

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: P387086

Luminaire Tested: **GPC-SA2D-750-U-SL3-HSS**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P387086  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-23)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GPC-SA2D-750-U-SL3-HSS  
Description: GALLEON PEDESTRIAN LUMINAIRE  
(2) 70 CRI, 5000K, 1200mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III  
SPILL LIGHT ELIMINATOR OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 13834 lumens  
Efficiency: N/A  
Efficacy: 107.2 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 0.5' x H: 0')  
IES Classification: Type III - Medium  
BUG Rating: B1 - U0 - G3

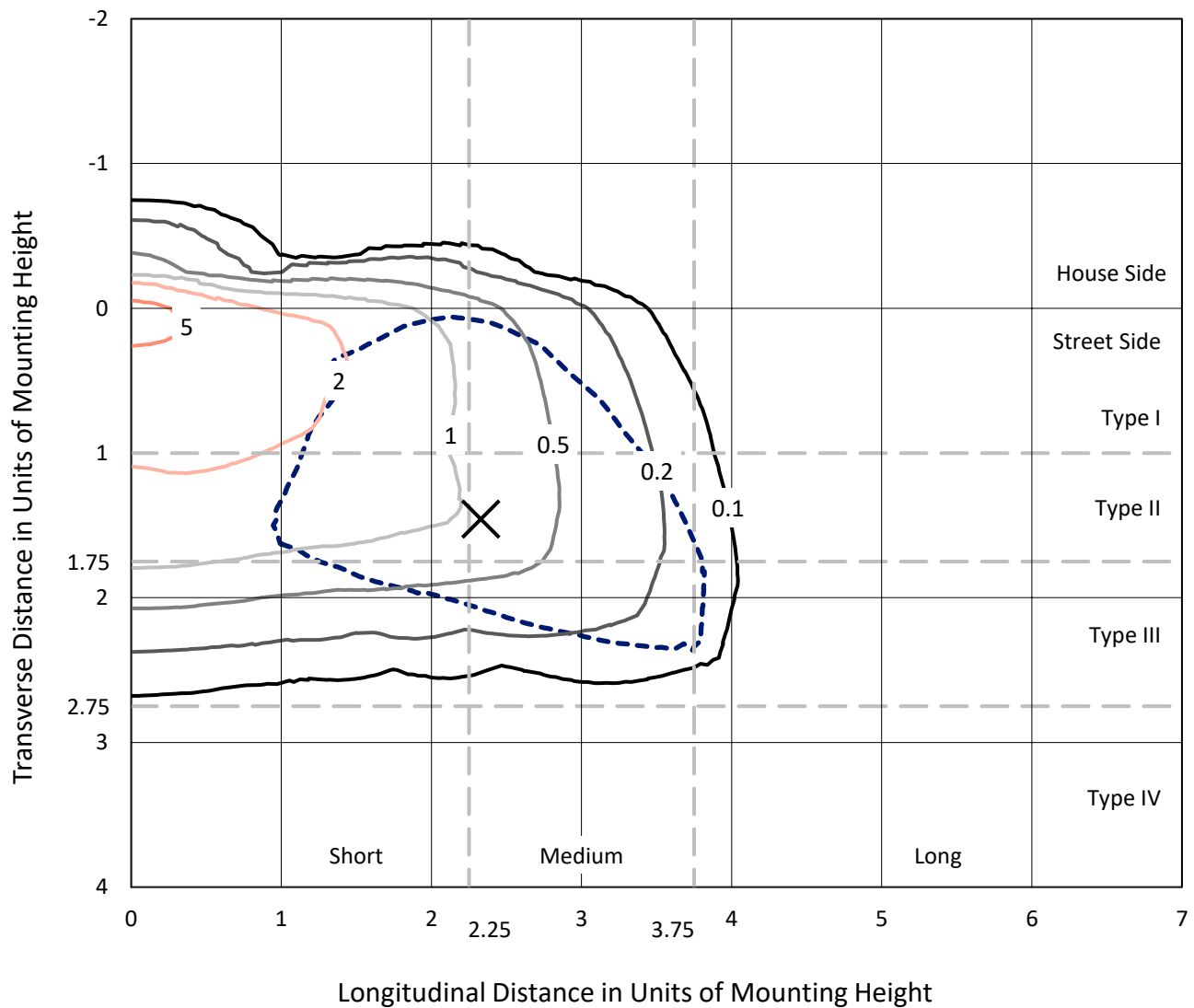
Input Watts (W): 129  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT



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## Iso-Footcandle Lines of Horizontal Illumination

✕ Max cd  
 - - - 1/2 Max cd

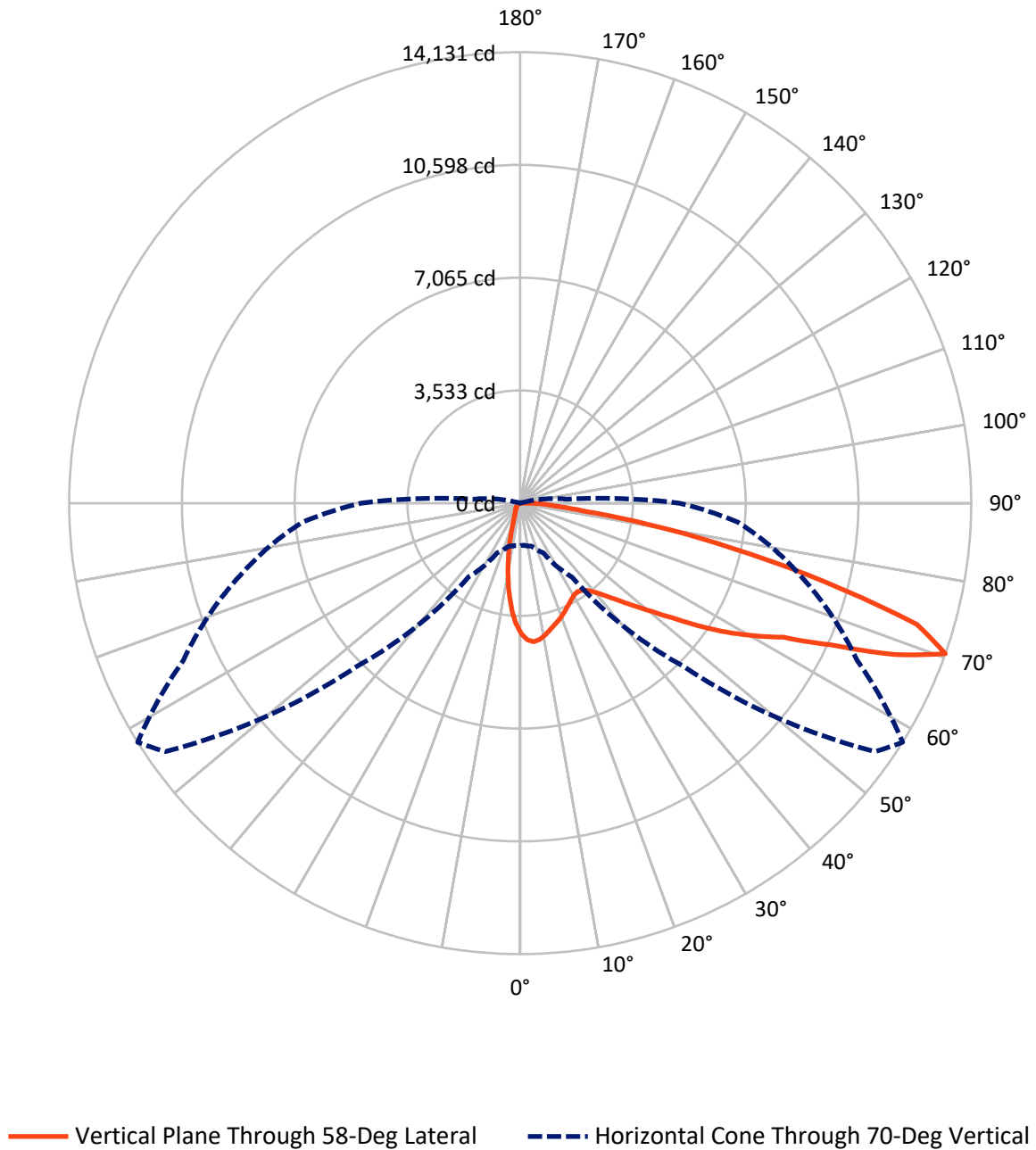


Based on 25 foot mounting height. Maximum calculated value = 6.6 fc  
 Type III - Medium - N/A

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CATALOG NUMBER: GPC-SA2D-750-U-SL3-HSS

## Luminous Intensity Polar Plot



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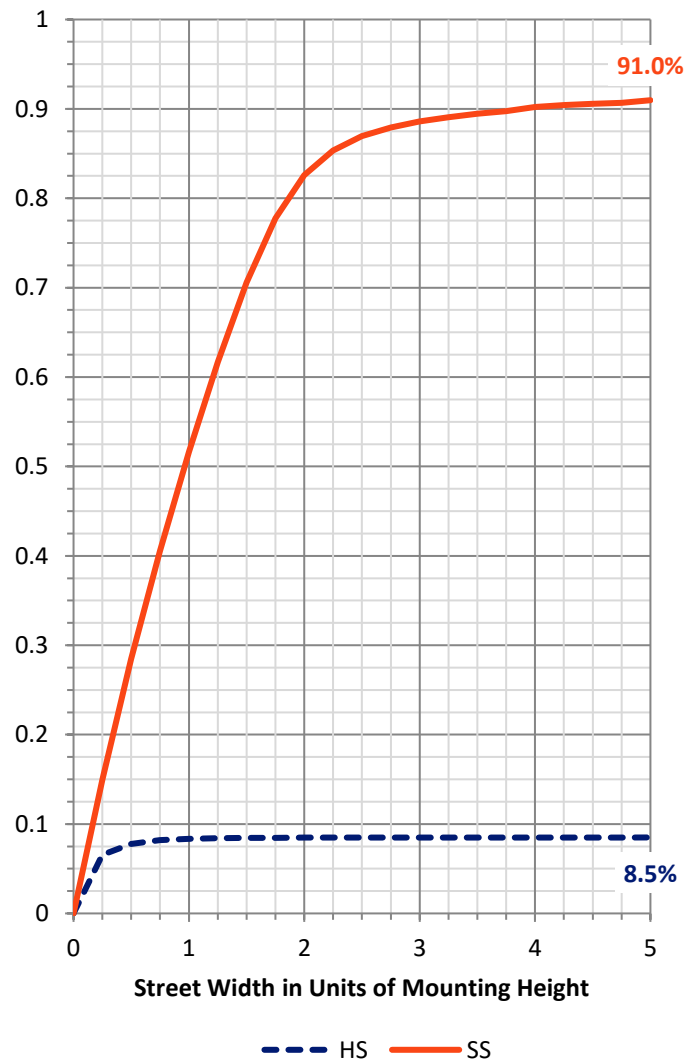
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 1183.9   | 0.0    | 1183.9  |
|                    | % Fixture | 8.6      | 0.0    | 8.6     |
| <b>Street Side</b> | Lumens    | 12650.1  | 0.0    | 12650.1 |
|                    | % Fixture | 91.4     | 0.0    | 91.4    |
| <b>Total</b>       | Lumens    | 13834.0  | 0.0    | 13834.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 334.2   | 2.4       |
| 10°-20°   | 701.3   | 5.1       |
| 20°-30°   | 922.0   | 6.7       |
| 30°-40°   | 1221.1  | 8.8       |
| 40°-50°   | 1825.2  | 13.2      |
| 50°-60°   | 2923.9  | 21.1      |
| 60°-70°   | 3685.6  | 26.6      |
| 70°-80°   | 1988.0  | 14.4      |
| 80°-90°   | 232.7   | 1.7       |
| 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°    | 13834.0 | 100.0     |
| 0°-180°   | 13834.0 | 100.0     |

**Coefficient of Utilization**



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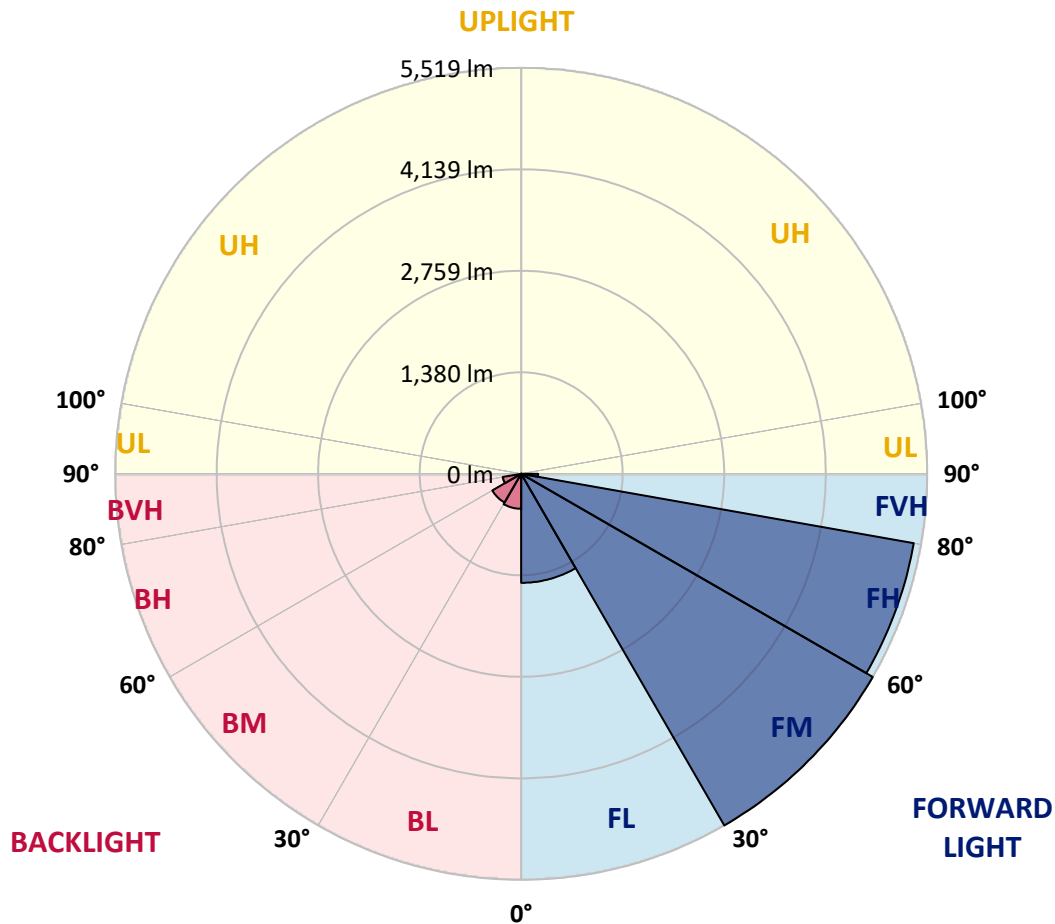
CATALOG NUMBER: GPC-SA2D-750-U-SL3-HSS

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 1481.9 | 10.7      |                         |      |         |
| FM   | (30°-60°)   | 5518.6 | 39.9      |                         |      |         |
| FH   | (60°-80°)   | 5418.9 | 39.2      |                         |      | G3/7500 |
| FVH  | (80°-90°)   | 230.7  | 1.7       |                         |      | G3/500  |
| BL   | (0°-30°)    | 475.6  | 3.4       | B1/500                  |      |         |
| BM   | (30°-60°)   | 451.6  | 3.3       | B1/1000                 |      |         |
| BH   | (60°-80°)   | 254.6  | 1.8       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 2.0    | 0.0       |                         |      | G0/10   |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B1-U0-G3**

Type III Medium



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°     | 58°     | 65°     | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|---------|---------|---------|--------|--------|
| 0°    | 4086.5 | 4086.5 | 4086.5 | 4086.5 | 4086.5 | 4086.5 | 4086.5  | 4086.5  | 4086.5  | 4086.5 | 4086.5 |
| 2.5°  | 4425.3 | 4414.4 | 4410.4 | 4403.5 | 4377.0 | 4351.1 | 4299.9  | 4285.5  | 4253.3  | 4176.8 | 4095.7 |
| 5°    | 4428.8 | 4428.2 | 4440.3 | 4437.4 | 4428.2 | 4416.1 | 4379.3  | 4360.3  | 4305.7  | 4196.4 | 4048.0 |
| 7.5°  | 4215.4 | 4226.3 | 4253.3 | 4275.2 | 4300.5 | 4333.3 | 4337.9  | 4319.5  | 4274.6  | 4156.7 | 3959.9 |
| 10°   | 3928.9 | 3946.1 | 3984.1 | 4027.2 | 4093.4 | 4159.0 | 4217.7  | 4215.4  | 4199.8  | 4083.6 | 3854.1 |
| 12.5° | 3641.8 | 3662.0 | 3705.7 | 3769.5 | 3863.3 | 3970.3 | 4075.0  | 4089.4  | 4115.3  | 4018.0 | 3756.3 |
| 15°   | 3390.5 | 3407.7 | 3450.9 | 3529.1 | 3645.3 | 3789.1 | 3942.7  | 3969.1  | 4035.9  | 3966.8 | 3674.6 |
| 17.5° | 3177.0 | 3188.0 | 3219.6 | 3306.5 | 3441.1 | 3615.4 | 3815.0  | 3866.8  | 3966.3  | 3926.6 | 3603.9 |
| 20°   | 3028.1 | 3029.8 | 3050.5 | 3111.5 | 3246.1 | 3441.1 | 3682.7  | 3756.9  | 3892.6  | 3892.1 | 3530.8 |
| 22.5° | 2954.4 | 2948.7 | 2952.7 | 2987.8 | 3086.7 | 3274.8 | 3550.4  | 3638.4  | 3826.5  | 3862.7 | 3456.6 |
| 25°   | 2940.6 | 2936.0 | 2924.5 | 2929.1 | 2988.9 | 3129.3 | 3416.9  | 3518.7  | 3768.4  | 3844.9 | 3392.2 |
| 27.5° | 2983.8 | 2988.4 | 2968.8 | 2948.1 | 2952.7 | 3035.0 | 3298.4  | 3416.3  | 3721.2  | 3844.9 | 3346.7 |
| 30°   | 3070.6 | 3072.9 | 3058.5 | 3031.5 | 2995.3 | 3008.5 | 3216.2  | 3334.1  | 3697.6  | 3871.4 | 3318.0 |
| 32.5° | 3166.7 | 3179.3 | 3177.6 | 3155.8 | 3104.0 | 3050.5 | 3196.6  | 3304.2  | 3695.9  | 3930.0 | 3315.1 |
| 35°   | 3285.8 | 3300.1 | 3324.3 | 3319.7 | 3265.6 | 3177.6 | 3263.3  | 3347.9  | 3729.8  | 4026.7 | 3346.2 |
| 37.5° | 3412.3 | 3434.2 | 3485.9 | 3510.7 | 3475.6 | 3376.1 | 3412.9  | 3473.3  | 3820.7  | 4183.1 | 3425.0 |
| 40°   | 3534.8 | 3559.6 | 3653.9 | 3751.1 | 3724.7 | 3622.3 | 3639.5  | 3687.9  | 3982.4  | 4408.1 | 3574.5 |
| 42.5° | 3655.1 | 3691.9 | 3830.5 | 3990.4 | 4022.1 | 3940.4 | 3949.6  | 3988.1  | 4222.3  | 4717.5 | 3819.0 |
| 45°   | 3798.9 | 3840.3 | 4045.7 | 4243.0 | 4327.5 | 4291.9 | 4331.0  | 4356.3  | 4535.8  | 5126.5 | 4148.6 |
| 47.5° | 4010.0 | 4057.7 | 4309.7 | 4534.6 | 4683.0 | 4706.0 | 4784.8  | 4801.5  | 4932.1  | 5602.8 | 4578.3 |
| 50°   | 4421.9 | 4435.1 | 4662.9 | 4867.1 | 5081.1 | 5219.1 | 5308.9  | 5321.5  | 5411.8  | 6123.4 | 5115.0 |
| 52.5° | 4940.2 | 4948.8 | 5077.6 | 5214.5 | 5457.9 | 5739.7 | 5949.7  | 5967.5  | 5986.5  | 6630.8 | 5644.8 |
| 55°   | 5455.0 | 5453.8 | 5539.0 | 5619.5 | 5897.9 | 6307.5 | 6763.1  | 6774.0  | 6637.7  | 7112.3 | 6049.8 |
| 57.5° | 5776.6 | 5807.6 | 5937.0 | 6040.6 | 6429.4 | 6954.6 | 7586.8  | 7627.1  | 7321.6  | 7468.9 | 6450.2 |
| 60°   | 5674.2 | 5689.1 | 5976.2 | 6359.3 | 7091.5 | 7874.4 | 8420.3  | 8430.7  | 7835.9  | 7825.0 | 6956.4 |
| 62.5° | 4834.3 | 4842.4 | 5293.3 | 6083.2 | 7426.9 | 9067.5 | 9425.9  | 9257.3  | 8427.3  | 8319.1 | 7562.1 |
| 65°   | 3313.4 | 3365.7 | 3742.5 | 4718.7 | 6810.8 | 9815.9 | 10982.5 | 10703.5 | 9328.7  | 9031.3 | 8109.7 |
| 67.5° | 1951.2 | 1940.3 | 2126.7 | 2845.7 | 5002.3 | 9318.9 | 12951.5 | 12674.2 | 10557.9 | 9508.1 | 7949.2 |
| 70°   | 1332.8 | 1325.4 | 1396.7 | 1722.8 | 2823.8 | 7229.0 | 13571.0 | 14130.7 | 11643.4 | 9187.1 | 6841.3 |
| 72.5° | 951.4  | 955.5  | 1060.7 | 1338.6 | 1772.9 | 4211.9 | 11670.4 | 12995.2 | 11303.4 | 8009.1 | 5200.2 |
| 75°   | 646.0  | 656.9  | 807.6  | 1098.1 | 1554.3 | 2142.8 | 8281.7  | 9878.6  | 9204.4  | 5820.8 | 2988.9 |
| 77.5° | 347.4  | 359.5  | 537.3  | 884.7  | 1405.3 | 1488.7 | 5327.3  | 6798.8  | 5781.7  | 2616.8 | 866.3  |
| 80°   | 145.0  | 151.9  | 251.4  | 643.1  | 1214.3 | 1307.5 | 3134.5  | 4122.7  | 2463.7  | 516.0  | 193.3  |
| 82.5° | 62.7   | 66.2   | 104.7  | 383.7  | 907.7  | 1103.9 | 1659.6  | 1983.4  | 746.7   | 113.3  | 97.2   |
| 85°   | 12.1   | 12.7   | 43.1   | 203.1  | 579.3  | 623.0  | 1075.7  | 1054.4  | 335.4   | 48.9   | 70.8   |
| 87.5° | 0.0    | 0.0    | 10.4   | 63.9   | 170.3  | 339.4  | 656.3   | 648.3   | 113.9   | 23.6   | 26.5   |
| 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: P387086

CATALOG NUMBER: GPC-SA2D-750-U-SL3-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 4086.5 | 4086.5 | 4086.5 | 4086.5 | 4086.5 | 4086.5 | 4086.5 | 4086.5 | 4086.5 | 4086.5 | 4086.5 |
| 2.5°  | 4054.3 | 4014.6 | 3931.2 | 3828.2 | 3749.4 | 3662.5 | 3593.5 | 3506.1 | 3468.1 | 3469.8 | 3449.1 |
| 5°    | 3963.4 | 3881.7 | 3697.1 | 3464.1 | 3284.6 | 3099.4 | 2940.0 | 2781.3 | 2687.5 | 2657.0 | 2628.3 |
| 7.5°  | 3833.4 | 3704.0 | 3409.4 | 3050.5 | 2746.8 | 2449.9 | 2191.7 | 1964.4 | 1820.6 | 1750.5 | 1724.6 |
| 10°   | 3686.7 | 3504.9 | 3078.7 | 2605.8 | 2172.1 | 1770.6 | 1435.8 | 1144.7 | 1028.5 | 949.7  | 929.6  |
| 12.5° | 3557.9 | 3311.7 | 2755.4 | 2149.7 | 1634.8 | 1150.5 | 831.2  | 650.0  | 571.2  | 540.1  | 535.0  |
| 15°   | 3436.5 | 3131.0 | 2444.2 | 1736.6 | 1132.1 | 708.1  | 528.6  | 467.1  | 448.7  | 443.5  | 443.5  |
| 17.5° | 3322.0 | 2959.0 | 2139.9 | 1330.0 | 749.0  | 496.4  | 437.8  | 424.0  | 418.2  | 417.6  | 418.2  |
| 20°   | 3202.4 | 2787.0 | 1840.8 | 974.5  | 522.9  | 420.5  | 404.4  | 396.9  | 395.2  | 395.2  | 395.2  |
| 22.5° | 3087.9 | 2615.0 | 1549.7 | 696.0  | 419.3  | 383.7  | 375.6  | 370.5  | 368.7  | 368.2  | 367.0  |
| 25°   | 2978.0 | 2451.7 | 1265.5 | 491.8  | 368.2  | 351.5  | 344.6  | 337.7  | 332.5  | 329.6  | 327.9  |
| 27.5° | 2887.7 | 2306.1 | 1000.9 | 394.6  | 332.5  | 318.1  | 309.5  | 299.1  | 286.5  | 280.7  | 278.4  |
| 30°   | 2815.8 | 2173.3 | 771.4  | 333.1  | 299.1  | 284.7  | 271.5  | 253.7  | 235.3  | 225.5  | 224.9  |
| 32.5° | 2759.4 | 2042.7 | 585.6  | 294.5  | 269.2  | 251.4  | 232.4  | 210.0  | 188.7  | 177.7  | 177.2  |
| 35°   | 2731.8 | 1927.6 | 447.5  | 266.3  | 242.8  | 220.3  | 196.7  | 172.0  | 151.3  | 140.9  | 139.8  |
| 37.5° | 2750.2 | 1830.4 | 349.2  | 242.8  | 220.3  | 194.4  | 166.8  | 140.9  | 122.5  | 113.3  | 112.7  |
| 40°   | 2817.5 | 1768.3 | 283.6  | 222.6  | 201.3  | 169.7  | 139.8  | 115.6  | 100.1  | 92.6   | 92.0   |
| 42.5° | 2960.8 | 1745.3 | 242.2  | 205.9  | 182.9  | 146.7  | 116.2  | 95.5   | 81.1   | 75.9   | 74.8   |
| 45°   | 3200.1 | 1779.2 | 214.0  | 189.8  | 163.9  | 124.8  | 96.1   | 78.2   | 65.6   | 61.6   | 61.0   |
| 47.5° | 3518.7 | 1868.4 | 193.9  | 174.3  | 146.7  | 105.3  | 80.0   | 63.3   | 53.5   | 49.5   | 48.9   |
| 50°   | 3929.5 | 2009.9 | 177.2  | 158.8  | 130.6  | 89.2   | 66.2   | 50.0   | 41.4   | 38.5   | 38.5   |
| 52.5° | 4376.4 | 2178.4 | 162.2  | 144.4  | 114.5  | 74.2   | 53.5   | 38.5   | 32.8   | 29.3   | 29.3   |
| 55°   | 4745.7 | 2325.7 | 146.1  | 133.5  | 94.9   | 61.6   | 40.8   | 29.3   | 24.2   | 22.4   | 22.4   |
| 57.5° | 5114.5 | 2482.7 | 127.7  | 114.5  | 75.9   | 50.0   | 31.1   | 21.9   | 17.8   | 16.7   | 16.7   |
| 60°   | 5592.5 | 2674.9 | 109.9  | 93.2   | 59.8   | 38.0   | 23.0   | 15.5   | 13.2   | 12.7   | 12.7   |
| 62.5° | 6118.2 | 2787.6 | 93.8   | 74.8   | 46.6   | 28.2   | 16.7   | 10.4   | 9.8    | 9.8    | 9.2    |
| 65°   | 6439.8 | 2628.3 | 78.8   | 59.8   | 36.2   | 21.3   | 10.9   | 7.5    | 8.6    | 8.1    | 6.9    |
| 67.5° | 6029.7 | 2057.6 | 64.4   | 46.6   | 28.2   | 16.1   | 6.9    | 5.2    | 9.2    | 7.5    | 5.8    |
| 70°   | 4992.5 | 1440.4 | 50.0   | 32.8   | 22.4   | 13.8   | 4.6    | 3.5    | 9.8    | 7.5    | 4.6    |
| 72.5° | 3736.2 | 964.1  | 39.7   | 21.9   | 16.7   | 12.1   | 4.0    | 1.7    | 8.6    | 6.3    | 4.0    |
| 75°   | 2041.5 | 388.3  | 31.6   | 13.8   | 10.4   | 8.6    | 2.9    | 1.2    | 5.8    | 4.6    | 2.9    |
| 77.5° | 537.3  | 102.4  | 23.0   | 9.2    | 5.8    | 3.5    | 1.7    | 0.6    | 2.9    | 2.3    | 1.2    |
| 80°   | 136.9  | 39.7   | 15.0   | 6.3    | 4.0    | 1.7    | 0.0    | 0.0    | 0.6    | 0.0    | 0.0    |
| 82.5° | 73.1   | 16.7   | 9.2    | 4.6    | 2.3    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 55.2   | 10.9   | 5.2    | 2.9    | 0.6    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 21.3   | 3.5    | 1.7    | 0.0    | 0.0    | 0.0    | 0.0    | 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-79-2008: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

Report Number: SP1-1908-441-4-R4

Test Date: 10/02/2019

Luminaire Tested: SA1C-750-U-5WQ

Data in this report applies to families of products SA1C-760-U-5WQ .

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### Test Information

Test Method: LM-79-2008  
 Report Number: SP1-1908-441-4-R4  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 10/28/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: MCGRAW-EDISON  
 Catalog Number: **SA1C-750-U-5WQ**  
 Description: MCGRAW EDISON ROADWAY AND AREA LUMINAIRE

\*\*\*THIS IS A REVISION OF SP1-1908-441-4-R3. TO UPDATE THE CATALOG INFORMATION.\*\*\*TESTED IN SITU. ROADWAY AND AREA LUMINAIRE. (1) 70 CRI, 5000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

### Spectral Parameters

|                           |        |           |      |      |       |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K):                  | 4884   | CRI (Ra): | 73.5 |      |       |
| CIE u':                   | 0.2101 | R1:       | 70.5 | R9:  | -28.4 |
| CIE v':                   | 0.4904 | R2:       | 77.7 | R10: | 48.6  |
| Duv:                      | 0.0037 | R3:       | 84.6 | R11: | 73.2  |
| CIE x:                    | 0.3493 | R4:       | 74.7 | R12: | 50.7  |
| CIE y:                    | 0.3624 | R5:       | 71.9 | R13: | 71.2  |
| CIE z:                    | 0.2884 | R6:       | 70.7 | R14: | 91.4  |
| Peak Wavelength (nm):     | 444    | R7:       | 81.2 |      |       |
| Dominant Wavelength (nm): | 571    | R8:       | 56.9 |      |       |
| Purity:                   | 13.7   |           |      |      |       |
| Rf:                       | 74.9   |           |      |      |       |
| Rg:                       | 96.3   |           |      |      |       |



### Test Conditions

Stabilization Time: 240M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.0./44%  
 Sphere Temperature (°C): 25.7

REPORT NUMBER: SP1-1908-441-4-R4

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 6/28/2019        | 12/28/2019           |
| Power Meter                    | IN0071                | 12/5/2018        | 12/5/2019            |
| AC Power Source                | IN0063                | 12/5/2018        | 12/5/2019            |
| DC Power Source                | IN0208                | 12/5/2018        | 12/5/2019            |
| Sphere Thermometer             | IN0085                | 12/5/2018        | 12/5/2019            |
| Room Thermometer               | IN0046                | 12/5/2018        | 12/5/2019            |

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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 5000K 4-step quadrangle

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**Photopic Flux vs. Wavelength**



#####

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 2945             | NR               | 490       | 37941            | NR               | 620       | 88803            | NR               | 750       | 3908             | NR               | 880       | 2997             | NR               |
| 365       | 2596             | NR               | 495       | 48525            | NR               | 625       | 80578            | NR               | 755       | 3988             | NR               | 885       | 2927             | NR               |
| 370       | 2732             | NR               | 500       | 60609            | NR               | 630       | 73127            | NR               | 760       | 3335             | NR               | 890       | 2649             | NR               |
| 375       | 2894             | NR               | 505       | 72036            | NR               | 635       | 66244            | NR               | 765       | 3438             | NR               | 895       | 2828             | NR               |
| 380       | 2822             | NR               | 510       | 82168            | NR               | 640       | 59440            | NR               | 770       | 3427             | NR               | 900       | 1407             | NR               |
| 385       | 2394             | NR               | 515       | 90898            | NR               | 645       | 52864            | NR               | 775       | 2759             | NR               | 905       | 2224             | NR               |
| 390       | 2370             | NR               | 520       | 97142            | NR               | 650       | 47085            | NR               | 780       | 2340             | NR               | 910       | 2905             | NR               |
| 395       | 2267             | NR               | 525       | 103255           | NR               | 655       | 41789            | NR               | 785       | 2412             | NR               | 915       | 3350             | NR               |
| 400       | 2262             | NR               | 530       | 106697           | NR               | 660       | 37064            | NR               | 790       | 1999             | NR               | 920       | 3114             | NR               |
| 405       | 3000             | NR               | 535       | 110081           | NR               | 665       | 32299            | NR               | 795       | 2054             | NR               | 925       | 2834             | NR               |
| 410       | 5324             | NR               | 540       | 112494           | NR               | 670       | 28142            | NR               | 800       | 2331             | NR               | 930       | 2271             | NR               |
| 415       | 10725            | NR               | 545       | 115513           | NR               | 675       | 24505            | NR               | 805       | 2648             | NR               | 935       | 2228             | NR               |
| 420       | 22128            | NR               | 550       | 117203           | NR               | 680       | 21162            | NR               | 810       | 2485             | NR               | 940       | 2833             | NR               |
| 425       | 44095            | NR               | 555       | 119753           | NR               | 685       | 18400            | NR               | 815       | 2409             | NR               | 945       | 2941             | NR               |
| 430       | 77002            | NR               | 560       | 122602           | NR               | 690       | 16065            | NR               | 820       | 2221             | NR               | 950       | 2323             | NR               |
| 435       | 119881           | NR               | 565       | 124314           | NR               | 695       | 13860            | NR               | 825       | 1562             | NR               | 955       | 1667             | NR               |
| 440       | 164454           | NR               | 570       | 126775           | NR               | 700       | 12177            | NR               | 830       | 2249             | NR               | 960       | 749              | NR               |
| 445       | 179997           | NR               | 575       | 127511           | NR               | 705       | 10757            | NR               | 835       | 2573             | NR               | 965       | 2669             | NR               |
| 450       | 142822           | NR               | 580       | 127577           | NR               | 710       | 9601             | NR               | 840       | 2764             | NR               | 970       | 3968             | NR               |
| 455       | 90008            | NR               | 585       | 126153           | NR               | 715       | 8944             | NR               | 845       | 3109             | NR               | 975       | 3886             | NR               |
| 460       | 60557            | NR               | 590       | 123678           | NR               | 720       | 7947             | NR               | 850       | 2963             | NR               | 980       | 2788             | NR               |
| 465       | 43305            | NR               | 595       | 119774           | NR               | 725       | 7062             | NR               | 855       | 2336             | NR               | 985       | 3496             | NR               |
| 470       | 31089            | NR               | 600       | 115733           | NR               | 730       | 6004             | NR               | 860       | 2118             | NR               | 990       | 2913             | NR               |
| 475       | 26278            | NR               | 605       | 109231           | NR               | 735       | 5594             | NR               | 865       | 3144             | NR               | 995       | 4659             | NR               |
| 480       | 27060            | NR               | 610       | 102408           | NR               | 740       | 5165             | NR               | 870       | 3069             | NR               | 1000      | 1308             | NR               |
| 485       | 30698            | NR               | 615       | 96015            | NR               | 745       | 4687             | NR               | 875       | 3311             | NR               |           |                  |                  |

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Scotopic Flux vs. Wavelength



Scotopic Lumens: 13493.5

S/P: 1.77

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 2945             | NR               | 490       | 37941            | NR               | 620       | 88803            | NR               | 750       | 3908             | NR               | 880       | 2997             | NR               |
| 365       | 2596             | NR               | 495       | 48525            | NR               | 625       | 80578            | NR               | 755       | 3988             | NR               | 885       | 2927             | NR               |
| 370       | 2732             | NR               | 500       | 60609            | NR               | 630       | 73127            | NR               | 760       | 3335             | NR               | 890       | 2649             | NR               |
| 375       | 2894             | NR               | 505       | 72036            | NR               | 635       | 66244            | NR               | 765       | 3438             | NR               | 895       | 2828             | NR               |
| 380       | 2822             | NR               | 510       | 82168            | NR               | 640       | 59440            | NR               | 770       | 3427             | NR               | 900       | 1407             | NR               |
| 385       | 2394             | NR               | 515       | 90898            | NR               | 645       | 52864            | NR               | 775       | 2759             | NR               | 905       | 2224             | NR               |
| 390       | 2370             | NR               | 520       | 97142            | NR               | 650       | 47085            | NR               | 780       | 2340             | NR               | 910       | 2905             | NR               |
| 395       | 2267             | NR               | 525       | 103255           | NR               | 655       | 41789            | NR               | 785       | 2412             | NR               | 915       | 3350             | NR               |
| 400       | 2262             | NR               | 530       | 106697           | NR               | 660       | 37064            | NR               | 790       | 1999             | NR               | 920       | 3114             | NR               |
| 405       | 3000             | NR               | 535       | 110081           | NR               | 665       | 32299            | NR               | 795       | 2054             | NR               | 925       | 2834             | NR               |
| 410       | 5324             | NR               | 540       | 112494           | NR               | 670       | 28142            | NR               | 800       | 2331             | NR               | 930       | 2271             | NR               |
| 415       | 10725            | NR               | 545       | 115513           | NR               | 675       | 24505            | NR               | 805       | 2648             | NR               | 935       | 2228             | NR               |
| 420       | 22128            | NR               | 550       | 117203           | NR               | 680       | 21162            | NR               | 810       | 2485             | NR               | 940       | 2833             | NR               |
| 425       | 44095            | NR               | 555       | 119753           | NR               | 685       | 18400            | NR               | 815       | 2409             | NR               | 945       | 2941             | NR               |
| 430       | 77002            | NR               | 560       | 122602           | NR               | 690       | 16065            | NR               | 820       | 2221             | NR               | 950       | 2323             | NR               |
| 435       | 119881           | NR               | 565       | 124314           | NR               | 695       | 13860            | NR               | 825       | 1562             | NR               | 955       | 1667             | NR               |
| 440       | 164454           | NR               | 570       | 126775           | NR               | 700       | 12177            | NR               | 830       | 2249             | NR               | 960       | 749              | NR               |
| 445       | 179997           | NR               | 575       | 127511           | NR               | 705       | 10757            | NR               | 835       | 2573             | NR               | 965       | 2669             | NR               |
| 450       | 142822           | NR               | 580       | 127577           | NR               | 710       | 9601             | NR               | 840       | 2764             | NR               | 970       | 3968             | NR               |
| 455       | 90008            | NR               | 585       | 126153           | NR               | 715       | 8944             | NR               | 845       | 3109             | NR               | 975       | 3886             | NR               |
| 460       | 60557            | NR               | 590       | 123678           | NR               | 720       | 7947             | NR               | 850       | 2963             | NR               | 980       | 2788             | NR               |
| 465       | 43305            | NR               | 595       | 119774           | NR               | 725       | 7062             | NR               | 855       | 2336             | NR               | 985       | 3496             | NR               |
| 470       | 31089            | NR               | 600       | 115733           | NR               | 730       | 6004             | NR               | 860       | 2118             | NR               | 990       | 2913             | NR               |
| 475       | 26278            | NR               | 605       | 109231           | NR               | 735       | 5594             | NR               | 865       | 3144             | NR               | 995       | 4659             | NR               |
| 480       | 27060            | NR               | 610       | 102408           | NR               | 740       | 5165             | NR               | 870       | 3069             | NR               | 1000      | 1308             | NR               |
| 485       | 30698            | NR               | 615       | 96015            | NR               | 745       | 4687             | NR               | 875       | 3311             | NR               |           |                  |                  |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 5378.9**

**M/P: 0.71**

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 2945             | NR               | 490       | 37941            | NR               | 620       | 88803            | NR               | 750       | 3908             | NR               | 880       | 2997             | NR               |
| 365       | 2596             | NR               | 495       | 48525            | NR               | 625       | 80578            | NR               | 755       | 3988             | NR               | 885       | 2927             | NR               |
| 370       | 2732             | NR               | 500       | 60609            | NR               | 630       | 73127            | NR               | 760       | 3335             | NR               | 890       | 2649             | NR               |
| 375       | 2894             | NR               | 505       | 72036            | NR               | 635       | 66244            | NR               | 765       | 3438             | NR               | 895       | 2828             | NR               |
| 380       | 2822             | NR               | 510       | 82168            | NR               | 640       | 59440            | NR               | 770       | 3427             | NR               | 900       | 1407             | NR               |
| 385       | 2394             | NR               | 515       | 90898            | NR               | 645       | 52864            | NR               | 775       | 2759             | NR               | 905       | 2224             | NR               |
| 390       | 2370             | NR               | 520       | 97142            | NR               | 650       | 47085            | NR               | 780       | 2340             | NR               | 910       | 2905             | NR               |
| 395       | 2267             | NR               | 525       | 103255           | NR               | 655       | 41789            | NR               | 785       | 2412             | NR               | 915       | 3350             | NR               |
| 400       | 2262             | NR               | 530       | 106697           | NR               | 660       | 37064            | NR               | 790       | 1999             | NR               | 920       | 3114             | NR               |
| 405       | 3000             | NR               | 535       | 110081           | NR               | 665       | 32299            | NR               | 795       | 2054             | NR               | 925       | 2834             | NR               |
| 410       | 5324             | NR               | 540       | 112494           | NR               | 670       | 28142            | NR               | 800       | 2331             | NR               | 930       | 2271             | NR               |
| 415       | 10725            | NR               | 545       | 115513           | NR               | 675       | 24505            | NR               | 805       | 2648             | NR               | 935       | 2228             | NR               |
| 420       | 22128            | NR               | 550       | 117203           | NR               | 680       | 21162            | NR               | 810       | 2485             | NR               | 940       | 2833             | NR               |
| 425       | 44095            | NR               | 555       | 119753           | NR               | 685       | 18400            | NR               | 815       | 2409             | NR               | 945       | 2941             | NR               |
| 430       | 77002            | NR               | 560       | 122602           | NR               | 690       | 16065            | NR               | 820       | 2221             | NR               | 950       | 2323             | NR               |
| 435       | 119881           | NR               | 565       | 124314           | NR               | 695       | 13860            | NR               | 825       | 1562             | NR               | 955       | 1667             | NR               |
| 440       | 164454           | NR               | 570       | 126775           | NR               | 700       | 12177            | NR               | 830       | 2249             | NR               | 960       | 749              | NR               |
| 445       | 179997           | NR               | 575       | 127511           | NR               | 705       | 10757            | NR               | 835       | 2573             | NR               | 965       | 2669             | NR               |
| 450       | 142822           | NR               | 580       | 127577           | NR               | 710       | 9601             | NR               | 840       | 2764             | NR               | 970       | 3968             | NR               |
| 455       | 90008            | NR               | 585       | 126153           | NR               | 715       | 8944             | NR               | 845       | 3109             | NR               | 975       | 3886             | NR               |
| 460       | 60557            | NR               | 590       | 123678           | NR               | 720       | 7947             | NR               | 850       | 2963             | NR               | 980       | 2788             | NR               |
| 465       | 43305            | NR               | 595       | 119774           | NR               | 725       | 7062             | NR               | 855       | 2336             | NR               | 985       | 3496             | NR               |
| 470       | 31089            | NR               | 600       | 115733           | NR               | 730       | 6004             | NR               | 860       | 2118             | NR               | 990       | 2913             | NR               |
| 475       | 26278            | NR               | 605       | 109231           | NR               | 735       | 5594             | NR               | 865       | 3144             | NR               | 995       | 4659             | NR               |
| 480       | 27060            | NR               | 610       | 102408           | NR               | 740       | 5165             | NR               | 870       | 3069             | NR               | 1000      | 1308             | NR               |
| 485       | 30698            | NR               | 615       | 96015            | NR               | 745       | 4687             | NR               | 875       | 3311             | NR               |           |                  |                  |

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**Summary**

$R_f = 74.9$   
 $R_g = 96.3$   
 CIE  $R_a = 73.5$   
 $R_g = -28.4$

**Spectral Power Distribution Comparison**



**Color Vector Graphics**



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 61 | CES51 = 90 | CES76 = 52 |
| CES02 = 60 | CES27 = 84 | CES52 = 91 | CES77 = 71 |
| CES03 = 30 | CES28 = 81 | CES53 = 79 | CES78 = 54 |
| CES04 = 69 | CES29 = 58 | CES54 = 83 | CES79 = 80 |
| CES05 = 46 | CES30 = 67 | CES55 = 83 | CES80 = 77 |
| CES06 = 50 | CES31 = 63 | CES56 = 73 | CES81 = 77 |
| CES07 = 39 | CES32 = 59 | CES57 = 72 | CES82 = 90 |
| CES08 = 38 | CES33 = 69 | CES58 = 73 | CES83 = 86 |
| CES09 = 29 | CES34 = 69 | CES59 = 88 | CES84 = 88 |
| CES10 = 73 | CES35 = 83 | CES60 = 93 | CES85 = 84 |
| CES11 = 56 | CES36 = 95 | CES61 = 88 | CES86 = 75 |
| CES12 = 61 | CES37 = 78 | CES62 = 85 | CES87 = 78 |
| CES13 = 41 | CES38 = 76 | CES63 = 77 | CES88 = 79 |
| CES14 = 74 | CES39 = 93 | CES64 = 74 | CES89 = 75 |
| CES15 = 70 | CES40 = 86 | CES65 = 67 | CES90 = 77 |
| CES16 = 46 | CES41 = 87 | CES66 = 69 | CES91 = 89 |
| CES17 = 49 | CES42 = 78 | CES67 = 67 | CES92 = 66 |
| CES18 = 55 | CES43 = 75 | CES68 = 73 | CES93 = 80 |
| CES19 = 71 | CES44 = 99 | CES69 = 81 | CES94 = 57 |
| CES20 = 64 | CES45 = 83 | CES70 = 63 | CES95 = 71 |
| CES21 = 85 | CES46 = 81 | CES71 = 60 | CES96 = 78 |
| CES22 = 77 | CES47 = 80 | CES72 = 86 | CES97 = 85 |
| CES23 = 91 | CES48 = 72 | CES73 = 53 | CES98 = 75 |
| CES24 = 90 | CES49 = 81 | CES74 = 96 | CES99 = 62 |
| CES25 = 71 | CES50 = 89 | CES75 = 58 |            |



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Color Rendition by Hue-Angle Bin



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**Measure Comparisons**



(END OF REPORT)