

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: P325000

Luminaire Tested: **GLEON-SA6B-722-U-AFL-HSS**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P325000  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-30)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA6B-722-U-AFL-HSS  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(6) 70 CRI, 2200K, 800mA LIGHTSQUARES WITH 16 LEDS EACH AND AUTOMOTIVE  
FRONTLINE OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 20569 lumens  
Efficiency: N/A  
Efficacy: 82.6 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B1 - U0 - G2

Input Watts (W): 249  
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: 24 FT

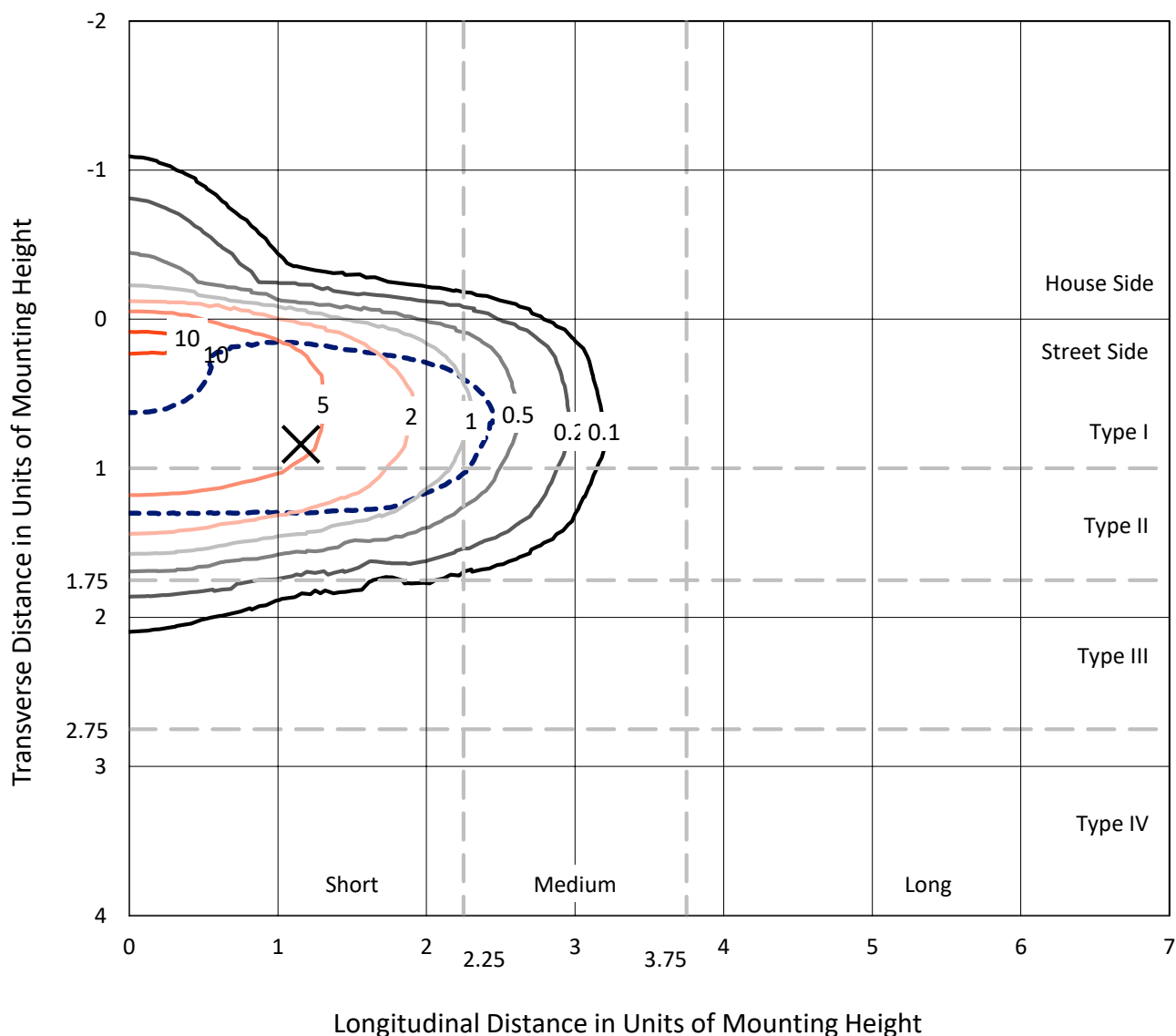


REPORT NUMBER: P325000  
 CATALOG NUMBER: GLEON-SA6B-722-U-AFL-HSS

## Iso-Footcandle Lines of Horizontal Illumination

✕ Max cd

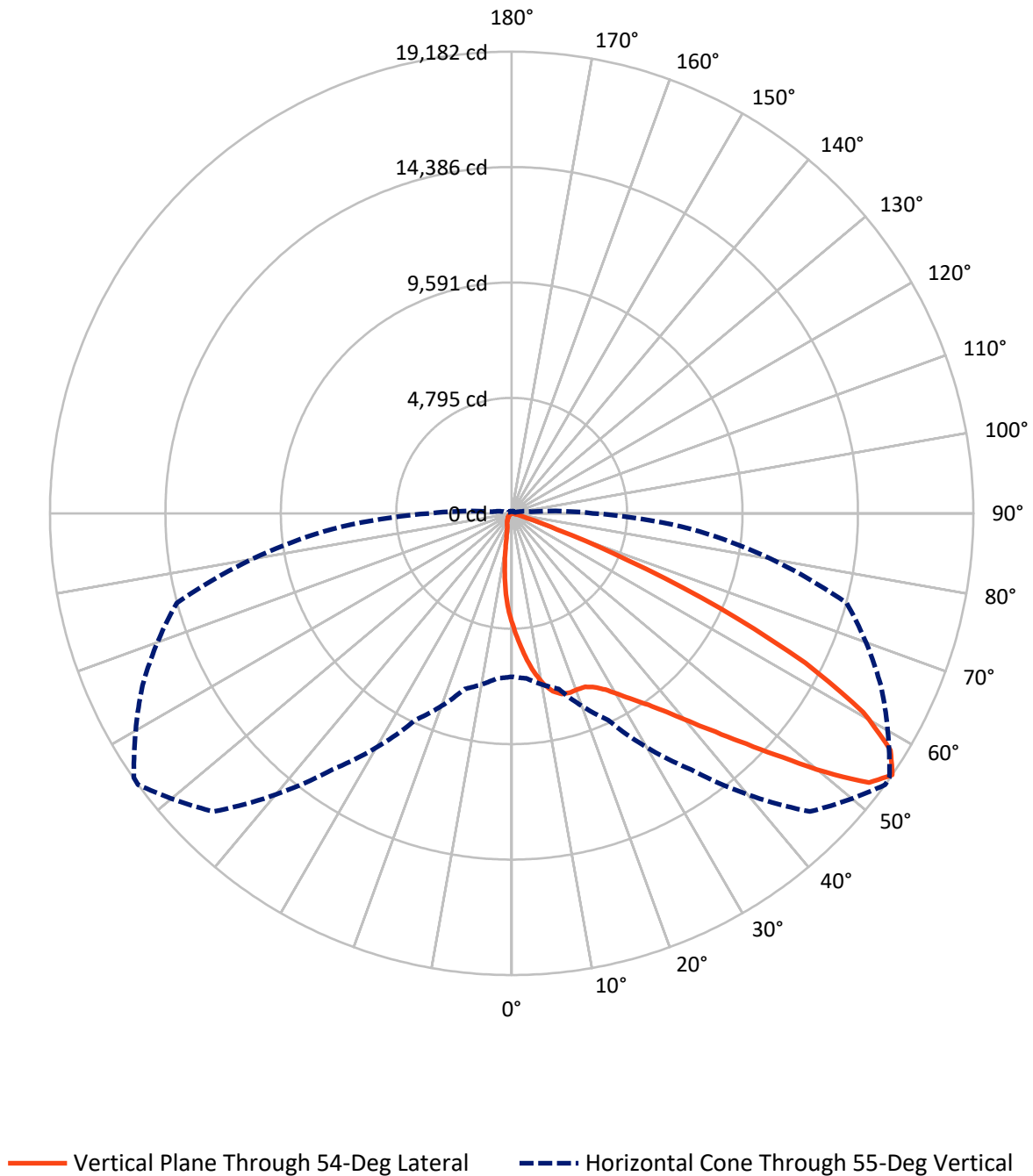
--- 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 11.3 fc  
 Type II - Short - N/A

REPORT NUMBER: P325000  
CATALOG NUMBER: GLEON-SA6B-722-U-AFL-HSS

## Luminous Intensity Polar Plot



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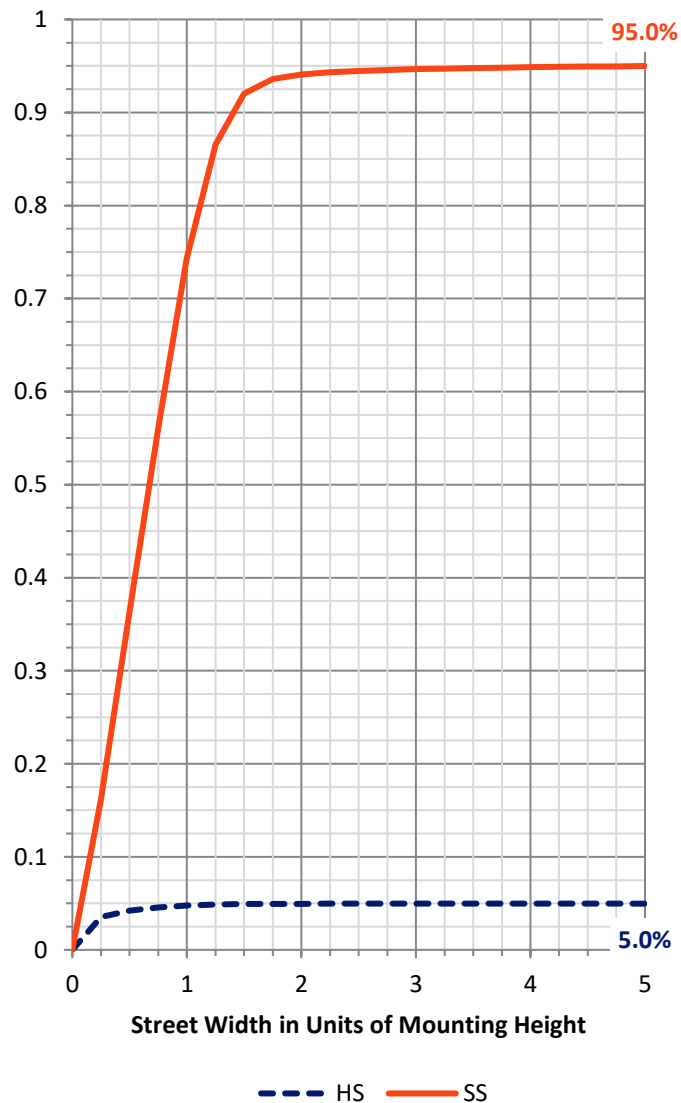
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 1026.2   | 0.0    | 1026.2  |
|                    | % Fixture | 5.0      | 0.0    | 5.0     |
| <b>Street Side</b> | Lumens    | 19542.8  | 0.0    | 19542.8 |
|                    | % Fixture | 95.0     | 0.0    | 95.0    |
| <b>Total</b>       | Lumens    | 20569.0  | 0.0    | 20569.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 424.2   | 2.1       |
| 10°-20°   | 1163.4  | 5.7       |
| 20°-30°   | 1986.4  | 9.7       |
| 30°-40°   | 3187.8  | 15.5      |
| 40°-50°   | 5094.1  | 24.8      |
| 50°-60°   | 5458.4  | 26.5      |
| 60°-70°   | 2802.5  | 13.6      |
| 70°-80°   | 424.5   | 2.1       |
| 80°-90°   | 27.6    | 0.1       |
| 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°    | 20569.0 | 100.0     |
| 0°-180°   | 20569.0 | 100.0     |

**Coefficient of Utilization**



REPORT NUMBER: P325000

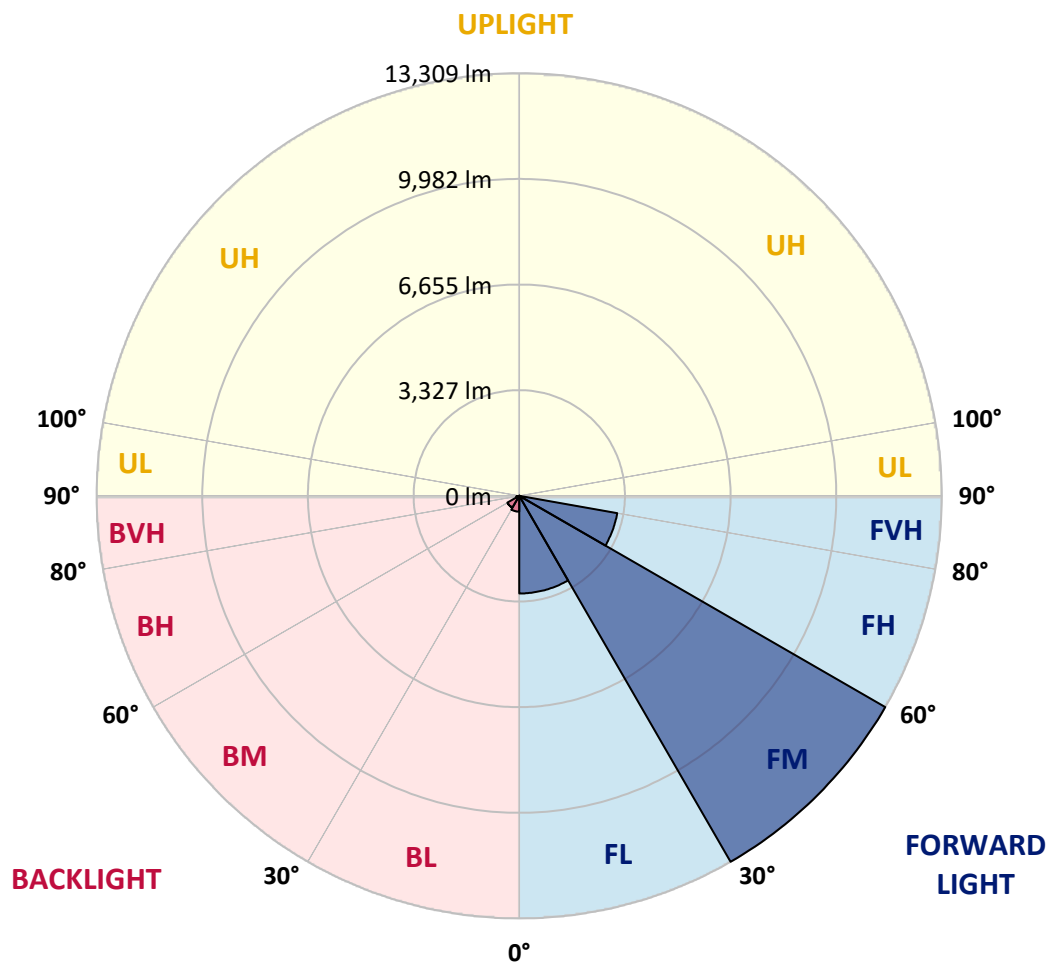
CATALOG NUMBER: GLEON-SA6B-722-U-AFL-HSS

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|---------|-----------|-------------------------|------|---------|
|      |             |         |           | B                       | U    | G       |
| FL   | (0°-30°)    | 3074.7  | 14.9      |                         |      |         |
| FM   | (30°-60°)   | 13309.1 | 64.7      |                         |      |         |
| FH   | (60°-80°)   | 3132.5  | 15.2      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 26.5    | 0.1       |                         |      | G1/100  |
| BL   | (0°-30°)    | 499.3   | 2.4       | B1/500                  |      |         |
| BM   | (30°-60°)   | 431.2   | 2.1       | B1/1000                 |      |         |
| BH   | (60°-80°)   | 94.6    | 0.5       | B0/110                  |      | G0/110  |
| BVH  | (80°-90°)   | 1.1     | 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-G2**

Type II Short





REPORT NUMBER: P325000

CATALOG NUMBER: GLEON-SA6B-722-U-AFL-HSS

**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 54°     | 55°     | 65°     | 75°     | 85°    |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| 0°    | 4606.6  | 4606.6  | 4606.6  | 4606.6  | 4606.6  | 4606.6  | 4606.6  | 4606.6  | 4606.6  | 4606.6  | 4606.6 |
| 2.5°  | 5780.9  | 5694.8  | 5697.4  | 5658.4  | 5515.3  | 5403.4  | 5287.1  | 5259.5  | 5078.3  | 4888.2  | 4705.2 |
| 5°    | 6780.3  | 6717.2  | 6702.1  | 6626.6  | 6427.6  | 6217.1  | 5991.5  | 5939.1  | 5584.6  | 5195.6  | 4812.7 |
| 7.5°  | 7293.7  | 7294.6  | 7282.1  | 7254.6  | 7130.2  | 6925.9  | 6650.6  | 6595.5  | 6113.2  | 5529.6  | 4924.6 |
| 10°   | 7144.5  | 7178.2  | 7247.5  | 7339.0  | 7434.0  | 7408.3  | 7201.3  | 7151.6  | 6627.5  | 5883.1  | 5049.0 |
| 12.5° | 6796.2  | 6800.7  | 6878.0  | 7028.1  | 7301.7  | 7582.4  | 7585.9  | 7569.1  | 7118.7  | 6252.6  | 5185.8 |
| 15°   | 6623.0  | 6639.9  | 6668.3  | 6765.2  | 7024.5  | 7474.0  | 7795.6  | 7819.5  | 7569.1  | 6645.2  | 5331.5 |
| 17.5° | 6736.7  | 6760.7  | 6736.7  | 6748.3  | 6898.4  | 7302.6  | 7832.0  | 7893.3  | 7962.6  | 7033.4  | 5469.2 |
| 20°   | 7045.0  | 7067.2  | 7024.5  | 6977.5  | 7006.8  | 7252.8  | 7806.2  | 7888.8  | 8270.8  | 7378.1  | 5584.6 |
| 22.5° | 7460.7  | 7469.6  | 7404.7  | 7327.4  | 7306.1  | 7421.6  | 7827.5  | 7912.8  | 8517.7  | 7689.9  | 5657.5 |
| 25°   | 7918.1  | 7926.1  | 7845.3  | 7756.5  | 7705.8  | 7752.9  | 8002.5  | 8066.5  | 8735.4  | 7987.4  | 5699.2 |
| 27.5° | 8416.5  | 8423.6  | 8322.3  | 8213.1  | 8154.4  | 8156.2  | 8291.2  | 8359.6  | 8967.2  | 8326.8  | 5733.0 |
| 30°   | 8943.2  | 8939.7  | 8846.4  | 8694.5  | 8619.9  | 8618.1  | 8706.9  | 8776.2  | 9303.0  | 8762.0  | 5779.2 |
| 32.5° | 9534.8  | 9527.7  | 9395.4  | 9207.0  | 9122.7  | 9135.1  | 9214.1  | 9254.1  | 9719.6  | 9225.7  | 5861.8 |
| 35°   | 10313.8 | 10293.4 | 10093.5 | 9859.9  | 9704.5  | 9700.0  | 9766.7  | 9798.6  | 10250.8 | 9787.1  | 5999.5 |
| 37.5° | 11324.7 | 11306.1 | 11035.1 | 10695.8 | 10477.3 | 10395.6 | 10474.6 | 10515.5 | 11008.5 | 10507.5 | 6220.6 |
| 40°   | 12321.4 | 12302.7 | 12141.9 | 11831.0 | 11494.4 | 11298.1 | 11360.2 | 11403.8 | 11954.5 | 11381.6 | 6499.6 |
| 42.5° | 13008.9 | 13024.9 | 13080.8 | 13106.6 | 12791.3 | 12379.1 | 12407.5 | 12452.8 | 12948.5 | 12316.0 | 6818.5 |
| 45°   | 13190.1 | 13224.7 | 13541.0 | 14161.9 | 14280.0 | 13958.5 | 13660.9 | 13685.8 | 13958.5 | 13250.5 | 7137.3 |
| 47.5° | 12645.6 | 12709.5 | 13319.8 | 14474.6 | 15474.8 | 15702.2 | 15139.0 | 15106.1 | 14927.6 | 14006.4 | 7363.9 |
| 50°   | 11408.2 | 11466.8 | 12257.4 | 13965.6 | 15837.2 | 17366.8 | 16910.2 | 16813.4 | 15777.7 | 14458.6 | 7443.8 |
| 52.5° | 9617.4  | 9688.5  | 10330.7 | 12363.1 | 15154.1 | 18109.4 | 18587.3 | 18506.5 | 16401.2 | 14494.1 | 7457.1 |
| 55°   | 6791.8  | 6878.0  | 7557.5  | 9475.3  | 12989.3 | 17518.7 | 19181.6 | 19157.6 | 16919.1 | 14399.9 | 7485.6 |
| 57.5° | 3816.9  | 3879.1  | 4612.0  | 6074.1  | 9513.5  | 15258.9 | 18560.7 | 18719.7 | 17231.8 | 14236.5 | 7528.2 |
| 60°   | 1694.8  | 1711.7  | 2091.0  | 3023.7  | 5569.5  | 11661.4 | 16783.2 | 17051.5 | 16963.5 | 14018.0 | 7600.1 |
| 62.5° | 939.8   | 925.6   | 925.6   | 1256.9  | 2420.6  | 7219.1  | 13685.8 | 14129.0 | 15818.5 | 13759.5 | 7603.7 |
| 65°   | 736.4   | 723.1   | 684.9   | 690.2   | 922.0   | 3204.0  | 9477.1  | 10265.0 | 13644.0 | 13001.8 | 7347.9 |
| 67.5° | 624.5   | 612.9   | 574.7   | 559.6   | 572.9   | 1057.1  | 5207.1  | 6025.2  | 10352.9 | 11032.5 | 6364.5 |
| 70°   | 527.6   | 519.6   | 500.1   | 481.4   | 447.7   | 522.3   | 1992.4  | 2548.5  | 6379.6  | 7339.0  | 4344.6 |
| 72.5° | 424.6   | 421.0   | 428.2   | 412.2   | 371.3   | 348.2   | 681.3   | 825.2   | 2865.6  | 3275.1  | 1789.9 |
| 75°   | 366.0   | 364.2   | 367.7   | 351.8   | 305.6   | 242.5   | 346.4   | 378.4   | 808.3   | 801.2   | 362.4  |
| 77.5° | 238.1   | 240.7   | 304.7   | 297.6   | 262.9   | 161.7   | 179.4   | 193.6   | 245.2   | 183.9   | 110.1  |
| 80°   | 151.9   | 150.1   | 154.6   | 246.9   | 236.3   | 123.5   | 89.7    | 94.2    | 118.1   | 90.6    | 53.3   |
| 82.5° | 92.4    | 90.6    | 101.3   | 115.5   | 119.0   | 86.2    | 55.1    | 56.0    | 73.7    | 58.6    | 28.4   |
| 85°   | 8.0     | 10.7    | 61.3    | 56.9    | 40.9    | 26.6    | 26.6    | 28.4    | 39.1    | 34.6    | 16.0   |
| 87.5° | 0.0     | 0.0     | 10.7    | 16.0    | 8.9     | 9.8     | 9.8     | 10.7    | 15.1    | 15.1    | 8.0    |
| 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: P325000

CATALOG NUMBER: GLEON-SA6B-722-U-AFL-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 4606.6 | 4606.6 | 4606.6 | 4606.6 | 4606.6 | 4606.6 | 4606.6 | 4606.6 | 4606.6 | 4606.6 | 4606.6 |
| 2.5°  | 4610.2 | 4517.8 | 4331.3 | 4151.8 | 3999.9 | 3853.4 | 3686.4 | 3521.1 | 3443.9 | 3412.8 | 3380.8 |
| 5°    | 4618.2 | 4428.1 | 4043.5 | 3656.2 | 3254.7 | 2893.1 | 2584.9 | 2268.7 | 2110.6 | 2041.3 | 2009.3 |
| 7.5°  | 4628.8 | 4339.3 | 3717.5 | 3067.2 | 2420.6 | 1930.2 | 1502.1 | 1226.7 | 1107.7 | 1089.0 | 1042.8 |
| 10°   | 4630.6 | 4231.8 | 3339.1 | 2417.0 | 1622.9 | 1163.6 | 895.4  | 753.3  | 700.9  | 692.0  | 676.9  |
| 12.5° | 4634.2 | 4104.8 | 2918.9 | 1789.9 | 1081.9 | 778.1  | 647.6  | 600.5  | 586.3  | 585.4  | 585.4  |
| 15°   | 4644.8 | 3971.5 | 2482.7 | 1289.8 | 777.2  | 616.5  | 568.5  | 549.8  | 544.5  | 547.2  | 546.3  |
| 17.5° | 4644.8 | 3814.3 | 2054.6 | 961.1  | 628.0  | 554.3  | 527.6  | 515.2  | 513.4  | 516.1  | 517.0  |
| 20°   | 4611.1 | 3623.3 | 1662.0 | 747.9  | 557.0  | 514.3  | 490.3  | 478.8  | 474.3  | 476.1  | 477.0  |
| 22.5° | 4530.2 | 3388.8 | 1342.2 | 619.1  | 509.9  | 477.9  | 452.1  | 434.4  | 427.3  | 428.2  | 428.2  |
| 25°   | 4404.1 | 3110.8 | 1049.9 | 535.6  | 471.7  | 438.8  | 408.6  | 388.2  | 383.7  | 382.8  | 384.6  |
| 27.5° | 4242.4 | 2803.4 | 835.9  | 471.7  | 426.4  | 395.3  | 365.1  | 348.2  | 344.7  | 345.5  | 346.4  |
| 30°   | 4083.4 | 2484.5 | 659.1  | 417.5  | 375.7  | 346.4  | 323.3  | 315.3  | 315.3  | 318.0  | 318.9  |
| 32.5° | 3937.8 | 2178.1 | 521.4  | 370.4  | 330.4  | 303.8  | 290.5  | 289.6  | 294.0  | 295.8  | 296.7  |
| 35°   | 3812.5 | 1894.7 | 431.7  | 334.0  | 294.9  | 271.8  | 267.4  | 270.9  | 276.3  | 279.8  | 280.7  |
| 37.5° | 3723.7 | 1641.5 | 377.5  | 303.8  | 267.4  | 248.7  | 247.8  | 254.9  | 262.0  | 270.0  | 271.8  |
| 40°   | 3686.4 | 1427.5 | 340.2  | 277.1  | 245.2  | 231.0  | 228.3  | 238.1  | 251.4  | 262.9  | 264.7  |
| 42.5° | 3655.3 | 1252.5 | 308.2  | 251.4  | 227.4  | 207.0  | 206.1  | 218.5  | 234.5  | 246.1  | 248.7  |
| 45°   | 3628.6 | 1112.1 | 278.9  | 223.8  | 204.3  | 177.7  | 180.3  | 196.3  | 208.7  | 221.2  | 223.8  |
| 47.5° | 3573.6 | 996.7  | 246.9  | 194.5  | 168.8  | 151.9  | 157.2  | 171.4  | 181.2  | 199.9  | 202.5  |
| 50°   | 3475.0 | 902.5  | 214.1  | 159.0  | 137.7  | 131.5  | 139.5  | 149.2  | 161.7  | 177.7  | 179.4  |
| 52.5° | 3408.3 | 831.4  | 185.7  | 133.2  | 113.7  | 115.5  | 123.5  | 127.0  | 134.1  | 140.3  | 138.6  |
| 55°   | 3370.1 | 792.3  | 162.6  | 115.5  | 96.8   | 102.2  | 103.9  | 99.5   | 95.9   | 89.7   | 87.1   |
| 57.5° | 3365.7 | 756.8  | 144.8  | 100.4  | 85.3   | 87.9   | 81.7   | 66.6   | 54.2   | 47.1   | 45.3   |
| 60°   | 3358.6 | 713.3  | 130.6  | 84.4   | 75.5   | 72.0   | 58.6   | 36.4   | 25.8   | 24.0   | 24.0   |
| 62.5° | 3281.3 | 645.8  | 119.9  | 71.1   | 64.0   | 54.2   | 33.8   | 16.9   | 14.2   | 15.1   | 15.1   |
| 65°   | 3035.3 | 551.6  | 109.3  | 57.7   | 50.6   | 39.1   | 16.9   | 9.8    | 5.3    | 6.2    | 6.2    |
| 67.5° | 2580.5 | 439.7  | 97.7   | 44.4   | 38.2   | 24.9   | 9.8    | 4.4    | 0.0    | 0.0    | 0.0    |
| 70°   | 1727.7 | 272.7  | 82.6   | 31.1   | 24.9   | 15.1   | 7.1    | 0.9    | 0.0    | 0.0    | 0.0    |
| 72.5° | 662.7  | 147.5  | 66.6   | 18.7   | 16.0   | 10.7   | 4.4    | 0.0    | 0.0    | 0.0    | 0.0    |
| 75°   | 149.2  | 96.8   | 46.2   | 13.3   | 11.5   | 7.1    | 1.8    | 0.0    | 0.0    | 0.0    | 0.0    |
| 77.5° | 56.9   | 70.2   | 26.6   | 8.9    | 8.0    | 4.4    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 80°   | 27.5   | 41.7   | 12.4   | 5.3    | 4.4    | 1.8    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 82.5° | 14.2   | 16.0   | 5.3    | 2.7    | 1.8    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 8.0    | 8.0    | 2.7    | 1.8    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 4.4    | 2.7    | 0.9    | 0.9    | 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: SP1-1908-441-10-R4

Test Date: 10/25/2019

Luminaire Tested: SA1C-722-U-5WQ

Data in this report applies to families of products SA1C-722-U-5WQ.

### Test Information

Test Method: LM-79-2008 Report  
 Number: SP1-1908-441-10-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-722-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):                  | 2237    | CRI (Ra): | 72.0 |      |       |
| CIE u':                   | 0.2876  | R1:       | 68.9 | R9:  | -17.4 |
| CIE v':                   | 0.5346  | R2:       | 83.0 | R10: | 61.3  |
| Duv:                      | -0.0006 | R3:       | 95.2 | R11: | 59.8  |
| CIE x:                    | 0.5005  | R4:       | 66.2 | R12: | 50.5  |
| CIE y:                    | 0.4134  | R5:       | 65.9 | R13: | 71.1  |
| CIE z:                    | 0.0860  | R6:       | 76.3 | R14: | 96.9  |
| Peak Wavelength (nm):     | 603     | R7:       | 76.7 |      |       |
| Dominant Wavelength (nm): | 587     | R8:       | 43.8 |      |       |
| Purity:                   | 74.5    |           |      |      |       |
| Rf:                       | 69.8    |           |      |      |       |
| Rg:                       | 99.2    |           |      |      |       |



### Test Conditions

Stabilization Time: 71M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 24.7/41%  
 Sphere Temperature (°C): 25.6

REPORT NUMBER: SP1-1908-441-10-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            |

REPORT NUMBER: SP1-1908-441-10-R4

CIE 1931 Chromaticity Diagram



CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 2200K 4-step quadrangle

REPORT NUMBER: SP1-1908-441-10-R4

**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       | 1768             | NR               | 490       | 5206             | NR               | 620       | 130919           | NR               | 750       | 8553             | NR               | 880       | 2713             | NR               |
| 365       | 1569             | NR               | 495       | 7286             | NR               | 625       | 125335           | NR               | 755       | 7696             | NR               | 885       | 2316             | NR               |
| 370       | 1594             | NR               | 500       | 10654            | NR               | 630       | 118388           | NR               | 760       | 6978             | NR               | 890       | 2539             | NR               |
| 375       | 1744             | NR               | 505       | 15189            | NR               | 635       | 111855           | NR               | 765       | 6377             | NR               | 895       | 1933             | NR               |
| 380       | 1659             | NR               | 510       | 20541            | NR               | 640       | 104062           | NR               | 770       | 5600             | NR               | 900       | 2216             | NR               |
| 385       | 1504             | NR               | 515       | 26492            | NR               | 645       | 96365            | NR               | 775       | 5000             | NR               | 905       | 2067             | NR               |
| 390       | 1541             | NR               | 520       | 32294            | NR               | 650       | 88651            | NR               | 780       | 4709             | NR               | 910       | 1959             | NR               |
| 395       | 1355             | NR               | 525       | 38123            | NR               | 655       | 81152            | NR               | 785       | 4305             | NR               | 915       | 1874             | NR               |
| 400       | 1243             | NR               | 530       | 43232            | NR               | 660       | 73523            | NR               | 790       | 4040             | NR               | 920       | 1484             | NR               |
| 405       | 1417             | NR               | 535       | 48012            | NR               | 665       | 66123            | NR               | 795       | 3642             | NR               | 925       | 1914             | NR               |
| 410       | 2147             | NR               | 540       | 52623            | NR               | 670       | 58677            | NR               | 800       | 3594             | NR               | 930       | 1948             | NR               |
| 415       | 3837             | NR               | 545       | 57516            | NR               | 675       | 52349            | NR               | 805       | 3190             | NR               | 935       | 2079             | NR               |
| 420       | 7159             | NR               | 550       | 62613            | NR               | 680       | 46159            | NR               | 810       | 3241             | NR               | 940       | 2263             | NR               |
| 425       | 12599            | NR               | 555       | 68554            | NR               | 685       | 40525            | NR               | 815       | 2732             | NR               | 945       | 1688             | NR               |
| 430       | 19019            | NR               | 560       | 75325            | NR               | 690       | 35615            | NR               | 820       | 2612             | NR               | 950       | 1560             | NR               |
| 435       | 24875            | NR               | 565       | 82533            | NR               | 695       | 31158            | NR               | 825       | 2966             | NR               | 955       | 2826             | NR               |
| 440       | 29103            | NR               | 570       | 90909            | NR               | 700       | 27409            | NR               | 830       | 2574             | NR               | 960       | 1477             | NR               |
| 445       | 29901            | NR               | 575       | 99621            | NR               | 705       | 24204            | NR               | 835       | 2633             | NR               | 965       | 1568             | NR               |
| 450       | 24862            | NR               | 580       | 108484           | NR               | 710       | 21558            | NR               | 840       | 2526             | NR               | 970       | 2030             | NR               |
| 455       | 15942            | NR               | 585       | 116679           | NR               | 715       | 19222            | NR               | 845       | 2631             | NR               | 975       | 1986             | NR               |
| 460       | 9916             | NR               | 590       | 123752           | NR               | 720       | 17310            | NR               | 850       | 2079             | NR               | 980       | 2540             | NR               |
| 465       | 7051             | NR               | 595       | 129324           | NR               | 725       | 15280            | NR               | 855       | 2309             | NR               | 985       | 1139             | NR               |
| 470       | 5227             | NR               | 600       | 134082           | NR               | 730       | 13282            | NR               | 860       | 2528             | NR               | 990       | 2018             | NR               |
| 475       | 4257             | NR               | 605       | 135698           | NR               | 735       | 11753            | NR               | 865       | 2121             | NR               | 995       | 3445             | NR               |
| 480       | 4052             | NR               | 610       | 135144           | NR               | 740       | 10654            | NR               | 870       | 2751             | NR               | 1000      | 3704             | NR               |
| 485       | 4298             | NR               | 615       | 134180           | NR               | 745       | 9451             | NR               | 875       | 2317             | NR               |           |                  |                  |

REPORT NUMBER: SP1-1908-441-10-R4

Scotopic Flux vs. Wavelength



Scotopic Lumens: 4696.9

S/P: 0.85

| 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       | 1768             | NR               | 490       | 5206             | NR               | 620       | 130919           | NR               | 750       | 8553             | NR               | 880       | 2713             | NR               |
| 365       | 1569             | NR               | 495       | 7286             | NR               | 625       | 125335           | NR               | 755       | 7696             | NR               | 885       | 2316             | NR               |
| 370       | 1594             | NR               | 500       | 10654            | NR               | 630       | 118388           | NR               | 760       | 6978             | NR               | 890       | 2539             | NR               |
| 375       | 1744             | NR               | 505       | 15189            | NR               | 635       | 111855           | NR               | 765       | 6377             | NR               | 895       | 1933             | NR               |
| 380       | 1659             | NR               | 510       | 20541            | NR               | 640       | 104062           | NR               | 770       | 5600             | NR               | 900       | 2216             | NR               |
| 385       | 1504             | NR               | 515       | 26492            | NR               | 645       | 96365            | NR               | 775       | 5000             | NR               | 905       | 2067             | NR               |
| 390       | 1541             | NR               | 520       | 32294            | NR               | 650       | 88651            | NR               | 780       | 4709             | NR               | 910       | 1959             | NR               |
| 395       | 1355             | NR               | 525       | 38123            | NR               | 655       | 81152            | NR               | 785       | 4305             | NR               | 915       | 1874             | NR               |
| 400       | 1243             | NR               | 530       | 43232            | NR               | 660       | 73523            | NR               | 790       | 4040             | NR               | 920       | 1484             | NR               |
| 405       | 1417             | NR               | 535       | 48012            | NR               | 665       | 66123            | NR               | 795       | 3642             | NR               | 925       | 1914             | NR               |
| 410       | 2147             | NR               | 540       | 52623            | NR               | 670       | 58677            | NR               | 800       | 3594             | NR               | 930       | 1948             | NR               |
| 415       | 3837             | NR               | 545       | 57516            | NR               | 675       | 52349            | NR               | 805       | 3190             | NR               | 935       | 2079             | NR               |
| 420       | 7159             | NR               | 550       | 62613            | NR               | 680       | 46159            | NR               | 810       | 3241             | NR               | 940       | 2263             | NR               |
| 425       | 12599            | NR               | 555       | 68554            | NR               | 685       | 40525            | NR               | 815       | 2732             | NR               | 945       | 1688             | NR               |
| 430       | 19019            | NR               | 560       | 75325            | NR               | 690       | 35615            | NR               | 820       | 2612             | NR               | 950       | 1560             | NR               |
| 435       | 24875            | NR               | 565       | 82533            | NR               | 695       | 31158            | NR               | 825       | 2966             | NR               | 955       | 2826             | NR               |
| 440       | 29103            | NR               | 570       | 90909            | NR               | 700       | 27409            | NR               | 830       | 2574             | NR               | 960       | 1477             | NR               |
| 445       | 29901            | NR               | 575       | 99621            | NR               | 705       | 24204            | NR               | 835       | 2633             | NR               | 965       | 1568             | NR               |
| 450       | 24862            | NR               | 580       | 108484           | NR               | 710       | 21558            | NR               | 840       | 2526             | NR               | 970       | 2030             | NR               |
| 455       | 15942            | NR               | 585       | 116679           | NR               | 715       | 19222            | NR               | 845       | 2631             | NR               | 975       | 1986             | NR               |
| 460       | 9916             | NR               | 590       | 123752           | NR               | 720       | 17310            | NR               | 850       | 2079             | NR               | 980       | 2540             | NR               |
| 465       | 7051             | NR               | 595       | 129324           | NR               | 725       | 15280            | NR               | 855       | 2309             | NR               | 985       | 1139             | NR               |
| 470       | 5227             | NR               | 600       | 134082           | NR               | 730       | 13282            | NR               | 860       | 2528             | NR               | 990       | 2018             | NR               |
| 475       | 4257             | NR               | 605       | 135698           | NR               | 735       | 11753            | NR               | 865       | 2121             | NR               | 995       | 3445             | NR               |
| 480       | 4052             | NR               | 610       | 135144           | NR               | 740       | 10654            | NR               | 870       | 2751             | NR               | 1000      | 3704             | NR               |
| 485       | 4298             | NR               | 615       | 134180           | NR               | 745       | 9451             | NR               | 875       | 2317             | NR               |           |                  |                  |

REPORT NUMBER: SP1-1908-441-10-R4

**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 1470.8 M/P: 0.27**

| 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       | 1768             | NR               | 490       | 5206             | NR               | 620       | 130919           | NR               | 750       | 8553             | NR               | 880       | 2713             | NR               |
| 365       | 1569             | NR               | 495       | 7286             | NR               | 625       | 125335           | NR               | 755       | 7696             | NR               | 885       | 2316             | NR               |
| 370       | 1594             | NR               | 500       | 10654            | NR               | 630       | 118388           | NR               | 760       | 6978             | NR               | 890       | 2539             | NR               |
| 375       | 1744             | NR               | 505       | 15189            | NR               | 635       | 111855           | NR               | 765       | 6377             | NR               | 895       | 1933             | NR               |
| 380       | 1659             | NR               | 510       | 20541            | NR               | 640       | 104062           | NR               | 770       | 5600             | NR               | 900       | 2216             | NR               |
| 385       | 1504             | NR               | 515       | 26492            | NR               | 645       | 96365            | NR               | 775       | 5000             | NR               | 905       | 2067             | NR               |
| 390       | 1541             | NR               | 520       | 32294            | NR               | 650       | 88651            | NR               | 780       | 4709             | NR               | 910       | 1959             | NR               |
| 395       | 1355             | NR               | 525       | 38123            | NR               | 655       | 81152            | NR               | 785       | 4305             | NR               | 915       | 1874             | NR               |
| 400       | 1243             | NR               | 530       | 43232            | NR               | 660       | 73523            | NR               | 790       | 4040             | NR               | 920       | 1484             | NR               |
| 405       | 1417             | NR               | 535       | 48012            | NR               | 665       | 66123            | NR               | 795       | 3642             | NR               | 925       | 1914             | NR               |
| 410       | 2147             | NR               | 540       | 52623            | NR               | 670       | 58677            | NR               | 800       | 3594             | NR               | 930       | 1948             | NR               |
| 415       | 3837             | NR               | 545       | 57516            | NR               | 675       | 52349            | NR               | 805       | 3190             | NR               | 935       | 2079             | NR               |
| 420       | 7159             | NR               | 550       | 62613            | NR               | 680       | 46159            | NR               | 810       | 3241             | NR               | 940       | 2263             | NR               |
| 425       | 12599            | NR               | 555       | 68554            | NR               | 685       | 40525            | NR               | 815       | 2732             | NR               | 945       | 1688             | NR               |
| 430       | 19019            | NR               | 560       | 75325            | NR               | 690       | 35615            | NR               | 820       | 2612             | NR               | 950       | 1560             | NR               |
| 435       | 24875            | NR               | 565       | 82533            | NR               | 695       | 31158            | NR               | 825       | 2966             | NR               | 955       | 2826             | NR               |
| 440       | 29103            | NR               | 570       | 90909            | NR               | 700       | 27409            | NR               | 830       | 2574             | NR               | 960       | 1477             | NR               |
| 445       | 29901            | NR               | 575       | 99621            | NR               | 705       | 24204            | NR               | 835       | 2633             | NR               | 965       | 1568             | NR               |
| 450       | 24862            | NR               | 580       | 108484           | NR               | 710       | 21558            | NR               | 840       | 2526             | NR               | 970       | 2030             | NR               |
| 455       | 15942            | NR               | 585       | 116679           | NR               | 715       | 19222            | NR               | 845       | 2631             | NR               | 975       | 1986             | NR               |
| 460       | 9916             | NR               | 590       | 123752           | NR               | 720       | 17310            | NR               | 850       | 2079             | NR               | 980       | 2540             | NR               |
| 465       | 7051             | NR               | 595       | 129324           | NR               | 725       | 15280            | NR               | 855       | 2309             | NR               | 985       | 1139             | NR               |
| 470       | 5227             | NR               | 600       | 134082           | NR               | 730       | 13282            | NR               | 860       | 2528             | NR               | 990       | 2018             | NR               |
| 475       | 4257             | NR               | 605       | 135698           | NR               | 735       | 11753            | NR               | 865       | 2121             | NR               | 995       | 3445             | NR               |
| 480       | 4052             | NR               | 610       | 135144           | NR               | 740       | 10654            | NR               | 870       | 2751             | NR               | 1000      | 3704             | NR               |
| 485       | 4298             | NR               | 615       | 134180           | NR               | 745       | 9451             | NR               | 875       | 2317             | NR               |           |                  |                  |

REPORT NUMBER: SP1-1908-441-10-R4

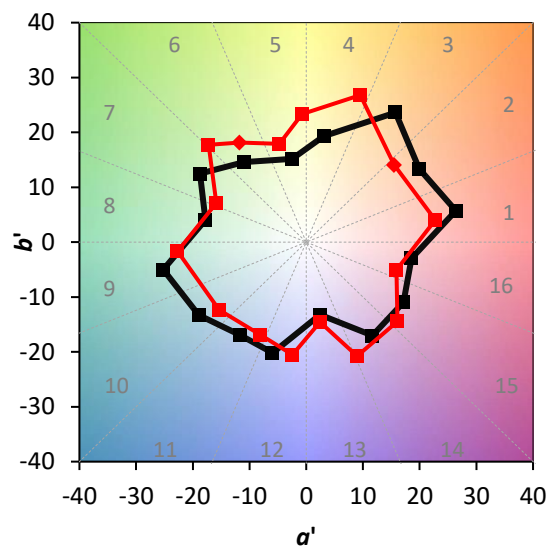
**TM-30-18**

### Summary

$R_f = 69.8$   
 $R_g = 99.2$   
 CIE  $R_a = 72.0$   
 $R_g = -17.4$



### Color Vector Graphics





REPORT NUMBER: SP1-1908-441-10-R4

**TM-30-18**

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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 87 | CES26 = 56 | CES51 = 74 | CES76 = 56 |
| CES02 = 65 | CES27 = 76 | CES52 = 76 | CES77 = 81 |
| CES03 = 32 | CES28 = 83 | CES53 = 65 | CES78 = 63 |
| CES04 = 72 | CES29 = 46 | CES54 = 78 | CES79 = 84 |
| CES05 = 52 | CES30 = 48 | CES55 = 75 | CES80 = 84 |
| CES06 = 52 | CES31 = 51 | CES56 = 65 | CES81 = 63 |
| CES07 = 44 | CES32 = 51 | CES57 = 62 | CES82 = 92 |
| CES08 = 42 | CES33 = 53 | CES58 = 66 | CES83 = 83 |
| CES09 = 29 | CES34 = 70 | CES59 = 84 | CES84 = 92 |
| CES10 = 78 | CES35 = 85 | CES60 = 90 | CES85 = 81 |
| CES11 = 61 | CES36 = 78 | CES61 = 84 | CES86 = 56 |
| CES12 = 68 | CES37 = 80 | CES62 = 70 | CES87 = 78 |
| CES13 = 45 | CES38 = 53 | CES63 = 68 | CES88 = 72 |
| CES14 = 75 | CES39 = 90 | CES64 = 69 | CES89 = 62 |
| CES15 = 72 | CES40 = 84 | CES65 = 67 | CES90 = 67 |
| CES16 = 49 | CES41 = 75 | CES66 = 64 | CES91 = 90 |
| CES17 = 51 | CES42 = 79 | CES67 = 63 | CES92 = 67 |
| CES18 = 57 | CES43 = 64 | CES68 = 69 | CES93 = 79 |
| CES19 = 74 | CES44 = 98 | CES69 = 80 | CES94 = 52 |
| CES20 = 68 | CES45 = 73 | CES70 = 63 | CES95 = 76 |
| CES21 = 89 | CES46 = 67 | CES71 = 63 | CES96 = 78 |
| CES22 = 81 | CES47 = 60 | CES72 = 87 | CES97 = 77 |
| CES23 = 92 | CES48 = 48 | CES73 = 56 | CES98 = 71 |
| CES24 = 92 | CES49 = 64 | CES74 = 87 | CES99 = 65 |
| CES25 = 74 | CES50 = 74 | CES75 = 66 |            |



REPORT NUMBER: SP1-1908-441-10-R4

**TM-30-18**

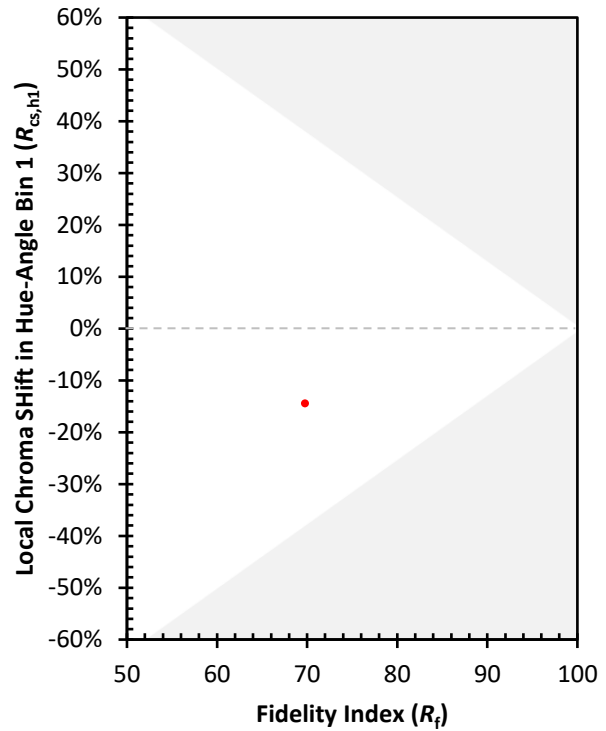
Color Rendition by Hue-Angle Bin



REPORT NUMBER: SP1-1908-441-10-R4

**TM-30-18**

**Measure Comparisons**



(END OF REPORT)