

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: LUMARK

Report Number: P1067122

Luminaire Tested: **NAV-SA6B-830-U-T3BC**

Issue Date: 08/07/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1067122  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 08/07/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: LUMARK  
Catalog Number: NAV-SA6B-830-U-T3BC  
Description: Navion AREA AND ROADWAY LUMINAIRE 800mA 6xLight Square PACKAGE  
80CRI 3000K FIXTURE w/ TYPE III ANGLED BACKLIGHT CONTROL  
Light Source: (84) 3000K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 22175 lumens  
Efficiency: N/A  
Efficacy: 105.1 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 1.5' x H: 0')  
IES Classification: Type III - Short  
BUG Rating: B0 - U0 - G4

Input Watts (W): 211  
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

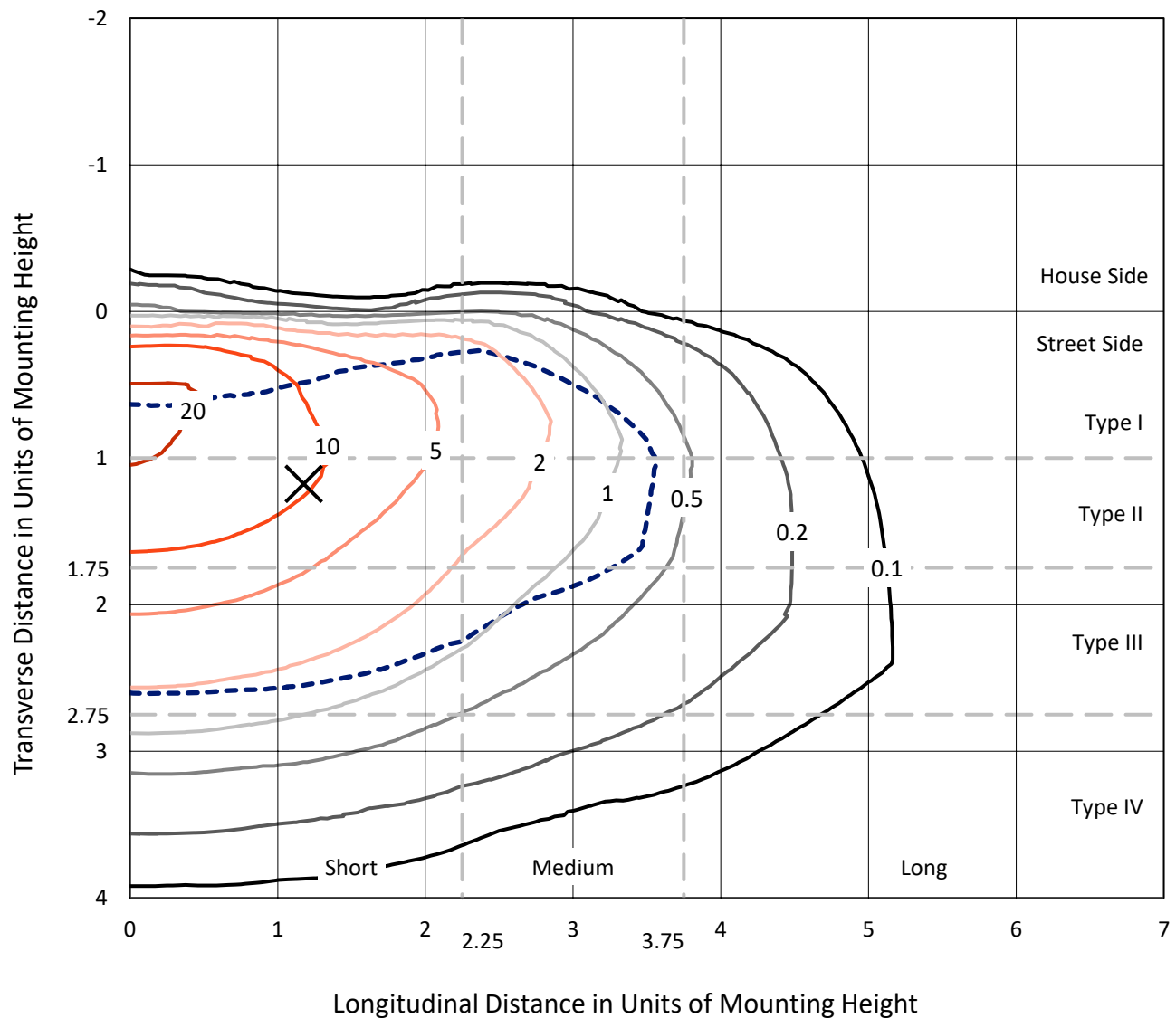


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## Iso-Footcandle Lines of Horizontal Illumination

× Max cd  
 - - - 1/2 Max cd

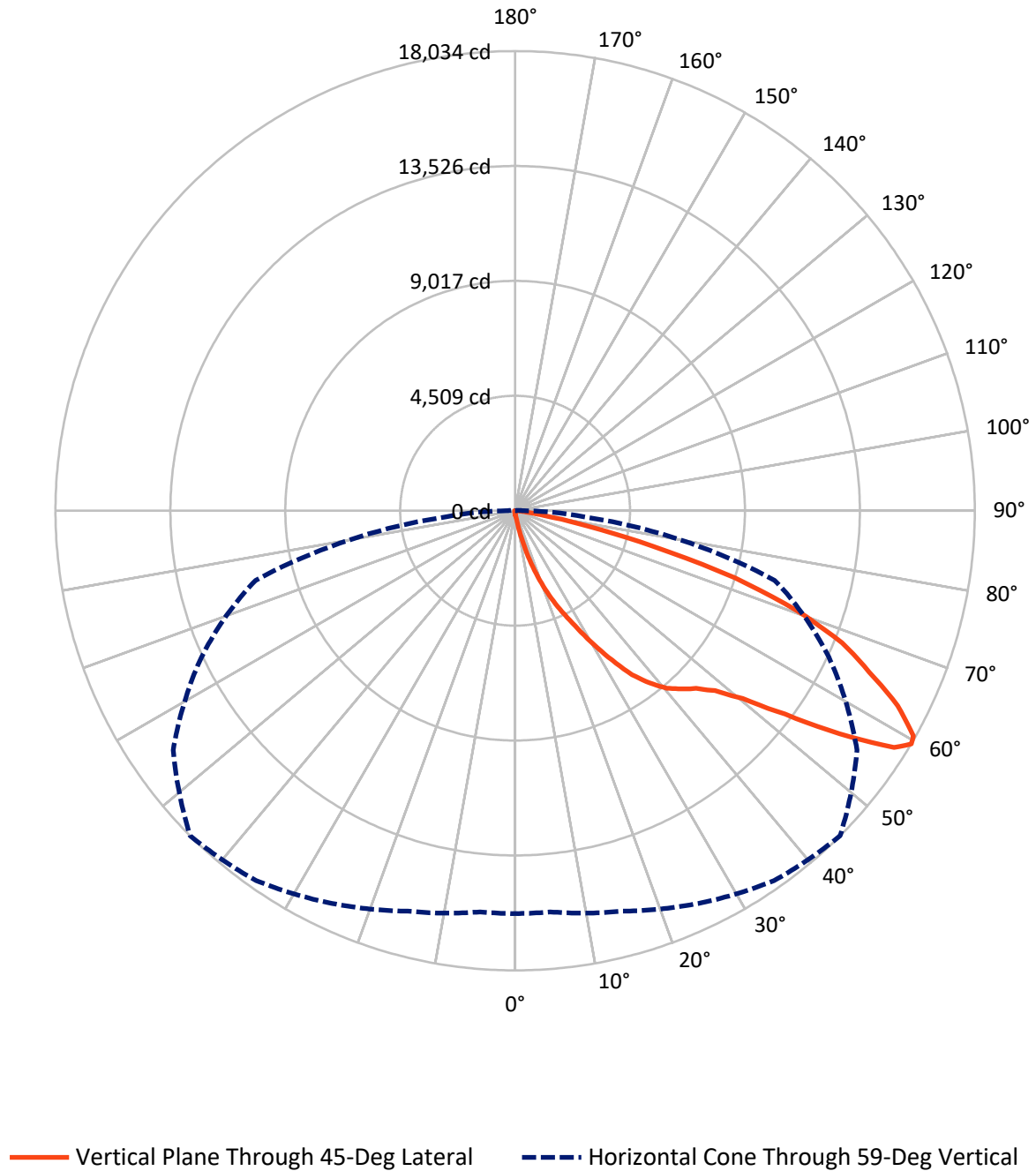


Based on 15 foot mounting height. Maximum calculated value = 24.2 fc  
 Type III - Short - N/A

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## Luminous Intensity Polar Plot



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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 78.7     | 0.0    | 78.7    |
|                    | % Fixture | 0.4      | 0.0    | 0.4     |
| <b>Street Side</b> | Lumens    | 22096.3  | 0.0    | 22096.3 |
|                    | % Fixture | 99.6     | 0.0    | 99.6    |
| <b>Total</b>       | Lumens    | 22175.0  | 0.0    | 22175.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 20.6    | 0.1       |
| 10°-20°   | 245.1   | 1.1       |
| 20°-30°   | 880.7   | 4.0       |
| 30°-40°   | 2046.4  | 9.2       |
| 40°-50°   | 3488.0  | 15.7      |
| 50°-60°   | 5747.3  | 25.9      |
| 60°-70°   | 6645.2  | 30.0      |
| 70°-80°   | 2855.0  | 12.9      |
| 80°-90°   | 246.7   | 1.1       |
| 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°    | 22175.0 | 100.0     |
| 0°-180°   | 22175.0 | 100.0     |



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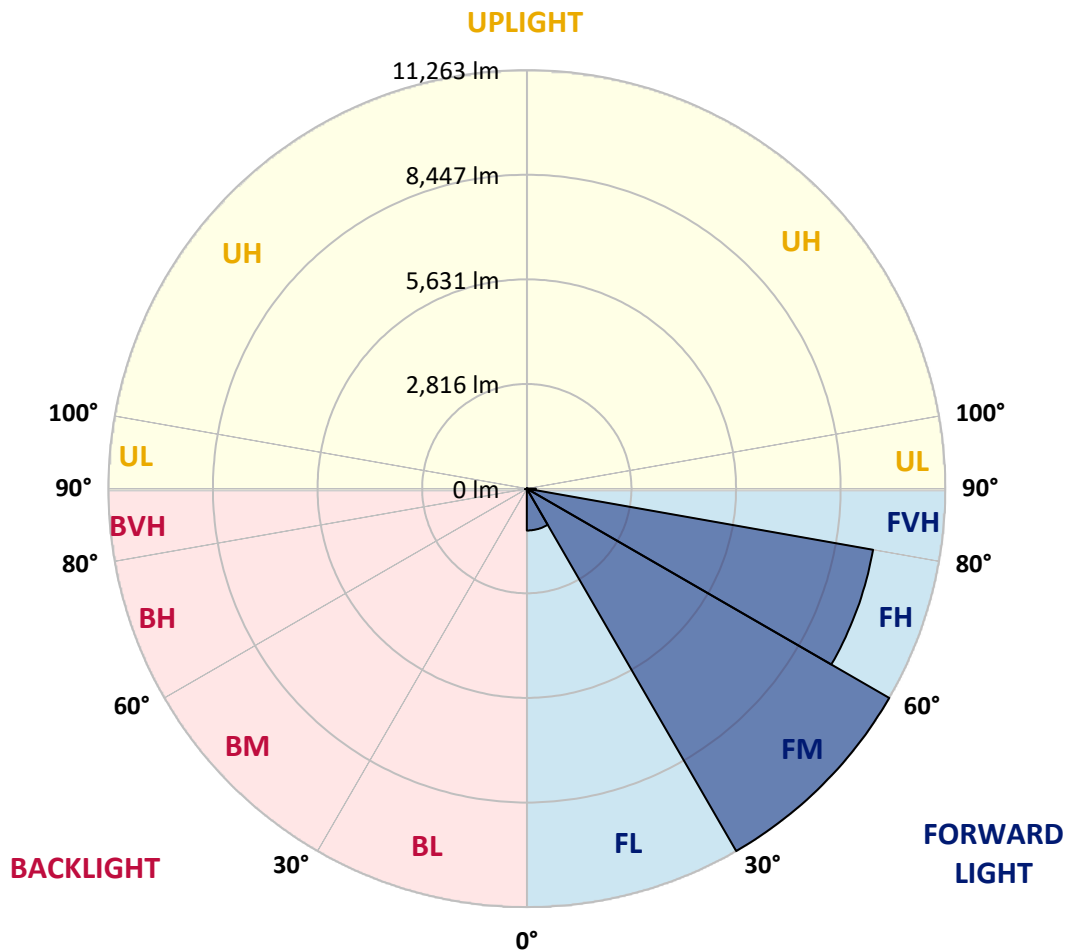
CATALOG NUMBER: NAV-SA6B-830-U-T3BC

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |          |
|------|-------------|---------|-----------|-------------------------|------|----------|
|      |             |         |           | B                       | U    | G        |
| FL   | (0°-30°)    | 1127.0  | 5.1       |                         |      |          |
| FM   | (30°-60°)   | 11262.7 | 50.8      |                         |      |          |
| FH   | (60°-80°)   | 9463.1  | 42.7      |                         |      | G4/12000 |
| FVH  | (80°-90°)   | 243.5   | 1.1       |                         |      | G3/500   |
| BL   | (0°-30°)    | 19.4    | 0.1       | B0/110                  |      |          |
| BM   | (30°-60°)   | 19.0    | 0.1       | B0/220                  |      |          |
| BH   | (60°-80°)   | 37.0    | 0.2       | B0/110                  |      | G0/110   |
| BVH  | (80°-90°)   | 3.2     | 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-G4**

Type III Short



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 44°     | 45°     | 55°     | 65°     | 75°     | 85°    |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| 0°    | 140.2   | 140.2   | 140.2   | 140.2   | 140.2   | 140.2   | 140.2   | 140.2   | 140.2   | 140.2   | 140.2  |
| 2.5°  | 181.9   | 181.9   | 177.4   | 171.5   | 170.0   | 165.5   | 165.5   | 161.0   | 155.1   | 150.6   | 144.6  |
| 5°    | 263.9   | 262.4   | 250.5   | 235.6   | 216.2   | 204.3   | 204.3   | 187.9   | 173.0   | 159.5   | 147.6  |
| 7.5°  | 577.0   | 563.6   | 520.4   | 448.8   | 354.9   | 292.2   | 287.8   | 234.1   | 198.3   | 171.5   | 149.1  |
| 10°   | 1324.1  | 1277.8  | 1216.7  | 1045.2  | 772.4   | 539.8   | 529.3   | 341.5   | 237.1   | 184.9   | 152.1  |
| 12.5° | 2169.5  | 2206.8  | 2084.5  | 1814.6  | 1495.5  | 1112.3  | 1037.8  | 575.5   | 313.1   | 202.8   | 155.1  |
| 15°   | 2938.9  | 2929.9  | 2861.3  | 2640.7  | 2272.4  | 1762.4  | 1716.2  | 1000.5  | 448.8   | 231.1   | 158.1  |
| 17.5° | 3514.4  | 3504.0  | 3438.4  | 3296.7  | 3013.4  | 2503.5  | 2463.2  | 1595.4  | 703.8   | 271.4   | 161.0  |
| 20°   | 4121.3  | 4107.9  | 4015.4  | 3902.1  | 3654.6  | 3220.7  | 3173.0  | 2260.4  | 1101.9  | 337.0   | 161.0  |
| 22.5° | 4848.9  | 4823.6  | 4725.1  | 4532.8  | 4271.9  | 3894.6  | 3851.4  | 2940.4  | 1595.4  | 444.3   | 168.5  |
| 25°   | 5728.6  | 5685.4  | 5549.7  | 5376.7  | 5062.1  | 4561.1  | 4514.9  | 3697.8  | 2190.4  | 606.9   | 175.9  |
| 27.5° | 6732.1  | 6739.6  | 6556.2  | 6263.9  | 5841.9  | 5330.5  | 5244.0  | 4376.2  | 2806.2  | 839.5   | 184.9  |
| 30°   | 7923.5  | 7848.9  | 7590.9  | 7251.0  | 6840.9  | 6189.4  | 6105.9  | 5051.7  | 3498.0  | 1182.4  | 199.8  |
| 32.5° | 9038.8  | 8958.2  | 8610.8  | 8182.9  | 7743.0  | 7055.7  | 6987.1  | 5810.6  | 4127.2  | 1588.0  | 226.6  |
| 35°   | 9996.0  | 9939.4  | 9453.3  | 8931.4  | 8540.7  | 7926.4  | 7905.6  | 6657.6  | 4866.8  | 2024.8  | 256.5  |
| 37.5° | 10838.5 | 10735.6 | 10110.8 | 9569.6  | 9173.0  | 8622.8  | 8578.0  | 7432.9  | 5579.5  | 2531.8  | 301.2  |
| 40°   | 11557.1 | 11500.5 | 10738.6 | 10027.3 | 9705.3  | 9213.2  | 9156.6  | 8112.8  | 6316.1  | 3120.8  | 356.4  |
| 42.5° | 12326.5 | 12252.0 | 11512.4 | 10714.7 | 10121.3 | 9594.9  | 9557.6  | 8673.5  | 6972.2  | 3767.9  | 438.4  |
| 45°   | 13195.8 | 13057.1 | 12408.5 | 11692.8 | 10790.7 | 9990.1  | 9948.3  | 9173.0  | 7644.6  | 4462.7  | 538.3  |
| 47.5° | 14124.7 | 14004.0 | 13479.1 | 12976.6 | 11938.9 | 10641.6 | 10552.2 | 9597.9  | 8312.6  | 5264.9  | 665.0  |
| 50°   | 15070.1 | 15073.1 | 14679.4 | 14437.9 | 13341.9 | 11700.3 | 11573.6 | 10222.7 | 9014.9  | 6123.8  | 852.9  |
| 52.5° | 16170.5 | 16198.8 | 16192.8 | 16013.9 | 15164.0 | 13431.4 | 13261.4 | 11171.0 | 9830.5  | 7125.7  | 1112.3 |
| 55°   | 16631.2 | 16681.9 | 17011.4 | 17408.0 | 17176.9 | 15626.2 | 15444.3 | 12806.7 | 10911.5 | 8242.5  | 1497.0 |
| 57.5° | 16254.0 | 16310.6 | 16765.4 | 17460.2 | 17991.0 | 17548.2 | 17527.3 | 14935.9 | 12335.5 | 9596.4  | 2126.2 |
| 59°   | 15805.2 | 15797.7 | 16264.4 | 17001.0 | 17716.7 | 18004.5 | 18034.3 | 16376.2 | 13576.0 | 10546.2 | 2669.0 |
| 60°   | 15506.9 | 15512.9 | 15823.1 | 16579.0 | 17339.5 | 17839.0 | 17955.3 | 17224.6 | 14300.7 | 11229.1 | 3134.2 |
| 62.5° | 14355.9 | 14424.4 | 14670.5 | 15372.8 | 16094.4 | 16652.1 | 16850.4 | 17980.6 | 16374.7 | 12842.4 | 4752.0 |
| 65°   | 13104.9 | 13109.3 | 13459.7 | 14060.6 | 14752.5 | 15144.6 | 15269.9 | 16804.2 | 17759.9 | 14485.6 | 6873.8 |
| 67.5° | 10872.8 | 10963.7 | 11361.8 | 12335.5 | 13249.5 | 13746.0 | 13841.4 | 14627.2 | 17185.9 | 15556.2 | 7936.9 |
| 70°   | 7608.8  | 7728.1  | 8296.2  | 9559.1  | 10920.5 | 11736.1 | 11730.1 | 12159.5 | 15125.2 | 15079.0 | 6729.1 |
| 72.5° | 3799.2  | 4005.0  | 4468.7  | 5821.1  | 7470.2  | 8751.0  | 9020.9  | 9781.3  | 12150.6 | 12524.8 | 5020.4 |
| 75°   | 1678.9  | 1690.9  | 1954.8  | 2636.2  | 3712.7  | 5339.5  | 5581.0  | 7763.9  | 9322.1  | 8704.8  | 3626.2 |
| 77.5° | 976.6   | 985.6   | 1033.3  | 1183.9  | 1504.5  | 2616.8  | 2888.2  | 5091.9  | 6587.5  | 5059.1  | 2364.8 |
| 80°   | 354.9   | 363.8   | 362.3   | 448.8   | 659.0   | 1030.3  | 1148.1  | 2467.7  | 4394.1  | 2664.5  | 1239.1 |
| 82.5° | 217.7   | 217.7   | 210.2   | 211.7   | 240.1   | 395.1   | 432.4   | 1051.2  | 2139.7  | 1312.1  | 354.9  |
| 85°   | 107.4   | 113.3   | 120.8   | 135.7   | 161.0   | 195.3   | 207.3   | 301.2   | 720.2   | 317.6   | 85.0   |
| 87.5° | 64.1    | 65.6    | 71.6    | 86.5    | 107.4   | 140.2   | 149.1   | 204.3   | 258.0   | 213.2   | 20.9   |
| 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°    | 140.2  | 140.2 | 140.2 | 140.2 | 140.2 | 140.2 | 140.2 | 140.2 | 140.2 | 140.2 | 140.2 |
| 2.5°  | 141.7  | 140.2 | 132.7 | 126.7 | 120.8 | 114.8 | 110.3 | 105.9 | 105.9 | 107.4 | 105.9 |
| 5°    | 141.7  | 135.7 | 123.8 | 113.3 | 104.4 | 96.9  | 89.5  | 83.5  | 82.0  | 82.0  | 83.5  |
| 7.5°  | 140.2  | 132.7 | 116.3 | 102.9 | 91.0  | 80.5  | 73.1  | 65.6  | 64.1  | 65.6  | 64.1  |
| 10°   | 138.7  | 129.7 | 110.3 | 93.9  | 77.5  | 67.1  | 56.7  | 49.2  | 49.2  | 49.2  | 50.7  |
| 12.5° | 138.7  | 125.2 | 104.4 | 85.0  | 67.1  | 55.2  | 44.7  | 37.3  | 35.8  | 35.8  | 35.8  |
| 15°   | 137.2  | 122.3 | 98.4  | 74.6  | 56.7  | 41.7  | 32.8  | 25.3  | 25.3  | 25.3  | 25.3  |
| 17.5° | 134.2  | 117.8 | 91.0  | 65.6  | 44.7  | 31.3  | 22.4  | 14.9  | 14.9  | 17.9  | 17.9  |
| 20°   | 131.2  | 113.3 | 82.0  | 53.7  | 37.3  | 23.9  | 14.9  | 8.9   | 8.9   | 13.4  | 14.9  |
| 22.5° | 132.7  | 113.3 | 76.0  | 47.7  | 29.8  | 17.9  | 11.9  | 7.5   | 6.0   | 10.4  | 13.4  |
| 25°   | 134.2  | 110.3 | 68.6  | 41.7  | 22.4  | 13.4  | 8.9   | 3.0   | 1.5   | 3.0   | 4.5   |
| 27.5° | 134.2  | 107.4 | 59.6  | 32.8  | 16.4  | 10.4  | 4.5   | 0.0   | 0.0   | 0.0   | 0.0   |
| 30°   | 132.7  | 102.9 | 52.2  | 26.8  | 11.9  | 6.0   | 1.5   | 0.0   | 0.0   | 0.0   | 0.0   |
| 32.5° | 131.2  | 98.4  | 47.7  | 20.9  | 10.4  | 3.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 35°   | 132.7  | 92.4  | 41.7  | 16.4  | 6.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 3.0   |
| 37.5° | 137.2  | 86.5  | 35.8  | 13.4  | 4.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 40°   | 143.1  | 82.0  | 29.8  | 10.4  | 1.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 42.5° | 155.1  | 82.0  | 26.8  | 7.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 45°   | 170.0  | 82.0  | 22.4  | 6.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 47.5° | 189.4  | 83.5  | 19.4  | 6.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 50°   | 213.2  | 86.5  | 17.9  | 4.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 52.5° | 231.1  | 83.5  | 16.4  | 4.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 55°   | 262.4  | 80.5  | 14.9  | 3.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 57.5° | 304.2  | 76.0  | 14.9  | 1.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 59°   | 345.9  | 70.1  | 14.9  | 1.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 60°   | 393.6  | 67.1  | 13.4  | 1.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 62.5° | 650.1  | 59.6  | 11.9  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 65°   | 1255.5 | 56.7  | 10.4  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 67.5° | 2029.3 | 56.7  | 7.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 70°   | 2133.7 | 56.7  | 6.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 72.5° | 1419.5 | 46.2  | 4.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 75°   | 760.4  | 41.7  | 4.5   | 1.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 77.5° | 410.0  | 38.8  | 6.0   | 3.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 80°   | 180.4  | 28.3  | 7.5   | 4.5   | 3.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 82.5° | 71.6   | 19.4  | 8.9   | 7.5   | 6.0   | 3.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 85°   | 34.3   | 14.9  | 11.9  | 10.4  | 7.5   | 4.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 87.5° | 16.4   | 14.9  | 13.4  | 11.9  | 10.4  | 7.5   | 1.5   | 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: SP1-2407-184-9

Test Date: 10/10/2024

Luminaire Tested: GSS-SB1A-830-U-5WQ

Data in this report applies to families of products including GSS-SB1A-830-U-5WQ

### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-9  
 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-830-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 80 CRI  
 3000K CCT 26 LEDS

### Spectral Parameters

CCT (K): 3055  
 CIE  $u'$ : 0.2475  
 CIE  $v'$ : 0.5247  
 Duv: 0.0032  
 CIE x: 0.4377  
 CIE y: 0.4124  
 CIE z: 0.1499  
 Peak Wavelength (nm): 604  
 Dominant Wavelength (nm): 581  
 Purity: 55.16339  
 R<sub>f</sub>: 81.5  
 R<sub>g</sub>: 99.2

CRI (Ra): 80.9  
 R1: 79.5  
 R2: 85.6  
 R3: 92.1  
 R4: 82.4  
 R5: 78.9  
 R6: 81.7  
 R7: 85.1  
 R8: 61.9  
 R9: 6.8  
 R10: 67.1  
 R11: 82.5  
 R12: 63.4  
 R13: 80.2  
 R14: 95.1  
 R15: 71.7



### Test Conditions

Stabilization Time: 20M  
 Operation Time: 1H 20M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-9

| 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 3000K 4-step quadrangle

REPORT NUMBER: SP1-2407-184-9

### Photopic Flux vs. Wavelength



### Photopic Lumens: NR

| 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    | 170                      | NR            | 620    | 938                      | NR            | 750    | 35                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 234                      | NR            | 625    | 894                      | NR            | 755    | 30                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 302                      | NR            | 630    | 847                      | NR            | 760    | 26                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 371                      | NR            | 635    | 788                      | NR            | 765    | 22                       | NR            | 895    | 1                        | NR            |
| 380    | 0                        | NR            | 510    | 431                      | NR            | 640    | 728                      | NR            | 770    | 19                       | NR            | 900    | 1                        | NR            |
| 385    | 0                        | NR            | 515    | 482                      | NR            | 645    | 665                      | NR            | 775    | 16                       | NR            | 905    | 1                        | NR            |
| 390    | 0                        | NR            | 520    | 523                      | NR            | 650    | 603                      | NR            | 780    | 14                       | NR            | 910    | 0                        | NR            |
| 395    | 2                        | NR            | 525    | 553                      | NR            | 655    | 542                      | NR            | 785    | 12                       | NR            | 915    | 0                        | NR            |
| 400    | 4                        | NR            | 530    | 580                      | NR            | 660    | 484                      | NR            | 790    | 11                       | NR            | 920    | 0                        | NR            |
| 405    | 8                        | NR            | 535    | 603                      | NR            | 665    | 430                      | NR            | 795    | 9                        | NR            | 925    | 0                        | NR            |
| 410    | 18                       | NR            | 540    | 622                      | NR            | 670    | 377                      | NR            | 800    | 8                        | NR            | 930    | 0                        | NR            |
| 415    | 36                       | NR            | 545    | 644                      | NR            | 675    | 330                      | NR            | 805    | 7                        | NR            | 935    | 0                        | NR            |
| 420    | 71                       | NR            | 550    | 668                      | NR            | 680    | 289                      | NR            | 810    | 6                        | NR            | 940    | 0                        | NR            |
| 425    | 131                      | NR            | 555    | 693                      | NR            | 685    | 250                      | NR            | 815    | 5                        | NR            | 945    | 0                        | NR            |
| 430    | 215                      | NR            | 560    | 720                      | NR            | 690    | 218                      | NR            | 820    | 4                        | NR            | 950    | 0                        | NR            |
| 435    | 341                      | NR            | 565    | 754                      | NR            | 695    | 188                      | NR            | 825    | 4                        | NR            | 955    | 0                        | NR            |
| 440    | 514                      | NR            | 570    | 792                      | NR            | 700    | 161                      | NR            | 830    | 3                        | NR            | 960    | 0                        | NR            |
| 445    | 576                      | NR            | 575    | 832                      | NR            | 705    | 139                      | NR            | 835    | 3                        | NR            | 965    | 0                        | NR            |
| 450    | 358                      | NR            | 580    | 875                      | NR            | 710    | 119                      | NR            | 840    | 3                        | NR            | 970    | 0                        | NR            |
| 455    | 222                      | NR            | 585    | 913                      | NR            | 715    | 102                      | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 170                      | NR            | 590    | 950                      | NR            | 720    | 88                       | NR            | 850    | 2                        | NR            | 980    | 0                        | NR            |
| 465    | 115                      | NR            | 595    | 977                      | NR            | 725    | 76                       | NR            | 855    | 2                        | NR            | 985    | 0                        | NR            |
| 470    | 88                       | NR            | 600    | 994                      | NR            | 730    | 65                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 87                       | NR            | 605    | 997                      | NR            | 735    | 56                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 96                       | NR            | 610    | 990                      | NR            | 740    | 47                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 122                      | NR            | 615    | 971                      | NR            | 745    | 41                       | NR            | 875    | 1                        | NR            |        |                          |               |

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### Scotopic Flux vs. Wavelength


**Scotopic Lumens: NR**
**S/P: 1.28**

| λ (nm) | Power W <sup>^</sup> /nm | Lumens (Φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (Φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (Φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (Φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (Φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 170                      | NR            | 620    | 938                      | NR            | 750    | 35                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 234                      | NR            | 625    | 894                      | NR            | 755    | 30                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 302                      | NR            | 630    | 847                      | NR            | 760    | 26                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 371                      | NR            | 635    | 788                      | NR            | 765    | 22                       | NR            | 895    | 1                        | NR            |
| 380    | 0                        | NR            | 510    | 431                      | NR            | 640    | 728                      | NR            | 770    | 19                       | NR            | 900    | 1                        | NR            |
| 385    | 0                        | NR            | 515    | 482                      | NR            | 645    | 665                      | NR            | 775    | 16                       | NR            | 905    | 1                        | NR            |
| 390    | 0                        | NR            | 520    | 523                      | NR            | 650    | 603                      | NR            | 780    | 14                       | NR            | 910    | 0                        | NR            |
| 395    | 2                        | NR            | 525    | 553                      | NR            | 655    | 542                      | NR            | 785    | 12                       | NR            | 915    | 0                        | NR            |
| 400    | 4                        | NR            | 530    | 580                      | NR            | 660    | 484                      | NR            | 790    | 11                       | NR            | 920    | 0                        | NR            |
| 405    | 8                        | NR            | 535    | 603                      | NR            | 665    | 430                      | NR            | 795    | 9                        | NR            | 925    | 0                        | NR            |
| 410    | 18                       | NR            | 540    | 622                      | NR            | 670    | 377                      | NR            | 800    | 8                        | NR            | 930    | 0                        | NR            |
| 415    | 36                       | NR            | 545    | 644                      | NR            | 675    | 330                      | NR            | 805    | 7                        | NR            | 935    | 0                        | NR            |
| 420    | 71                       | NR            | 550    | 668                      | NR            | 680    | 289                      | NR            | 810    | 6                        | NR            | 940    | 0                        | NR            |
| 425    | 131                      | NR            | 555    | 693                      | NR            | 685    | 250                      | NR            | 815    | 5                        | NR            | 945    | 0                        | NR            |
| 430    | 215                      | NR            | 560    | 720                      | NR            | 690    | 218                      | NR            | 820    | 4                        | NR            | 950    | 0                        | NR            |
| 435    | 341                      | NR            | 565    | 754                      | NR            | 695    | 188                      | NR            | 825    | 4                        | NR            | 955    | 0                        | NR            |
| 440    | 514                      | NR            | 570    | 792                      | NR            | 700    | 161                      | NR            | 830    | 3                        | NR            | 960    | 0                        | NR            |
| 445    | 576                      | NR            | 575    | 832                      | NR            | 705    | 139                      | NR            | 835    | 3                        | NR            | 965    | 0                        | NR            |
| 450    | 358                      | NR            | 580    | 875                      | NR            | 710    | 119                      | NR            | 840    | 3                        | NR            | 970    | 0                        | NR            |
| 455    | 222                      | NR            | 585    | 913                      | NR            | 715    | 102                      | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 170                      | NR            | 590    | 950                      | NR            | 720    | 88                       | NR            | 850    | 2                        | NR            | 980    | 0                        | NR            |
| 465    | 115                      | NR            | 595    | 977                      | NR            | 725    | 76                       | NR            | 855    | 2                        | NR            | 985    | 0                        | NR            |
| 470    | 88                       | NR            | 600    | 994                      | NR            | 730    | 65                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 87                       | NR            | 605    | 997                      | NR            | 735    | 56                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 96                       | NR            | 610    | 990                      | NR            | 740    | 47                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 122                      | NR            | 615    | 971                      | NR            | 745    | 41                       | NR            | 875    | 1                        | NR            |        |                          |               |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.33

| $\lambda$<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               | 170                                    | NR                             | 620               | 938                                    | NR                             | 750               | 35                                     | NR                             | 880               | 1                                      | NR                             |
| 365               | 0                                      | NR                             | 495               | 234                                    | NR                             | 625               | 894                                    | NR                             | 755               | 30                                     | NR                             | 885               | 1                                      | NR                             |
| 370               | 0                                      | NR                             | 500               | 302                                    | NR                             | 630               | 847                                    | NR                             | 760               | 26                                     | NR                             | 890               | 1                                      | NR                             |
| 375               | 0                                      | NR                             | 505               | 371                                    | NR                             | 635               | 788                                    | NR                             | 765               | 22                                     | NR                             | 895               | 1                                      | NR                             |
| 380               | 0                                      | NR                             | 510               | 431                                    | NR                             | 640               | 728                                    | NR                             | 770               | 19                                     | NR                             | 900               | 1                                      | NR                             |
| 385               | 0                                      | NR                             | 515               | 482                                    | NR                             | 645               | 665                                    | NR                             | 775               | 16                                     | NR                             | 905               | 1                                      | NR                             |
| 390               | 0                                      | NR                             | 520               | 523                                    | NR                             | 650               | 603                                    | NR                             | 780               | 14                                     | NR                             | 910               | 0                                      | NR                             |
| 395               | 2                                      | NR                             | 525               | 553                                    | NR                             | 655               | 542                                    | NR                             | 785               | 12                                     | NR                             | 915               | 0                                      | NR                             |
| 400               | 4                                      | NR                             | 530               | 580                                    | NR                             | 660               | 484                                    | NR                             | 790               | 11                                     | NR                             | 920               | 0                                      | NR                             |
| 405               | 8                                      | NR                             | 535               | 603                                    | NR                             | 665               | 430                                    | NR                             | 795               | 9                                      | NR                             | 925               | 0                                      | NR                             |
| 410               | 18                                     | NR                             | 540               | 622                                    | NR                             | 670               | 377                                    | NR                             | 800               | 8                                      | NR                             | 930               | 0                                      | NR                             |
| 415               | 36                                     | NR                             | 545               | 644                                    | NR                             | 675               | 330                                    | NR                             | 805               | 7                                      | NR                             | 935               | 0                                      | NR                             |
| 420               | 71                                     | NR                             | 550               | 668                                    | NR                             | 680               | 289                                    | NR                             | 810               | 6                                      | NR                             | 940               | 0                                      | NR                             |
| 425               | 131                                    | NR                             | 555               | 693                                    | NR                             | 685               | 250                                    | NR                             | 815               | 5                                      | NR                             | 945               | 0                                      | NR                             |
| 430               | 215                                    | NR                             | 560               | 720                                    | NR                             | 690               | 218                                    | NR                             | 820               | 4                                      | NR                             | 950               | 0                                      | NR                             |
| 435               | 341                                    | NR                             | 565               | 754                                    | NR                             | 695               | 188                                    | NR                             | 825               | 4                                      | NR                             | 955               | 0                                      | NR                             |
| 440               | 514                                    | NR                             | 570               | 792                                    | NR                             | 700               | 161                                    | NR                             | 830               | 3                                      | NR                             | 960               | 0                                      | NR                             |
| 445               | 576                                    | NR                             | 575               | 832                                    | NR                             | 705               | 139                                    | NR                             | 835               | 3                                      | NR                             | 965               | 0                                      | NR                             |
| 450               | 358                                    | NR                             | 580               | 875                                    | NR                             | 710               | 119                                    | NR                             | 840               | 3                                      | NR                             | 970               | 0                                      | NR                             |
| 455               | 222                                    | NR                             | 585               | 913                                    | NR                             | 715               | 102                                    | NR                             | 845               | 2                                      | NR                             | 975               | 0                                      | NR                             |
| 460               | 170                                    | NR                             | 590               | 950                                    | NR                             | 720               | 88                                     | NR                             | 850               | 2                                      | NR                             | 980               | 0                                      | NR                             |
| 465               | 115                                    | NR                             | 595               | 977                                    | NR                             | 725               | 76                                     | NR                             | 855               | 2                                      | NR                             | 985               | 0                                      | NR                             |
| 470               | 88                                     | NR                             | 600               | 994                                    | NR                             | 730               | 65                                     | NR                             | 860               | 1                                      | NR                             | 990               | 0                                      | NR                             |
| 475               | 87                                     | NR                             | 605               | 997                                    | NR                             | 735               | 56                                     | NR                             | 865               | 1                                      | NR                             | 995               | 0                                      | NR                             |
| 480               | 96                                     | NR                             | 610               | 990                                    | NR                             | 740               | 47                                     | NR                             | 870               | 1                                      | NR                             | 1000              | 0                                      | NR                             |
| 485               | 122                                    | NR                             | 615               | 971                                    | NR                             | 745               | 41                                     | NR                             | 875               | 1                                      | NR                             |                   |                                        |                                |

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TM-30-18

### Summary

$R_f = 81.5$   
 $R_g = 99.2$   
 $CIE R_a = 80.9$   
 $R_9 = 6.8$



### Color Vector Graphics



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 74 | CES51 = 89 | CES76 = 70 |
| CES02 = 63 | CES27 = 88 | CES52 = 91 | CES77 = 86 |
| CES03 = 31 | CES28 = 89 | CES53 = 81 | CES78 = 72 |
| CES04 = 70 | CES29 = 67 | CES54 = 87 | CES79 = 90 |
| CES05 = 50 | CES30 = 68 | CES55 = 85 | CES80 = 88 |
| CES06 = 51 | CES31 = 71 | CES56 = 78 | CES81 = 78 |
| CES07 = 42 | CES32 = 70 | CES57 = 76 | CES82 = 95 |
| CES08 = 41 | CES33 = 71 | CES58 = 78 | CES83 = 90 |
| CES09 = 29 | CES34 = 82 | CES59 = 92 | CES84 = 93 |
| CES10 = 76 | CES35 = 90 | CES60 = 95 | CES85 = 86 |
| CES11 = 59 | CES36 = 93 | CES61 = 93 | CES86 = 72 |
| CES12 = 65 | CES37 = 87 | CES62 = 83 | CES87 = 85 |
| CES13 = 43 | CES38 = 75 | CES63 = 77 | CES88 = 83 |
| CES14 = 74 | CES39 = 94 | CES64 = 83 | CES89 = 75 |
| CES15 = 71 | CES40 = 89 | CES65 = 77 | CES90 = 81 |
| CES16 = 47 | CES41 = 85 | CES66 = 80 | CES91 = 96 |
| CES17 = 50 | CES42 = 86 | CES67 = 79 | CES92 = 73 |
| CES18 = 56 | CES43 = 81 | CES68 = 84 | CES93 = 84 |
| CES19 = 72 | CES44 = 99 | CES69 = 90 | CES94 = 64 |
| CES20 = 66 | CES45 = 87 | CES70 = 77 | CES95 = 80 |
| CES21 = 87 | CES46 = 82 | CES71 = 76 | CES96 = 84 |
| CES22 = 79 | CES47 = 77 | CES72 = 92 | CES97 = 87 |
| CES23 = 92 | CES48 = 71 | CES73 = 71 | CES98 = 81 |
| CES24 = 91 | CES49 = 81 | CES74 = 93 | CES99 = 74 |
| CES25 = 72 | CES50 = 89 | CES75 = 74 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)