

Signify Classified - Internal  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



Scaled data based on original data using  
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions  
(formerly Eaton)

Brand: McGRAW-EDISON

Report Number: P1047534

Luminaire Tested: **GALN-SA5B-935-U-T3BC**

Issue Date: 07/10/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1047534  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 07/10/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: MCGRAW-EDISON  
Catalog Number: GALN-SA5B-935-U-T3BC  
Description: GALLEON II AREA AND ROADWAY LUMINAIRE 800mA 5xLight Square PACKAGE  
90CRI 3500K FIXTURE w/ TYPE III ANGLED BACKLIGHT CONTROL  
Light Source: (70) 3500K CCT, 90 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 17076.1 lumens  
Efficiency: N/A  
Efficacy: 95.5 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type III - Short  
BUG Rating: B0 - U0 - G3

Input Watts (W): 178.8  
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

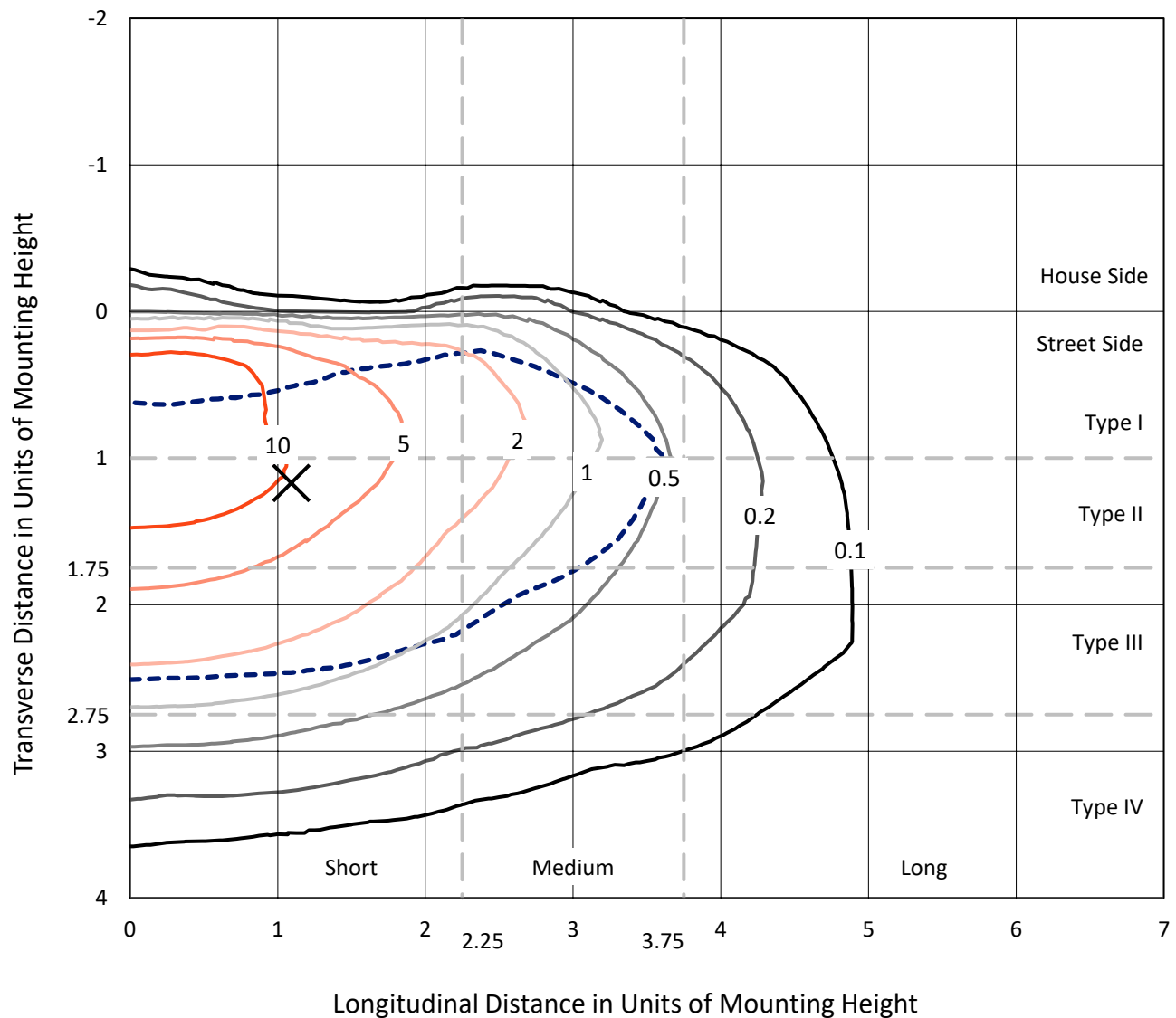


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## Iso-Footcandle Lines of Horizontal Illumination

✕ Max cd  
 - - - 1/2 Max cd

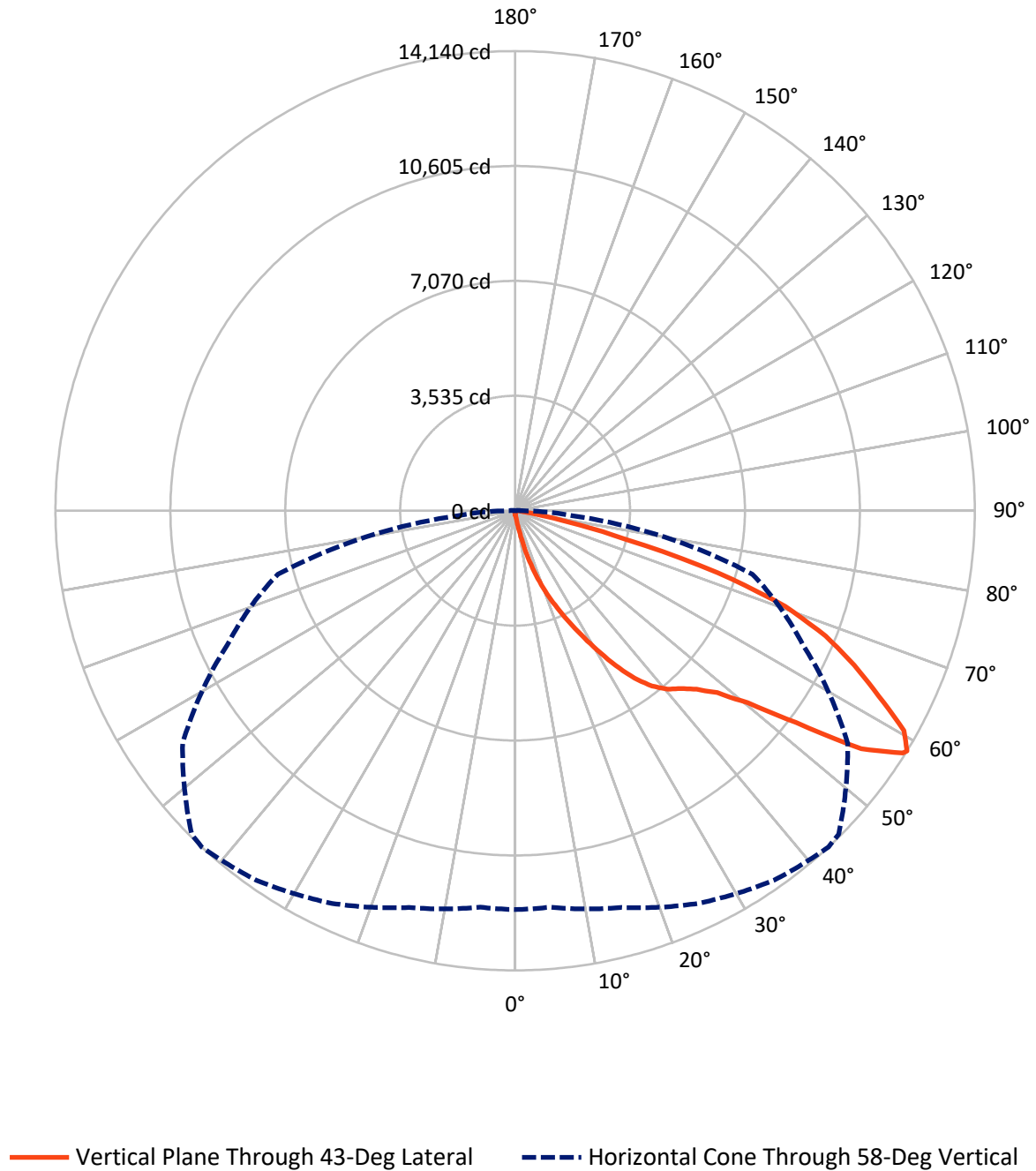


Based on 15 foot mounting height. Maximum calculated value = 19.2 fc  
 Type III - Short - N/A

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## Luminous Intensity Polar Plot



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CATALOG NUMBER: GALN-SA5B-935-U-T3BC

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 62.3     | 0.0    | 62.3    |
|                    | % Fixture | 0.4      | 0.0    | 0.4     |
| <b>Street Side</b> | Lumens    | 17013.7  | 0.0    | 17013.7 |
|                    | % Fixture | 99.6     | 0.0    | 99.6    |
| <b>Total</b>       | Lumens    | 17076.1  | 0.0    | 17076.1 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 16.4    | 0.1       |
| 10°-20°   | 196.3   | 1.1       |
| 20°-30°   | 707.5   | 4.1       |
| 30°-40°   | 1618.7  | 9.5       |
| 40°-50°   | 2730.1  | 16.0      |
| 50°-60°   | 4505.4  | 26.4      |
| 60°-70°   | 5035.3  | 29.5      |
| 70°-80°   | 2079.0  | 12.2      |
| 80°-90°   | 187.4   | 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°    | 17076.1 | 100.0     |
| 0°-180°   | 17076.1 | 100.0     |



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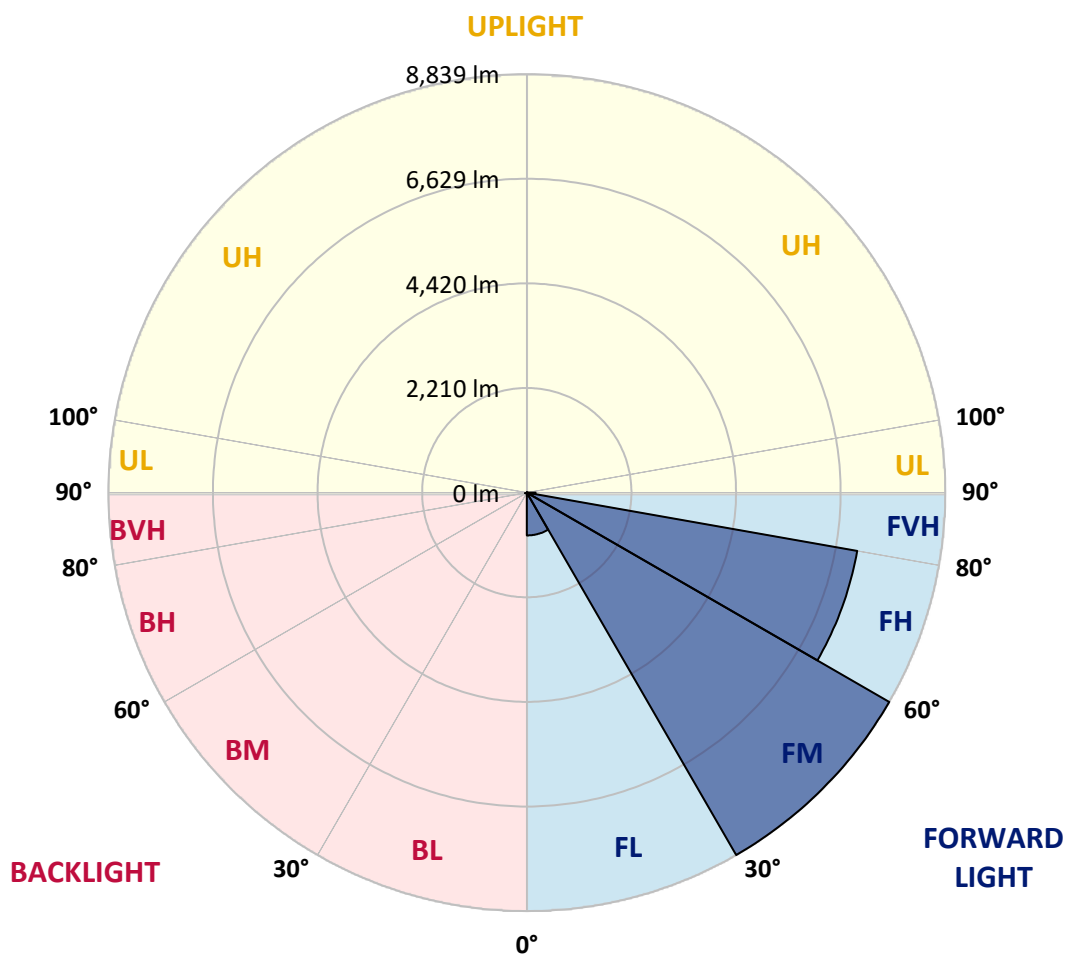
CATALOG NUMBER: GALN-SA5B-935-U-T3BC

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 903.9  | 5.3       |                         |      |         |
| FM   | (30°-60°)   | 8839.2 | 51.8      |                         |      |         |
| FH   | (60°-80°)   | 7085.8 | 41.5      |                         |      | G3/7500 |
| FVH  | (80°-90°)   | 184.9  | 1.1       |                         |      | G2/225  |
| BL   | (0°-30°)    | 16.3   | 0.1       | B0/110                  |      |         |
| BM   | (30°-60°)   | 14.9   | 0.1       | B0/220                  |      |         |
| BH   | (60°-80°)   | 28.6   | 0.2       | B0/110                  |      | G0/110  |
| BVH  | (80°-90°)   | 2.6    | 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 III Short



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 43°     | 45°     | 55°     | 65°     | 75°     | 85°    |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| 0°    | 111.7   | 111.7   | 111.7   | 111.7   | 111.7   | 111.7   | 111.7   | 111.7   | 111.7   | 111.7   | 111.7  |
| 2.5°  | 134.0   | 138.4   | 134.0   | 134.0   | 134.0   | 129.5   | 129.5   | 125.1   | 125.1   | 120.6   | 116.1  |
| 5°    | 196.5   | 196.5   | 183.1   | 174.2   | 165.2   | 160.8   | 156.3   | 147.4   | 138.4   | 129.5   | 120.6  |
| 7.5°  | 437.7   | 437.7   | 397.5   | 343.9   | 272.4   | 232.2   | 223.3   | 183.1   | 156.3   | 138.4   | 120.6  |
| 10°   | 1045.1  | 1045.1  | 955.7   | 808.4   | 625.3   | 464.5   | 415.3   | 263.5   | 187.6   | 147.4   | 125.1  |
| 12.5° | 1737.3  | 1759.6  | 1648.0  | 1460.4  | 1188.0  | 906.6   | 808.4   | 482.3   | 250.1   | 160.8   | 125.1  |
| 15°   | 2358.1  | 2304.5  | 2273.2  | 2094.6  | 1835.6  | 1500.6  | 1375.6  | 812.8   | 361.8   | 183.1   | 125.1  |
| 17.5° | 2777.9  | 2777.9  | 2733.3  | 2612.7  | 2376.0  | 2081.2  | 1978.5  | 1313.0  | 585.1   | 209.9   | 129.5  |
| 20°   | 3269.2  | 3269.2  | 3188.8  | 3103.9  | 2894.0  | 2643.9  | 2545.7  | 1866.8  | 906.6   | 268.0   | 129.5  |
| 22.5° | 3863.2  | 3872.1  | 3782.8  | 3630.9  | 3430.0  | 3153.1  | 3068.2  | 2380.4  | 1313.0  | 357.3   | 134.0  |
| 25°   | 4586.7  | 4595.6  | 4466.1  | 4323.2  | 4015.0  | 3715.8  | 3586.3  | 2970.0  | 1808.8  | 500.2   | 134.0  |
| 27.5° | 5386.1  | 5448.6  | 5256.6  | 5011.0  | 4684.9  | 4309.8  | 4211.5  | 3501.4  | 2300.0  | 705.6   | 142.9  |
| 30°   | 6382.1  | 6382.1  | 6127.5  | 5783.6  | 5430.8  | 4966.3  | 4841.3  | 4059.7  | 2822.6  | 978.1   | 151.8  |
| 32.5° | 7239.5  | 7172.6  | 6846.5  | 6484.8  | 6109.6  | 5676.4  | 5542.4  | 4644.7  | 3358.5  | 1317.5  | 169.7  |
| 35°   | 7896.1  | 7838.0  | 7436.1  | 7047.5  | 6721.5  | 6324.0  | 6163.2  | 5278.9  | 3925.7  | 1701.6  | 196.5  |
| 37.5° | 8458.8  | 8436.5  | 7891.6  | 7404.8  | 7190.4  | 6842.1  | 6699.2  | 5877.4  | 4484.0  | 2116.9  | 227.8  |
| 40°   | 9075.1  | 9003.7  | 8423.1  | 7820.1  | 7498.6  | 7217.2  | 7087.7  | 6359.7  | 5019.9  | 2603.7  | 272.4  |
| 42.5° | 9602.1  | 9517.3  | 8994.7  | 8405.2  | 7855.9  | 7476.3  | 7351.2  | 6766.1  | 5542.4  | 3090.5  | 330.5  |
| 45°   | 10187.2 | 10142.5 | 9615.5  | 9168.9  | 8436.5  | 7829.1  | 7663.8  | 7092.2  | 6020.3  | 3671.1  | 406.4  |
| 47.5° | 11067.0 | 10986.6 | 10495.3 | 10129.1 | 9280.6  | 8365.0  | 8128.3  | 7427.1  | 6480.3  | 4242.8  | 522.5  |
| 50°   | 12089.7 | 12036.1 | 11745.8 | 11455.5 | 10611.5 | 9280.6  | 8999.2  | 7909.5  | 6993.9  | 4921.6  | 674.4  |
| 52.5° | 12924.9 | 12916.0 | 12951.7 | 12956.2 | 12317.5 | 10821.4 | 10401.5 | 8686.6  | 7583.4  | 5591.6  | 888.8  |
| 55°   | 12907.0 | 12947.2 | 13340.2 | 13791.3 | 13840.4 | 12924.9 | 12518.5 | 9995.1  | 8351.6  | 6417.8  | 1188.0 |
| 57.5° | 12424.7 | 12393.4 | 12808.8 | 13487.6 | 13965.5 | 14063.8 | 13996.8 | 12027.2 | 9508.3  | 7413.7  | 1648.0 |
| 58°   | 12268.4 | 12241.6 | 12634.6 | 13326.8 | 13876.2 | 14139.7 | 14072.7 | 12487.2 | 9767.4  | 7556.6  | 1773.0 |
| 60°   | 11701.2 | 11705.6 | 11937.9 | 12567.6 | 13116.9 | 13742.2 | 13804.7 | 13800.3 | 11058.1 | 8512.4  | 2402.8 |
| 62.5° | 10950.9 | 10915.2 | 11129.5 | 11643.1 | 12125.5 | 12545.3 | 12652.5 | 13889.6 | 12947.2 | 9727.2  | 3604.1 |
| 65°   | 9914.7  | 9861.2  | 10088.9 | 10669.5 | 11187.6 | 11460.0 | 11464.5 | 12692.7 | 13836.0 | 11031.3 | 5319.1 |
| 67.5° | 7989.9  | 7945.2  | 8400.7  | 9146.6  | 9946.0  | 10303.3 | 10464.1 | 11013.4 | 13085.7 | 11915.6 | 6301.7 |
| 70°   | 4894.8  | 4988.6  | 5622.8  | 6792.9  | 8159.6  | 8816.1  | 9057.3  | 9227.0  | 11142.9 | 11781.6 | 5270.0 |
| 72.5° | 2259.8  | 2148.2  | 2688.6  | 3505.9  | 5064.6  | 6525.0  | 6775.1  | 7440.5  | 8833.9  | 10227.4 | 3930.2 |
| 75°   | 1054.0  | 1013.8  | 1138.9  | 1531.9  | 2295.6  | 3523.8  | 3979.3  | 5939.9  | 6775.1  | 7114.5  | 2836.0 |
| 77.5° | 540.4   | 544.9   | 647.6   | 696.7   | 946.8   | 1630.1  | 1871.3  | 3907.8  | 4966.3  | 3970.4  | 1902.6 |
| 80°   | 236.7   | 245.6   | 250.1   | 272.4   | 384.1   | 629.7   | 710.1   | 1813.2  | 3394.2  | 2023.1  | 1040.6 |
| 82.5° | 151.8   | 156.3   | 156.3   | 156.3   | 183.1   | 250.1   | 285.8   | 728.0   | 1692.7  | 1004.9  | 321.6  |
| 85°   | 80.4    | 80.4    | 89.3    | 111.7   | 129.5   | 151.8   | 160.8   | 232.2   | 558.3   | 299.2   | 75.9   |
| 87.5° | 44.7    | 49.1    | 53.6    | 67.0    | 84.9    | 102.7   | 111.7   | 160.8   | 214.4   | 205.4   | 17.9   |
| 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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CATALOG NUMBER: GALN-SA5B-935-U-T3BC

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 111.7  | 111.7 | 111.7 | 111.7 | 111.7 | 111.7 | 111.7 | 111.7 | 111.7 | 111.7 | 111.7 |
| 2.5°  | 116.1  | 111.7 | 107.2 | 102.7 | 98.3  | 93.8  | 93.8  | 93.8  | 93.8  | 93.8  | 93.8  |
| 5°    | 111.7  | 107.2 | 102.7 | 93.8  | 84.9  | 80.4  | 75.9  | 71.5  | 71.5  | 71.5  | 71.5  |
| 7.5°  | 111.7  | 107.2 | 93.8  | 84.9  | 75.9  | 67.0  | 58.1  | 58.1  | 58.1  | 58.1  | 58.1  |
| 10°   | 111.7  | 102.7 | 89.3  | 75.9  | 62.5  | 53.6  | 49.1  | 44.7  | 44.7  | 44.7  | 44.7  |
| 12.5° | 111.7  | 98.3  | 84.9  | 67.0  | 53.6  | 44.7  | 40.2  | 35.7  | 35.7  | 35.7  | 35.7  |
| 15°   | 111.7  | 98.3  | 80.4  | 62.5  | 49.1  | 35.7  | 31.3  | 26.8  | 26.8  | 26.8  | 26.8  |
| 17.5° | 107.2  | 93.8  | 75.9  | 53.6  | 40.2  | 26.8  | 22.3  | 17.9  | 17.9  | 22.3  | 22.3  |
| 20°   | 102.7  | 89.3  | 67.0  | 44.7  | 31.3  | 22.3  | 13.4  | 13.4  | 13.4  | 13.4  | 13.4  |
| 22.5° | 102.7  | 89.3  | 62.5  | 40.2  | 26.8  | 13.4  | 8.9   | 8.9   | 8.9   | 8.9   | 13.4  |
| 25°   | 102.7  | 84.9  | 53.6  | 31.3  | 17.9  | 8.9   | 4.5   | 4.5   | 4.5   | 4.5   | 4.5   |
| 27.5° | 102.7  | 84.9  | 49.1  | 26.8  | 13.4  | 8.9   | 4.5   | 0.0   | 0.0   | 0.0   | 0.0   |
| 30°   | 98.3   | 80.4  | 44.7  | 22.3  | 8.9   | 4.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 32.5° | 98.3   | 75.9  | 35.7  | 17.9  | 8.9   | 4.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 35°   | 102.7  | 71.5  | 31.3  | 13.4  | 4.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 4.5   |
| 37.5° | 107.2  | 67.0  | 26.8  | 8.9   | 4.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 40°   | 111.7  | 62.5  | 26.8  | 8.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 42.5° | 120.6  | 62.5  | 22.3  | 8.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 45°   | 129.5  | 62.5  | 17.9  | 4.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 47.5° | 147.4  | 67.0  | 17.9  | 4.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 50°   | 160.8  | 71.5  | 13.4  | 4.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 52.5° | 178.6  | 67.0  | 13.4  | 4.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 55°   | 201.0  | 67.0  | 13.4  | 4.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 57.5° | 218.8  | 62.5  | 13.4  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 58°   | 227.8  | 58.1  | 8.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 60°   | 272.4  | 53.6  | 8.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 62.5° | 424.3  | 44.7  | 8.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 65°   | 862.0  | 40.2  | 8.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 67.5° | 1607.8 | 35.7  | 8.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 70°   | 1799.8 | 40.2  | 4.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 72.5° | 1134.4 | 31.3  | 4.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 75°   | 598.5  | 31.3  | 4.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 77.5° | 299.2  | 31.3  | 4.5   | 4.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 80°   | 138.4  | 22.3  | 4.5   | 4.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 82.5° | 58.1   | 13.4  | 8.9   | 4.5   | 4.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 85°   | 26.8   | 13.4  | 8.9   | 8.9   | 4.5   | 4.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 87.5° | 13.4   | 13.4  | 13.4  | 8.9   | 8.9   | 4.5   | 4.5   | 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: SP1-2407-184-15

Test Date: 10/11/2024

Luminaire Tested: GSS-SB1A-935-U-5WQ

Data in this report applies to families of products including GSS-SB1A-935-U-5WQ

### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-15  
 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-935-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 90 CRI  
 3500K CCT 26 LEDS

### Spectral Parameters

CCT (K): 3455  
 CIE  $u'$ : 0.2356  
 CIE  $v'$ : 0.5159  
 Duv: 0.0028  
 CIE x: 0.4109  
 CIE y: 0.3999  
 CIE z: 0.1892  
 Peak Wavelength (nm): 616  
 Dominant Wavelength (nm): 579  
 Purity: 43.35383  
 R<sub>f</sub>: 92.3  
 R<sub>g</sub>: 98.5

CRI (Ra): 92.2  
 R1: 92.0  
 R2: 94.4  
 R3: 95.6  
 R4: 93.2  
 R5: 91.4  
 R6: 92.5  
 R7: 94.5  
 R8: 84.2  
 R9: 59.8  
 R10: 85.8  
 R11: 93.2  
 R12: 78.0  
 R13: 92.5  
 R14: 97.0  
 R15: 88.4



### Test Conditions

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

REPORT NUMBER: SP1-2407-184-15

| 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 3500K 4-step quadrangle

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### Photopic Flux vs. Wavelength



### Photopic Lumens: NR

| $\lambda$<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               | 410                                    | NR                             | 620               | 997                                    | NR                             | 750               | 74                                     | NR                             | 880               | 1                                      | NR                             |
| 365               | 0                                      | NR                             | 495               | 454                                    | NR                             | 625               | 988                                    | NR                             | 755               | 64                                     | NR                             | 885               | 1                                      | NR                             |
| 370               | 0                                      | NR                             | 500               | 493                                    | NR                             | 630               | 973                                    | NR                             | 760               | 54                                     | NR                             | 890               | 1                                      | NR                             |
| 375               | 0                                      | NR                             | 505               | 530                                    | NR                             | 635               | 946                                    | NR                             | 765               | 47                                     | NR                             | 895               | 1                                      | NR                             |
| 380               | 0                                      | NR                             | 510               | 564                                    | NR                             | 640               | 913                                    | NR                             | 770               | 40                                     | NR                             | 900               | 1                                      | NR                             |
| 385               | 0                                      | NR                             | 515               | 599                                    | NR                             | 645               | 870                                    | NR                             | 775               | 34                                     | NR                             | 905               | 1                                      | NR                             |
| 390               | 0                                      | NR                             | 520               | 634                                    | NR                             | 650               | 826                                    | NR                             | 780               | 29                                     | NR                             | 910               | 1                                      | NR                             |
| 395               | 0                                      | NR                             | 525               | 664                                    | NR                             | 655               | 774                                    | NR                             | 785               | 25                                     | NR                             | 915               | 1                                      | NR                             |
| 400               | 2                                      | NR                             | 530               | 695                                    | NR                             | 660               | 720                                    | NR                             | 790               | 21                                     | NR                             | 920               | 1                                      | NR                             |
| 405               | 4                                      | NR                             | 535               | 722                                    | NR                             | 665               | 664                                    | NR                             | 795               | 18                                     | NR                             | 925               | 1                                      | NR                             |
| 410               | 9                                      | NR                             | 540               | 741                                    | NR                             | 670               | 605                                    | NR                             | 800               | 16                                     | NR                             | 930               | 0                                      | NR                             |
| 415               | 17                                     | NR                             | 545               | 762                                    | NR                             | 675               | 550                                    | NR                             | 805               | 13                                     | NR                             | 935               | 0                                      | NR                             |
| 420               | 32                                     | NR                             | 550               | 777                                    | NR                             | 680               | 497                                    | NR                             | 810               | 12                                     | NR                             | 940               | 0                                      | NR                             |
| 425               | 61                                     | NR                             | 555               | 789                                    | NR                             | 685               | 445                                    | NR                             | 815               | 10                                     | NR                             | 945               | 0                                      | NR                             |
| 430               | 114                                    | NR                             | 560               | 800                                    | NR                             | 690               | 398                                    | NR                             | 820               | 9                                      | NR                             | 950               | 0                                      | NR                             |
| 435               | 218                                    | NR                             | 565               | 813                                    | NR                             | 695               | 352                                    | NR                             | 825               | 7                                      | NR                             | 955               | 0                                      | NR                             |
| 440               | 427                                    | NR                             | 570               | 828                                    | NR                             | 700               | 309                                    | NR                             | 830               | 6                                      | NR                             | 960               | 0                                      | NR                             |
| 445               | 684                                    | NR                             | 575               | 846                                    | NR                             | 705               | 273                                    | NR                             | 835               | 5                                      | NR                             | 965               | 0                                      | NR                             |
| 450               | 611                                    | NR                             | 580               | 866                                    | NR                             | 710               | 237                                    | NR                             | 840               | 5                                      | NR                             | 970               | 0                                      | NR                             |
| 455               | 461                                    | NR                             | 585               | 888                                    | NR                             | 715               | 208                                    | NR                             | 845               | 4                                      | NR                             | 975               | 0                                      | NR                             |
| 460               | 427                                    | NR                             | 590               | 913                                    | NR                             | 720               | 181                                    | NR                             | 850               | 4                                      | NR                             | 980               | 0                                      | NR                             |
| 465               | 349                                    | NR                             | 595               | 936                                    | NR                             | 725               | 157                                    | NR                             | 855               | 3                                      | NR                             | 985               | 0                                      | NR                             |
| 470               | 298                                    | NR                             | 600               | 957                                    | NR                             | 730               | 136                                    | NR                             | 860               | 3                                      | NR                             | 990               | 1                                      | NR                             |
| 475               | 312                                    | NR                             | 605               | 976                                    | NR                             | 735               | 117                                    | NR                             | 865               | 2                                      | NR                             | 995               | 0                                      | NR                             |
| 480               | 335                                    | NR                             | 610               | 990                                    | NR                             | 740               | 100                                    | NR                             | 870               | 2                                      | NR                             | 1000              | 0                                      | NR                             |
| 485               | 367                                    | NR                             | 615               | 999                                    | NR                             | 745               | 86                                     | NR                             | 875               | 2                                      | NR                             |                   |                                        |                                |

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### Scotopic Flux vs. Wavelength



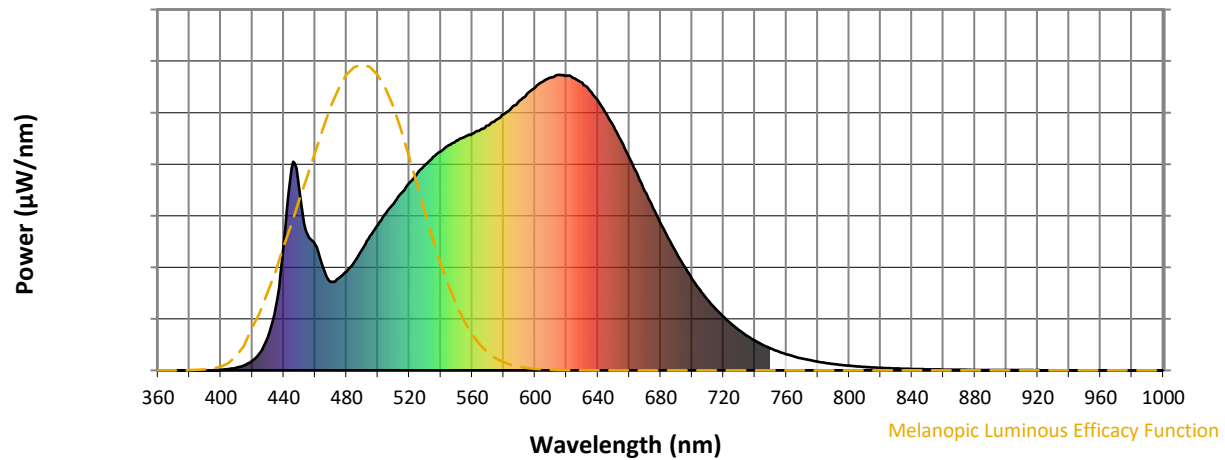
Scotopic Lumens: NR

S/P: 1.58

| 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       | 410                         | NR               | 620       | 997                         | NR               | 750       | 74                          | NR               | 880       | 1                           | NR               |
| 365       | 0                           | NR               | 495       | 454                         | NR               | 625       | 988                         | NR               | 755       | 64                          | NR               | 885       | 1                           | NR               |
| 370       | 0                           | NR               | 500       | 493                         | NR               | 630       | 973                         | NR               | 760       | 54                          | NR               | 890       | 1                           | NR               |
| 375       | 0                           | NR               | 505       | 530                         | NR               | 635       | 946                         | NR               | 765       | 47                          | NR               | 895       | 1                           | NR               |
| 380       | 0                           | NR               | 510       | 564                         | NR               | 640       | 913                         | NR               | 770       | 40                          | NR               | 900       | 1                           | NR               |
| 385       | 0                           | NR               | 515       | 599                         | NR               | 645       | 870                         | NR               | 775       | 34                          | NR               | 905       | 1                           | NR               |
| 390       | 0                           | NR               | 520       | 634                         | NR               | 650       | 826                         | NR               | 780       | 29                          | NR               | 910       | 1                           | NR               |
| 395       | 0                           | NR               | 525       | 664                         | NR               | 655       | 774                         | NR               | 785       | 25                          | NR               | 915       | 1                           | NR               |
| 400       | 2                           | NR               | 530       | 695                         | NR               | 660       | 720                         | NR               | 790       | 21                          | NR               | 920       | 1                           | NR               |
| 405       | 4                           | NR               | 535       | 722                         | NR               | 665       | 664                         | NR               | 795       | 18                          | NR               | 925       | 1                           | NR               |
| 410       | 9                           | NR               | 540       | 741                         | NR               | 670       | 605                         | NR               | 800       | 16                          | NR               | 930       | 0                           | NR               |
| 415       | 17                          | NR               | 545       | 762                         | NR               | 675       | 550                         | NR               | 805       | 13                          | NR               | 935       | 0                           | NR               |
| 420       | 32                          | NR               | 550       | 777                         | NR               | 680       | 497                         | NR               | 810       | 12                          | NR               | 940       | 0                           | NR               |
| 425       | 61                          | NR               | 555       | 789                         | NR               | 685       | 445                         | NR               | 815       | 10                          | NR               | 945       | 0                           | NR               |
| 430       | 114                         | NR               | 560       | 800                         | NR               | 690       | 398                         | NR               | 820       | 9                           | NR               | 950       | 0                           | NR               |
| 435       | 218                         | NR               | 565       | 813                         | NR               | 695       | 352                         | NR               | 825       | 7                           | NR               | 955       | 0                           | NR               |
| 440       | 427                         | NR               | 570       | 828                         | NR               | 700       | 309                         | NR               | 830       | 6                           | NR               | 960       | 0                           | NR               |
| 445       | 684                         | NR               | 575       | 846                         | NR               | 705       | 273                         | NR               | 835       | 5                           | NR               | 965       | 0                           | NR               |
| 450       | 611                         | NR               | 580       | 866                         | NR               | 710       | 237                         | NR               | 840       | 5                           | NR               | 970       | 0                           | NR               |
| 455       | 461                         | NR               | 585       | 888                         | NR               | 715       | 208                         | NR               | 845       | 4                           | NR               | 975       | 0                           | NR               |
| 460       | 427                         | NR               | 590       | 913                         | NR               | 720       | 181                         | NR               | 850       | 4                           | NR               | 980       | 0                           | NR               |
| 465       | 349                         | NR               | 595       | 936                         | NR               | 725       | 157                         | NR               | 855       | 3                           | NR               | 985       | 0                           | NR               |
| 470       | 298                         | NR               | 600       | 957                         | NR               | 730       | 136                         | NR               | 860       | 3                           | NR               | 990       | 1                           | NR               |
| 475       | 312                         | NR               | 605       | 976                         | NR               | 735       | 117                         | NR               | 865       | 2                           | NR               | 995       | 0                           | NR               |
| 480       | 335                         | NR               | 610       | 990                         | NR               | 740       | 100                         | NR               | 870       | 2                           | NR               | 1000      | 0                           | NR               |
| 485       | 367                         | NR               | 615       | 999                         | NR               | 745       | 86                          | NR               | 875       | 2                           | NR               |           |                             |                  |

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### Melanopic Flux vs. Wavelength


**Melanopic Lumens: NR**
**M/P: 3.14**

| $\lambda$<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               | 410                                    | NR                             | 620               | 997                                    | NR                             | 750               | 74                                     | NR                             | 880               | 1                                      | NR                             |
| 365               | 0                                      | NR                             | 495               | 454                                    | NR                             | 625               | 988                                    | NR                             | 755               | 64                                     | NR                             | 885               | 1                                      | NR                             |
| 370               | 0                                      | NR                             | 500               | 493                                    | NR                             | 630               | 973                                    | NR                             | 760               | 54                                     | NR                             | 890               | 1                                      | NR                             |
| 375               | 0                                      | NR                             | 505               | 530                                    | NR                             | 635               | 946                                    | NR                             | 765               | 47                                     | NR                             | 895               | 1                                      | NR                             |
| 380               | 0                                      | NR                             | 510               | 564                                    | NR                             | 640               | 913                                    | NR                             | 770               | 40                                     | NR                             | 900               | 1                                      | NR                             |
| 385               | 0                                      | NR                             | 515               | 599                                    | NR                             | 645               | 870                                    | NR                             | 775               | 34                                     | NR                             | 905               | 1                                      | NR                             |
| 390               | 0                                      | NR                             | 520               | 634                                    | NR                             | 650               | 826                                    | NR                             | 780               | 29                                     | NR                             | 910               | 1                                      | NR                             |
| 395               | 0                                      | NR                             | 525               | 664                                    | NR                             | 655               | 774                                    | NR                             | 785               | 25                                     | NR                             | 915               | 1                                      | NR                             |
| 400               | 2                                      | NR                             | 530               | 695                                    | NR                             | 660               | 720                                    | NR                             | 790               | 21                                     | NR                             | 920               | 1                                      | NR                             |
| 405               | 4                                      | NR                             | 535               | 722                                    | NR                             | 665               | 664                                    | NR                             | 795               | 18                                     | NR                             | 925               | 1                                      | NR                             |
| 410               | 9                                      | NR                             | 540               | 741                                    | NR                             | 670               | 605                                    | NR                             | 800               | 16                                     | NR                             | 930               | 0                                      | NR                             |
| 415               | 17                                     | NR                             | 545               | 762                                    | NR                             | 675               | 550                                    | NR                             | 805               | 13                                     | NR                             | 935               | 0                                      | NR                             |
| 420               | 32                                     | NR                             | 550               | 777                                    | NR                             | 680               | 497                                    | NR                             | 810               | 12                                     | NR                             | 940               | 0                                      | NR                             |
| 425               | 61                                     | NR                             | 555               | 789                                    | NR                             | 685               | 445                                    | NR                             | 815               | 10                                     | NR                             | 945               | 0                                      | NR                             |
| 430               | 114                                    | NR                             | 560               | 800                                    | NR                             | 690               | 398                                    | NR                             | 820               | 9                                      | NR                             | 950               | 0                                      | NR                             |
| 435               | 218                                    | NR                             | 565               | 813                                    | NR                             | 695               | 352                                    | NR                             | 825               | 7                                      | NR                             | 955               | 0                                      | NR                             |
| 440               | 427                                    | NR                             | 570               | 828                                    | NR                             | 700               | 309                                    | NR                             | 830               | 6                                      | NR                             | 960               | 0                                      | NR                             |
| 445               | 684                                    | NR                             | 575               | 846                                    | NR                             | 705               | 273                                    | NR                             | 835               | 5                                      | NR                             | 965               | 0                                      | NR                             |
| 450               | 611                                    | NR                             | 580               | 866                                    | NR                             | 710               | 237                                    | NR                             | 840               | 5                                      | NR                             | 970               | 0                                      | NR                             |
| 455               | 461                                    | NR                             | 585               | 888                                    | NR                             | 715               | 208                                    | NR                             | 845               | 4                                      | NR                             | 975               | 0                                      | NR                             |
| 460               | 427                                    | NR                             | 590               | 913                                    | NR                             | 720               | 181                                    | NR                             | 850               | 4                                      | NR                             | 980               | 0                                      | NR                             |
| 465               | 349                                    | NR                             | 595               | 936                                    | NR                             | 725               | 157                                    | NR                             | 855               | 3                                      | NR                             | 985               | 0                                      | NR                             |
| 470               | 298                                    | NR                             | 600               | 957                                    | NR                             | 730               | 136                                    | NR                             | 860               | 3                                      | NR                             | 990               | 1                                      | NR                             |
| 475               | 312                                    | NR                             | 605               | 976                                    | NR                             | 735               | 117                                    | NR                             | 865               | 2                                      | NR                             | 995               | 0                                      | NR                             |
| 480               | 335                                    | NR                             | 610               | 990                                    | NR                             | 740               | 100                                    | NR                             | 870               | 2                                      | NR                             | 1000              | 0                                      | NR                             |
| 485               | 367                                    | NR                             | 615               | 999                                    | NR                             | 745               | 86                                     | NR                             | 875               | 2                                      | NR                             |                   |                                        |                                |

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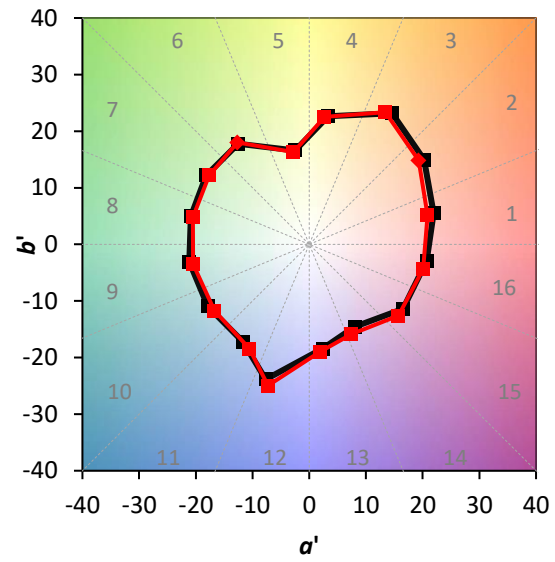
TM-30-18

### Summary

$R_f = 92.3$   
 $R_g = 98.5$   
 $\text{CIE } R_a = 92.2$   
 $R_9 = 59.8$



### Color Vector Graphics



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 93 | CES51 = 97 | CES76 = 88 |
| CES02 = 62 | CES27 = 93 | CES52 = 98 | CES77 = 91 |
| CES03 = 31 | CES28 = 96 | CES53 = 96 | CES78 = 85 |
| CES04 = 70 | CES29 = 95 | CES54 = 95 | CES79 = 96 |
| CES05 = 50 | CES30 = 97 | CES55 = 94 | CES80 = 94 |
| CES06 = 51 | CES31 = 96 | CES56 = 94 | CES81 = 87 |
| CES07 = 42 | CES32 = 91 | CES57 = 93 | CES82 = 97 |
| CES08 = 41 | CES33 = 98 | CES58 = 94 | CES83 = 97 |
| CES09 = 29 | CES34 = 94 | CES59 = 96 | CES84 = 94 |
| CES10 = 75 | CES35 = 97 | CES60 = 94 | CES85 = 85 |
| CES11 = 58 | CES36 = 86 | CES61 = 93 | CES86 = 87 |
| CES12 = 64 | CES37 = 95 | CES62 = 91 | CES87 = 92 |
| CES13 = 43 | CES38 = 92 | CES63 = 93 | CES88 = 96 |
| CES14 = 74 | CES39 = 99 | CES64 = 91 | CES89 = 87 |
| CES15 = 71 | CES40 = 98 | CES65 = 89 | CES90 = 96 |
| CES16 = 47 | CES41 = 98 | CES66 = 89 | CES91 = 78 |
| CES17 = 49 | CES42 = 96 | CES67 = 88 | CES92 = 81 |
| CES18 = 56 | CES43 = 96 | CES68 = 89 | CES93 = 89 |
| CES19 = 71 | CES44 = 99 | CES69 = 91 | CES94 = 81 |
| CES20 = 66 | CES45 = 98 | CES70 = 87 | CES95 = 85 |
| CES21 = 86 | CES46 = 97 | CES71 = 84 | CES96 = 92 |
| CES22 = 78 | CES47 = 97 | CES72 = 95 | CES97 = 95 |
| CES23 = 91 | CES48 = 93 | CES73 = 83 | CES98 = 94 |
| CES24 = 90 | CES49 = 96 | CES74 = 94 | CES99 = 91 |
| CES25 = 71 | CES50 = 98 | CES75 = 85 |            |



**Color Rendition by Hue-Angle Bin**


**Measure Comparisons**



(END OF REPORT)