

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: P1066207

Luminaire Tested: **NVN-SA5C-740-U-T4BC**

Issue Date: 08/07/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1066207  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 08/07/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: NVN-SA5C-740-U-T4BC  
Description: Navion AREA AND ROADWAY LUMINAIRE 1050mA 5xLight Square PACKAGE  
70CRI 4000K FIXTURE w/ TYPE IV ANGLED BACKLIGHT CONTROL  
Light Source: (70) 4000K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 27558.8 lumens  
Efficiency: N/A  
Efficacy: 116.8 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 1.5' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B0 - U0 - G5

Input Watts (W): 236  
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



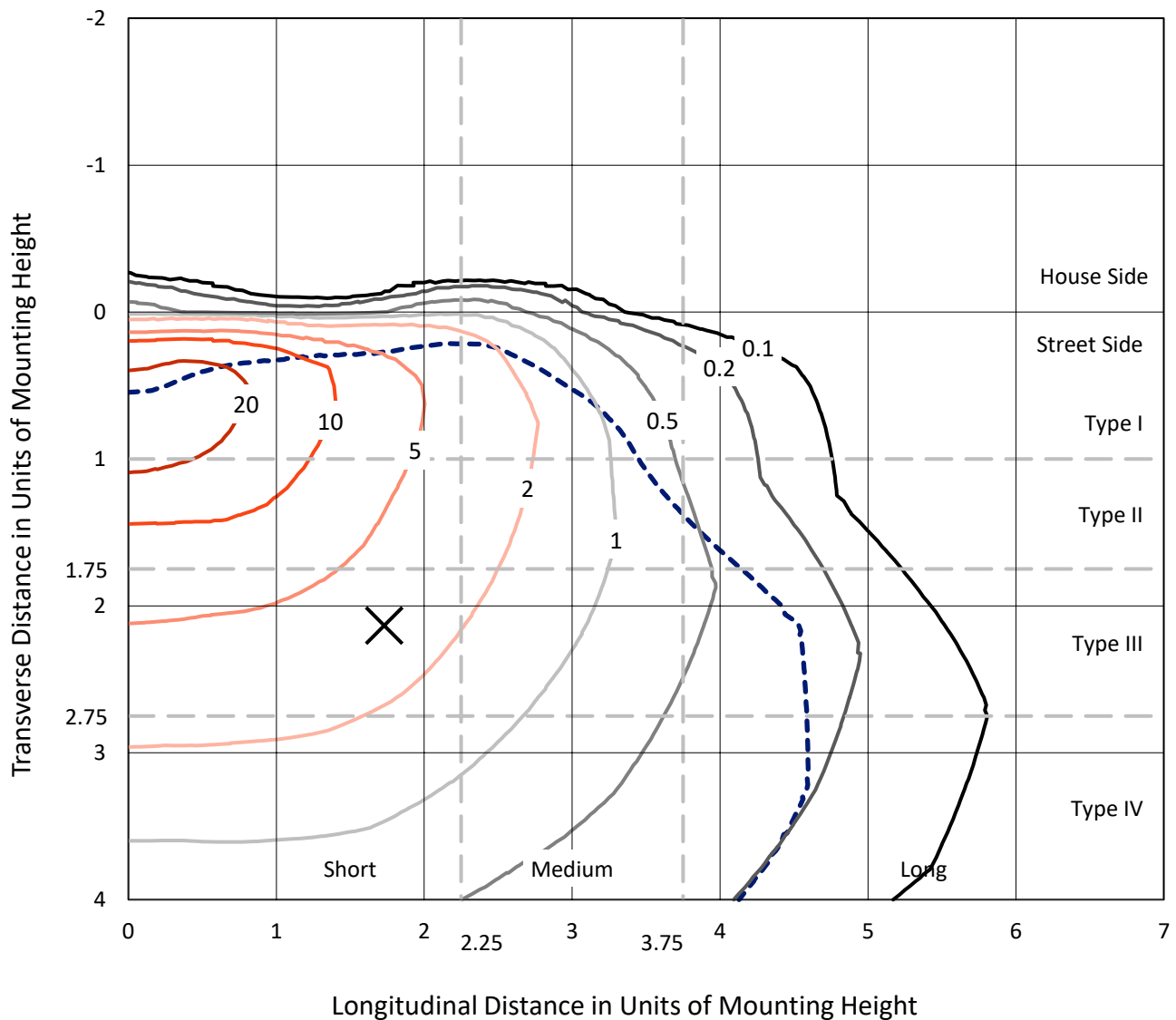
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## Iso-Footcandle Lines of Horizontal Illumination

× Max cd

--- 1/2 Max cd

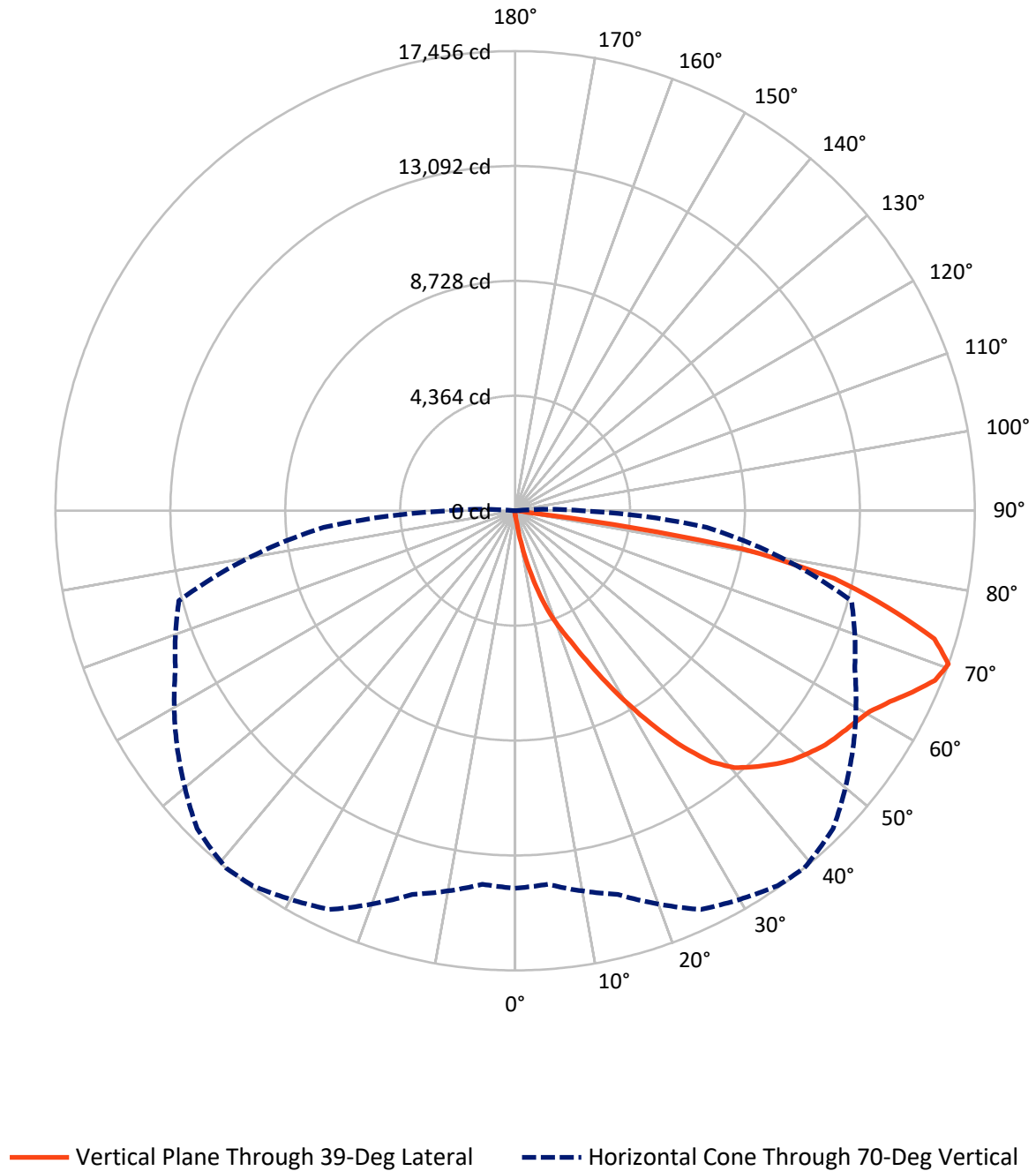


Based on 15 foot mounting height. Maximum calculated value = 30 fc  
 Type IV - Short - N/A

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## Luminous Intensity Polar Plot



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CATALOG NUMBER: NVN-SA5C-740-U-T4BC

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 84.9     | 0.0    | 84.9    |
|                    | % Fixture | 0.3      | 0.0    | 0.3     |
| <b>Street Side</b> | Lumens    | 27474.0  | 0.0    | 27474.0 |
|                    | % Fixture | 99.7     | 0.0    | 99.7    |
| <b>Total</b>       | Lumens    | 27558.8  | 0.0    | 27558.8 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 29.0    | 0.1       |
| 10°-20°   | 338.8   | 1.2       |
| 20°-30°   | 1149.7  | 4.2       |
| 30°-40°   | 2702.0  | 9.8       |
| 40°-50°   | 4387.6  | 15.9      |
| 50°-60°   | 5559.9  | 20.2      |
| 60°-70°   | 7062.6  | 25.6      |
| 70°-80°   | 5738.3  | 20.8      |
| 80°-90°   | 590.9   | 2.1       |
| 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°    | 27558.8 | 100.0     |
| 0°-180°   | 27558.8 | 100.0     |



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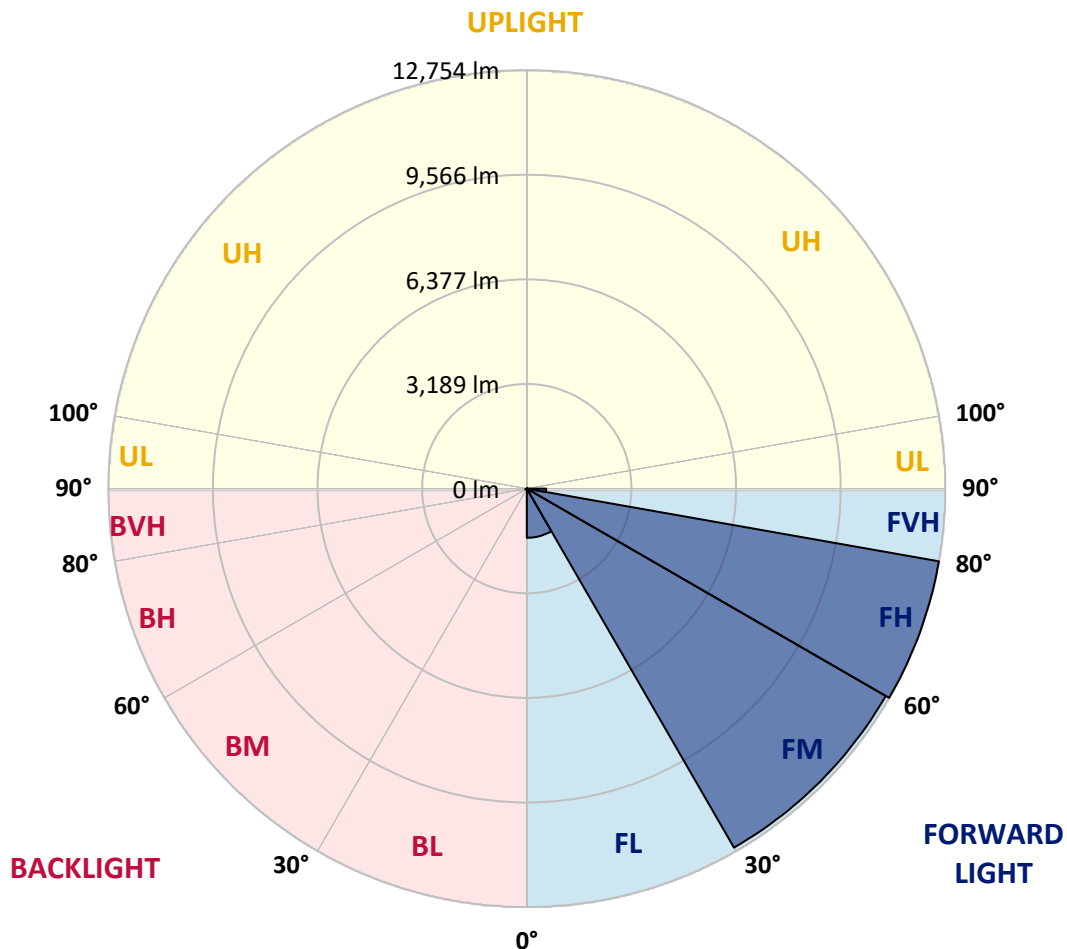
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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |        |
|------|-------------|---------|-----------|-------------------------|------|--------|
|      |             |         |           | B                       | U    | G      |
| FL   | (0°-30°)    | 1499.1  | 5.4       |                         |      |        |
| FM   | (30°-60°)   | 12633.2 | 45.8      |                         |      |        |
| FH   | (60°-80°)   | 12754.3 | 46.3      |                         |      | G5     |
| FVH  | (80°-90°)   | 587.3   | 2.1       |                         |      | G4/750 |
| BL   | (0°-30°)    | 18.4    | 0.1       | B0/110                  |      |        |
| BM   | (30°-60°)   | 16.3    | 0.1       | B0/220                  |      |        |
| BH   | (60°-80°)   | 46.7    | 0.2       | B0/110                  |      | G0/110 |
| BVH  | (80°-90°)   | 3.5     | 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-G5**

Type IV Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 39°     | 45°     | 55°     | 65°     | 75°     | 85°    |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| 0°    | 149.6   | 149.6   | 149.6   | 149.6   | 149.6   | 149.6   | 149.6   | 149.6   | 149.6   | 149.6   | 149.6  |
| 2.5°  | 194.5   | 194.5   | 194.5   | 187.1   | 187.1   | 179.6   | 179.6   | 172.1   | 164.6   | 164.6   | 157.1  |
| 5°    | 366.6   | 374.1   | 351.7   | 306.8   | 276.8   | 261.9   | 246.9   | 209.5   | 187.1   | 172.1   | 157.1  |
| 7.5°  | 1002.6  | 972.7   | 927.8   | 778.1   | 598.6   | 508.8   | 434.0   | 306.8   | 224.5   | 179.6   | 157.1  |
| 10°   | 2110.0  | 2027.7  | 1900.5  | 1698.4  | 1346.8  | 1204.6  | 935.3   | 561.2   | 314.2   | 202.0   | 157.1  |
| 12.5° | 3097.6  | 3112.6  | 2955.4  | 2760.9  | 2334.4  | 2095.0  | 1728.4  | 1055.0  | 493.8   | 239.4   | 157.1  |
| 15°   | 3845.8  | 3830.9  | 3771.0  | 3613.9  | 3232.3  | 3000.3  | 2671.1  | 1773.3  | 830.5   | 299.3   | 164.6  |
| 17.5° | 4436.9  | 4377.0  | 4354.6  | 4287.3  | 4040.4  | 3913.2  | 3554.0  | 2611.3  | 1316.9  | 404.0   | 172.1  |
| 20°   | 5028.0  | 5013.0  | 4990.6  | 4915.8  | 4751.2  | 4661.4  | 4384.5  | 3456.7  | 1960.3  | 576.1   | 187.1  |
| 22.5° | 5888.4  | 5806.1  | 5821.1  | 5656.5  | 5521.8  | 5364.7  | 5140.2  | 4354.6  | 2701.1  | 823.0   | 209.5  |
| 25°   | 6898.5  | 6891.0  | 6771.3  | 6696.5  | 6472.0  | 6300.0  | 6000.7  | 5222.5  | 3524.1  | 1189.7  | 231.9  |
| 27.5° | 8088.2  | 8005.9  | 7953.5  | 7826.3  | 7594.4  | 7399.8  | 6988.3  | 6083.0  | 4414.5  | 1601.2  | 261.9  |
| 30°   | 9330.2  | 9330.2  | 9233.0  | 9038.4  | 8814.0  | 8574.5  | 8155.5  | 6988.3  | 5297.4  | 2124.9  | 299.3  |
| 32.5° | 10781.8 | 10811.7 | 10572.3 | 10280.5 | 9988.6  | 9824.0  | 9277.8  | 8013.4  | 6142.8  | 2723.5  | 344.2  |
| 35°   | 12188.4 | 12151.0 | 11754.4 | 11432.7 | 11215.7 | 11036.1 | 10572.3 | 9135.7  | 7100.5  | 3419.3  | 404.0  |
| 37.5° | 13535.2 | 13437.9 | 12779.5 | 12323.1 | 12225.8 | 12106.1 | 11642.2 | 10258.0 | 8050.8  | 4190.0  | 478.9  |
| 40°   | 14500.4 | 14350.7 | 13669.9 | 13041.4 | 12899.2 | 12831.9 | 12472.7 | 11275.6 | 9053.4  | 5050.4  | 576.1  |
| 42.5° | 14919.4 | 14747.3 | 14275.9 | 13767.1 | 13452.9 | 13295.8 | 12981.5 | 12106.1 | 10056.0 | 6008.2  | 718.3  |
| 45°   | 15001.7 | 14867.0 | 14530.3 | 14410.6 | 13984.1 | 13744.7 | 13318.2 | 12697.2 | 10991.3 | 6958.4  | 912.8  |
| 47.5° | 14702.4 | 14642.5 | 14440.5 | 14694.9 | 14477.9 | 14148.7 | 13632.4 | 13138.6 | 11821.8 | 8110.6  | 1182.2 |
| 50°   | 13969.1 | 13924.3 | 14021.5 | 14687.4 | 14837.1 | 14463.0 | 13976.6 | 13482.8 | 12540.1 | 9300.3  | 1563.8 |
| 52.5° | 12981.5 | 12974.0 | 13430.4 | 14492.9 | 14994.2 | 14762.3 | 14313.3 | 13827.0 | 13108.7 | 10452.5 | 2102.5 |
| 55°   | 11904.1 | 12031.3 | 12831.9 | 14313.3 | 15084.0 | 14979.2 | 14642.5 | 14133.8 | 13617.5 | 11522.5 | 2970.4 |
| 57.5° | 11814.3 | 11761.9 | 12532.6 | 14238.5 | 15136.4 | 15196.2 | 14971.8 | 14455.5 | 14051.4 | 12397.9 | 4130.1 |
| 60°   | 12712.1 | 12592.4 | 12884.2 | 14395.6 | 15368.3 | 15473.1 | 15301.0 | 14702.4 | 14485.4 | 13086.3 | 5656.5 |
| 62.5° | 13752.2 | 13639.9 | 13789.6 | 15001.7 | 15824.7 | 15974.4 | 15757.4 | 14956.8 | 14837.1 | 13565.1 | 7295.1 |
| 65°   | 14582.7 | 14492.9 | 14777.2 | 15907.0 | 16460.7 | 16587.9 | 16438.2 | 15428.2 | 14994.2 | 13954.2 | 8626.9 |
| 67.5° | 14717.4 | 14605.1 | 15196.2 | 16513.1 | 17104.2 | 17193.9 | 17074.2 | 15884.6 | 14941.8 | 13984.1 | 8933.7 |
| 70°   | 14335.8 | 14238.5 | 15084.0 | 16707.6 | 17381.0 | 17455.8 | 17074.2 | 15667.6 | 14231.0 | 13220.9 | 7302.6 |
| 72.5° | 13161.1 | 13235.9 | 14328.3 | 16236.2 | 16999.4 | 16655.2 | 15847.2 | 14575.2 | 13310.7 | 11208.2 | 5125.3 |
| 75°   | 11335.4 | 11417.7 | 12869.3 | 14941.8 | 15001.7 | 14582.7 | 14148.7 | 13408.0 | 11911.6 | 7384.9  | 3554.0 |
| 77.5° | 8058.3  | 7766.5  | 9936.3  | 12338.0 | 12121.1 | 12390.4 | 12427.8 | 11155.9 | 9973.7  | 3845.8  | 2379.3 |
| 80°   | 793.1   | 673.4   | 1249.5  | 3539.0  | 7818.8  | 8739.1  | 9098.3  | 8597.0  | 7354.9  | 1720.9  | 1249.5 |
| 82.5° | 172.1   | 172.1   | 187.1   | 202.0   | 314.2   | 471.4   | 2162.3  | 5297.4  | 4751.2  | 875.4   | 404.0  |
| 85°   | 97.3    | 97.3    | 119.7   | 142.2   | 187.1   | 209.5   | 246.9   | 329.2   | 1279.4  | 314.2   | 74.8   |
| 87.5° | 74.8    | 82.3    | 97.3    | 119.7   | 157.1   | 172.1   | 209.5   | 261.9   | 321.7   | 291.8   | 22.4   |
| 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°    | 149.6  | 149.6 | 149.6 | 149.6 | 149.6 | 149.6 | 149.6 | 149.6 | 149.6 | 149.6 | 149.6 |
| 2.5°  | 157.1  | 149.6 | 142.2 | 134.7 | 127.2 | 127.2 | 119.7 | 119.7 | 119.7 | 119.7 | 119.7 |
| 5°    | 149.6  | 142.2 | 134.7 | 119.7 | 112.2 | 104.7 | 97.3  | 97.3  | 97.3  | 97.3  | 97.3  |
| 7.5°  | 149.6  | 142.2 | 127.2 | 112.2 | 97.3  | 89.8  | 82.3  | 74.8  | 74.8  | 82.3  | 82.3  |
| 10°   | 149.6  | 134.7 | 112.2 | 97.3  | 82.3  | 74.8  | 67.3  | 59.9  | 59.9  | 59.9  | 59.9  |
| 12.5° | 142.2  | 127.2 | 104.7 | 89.8  | 74.8  | 59.9  | 44.9  | 37.4  | 37.4  | 37.4  | 37.4  |
| 15°   | 134.7  | 119.7 | 97.3  | 74.8  | 52.4  | 37.4  | 29.9  | 22.4  | 22.4  | 22.4  | 22.4  |
| 17.5° | 134.7  | 112.2 | 89.8  | 67.3  | 37.4  | 22.4  | 15.0  | 7.5   | 7.5   | 7.5   | 15.0  |
| 20°   | 134.7  | 112.2 | 82.3  | 52.4  | 22.4  | 15.0  | 15.0  | 7.5   | 0.0   | 7.5   | 7.5   |
| 22.5° | 134.7  | 104.7 | 67.3  | 37.4  | 22.4  | 15.0  | 7.5   | 0.0   | 0.0   | 0.0   | 0.0   |
| 25°   | 142.2  | 104.7 | 59.9  | 29.9  | 15.0  | 7.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 27.5° | 142.2  | 97.3  | 52.4  | 22.4  | 7.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 30°   | 149.6  | 97.3  | 44.9  | 15.0  | 7.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 32.5° | 149.6  | 89.8  | 29.9  | 15.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 35°   | 149.6  | 82.3  | 22.4  | 7.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 37.5° | 149.6  | 74.8  | 22.4  | 7.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 40°   | 157.1  | 67.3  | 15.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 42.5° | 164.6  | 59.9  | 15.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 45°   | 172.1  | 52.4  | 7.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 47.5° | 194.5  | 52.4  | 7.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 50°   | 224.5  | 52.4  | 7.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 52.5° | 269.4  | 52.4  | 7.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 55°   | 351.7  | 44.9  | 7.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 57.5° | 508.8  | 44.9  | 7.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 60°   | 853.0  | 44.9  | 7.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 62.5° | 1496.4 | 44.9  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 65°   | 2529.0 | 44.9  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 67.5° | 3299.6 | 52.4  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 70°   | 2506.5 | 44.9  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 72.5° | 1197.1 | 29.9  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 75°   | 531.2  | 29.9  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 77.5° | 231.9  | 22.4  | 7.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 80°   | 89.8   | 15.0  | 7.5   | 7.5   | 7.5   | 7.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 82.5° | 37.4   | 15.0  | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   | 0.0   | 0.0   | 0.0   | 0.0   |
| 85°   | 22.4   | 15.0  | 15.0  | 15.0  | 7.5   | 7.5   | 7.5   | 0.0   | 0.0   | 0.0   | 0.0   |
| 87.5° | 15.0   | 15.0  | 15.0  | 15.0  | 15.0  | 7.5   | 7.5   | 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   |

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

Report Prepared for

Cooper Lighting Solutions

McGraw-Edison

Report Number: SP1-2407-184-1

Test Date: 10/09/2024

Luminaire Tested: GSS-SB1A-740-U-5WQ

Data in this report applies to families of products including GSS-SB1A-740-U-5WQ

### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-1  
 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-740-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 70 CRI  
 4000K CCT 26 LEDS

### Spectral Parameters

|                           |          |           |      |      |       |
|---------------------------|----------|-----------|------|------|-------|
| CCT (K):                  | 3949     | CRI (Ra): | 70.7 |      |       |
| CIE u':                   | 0.2248   | R1:       | 68.0 | R9:  | -36.7 |
| CIE v':                   | 0.5053   | R2:       | 76.0 | R10: | 45.1  |
| Duv:                      | 0.0022   | R3:       | 84.3 | R11: | 70.7  |
| CIE x:                    | 0.3844   | R4:       | 72.0 | R12: | 47.1  |
| CIE y:                    | 0.3840   | R5:       | 68.6 | R13: | 68.5  |
| CIE z:                    | 0.2316   | R6:       | 68.3 | R14: | 91.1  |
| Peak Wavelength (nm):     | 440      | R7:       | 77.9 | R15: | 58.7  |
| Dominant Wavelength (nm): | 578      | R8:       | 50.3 |      |       |
| Purity:                   | 30.60026 |           |      |      |       |
| Rf:                       | 71.8     |           |      |      |       |
| Rg:                       | 96.5     |           |      |      |       |



### Test Conditions

Stabilization Time: 34M  
 Operation Time: 1H 34M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-1

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 6/18/2024        | 12/18/2024           |
| Power Meter                    | INXT2011004           | 2/8/2024         | 2/8/2025             |
| AC Power Source                | IN0063                | 10/24/2023       | 10/24/2024           |
| DC Power Source                | IN0208                | 10/24/2023       | 10/24/2024           |
| Sphere Thermometer             | IN0085                | 10/24/2023       | 10/24/2024           |
| Room Thermometer               | IN0046                | 10/24/2023       | 10/24/2024           |



REPORT NUMBER: SP1-2407-184-1

### 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               | 139                           | NR                             | 620               | 607                           | NR                             | 750               | 15                            | NR                             | 880               | 0                             | NR                             |
| 365               | 0                             | NR                             | 495               | 198                           | NR                             | 625               | 554                           | NR                             | 755               | 13                            | NR                             | 885               | 0                             | NR                             |
| 370               | 0                             | NR                             | 500               | 267                           | NR                             | 630               | 504                           | NR                             | 760               | 11                            | NR                             | 890               | 0                             | NR                             |
| 375               | 0                             | NR                             | 505               | 343                           | NR                             | 635               | 452                           | NR                             | 765               | 10                            | NR                             | 895               | 0                             | NR                             |
| 380               | 0                             | NR                             | 510               | 410                           | NR                             | 640               | 403                           | NR                             | 770               | 8                             | NR                             | 900               | 0                             | NR                             |
| 385               | 2                             | NR                             | 515               | 470                           | NR                             | 645               | 357                           | NR                             | 775               | 7                             | NR                             | 905               | 0                             | NR                             |
| 390               | 4                             | NR                             | 520               | 516                           | NR                             | 650               | 314                           | NR                             | 780               | 6                             | NR                             | 910               | 0                             | NR                             |
| 395               | 7                             | NR                             | 525               | 550                           | NR                             | 655               | 275                           | NR                             | 785               | 5                             | NR                             | 915               | 0                             | NR                             |
| 400               | 10                            | NR                             | 530               | 578                           | NR                             | 660               | 240                           | NR                             | 790               | 5                             | NR                             | 920               | 0                             | NR                             |
| 405               | 17                            | NR                             | 535               | 601                           | NR                             | 665               | 208                           | NR                             | 795               | 4                             | NR                             | 925               | 0                             | NR                             |
| 410               | 35                            | NR                             | 540               | 620                           | NR                             | 670               | 179                           | NR                             | 800               | 4                             | NR                             | 930               | 0                             | NR                             |
| 415               | 70                            | NR                             | 545               | 641                           | NR                             | 675               | 155                           | NR                             | 805               | 3                             | NR                             | 935               | 0                             | NR                             |
| 420               | 147                           | NR                             | 550               | 664                           | NR                             | 680               | 133                           | NR                             | 810               | 3                             | NR                             | 940               | 0                             | NR                             |
| 425               | 285                           | NR                             | 555               | 689                           | NR                             | 685               | 114                           | NR                             | 815               | 2                             | NR                             | 945               | 0                             | NR                             |
| 430               | 487                           | NR                             | 560               | 715                           | NR                             | 690               | 98                            | NR                             | 820               | 2                             | NR                             | 950               | 0                             | NR                             |
| 435               | 787                           | NR                             | 565               | 743                           | NR                             | 695               | 84                            | NR                             | 825               | 2                             | NR                             | 955               | 0                             | NR                             |
| 440               | 1000                          | NR                             | 570               | 771                           | NR                             | 700               | 72                            | NR                             | 830               | 2                             | NR                             | 960               | 0                             | NR                             |
| 445               | 783                           | NR                             | 575               | 794                           | NR                             | 705               | 61                            | NR                             | 835               | 1                             | NR                             | 965               | 0                             | NR                             |
| 450               | 417                           | NR                             | 580               | 811                           | NR                             | 710               | 52                            | NR                             | 840               | 1                             | NR                             | 970               | 0                             | NR                             |
| 455               | 261                           | NR                             | 585               | 817                           | NR                             | 715               | 45                            | NR                             | 845               | 1                             | NR                             | 975               | 0                             | NR                             |
| 460               | 167                           | NR                             | 590               | 815                           | NR                             | 720               | 39                            | NR                             | 850               | 1                             | NR                             | 980               | 0                             | NR                             |
| 465               | 104                           | NR                             | 595               | 801                           | NR                             | 725               | 33                            | NR                             | 855               | 1                             | NR                             | 985               | 0                             | NR                             |
| 470               | 79                            | NR                             | 600               | 777                           | NR                             | 730               | 28                            | NR                             | 860               | 1                             | NR                             | 990               | 0                             | NR                             |
| 475               | 73                            | NR                             | 605               | 744                           | NR                             | 735               | 24                            | NR                             | 865               | 1                             | NR                             | 995               | 0                             | NR                             |
| 480               | 76                            | NR                             | 610               | 704                           | NR                             | 740               | 21                            | NR                             | 870               | 1                             | NR                             | 1000              | 0                             | NR                             |
| 485               | 98                            | NR                             | 615               | 657                           | NR                             | 745               | 18                            | NR                             | 875               | 1                             | NR                             |                   |                               |                                |

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### Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.47

| λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(Φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 139                         | NR               | 620       | 607                         | NR               | 750       | 15                          | NR               | 880       | 0                           | NR               |
| 365       | 0                           | NR               | 495       | 198                         | NR               | 625       | 554                         | NR               | 755       | 13                          | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 267                         | NR               | 630       | 504                         | NR               | 760       | 11                          | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 343                         | NR               | 635       | 452                         | NR               | 765       | 10                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 410                         | NR               | 640       | 403                         | NR               | 770       | 8                           | NR               | 900       | 0                           | NR               |
| 385       | 2                           | NR               | 515       | 470                         | NR               | 645       | 357                         | NR               | 775       | 7                           | NR               | 905       | 0                           | NR               |
| 390       | 4                           | NR               | 520       | 516                         | NR               | 650       | 314                         | NR               | 780       | 6                           | NR               | 910       | 0                           | NR               |
| 395       | 7                           | NR               | 525       | 550                         | NR               | 655       | 275                         | NR               | 785       | 5                           | NR               | 915       | 0                           | NR               |
| 400       | 10                          | NR               | 530       | 578                         | NR               | 660       | 240                         | NR               | 790       | 5                           | NR               | 920       | 0                           | NR               |
| 405       | 17                          | NR               | 535       | 601                         | NR               | 665       | 208                         | NR               | 795       | 4                           | NR               | 925       | 0                           | NR               |
| 410       | 35                          | NR               | 540       | 620                         | NR               | 670       | 179                         | NR               | 800       | 4                           | NR               | 930       | 0                           | NR               |
| 415       | 70                          | NR               | 545       | 641                         | NR               | 675       | 155                         | NR               | 805       | 3                           | NR               | 935       | 0                           | NR               |
| 420       | 147                         | NR               | 550       | 664                         | NR               | 680       | 133                         | NR               | 810       | 3                           | NR               | 940       | 0                           | NR               |
| 425       | 285                         | NR               | 555       | 689                         | NR               | 685       | 114                         | NR               | 815       | 2                           | NR               | 945       | 0                           | NR               |
| 430       | 487                         | NR               | 560       | 715                         | NR               | 690       | 98                          | NR               | 820       | 2                           | NR               | 950       | 0                           | NR               |
| 435       | 787                         | NR               | 565       | 743                         | NR               | 695       | 84                          | NR               | 825       | 2                           | NR               | 955       | 0                           | NR               |
| 440       | 1000                        | NR               | 570       | 771                         | NR               | 700       | 72                          | NR               | 830       | 2                           | NR               | 960       | 0                           | NR               |
| 445       | 783                         | NR               | 575       | 794                         | NR               | 705       | 61                          | NR               | 835       | 1                           | NR               | 965       | 0                           | NR               |
| 450       | 417                         | NR               | 580       | 811                         | NR               | 710       | 52                          | NR               | 840       | 1                           | NR               | 970       | 0                           | NR               |
| 455       | 261                         | NR               | 585       | 817                         | NR               | 715       | 45                          | NR               | 845       | 1                           | NR               | 975       | 0                           | NR               |
| 460       | 167                         | NR               | 590       | 815                         | NR               | 720       | 39                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 104                         | NR               | 595       | 801                         | NR               | 725       | 33                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 79                          | NR               | 600       | 777                         | NR               | 730       | 28                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 73                          | NR               | 605       | 744                         | NR               | 735       | 24                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 76                          | NR               | 610       | 704                         | NR               | 740       | 21                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 98                          | NR               | 615       | 657                         | NR               | 745       | 18                          | NR               | 875       | 1                           | NR               |           |                             |                  |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.78

| λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 139                         | NR               | 620       | 607                         | NR               | 750       | 15                          | NR               | 880       | 0                           | NR               |
| 365       | 0                           | NR               | 495       | 198                         | NR               | 625       | 554                         | NR               | 755       | 13                          | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 267                         | NR               | 630       | 504                         | NR               | 760       | 11                          | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 343                         | NR               | 635       | 452                         | NR               | 765       | 10                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 410                         | NR               | 640       | 403                         | NR               | 770       | 8                           | NR               | 900       | 0                           | NR               |
| 385       | 2                           | NR               | 515       | 470                         | NR               | 645       | 357                         | NR               | 775       | 7                           | NR               | 905       | 0                           | NR               |
| 390       | 4                           | NR               | 520       | 516                         | NR               | 650       | 314                         | NR               | 780       | 6                           | NR               | 910       | 0                           | NR               |
| 395       | 7                           | NR               | 525       | 550                         | NR               | 655       | 275                         | NR               | 785       | 5                           | NR               | 915       | 0                           | NR               |
| 400       | 10                          | NR               | 530       | 578                         | NR               | 660       | 240                         | NR               | 790       | 5                           | NR               | 920       | 0                           | NR               |
| 405       | 17                          | NR               | 535       | 601                         | NR               | 665       | 208                         | NR               | 795       | 4                           | NR               | 925       | 0                           | NR               |
| 410       | 35                          | NR               | 540       | 620                         | NR               | 670       | 179                         | NR               | 800       | 4                           | NR               | 930       | 0                           | NR               |
| 415       | 70                          | NR               | 545       | 641                         | NR               | 675       | 155                         | NR               | 805       | 3                           | NR               | 935       | 0                           | NR               |
| 420       | 147                         | NR               | 550       | 664                         | NR               | 680       | 133                         | NR               | 810       | 3                           | NR               | 940       | 0                           | NR               |
| 425       | 285                         | NR               | 555       | 689                         | NR               | 685       | 114                         | NR               | 815       | 2                           | NR               | 945       | 0                           | NR               |
| 430       | 487                         | NR               | 560       | 715                         | NR               | 690       | 98                          | NR               | 820       | 2                           | NR               | 950       | 0                           | NR               |
| 435       | 787                         | NR               | 565       | 743                         | NR               | 695       | 84                          | NR               | 825       | 2                           | NR               | 955       | 0                           | NR               |
| 440       | 1000                        | NR               | 570       | 771                         | NR               | 700       | 72                          | NR               | 830       | 2                           | NR               | 960       | 0                           | NR               |
| 445       | 783                         | NR               | 575       | 794                         | NR               | 705       | 61                          | NR               | 835       | 1                           | NR               | 965       | 0                           | NR               |
| 450       | 417                         | NR               | 580       | 811                         | NR               | 710       | 52                          | NR               | 840       | 1                           | NR               | 970       | 0                           | NR               |
| 455       | 261                         | NR               | 585       | 817                         | NR               | 715       | 45                          | NR               | 845       | 1                           | NR               | 975       | 0                           | NR               |
| 460       | 167                         | NR               | 590       | 815                         | NR               | 720       | 39                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 104                         | NR               | 595       | 801                         | NR               | 725       | 33                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 79                          | NR               | 600       | 777                         | NR               | 730       | 28                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 73                          | NR               | 605       | 744                         | NR               | 735       | 24                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 76                          | NR               | 610       | 704                         | NR               | 740       | 21                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 98                          | NR               | 615       | 657                         | NR               | 745       | 18                          | NR               | 875       | 1                           | NR               |           |                             |                  |

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TM-30-18

### Summary

$R_f = 71.8$   
 $R_g = 96.5$   
 $CIE R_a = 70.7$   
 $R_g = -36.7$



### Color Vector Graphics

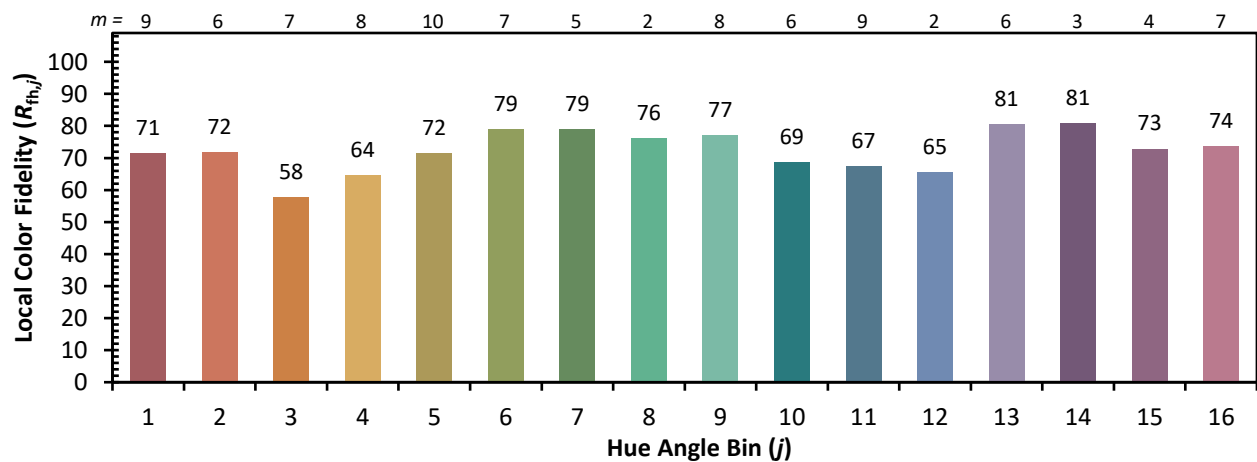
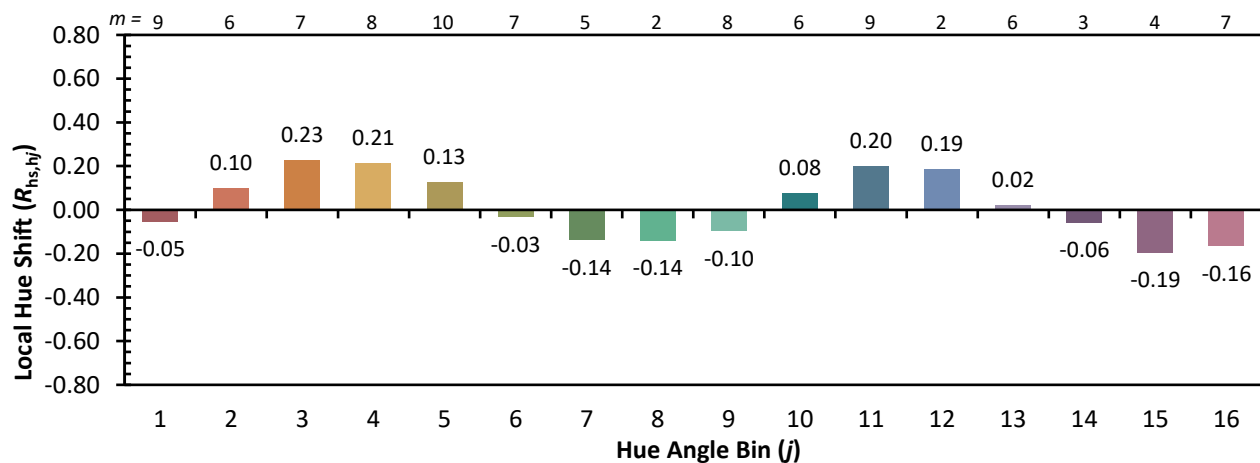
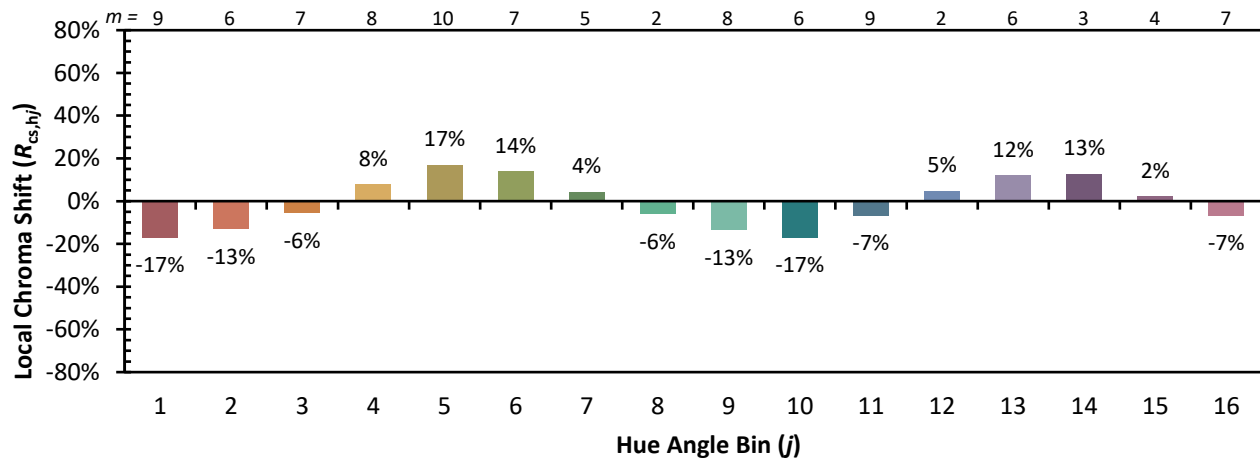


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 56 | CES51 = 86 | CES76 = 48 |
| CES02 = 61 | CES27 = 79 | CES52 = 88 | CES77 = 71 |
| CES03 = 30 | CES28 = 80 | CES53 = 73 | CES78 = 52 |
| CES04 = 70 | CES29 = 49 | CES54 = 79 | CES79 = 79 |
| CES05 = 47 | CES30 = 53 | CES55 = 77 | CES80 = 77 |
| CES06 = 50 | CES31 = 55 | CES56 = 67 | CES81 = 75 |
| CES07 = 40 | CES32 = 53 | CES57 = 64 | CES82 = 90 |
| CES08 = 39 | CES33 = 59 | CES58 = 67 | CES83 = 84 |
| CES09 = 29 | CES34 = 67 | CES59 = 87 | CES84 = 89 |
| CES10 = 74 | CES35 = 82 | CES60 = 91 | CES85 = 86 |
| CES11 = 57 | CES36 = 86 | CES61 = 87 | CES86 = 71 |
| CES12 = 63 | CES37 = 76 | CES62 = 76 | CES87 = 78 |
| CES13 = 42 | CES38 = 62 | CES63 = 73 | CES88 = 76 |
| CES14 = 74 | CES39 = 91 | CES64 = 71 | CES89 = 72 |
| CES15 = 71 | CES40 = 84 | CES65 = 64 | CES90 = 72 |
| CES16 = 46 | CES41 = 81 | CES66 = 67 | CES91 = 97 |
| CES17 = 49 | CES42 = 76 | CES67 = 65 | CES92 = 66 |
| CES18 = 56 | CES43 = 71 | CES68 = 72 | CES93 = 81 |
| CES19 = 72 | CES44 = 98 | CES69 = 82 | CES94 = 55 |
| CES20 = 65 | CES45 = 80 | CES70 = 61 | CES95 = 73 |
| CES21 = 86 | CES46 = 76 | CES71 = 59 | CES96 = 78 |
| CES22 = 78 | CES47 = 71 | CES72 = 86 | CES97 = 83 |
| CES23 = 92 | CES48 = 61 | CES73 = 52 | CES98 = 72 |
| CES24 = 91 | CES49 = 76 | CES74 = 93 | CES99 = 60 |
| CES25 = 72 | CES50 = 84 | CES75 = 56 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)