

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: P1067241

Luminaire Tested: **NAV-SA6A-730-U-T2BC**

Issue Date: 08/07/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1067241  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 08/07/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: LUMARK  
Catalog Number: NAV-SA6A-730-U-T2BC  
Description: Navion AREA AND ROADWAY LUMINAIRE 615mA 6xLight Square PACKAGE  
70CRI 3000K FIXTURE w/ TYPE II ANGLED BACKLIGHT CONTROL  
Light Source: (84) 3000K CCT, 70 CRI LEDs  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 19170.4 lumens  
Efficiency: N/A  
Efficacy: 118.6 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 1.5' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B0 - U0 - G3

Input Watts (W): 161.6  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.97  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT



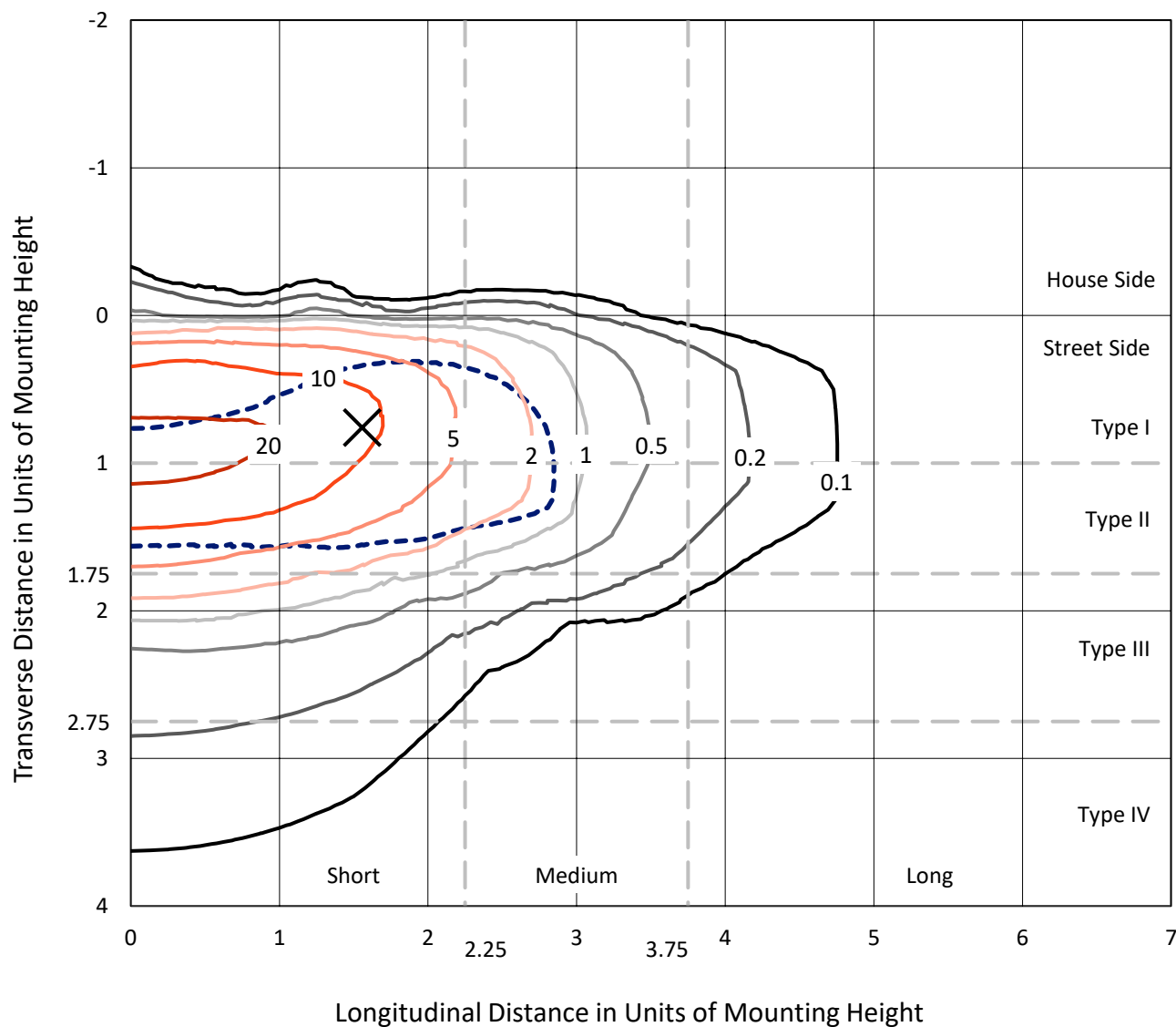
REPORT NUMBER: P1067241

CATALOG NUMBER: NAV-SA6A-730-U-T2BC

## Iso-Footcandle Lines of Horizontal Illumination

× Max cd

--- 1/2 Max cd

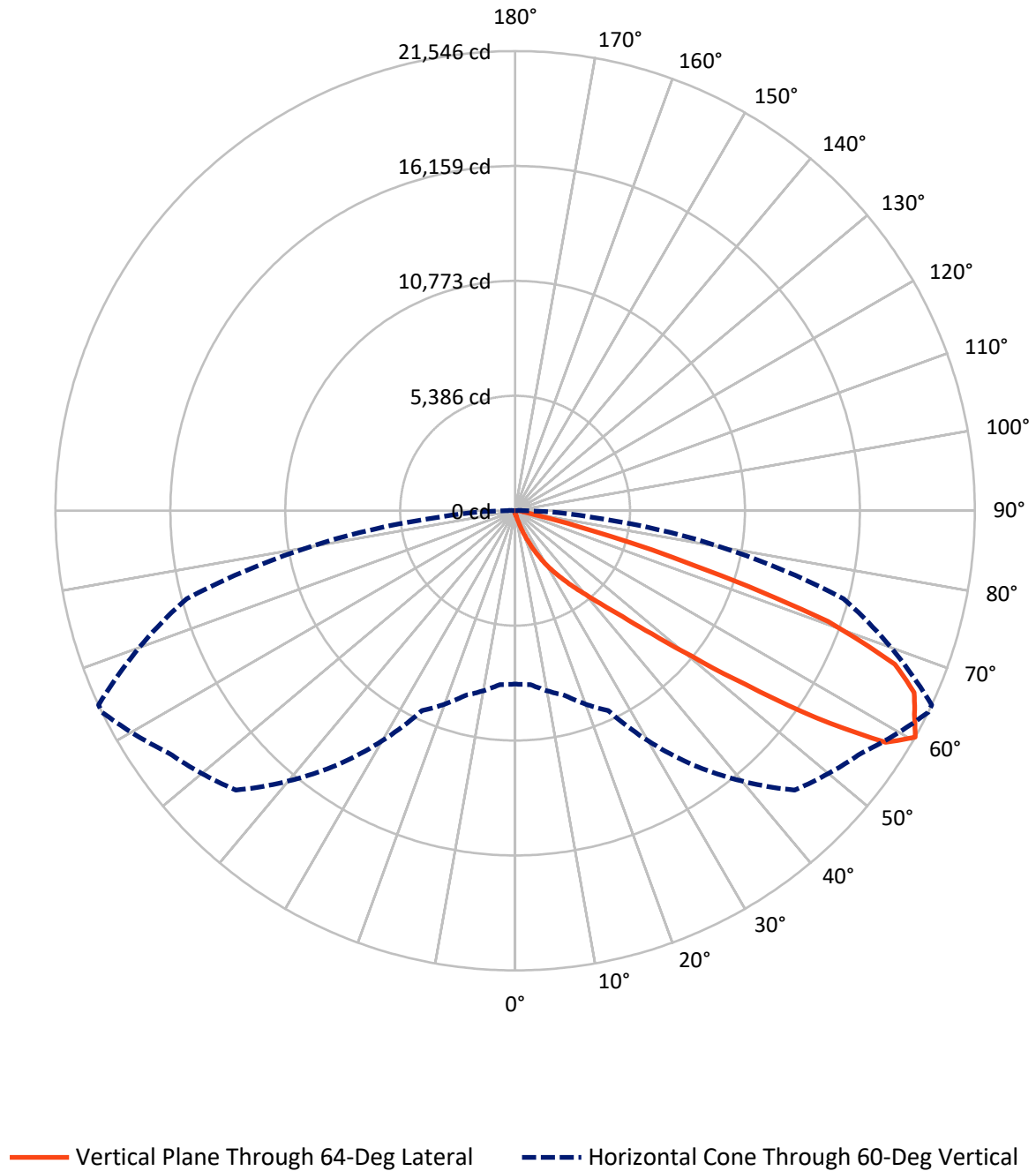


Based on 15 foot mounting height. Maximum calculated value = 27.5 fc  
 Type II - Short - N/A

REPORT NUMBER: P1067241

CATALOG NUMBER: NAV-SA6A-730-U-T2BC

## Luminous Intensity Polar Plot



REPORT NUMBER: P1067241

CATALOG NUMBER: NAV-SA6A-730-U-T2BC

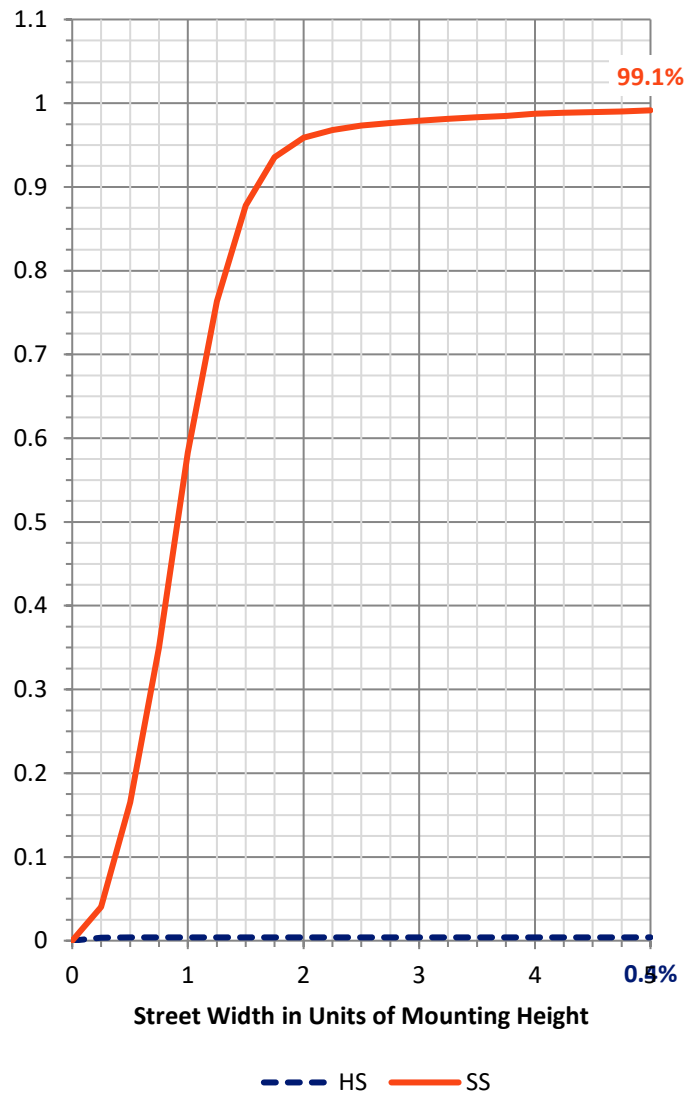
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 77.7     | 0.0    | 77.7    |
|                    | % Fixture | 0.4      | 0.0    | 0.4     |
| <b>Street Side</b> | Lumens    | 19092.7  | 0.0    | 19092.7 |
|                    | % Fixture | 99.6     | 0.0    | 99.6    |
| <b>Total</b>       | Lumens    | 19170.4  | 0.0    | 19170.4 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 19.1    | 0.1       |
| 10°-20°   | 188.4   | 1.0       |
| 20°-30°   | 625.7   | 3.3       |
| 30°-40°   | 1669.5  | 8.7       |
| 40°-50°   | 4243.4  | 22.1      |
| 50°-60°   | 6186.0  | 32.3      |
| 60°-70°   | 4778.1  | 24.9      |
| 70°-80°   | 1312.1  | 6.8       |
| 80°-90°   | 148.1   | 0.8       |
| 90°-100°  | 0.0     | 0.0       |
| 100°-110° | 0.0     | 0.0       |
| 110°-120° | 0.0     | 0.0       |
| 120°-130° | 0.0     | 0.0       |
| 130°-140° | 0.0     | 0.0       |
| 140°-150° | 0.0     | 0.0       |
| 150°-160° | 0.0     | 0.0       |
| 160°-170° | 0.0     | 0.0       |
| 170°-180° | 0.0     | 0.0       |
| 0°-90°    | 19170.4 | 100.0     |
| 0°-180°   | 19170.4 | 100.0     |



REPORT NUMBER: P1067241

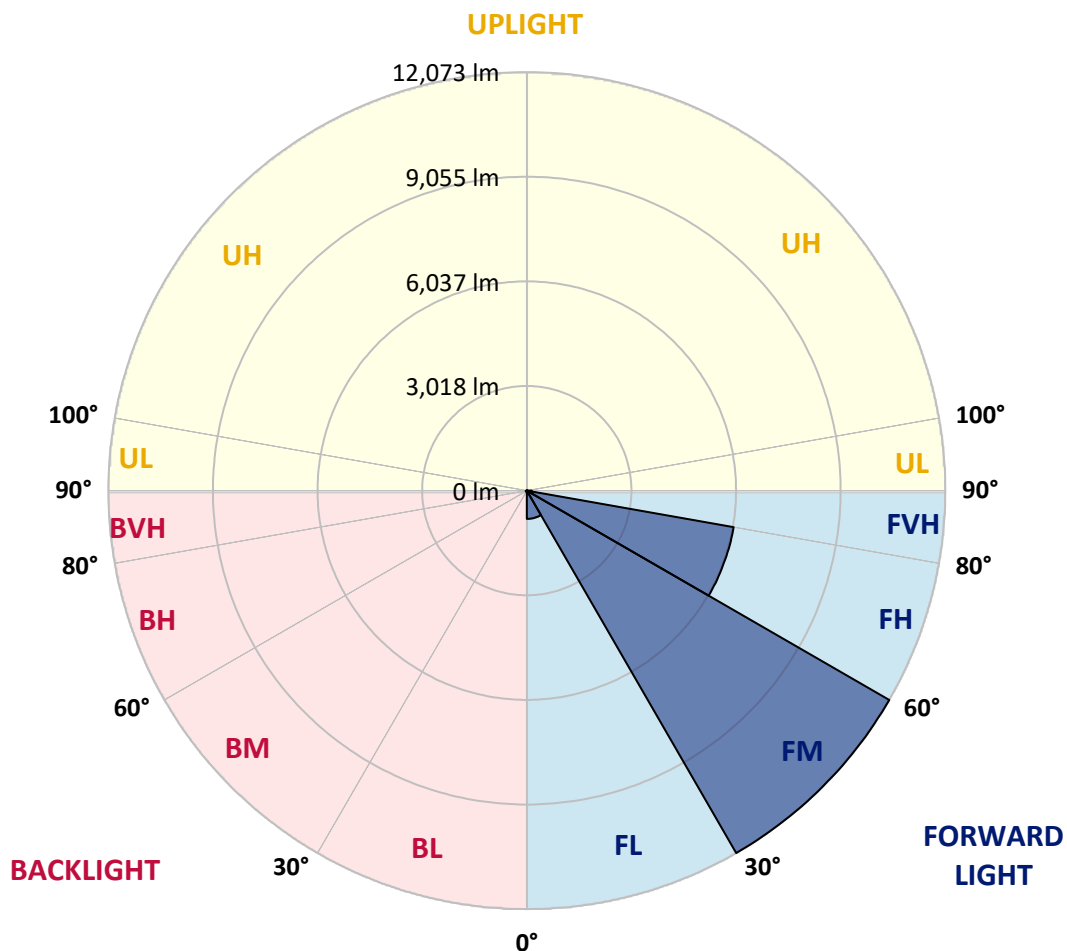
CATALOG NUMBER: NAV-SA6A-730-U-T2BC

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|---------|-----------|-------------------------|------|---------|
|      |             |         |           | B                       | U    | G       |
| FL   | (0°-30°)    | 815.7   | 4.3       |                         |      |         |
| FM   | (30°-60°)   | 12073.2 | 63.0      |                         |      |         |
| FH   | (60°-80°)   | 6059.2  | 31.6      |                         |      | G3/7500 |
| FVH  | (80°-90°)   | 144.6   | 0.8       |                         |      | G2/225  |
| BL   | (0°-30°)    | 17.5    | 0.1       | B0/110                  |      |         |
| BM   | (30°-60°)   | 25.8    | 0.1       | B0/220                  |      |         |
| BH   | (60°-80°)   | 31.0    | 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-G3**

Type II Short



REPORT NUMBER: P1067241

CATALOG NUMBER: NAV-SA6A-730-U-T2BC

**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 64°     | 65°     | 75°     | 85°    |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| 0°    | 126.6   | 126.6   | 126.6   | 126.6   | 126.6   | 126.6   | 126.6   | 126.6   | 126.6   | 126.6   | 126.6  |
| 2.5°  | 168.9   | 168.9   | 168.9   | 163.6   | 158.3   | 158.3   | 153.0   | 147.8   | 147.8   | 137.2   | 131.9  |
| 5°    | 258.6   | 258.6   | 248.0   | 237.5   | 221.6   | 200.5   | 179.4   | 163.6   | 163.6   | 147.8   | 137.2  |
| 7.5°  | 506.6   | 522.4   | 474.9   | 416.9   | 337.7   | 285.0   | 226.9   | 190.0   | 184.7   | 158.3   | 137.2  |
| 10°   | 1097.6  | 1087.0  | 1013.2  | 870.7   | 686.0   | 496.0   | 316.6   | 232.2   | 221.6   | 168.9   | 137.2  |
| 12.5° | 1651.7  | 1667.5  | 1588.4  | 1430.0  | 1208.4  | 881.2   | 543.5   | 300.8   | 290.2   | 184.7   | 137.2  |
| 15°   | 2126.6  | 2126.6  | 2073.8  | 1994.7  | 1751.9  | 1408.9  | 876.0   | 448.5   | 411.6   | 200.5   | 131.9  |
| 17.5° | 2453.8  | 2448.5  | 2427.4  | 2406.3  | 2263.8  | 1910.2  | 1340.3  | 717.7   | 633.2   | 237.5   | 131.9  |
| 20°   | 2823.2  | 2807.3  | 2833.7  | 2791.5  | 2680.7  | 2401.0  | 1831.1  | 1065.9  | 986.8   | 300.8   | 131.9  |
| 22.5° | 3208.4  | 3224.2  | 3245.3  | 3203.1  | 3081.7  | 2839.0  | 2348.2  | 1514.5  | 1430.0  | 416.9   | 137.2  |
| 25°   | 3699.1  | 3688.6  | 3736.1  | 3699.1  | 3546.1  | 3261.1  | 2833.7  | 2005.2  | 1883.9  | 580.5   | 147.8  |
| 27.5° | 4300.7  | 4279.6  | 4311.2  | 4216.3  | 4015.7  | 3725.5  | 3266.4  | 2506.5  | 2364.1  | 833.8   | 168.9  |
| 30°   | 5097.5  | 5113.3  | 4970.9  | 4860.0  | 4575.1  | 4189.9  | 3746.6  | 3044.8  | 2897.0  | 1134.5  | 190.0  |
| 32.5° | 6353.4  | 6242.6  | 6021.0  | 5572.4  | 5197.8  | 4707.0  | 4226.8  | 3514.4  | 3382.5  | 1519.8  | 221.6  |
| 35°   | 8311.2  | 8332.3  | 7846.8  | 6738.6  | 5926.0  | 5356.1  | 4754.5  | 4031.6  | 3936.6  | 1957.7  | 263.8  |
| 37.5° | 10696.3 | 10638.3 | 10210.9 | 8812.5  | 6991.9  | 6163.4  | 5356.1  | 4596.2  | 4459.0  | 2432.7  | 316.6  |
| 40°   | 13398.1 | 13155.4 | 12907.4 | 11957.5 | 9213.5  | 7176.6  | 6116.0  | 5250.5  | 5145.0  | 2981.5  | 401.0  |
| 42.5° | 15561.7 | 15498.3 | 15540.5 | 15144.8 | 12917.9 | 8902.2  | 7123.9  | 6052.6  | 5926.0  | 3662.2  | 548.8  |
| 45°   | 16627.6 | 16537.9 | 16791.2 | 17086.7 | 16516.8 | 12574.9 | 8749.1  | 7076.4  | 6907.5  | 4464.3  | 775.7  |
| 47.5° | 16342.6 | 16279.3 | 16822.8 | 17403.3 | 18163.2 | 16833.4 | 11403.4 | 8606.7  | 8316.4  | 5493.3  | 1113.4 |
| 50°   | 14939.0 | 14944.3 | 15836.1 | 16917.8 | 18121.0 | 18991.7 | 15334.7 | 10701.6 | 10337.5 | 6860.0  | 1641.1 |
| 52.5° | 13572.3 | 13614.5 | 14559.0 | 16136.8 | 17493.0 | 19245.0 | 18785.9 | 13524.8 | 12933.7 | 8469.5  | 2263.8 |
| 55°   | 12168.6 | 12189.7 | 13023.5 | 15245.0 | 17197.5 | 18490.3 | 20558.9 | 17160.6 | 16532.6 | 10474.7 | 2870.6 |
| 57.5° | 10817.7 | 10817.7 | 11129.0 | 13102.6 | 16875.6 | 18421.7 | 20347.8 | 20485.0 | 19973.2 | 12764.9 | 3319.2 |
| 60°   | 8126.5  | 8179.2  | 8954.9  | 10337.5 | 14553.8 | 18522.0 | 19809.6 | 21545.7 | 21545.7 | 15941.6 | 3662.2 |
| 62.5° | 4105.4  | 4184.6  | 5150.3  | 6495.9  | 9983.9  | 17139.5 | 19894.0 | 21012.7 | 21097.2 | 18743.6 | 4443.2 |
| 65°   | 1926.1  | 2015.8  | 2532.9  | 3482.8  | 5371.9  | 12063.1 | 19018.0 | 20558.9 | 20532.5 | 18210.7 | 6089.6 |
| 67.5° | 1382.6  | 1408.9  | 1583.1  | 2031.6  | 2891.8  | 5287.5  | 14516.8 | 19202.7 | 19213.3 | 15471.9 | 7002.5 |
| 70°   | 1240.1  | 1240.1  | 1282.3  | 1414.2  | 1741.4  | 2364.1  | 7055.3  | 15551.1 | 16305.7 | 11947.0 | 6490.6 |
| 72.5° | 1224.2  | 1213.7  | 1203.1  | 1208.4  | 1176.8  | 1187.3  | 2422.1  | 8780.8  | 9857.3  | 8358.7  | 5176.7 |
| 75°   | 1192.6  | 1192.6  | 1182.0  | 1145.1  | 939.3   | 765.2   | 833.8   | 3551.4  | 4105.4  | 5583.0  | 3841.6 |
| 77.5° | 944.6   | 1039.6  | 1150.4  | 1081.8  | 860.1   | 575.2   | 485.5   | 1029.0  | 1298.1  | 3424.7  | 2786.2 |
| 80°   | 438.0   | 443.3   | 438.0   | 459.1   | 548.8   | 411.6   | 358.8   | 501.3   | 506.6   | 1899.7  | 1725.6 |
| 82.5° | 316.6   | 321.9   | 306.1   | 274.4   | 242.7   | 221.6   | 295.5   | 369.4   | 395.8   | 870.7   | 643.8  |
| 85°   | 95.0    | 89.7    | 105.5   | 142.5   | 168.9   | 195.2   | 248.0   | 311.3   | 327.2   | 321.9   | 95.0   |
| 87.5° | 42.2    | 42.2    | 52.8    | 73.9    | 100.3   | 147.8   | 216.4   | 285.0   | 290.2   | 332.4   | 26.4   |
| 90°   | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0    |



REPORT NUMBER: P1067241

CATALOG NUMBER: NAV-SA6A-730-U-T2BC

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 126.6  | 126.6 | 126.6 | 126.6 | 126.6 | 126.6 | 126.6 | 126.6 | 126.6 | 126.6 | 126.6 |
| 2.5°  | 131.9  | 126.6 | 121.4 | 116.1 | 110.8 | 105.5 | 100.3 | 100.3 | 105.5 | 105.5 | 105.5 |
| 5°    | 126.6  | 121.4 | 110.8 | 100.3 | 95.0  | 89.7  | 84.4  | 84.4  | 89.7  | 89.7  | 89.7  |
| 7.5°  | 126.6  | 116.1 | 105.5 | 95.0  | 84.4  | 79.2  | 73.9  | 73.9  | 73.9  | 79.2  | 79.2  |
| 10°   | 126.6  | 116.1 | 100.3 | 84.4  | 73.9  | 68.6  | 63.3  | 58.0  | 63.3  | 63.3  | 63.3  |
| 12.5° | 121.4  | 110.8 | 95.0  | 79.2  | 63.3  | 52.8  | 47.5  | 47.5  | 47.5  | 47.5  | 47.5  |
| 15°   | 116.1  | 105.5 | 89.7  | 68.6  | 52.8  | 42.2  | 31.7  | 31.7  | 31.7  | 36.9  | 36.9  |
| 17.5° | 110.8  | 100.3 | 79.2  | 52.8  | 36.9  | 26.4  | 21.1  | 21.1  | 21.1  | 26.4  | 26.4  |
| 20°   | 110.8  | 95.0  | 68.6  | 42.2  | 26.4  | 15.8  | 10.6  | 10.6  | 10.6  | 15.8  | 21.1  |
| 22.5° | 110.8  | 95.0  | 63.3  | 31.7  | 15.8  | 10.6  | 5.3   | 5.3   | 5.3   | 5.3   | 5.3   |
| 25°   | 110.8  | 89.7  | 58.0  | 26.4  | 10.6  | 5.3   | 0.0   | 0.0   | 5.3   | 10.6  | 15.8  |
| 27.5° | 110.8  | 84.4  | 47.5  | 15.8  | 10.6  | 5.3   | 0.0   | 5.3   | 10.6  | 10.6  | 10.6  |
| 30°   | 110.8  | 84.4  | 42.2  | 15.8  | 5.3   | 0.0   | 0.0   | 5.3   | 10.6  | 10.6  | 15.8  |
| 32.5° | 116.1  | 79.2  | 36.9  | 10.6  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 35°   | 121.4  | 73.9  | 31.7  | 10.6  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 37.5° | 131.9  | 73.9  | 21.1  | 5.3   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 40°   | 147.8  | 79.2  | 21.1  | 5.3   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 42.5° | 184.7  | 84.4  | 15.8  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 45°   | 258.6  | 105.5 | 15.8  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 47.5° | 379.9  | 158.3 | 15.8  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 50°   | 554.1  | 216.4 | 10.6  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 52.5° | 680.7  | 216.4 | 10.6  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 55°   | 675.4  | 137.2 | 5.3   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 57.5° | 517.1  | 95.0  | 5.3   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 60°   | 438.0  | 68.6  | 5.3   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 62.5° | 527.7  | 52.8  | 5.3   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 65°   | 939.3  | 47.5  | 5.3   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 67.5° | 1509.2 | 47.5  | 5.3   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 70°   | 1688.6 | 47.5  | 5.3   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 72.5° | 1319.2 | 42.2  | 5.3   | 5.3   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 75°   | 722.9  | 36.9  | 5.3   | 5.3   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 77.5° | 364.1  | 26.4  | 10.6  | 5.3   | 5.3   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 80°   | 153.0  | 21.1  | 10.6  | 5.3   | 5.3   | 5.3   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 82.5° | 52.8   | 21.1  | 10.6  | 10.6  | 5.3   | 5.3   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 85°   | 26.4   | 15.8  | 15.8  | 10.6  | 10.6  | 5.3   | 5.3   | 0.0   | 0.0   | 0.0   | 0.0   |
| 87.5° | 15.8   | 15.8  | 15.8  | 10.6  | 10.6  | 5.3   | 5.3   | 0.0   | 0.0   | 0.0   | 5.3   |
| 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: SP1-2407-184-4

Test Date: 10/10/2024

Luminaire Tested: GSS-SB1A-730-U-5WQ

Data in this report applies to families of products including GSS-SB1A-730-U-5WQ

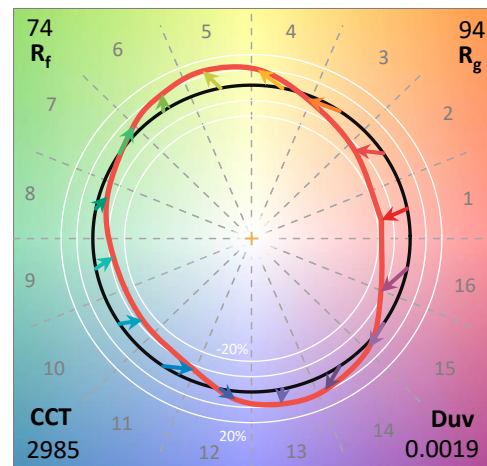
### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-4  
 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-730-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 70 CRI  
 3000K CCT 26 LEDS

### Spectral Parameters

CCT (K): 2985  
 CIE  $u'$ : 0.2504  
 CIE  $v'$ : 0.5243  
 Duv: 0.0019  
 CIE x: 0.4408  
 CIE y: 0.4101  
 CIE z: 0.1491  
 Peak Wavelength (nm): 595  
 Dominant Wavelength (nm): 582  
 Purity: 55.41818  
 R<sub>f</sub>: 73.8  
 R<sub>g</sub>: 94.4

CRI (Ra): 70.8  
 R1: 66.3  
 R2: 80.6  
 R3: 94.5  
 R4: 68.2  
 R5: 66.5  
 R6: 74.7  
 R7: 76.2  
 R8: 39.6  
 R9: -43.2  
 R10: 57.6  
 R11: 64.8  
 R12: 53.5  
 R13: 68.7  
 R14: 97.0  
 R15: 56.4



### Test Conditions

Stabilization Time: 36M  
 Operation Time: 1H 36M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-4

| 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: SP1-2407-184-4

**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: SP1-2407-184-4

### Photopic Flux vs. Wavelength



### Photopic Lumens: NR

| 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       | 142                         | NR               | 620       | 803                         | NR               | 750       | 17                          | NR               | 880       | 0                           | NR               |
| 365       | 0                           | NR               | 495       | 189                         | NR               | 625       | 734                         | NR               | 755       | 15                          | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 240                         | NR               | 630       | 670                         | NR               | 760       | 13                          | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 290                         | NR               | 635       | 600                         | NR               | 765       | 11                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 335                         | NR               | 640       | 535                         | NR               | 770       | 9                           | NR               | 900       | 0                           | NR               |
| 385       | 0                           | NR               | 515       | 375                         | NR               | 645       | 473                         | NR               | 775       | 8                           | NR               | 905       | 0                           | NR               |
| 390       | 1                           | NR               | 520       | 408                         | NR               | 650       | 415                         | NR               | 780       | 7                           | NR               | 910       | 0                           | NR               |
| 395       | 2                           | NR               | 525       | 434                         | NR               | 655       | 362                         | NR               | 785       | 6                           | NR               | 915       | 0                           | NR               |
| 400       | 4                           | NR               | 530       | 461                         | NR               | 660       | 313                         | NR               | 790       | 5                           | NR               | 920       | 0                           | NR               |
| 405       | 8                           | NR               | 535       | 486                         | NR               | 665       | 271                         | NR               | 795       | 4                           | NR               | 925       | 0                           | NR               |
| 410       | 16                          | NR               | 540       | 514                         | NR               | 670       | 231                         | NR               | 800       | 4                           | NR               | 930       | 0                           | NR               |
| 415       | 33                          | NR               | 545       | 549                         | NR               | 675       | 198                         | NR               | 805       | 3                           | NR               | 935       | 0                           | NR               |
| 420       | 69                          | NR               | 550       | 591                         | NR               | 680       | 169                         | NR               | 810       | 3                           | NR               | 940       | 0                           | NR               |
| 425       | 131                         | NR               | 555       | 640                         | NR               | 685       | 144                         | NR               | 815       | 2                           | NR               | 945       | 0                           | NR               |
| 430       | 227                         | NR               | 560       | 695                         | NR               | 690       | 123                         | NR               | 820       | 2                           | NR               | 950       | 0                           | NR               |
| 435       | 369                         | NR               | 565       | 757                         | NR               | 695       | 104                         | NR               | 825       | 2                           | NR               | 955       | 0                           | NR               |
| 440       | 517                         | NR               | 570       | 822                         | NR               | 700       | 88                          | NR               | 830       | 2                           | NR               | 960       | 0                           | NR               |
| 445       | 498                         | NR               | 575       | 882                         | NR               | 705       | 75                          | NR               | 835       | 1                           | NR               | 965       | 0                           | NR               |
| 450       | 315                         | NR               | 580       | 935                         | NR               | 710       | 63                          | NR               | 840       | 1                           | NR               | 970       | 0                           | NR               |
| 455       | 204                         | NR               | 585       | 972                         | NR               | 715       | 54                          | NR               | 845       | 1                           | NR               | 975       | 0                           | NR               |
| 460       | 145                         | NR               | 590       | 996                         | NR               | 720       | 46                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 100                         | NR               | 595       | 1000                        | NR               | 725       | 39                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 78                          | NR               | 600       | 989                         | NR               | 730       | 33                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 76                          | NR               | 605       | 960                         | NR               | 735       | 28                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 83                          | NR               | 610       | 918                         | NR               | 740       | 24                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 105                         | NR               | 615       | 864                         | NR               | 745       | 20                          | NR               | 875       | 1                           | NR               |           |                             |                  |

REPORT NUMBER: SP1-2407-184-4

### Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.19

| 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    | 142                      | NR            | 620    | 803                      | NR            | 750    | 17                       | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 189                      | NR            | 625    | 734                      | NR            | 755    | 15                       | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 240                      | NR            | 630    | 670                      | NR            | 760    | 13                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 290                      | NR            | 635    | 600                      | NR            | 765    | 11                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 335                      | NR            | 640    | 535                      | NR            | 770    | 9                        | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 375                      | NR            | 645    | 473                      | NR            | 775    | 8                        | NR            | 905    | 0                        | NR            |
| 390    | 1                        | NR            | 520    | 408                      | NR            | 650    | 415                      | NR            | 780    | 7                        | NR            | 910    | 0                        | NR            |
| 395    | 2                        | NR            | 525    | 434                      | NR            | 655    | 362                      | NR            | 785    | 6                        | NR            | 915    | 0                        | NR            |
| 400    | 4                        | NR            | 530    | 461                      | NR            | 660    | 313                      | NR            | 790    | 5                        | NR            | 920    | 0                        | NR            |
| 405    | 8                        | NR            | 535    | 486                      | NR            | 665    | 271                      | NR            | 795    | 4                        | NR            | 925    | 0                        | NR            |
| 410    | 16                       | NR            | 540    | 514                      | NR            | 670    | 231                      | NR            | 800    | 4                        | NR            | 930    | 0                        | NR            |
| 415    | 33                       | NR            | 545    | 549                      | NR            | 675    | 198                      | NR            | 805    | 3                        | NR            | 935    | 0                        | NR            |
| 420    | 69                       | NR            | 550    | 591                      | NR            | 680    | 169                      | NR            | 810    | 3                        | NR            | 940    | 0                        | NR            |
| 425    | 131                      | NR            | 555    | 640                      | NR            | 685    | 144                      | NR            | 815    | 2                        | NR            | 945    | 0                        | NR            |
| 430    | 227                      | NR            | 560    | 695                      | NR            | 690    | 123                      | NR            | 820    | 2                        | NR            | 950    | 0                        | NR            |
| 435    | 369                      | NR            | 565    | 757                      | NR            | 695    | 104                      | NR            | 825    | 2                        | NR            | 955    | 0                        | NR            |
| 440    | 517                      | NR            | 570    | 822                      | NR            | 700    | 88                       | NR            | 830    | 2                        | NR            | 960    | 0                        | NR            |
| 445    | 498                      | NR            | 575    | 882                      | NR            | 705    | 75                       | NR            | 835    | 1                        | NR            | 965    | 0                        | NR            |
| 450    | 315                      | NR            | 580    | 935                      | NR            | 710    | 63                       | NR            | 840    | 1                        | NR            | 970    | 0                        | NR            |
| 455    | 204                      | NR            | 585    | 972                      | NR            | 715    | 54                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 145                      | NR            | 590    | 996                      | NR            | 720    | 46                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 100                      | NR            | 595    | 1000                     | NR            | 725    | 39                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 78                       | NR            | 600    | 989                      | NR            | 730    | 33                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 76                       | NR            | 605    | 960                      | NR            | 735    | 28                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 83                       | NR            | 610    | 918                      | NR            | 740    | 24                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 105                      | NR            | 615    | 864                      | NR            | 745    | 20                       | NR            | 875    | 1                        | NR            |        |                          |               |

REPORT NUMBER: SP1-2407-184-4

### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.13

| $\lambda$<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               | 142                                  | NR                             | 620               | 803                                  | NR                             | 750               | 17                                   | NR                             | 880               | 0                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 189                                  | NR                             | 625               | 734                                  | NR                             | 755               | 15                                   | NR                             | 885               | 0                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 240                                  | NR                             | 630               | 670                                  | NR                             | 760               | 13                                   | NR                             | 890               | 0                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 290                                  | NR                             | 635               | 600                                  | NR                             | 765               | 11                                   | NR                             | 895               | 0                                    | NR                             |
| 380               | 0                                    | NR                             | 510               | 335                                  | NR                             | 640               | 535                                  | NR                             | 770               | 9                                    | NR                             | 900               | 0                                    | NR                             |
| 385               | 0                                    | NR                             | 515               | 375                                  | NR                             | 645               | 473                                  | NR                             | 775               | 8                                    | NR                             | 905               | 0                                    | NR                             |
| 390               | 1                                    | NR                             | 520               | 408                                  | NR                             | 650               | 415                                  | NR                             | 780               | 7                                    | NR                             | 910               | 0                                    | NR                             |
| 395               | 2                                    | NR                             | 525               | 434                                  | NR                             | 655               | 362                                  | NR                             | 785               | 6                                    | NR                             | 915               | 0                                    | NR                             |
| 400               | 4                                    | NR                             | 530               | 461                                  | NR                             | 660               | 313                                  | NR                             | 790               | 5                                    | NR                             | 920               | 0                                    | NR                             |
| 405               | 8                                    | NR                             | 535               | 486                                  | NR                             | 665               | 271                                  | NR                             | 795               | 4                                    | NR                             | 925               | 0                                    | NR                             |
| 410               | 16                                   | NR                             | 540               | 514                                  | NR                             | 670               | 231                                  | NR                             | 800               | 4                                    | NR                             | 930               | 0                                    | NR                             |
| 415               | 33                                   | NR                             | 545               | 549                                  | NR                             | 675               | 198                                  | NR                             | 805               | 3                                    | NR                             | 935               | 0                                    | NR                             |
| 420               | 69                                   | NR                             | 550               | 591                                  | NR                             | 680               | 169                                  | NR                             | 810               | 3                                    | NR                             | 940               | 0                                    | NR                             |
| 425               | 131                                  | NR                             | 555               | 640                                  | NR                             | 685               | 144                                  | NR                             | 815               | 2                                    | NR                             | 945               | 0                                    | NR                             |
| 430               | 227                                  | NR                             | 560               | 695                                  | NR                             | 690               | 123                                  | NR                             | 820               | 2                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 369                                  | NR                             | 565               | 757                                  | NR                             | 695               | 104                                  | NR                             | 825               | 2                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 517                                  | NR                             | 570               | 822                                  | NR                             | 700               | 88                                   | NR                             | 830               | 2                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 498                                  | NR                             | 575               | 882                                  | NR                             | 705               | 75                                   | NR                             | 835               | 1                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 315                                  | NR                             | 580               | 935                                  | NR                             | 710               | 63                                   | NR                             | 840               | 1                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 204                                  | NR                             | 585               | 972                                  | NR                             | 715               | 54                                   | NR                             | 845               | 1                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 145                                  | NR                             | 590               | 996                                  | NR                             | 720               | 46                                   | NR                             | 850               | 1                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 100                                  | NR                             | 595               | 1000                                 | NR                             | 725               | 39                                   | NR                             | 855               | 1                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 78                                   | NR                             | 600               | 989                                  | NR                             | 730               | 33                                   | NR                             | 860               | 1                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 76                                   | NR                             | 605               | 960                                  | NR                             | 735               | 28                                   | NR                             | 865               | 1                                    | NR                             | 995               | 0                                    | NR                             |
| 480               | 83                                   | NR                             | 610               | 918                                  | NR                             | 740               | 24                                   | NR                             | 870               | 1                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 105                                  | NR                             | 615               | 864                                  | NR                             | 745               | 20                                   | NR                             | 875               | 1                                    | NR                             |                   |                                      |                                |

REPORT NUMBER: SP1-2407-184-4

TM-30-18

### Summary

$R_f = 73.8$   
 $R_g = 94.4$   
 $CIE\ R_a = 70.8$   
 $R_g = -43.2$



### Color Vector Graphics



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 63 | CES51 = 86 | CES76 = 61 |
| CES02 = 62 | CES27 = 83 | CES52 = 86 | CES77 = 81 |
| CES03 = 31 | CES28 = 86 | CES53 = 75 | CES78 = 64 |
| CES04 = 71 | CES29 = 58 | CES54 = 81 | CES79 = 86 |
| CES05 = 49 | CES30 = 61 | CES55 = 80 | CES80 = 86 |
| CES06 = 51 | CES31 = 63 | CES56 = 71 | CES81 = 70 |
| CES07 = 41 | CES32 = 61 | CES57 = 69 | CES82 = 94 |
| CES08 = 40 | CES33 = 65 | CES58 = 72 | CES83 = 88 |
| CES09 = 29 | CES34 = 77 | CES59 = 85 | CES84 = 90 |
| CES10 = 76 | CES35 = 88 | CES60 = 93 | CES85 = 80 |
| CES11 = 59 | CES36 = 89 | CES61 = 86 | CES86 = 60 |
| CES12 = 65 | CES37 = 85 | CES62 = 81 | CES87 = 78 |
| CES13 = 43 | CES38 = 69 | CES63 = 73 | CES88 = 75 |
| CES14 = 74 | CES39 = 93 | CES64 = 72 | CES89 = 66 |
| CES15 = 71 | CES40 = 89 | CES65 = 67 | CES90 = 72 |
| CES16 = 47 | CES41 = 83 | CES66 = 70 | CES91 = 95 |
| CES17 = 50 | CES42 = 87 | CES67 = 68 | CES92 = 59 |
| CES18 = 56 | CES43 = 77 | CES68 = 73 | CES93 = 76 |
| CES19 = 73 | CES44 = 99 | CES69 = 83 | CES94 = 48 |
| CES20 = 66 | CES45 = 83 | CES70 = 66 | CES95 = 70 |
| CES21 = 87 | CES46 = 77 | CES71 = 66 | CES96 = 76 |
| CES22 = 79 | CES47 = 74 | CES72 = 88 | CES97 = 82 |
| CES23 = 92 | CES48 = 62 | CES73 = 59 | CES98 = 73 |
| CES24 = 91 | CES49 = 77 | CES74 = 93 | CES99 = 60 |
| CES25 = 73 | CES50 = 85 | CES75 = 67 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)