | NR                             | 795               | 7                             | NR                             | 925               | 0                             | NR                             |
| 410               | 23                            | NR                             | 540               | 498                           | NR                             | 670               | 313                           | NR                             | 800               | 6                             | NR                             | 930               | 0                             | NR                             |
| 415               | 51                            | NR                             | 545               | 530                           | NR                             | 675               | 272                           | NR                             | 805               | 5                             | NR                             | 935               | 0                             | NR                             |
| 420               | 111                           | NR                             | 550               | 563                           | NR                             | 680               | 236                           | NR                             | 810               | 4                             | NR                             | 940               | 0                             | NR                             |
| 425               | 214                           | NR                             | 555               | 605                           | NR                             | 685               | 203                           | NR                             | 815               | 4                             | NR                             | 945               | 0                             | NR                             |
| 430               | 339                           | NR                             | 560               | 651                           | NR                             | 690               | 175                           | NR                             | 820               | 3                             | NR                             | 950               | 0                             | NR                             |
| 435               | 467                           | NR                             | 565               | 705                           | NR                             | 695               | 150                           | NR                             | 825               | 3                             | NR                             | 955               | 0                             | NR                             |
| 440               | 535                           | NR                             | 570               | 765                           | NR                             | 700               | 128                           | NR                             | 830               | 3                             | NR                             | 960               | 0                             | NR                             |
| 445               | 372                           | NR                             | 575               | 824                           | NR                             | 705               | 110                           | NR                             | 835               | 2                             | NR                             | 965               | 0                             | NR                             |
| 450               | 160                           | NR                             | 580               | 882                           | NR                             | 710               | 94                            | NR                             | 840               | 2                             | NR                             | 970               | 0                             | NR                             |
| 455               | 89                            | NR                             | 585               | 930                           | NR                             | 715               | 80                            | NR                             | 845               | 2                             | NR                             | 975               | 0                             | NR                             |
| 460               | 53                            | NR                             | 590               | 968                           | NR                             | 720               | 69                            | NR                             | 850               | 1                             | NR                             | 980               | 0                             | NR                             |
| 465               | 31                            | NR                             | 595               | 991                           | NR                             | 725               | 59                            | NR                             | 855               | 1                             | NR                             | 985               | 0                             | NR                             |
| 470               | 23                            | NR                             | 600               | 999                           | NR                             | 730               | 50                            | NR                             | 860               | 1                             | NR                             | 990               | 0                             | NR                             |
| 475               | 21                            | NR                             | 605               | 992                           | NR                             | 735               | 43                            | NR                             | 865               | 1                             | NR                             | 995               | 0                             | NR                             |
| 480               | 23                            | NR                             | 610               | 969                           | NR                             | 740               | 36                            | NR                             | 870               | 1                             | NR                             | 1000              | 0                             | NR                             |
| 485               | 32                            | NR                             | 615               | 935                           | NR                             | 745               | 31                            | NR                             | 875               | 1                             | NR                             |                   |                               |                                |

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### Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.02

| $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360               | 0                                    | NR                             | 490               | 52                                   | NR                             | 620               | 888                                  | NR                             | 750               | 27                                   | NR                             | 880               | 1                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 87                                   | NR                             | 625               | 834                                  | NR                             | 755               | 23                                   | NR                             | 885               | 1                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 135                                  | NR                             | 630               | 776                                  | NR                             | 760               | 20                                   | NR                             | 890               | 1                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 196                                  | NR                             | 635               | 712                                  | NR                             | 765               | 17                                   | NR                             | 895               | 0                                    | NR                             |
| 380               | 0                                    | NR                             | 510               | 258                                  | NR                             | 640               | 648                                  | NR                             | 770               | 15                                   | NR                             | 900               | 0                                    | NR                             |
| 385               | 1                                    | NR                             | 515               | 317                                  | NR                             | 645               | 583                                  | NR                             | 775               | 12                                   | NR                             | 905               | 0                                    | NR                             |
| 390               | 2                                    | NR                             | 520               | 368                                  | NR                             | 650               | 523                                  | NR                             | 780               | 11                                   | NR                             | 910               | 0                                    | NR                             |
| 395               | 4                                    | NR                             | 525               | 408                                  | NR                             | 655               | 465                                  | NR                             | 785               | 9                                    | NR                             | 915               | 0                                    | NR                             |
| 400               | 6                                    | NR                             | 530               | 443                                  | NR                             | 660               | 410                                  | NR                             | 790               | 8                                    | NR                             | 920               | 0                                    | NR                             |
| 405               | 11                                   | NR                             | 535               | 473                                  | NR                             | 665               | 360                                  | NR                             | 795               | 7                                    | NR                             | 925               | 0                                    | NR                             |
| 410               | 23                                   | NR                             | 540               | 498                                  | NR                             | 670               | 313                                  | NR                             | 800               | 6                                    | NR                             | 930               | 0                                    | NR                             |
| 415               | 51                                   | NR                             | 545               | 530                                  | NR                             | 675               | 272                                  | NR                             | 805               | 5                                    | NR                             | 935               | 0                                    | NR                             |
| 420               | 111                                  | NR                             | 550               | 563                                  | NR                             | 680               | 236                                  | NR                             | 810               | 4                                    | NR                             | 940               | 0                                    | NR                             |
| 425               | 214                                  | NR                             | 555               | 605                                  | NR                             | 685               | 203                                  | NR                             | 815               | 4                                    | NR                             | 945               | 0                                    | NR                             |
| 430               | 339                                  | NR                             | 560               | 651                                  | NR                             | 690               | 175                                  | NR                             | 820               | 3                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 467                                  | NR                             | 565               | 705                                  | NR                             | 695               | 150                                  | NR                             | 825               | 3                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 535                                  | NR                             | 570               | 765                                  | NR                             | 700               | 128                                  | NR                             | 830               | 3                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 372                                  | NR                             | 575               | 824                                  | NR                             | 705               | 110                                  | NR                             | 835               | 2                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 160                                  | NR                             | 580               | 882                                  | NR                             | 710               | 94                                   | NR                             | 840               | 2                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 89                                   | NR                             | 585               | 930                                  | NR                             | 715               | 80                                   | NR                             | 845               | 2                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 53                                   | NR                             | 590               | 968                                  | NR                             | 720               | 69                                   | NR                             | 850               | 1                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 31                                   | NR                             | 595               | 991                                  | NR                             | 725               | 59                                   | NR                             | 855               | 1                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 23                                   | NR                             | 600               | 999                                  | NR                             | 730               | 50                                   | NR                             | 860               | 1                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 21                                   | NR                             | 605               | 992                                  | NR                             | 735               | 43                                   | NR                             | 865               | 1                                    | NR                             | 995               | 0                                    | NR                             |
| 480               | 23                                   | NR                             | 610               | 969                                  | NR                             | 740               | 36                                   | NR                             | 870               | 1                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 32                                   | NR                             | 615               | 935                                  | NR                             | 745               | 31                                   | NR                             | 875               | 1                                    | NR                             |                   |                                      |                                |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 1.71

| λ (nm) | Power W <sup>λ</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>λ</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>λ</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>λ</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>λ</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 52                       | NR            | 620    | 888                      | NR            | 750    | 27                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 87                       | NR            | 625    | 834                      | NR            | 755    | 23                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 135                      | NR            | 630    | 776                      | NR            | 760    | 20                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 196                      | NR            | 635    | 712                      | NR            | 765    | 17                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 258                      | NR            | 640    | 648                      | NR            | 770    | 15                       | NR            | 900    | 0                        | NR            |
| 385    | 1                        | NR            | 515    | 317                      | NR            | 645    | 583                      | NR            | 775    | 12                       | NR            | 905    | 0                        | NR            |
| 390    | 2                        | NR            | 520    | 368                      | NR            | 650    | 523                      | NR            | 780    | 11                       | NR            | 910    | 0                        | NR            |
| 395    | 4                        | NR            | 525    | 408                      | NR            | 655    | 465                      | NR            | 785    | 9                        | NR            | 915    | 0                        | NR            |
| 400    | 6                        | NR            | 530    | 443                      | NR            | 660    | 410                      | NR            | 790    | 8                        | NR            | 920    | 0                        | NR            |
| 405    | 11                       | NR            | 535    | 473                      | NR            | 665    | 360                      | NR            | 795    | 7                        | NR            | 925    | 0                        | NR            |
| 410    | 23                       | NR            | 540    | 498                      | NR            | 670    | 313                      | NR            | 800    | 6                        | NR            | 930    | 0                        | NR            |
| 415    | 51                       | NR            | 545    | 530                      | NR            | 675    | 272                      | NR            | 805    | 5                        | NR            | 935    | 0                        | NR            |
| 420    | 111                      | NR            | 550    | 563                      | NR            | 680    | 236                      | NR            | 810    | 4                        | NR            | 940    | 0                        | NR            |
| 425    | 214                      | NR            | 555    | 605                      | NR            | 685    | 203                      | NR            | 815    | 4                        | NR            | 945    | 0                        | NR            |
| 430    | 339                      | NR            | 560    | 651                      | NR            | 690    | 175                      | NR            | 820    | 3                        | NR            | 950    | 0                        | NR            |
| 435    | 467                      | NR            | 565    | 705                      | NR            | 695    | 150                      | NR            | 825    | 3                        | NR            | 955    | 0                        | NR            |
| 440    | 535                      | NR            | 570    | 765                      | NR            | 700    | 128                      | NR            | 830    | 3                        | NR            | 960    | 0                        | NR            |
| 445    | 372                      | NR            | 575    | 824                      | NR            | 705    | 110                      | NR            | 835    | 2                        | NR            | 965    | 0                        | NR            |
| 450    | 160                      | NR            | 580    | 882                      | NR            | 710    | 94                       | NR            | 840    | 2                        | NR            | 970    | 0                        | NR            |
| 455    | 89                       | NR            | 585    | 930                      | NR            | 715    | 80                       | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 53                       | NR            | 590    | 968                      | NR            | 720    | 69                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 31                       | NR            | 595    | 991                      | NR            | 725    | 59                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 23                       | NR            | 600    | 999                      | NR            | 730    | 50                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 21                       | NR            | 605    | 992                      | NR            | 735    | 43                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 23                       | NR            | 610    | 969                      | NR            | 740    | 36                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 32                       | NR            | 615    | 935                      | NR            | 745    | 31                       | NR            | 875    | 1                        | NR            |        |                          |               |

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TM-30-18

### Summary

$R_f = 67.9$   
 $R_g = 98.6$   
 $\text{CIE } R_a = 71.1$   
 $R_g = -27.8$

### Spectral Power Distribution Comparison



### Color Vector Graphics





Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)