

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: P324888

Luminaire Tested: **GLEON-SA4C-760-U-AFL-HSS**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P324888  
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-SA4C-760-U-AFL-HSS  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(4) 70 CRI, 5700K, 1050mA 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: 23356 lumens  
Efficiency: N/A  
Efficacy: 103.8 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 1' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B2 - U0 - G2

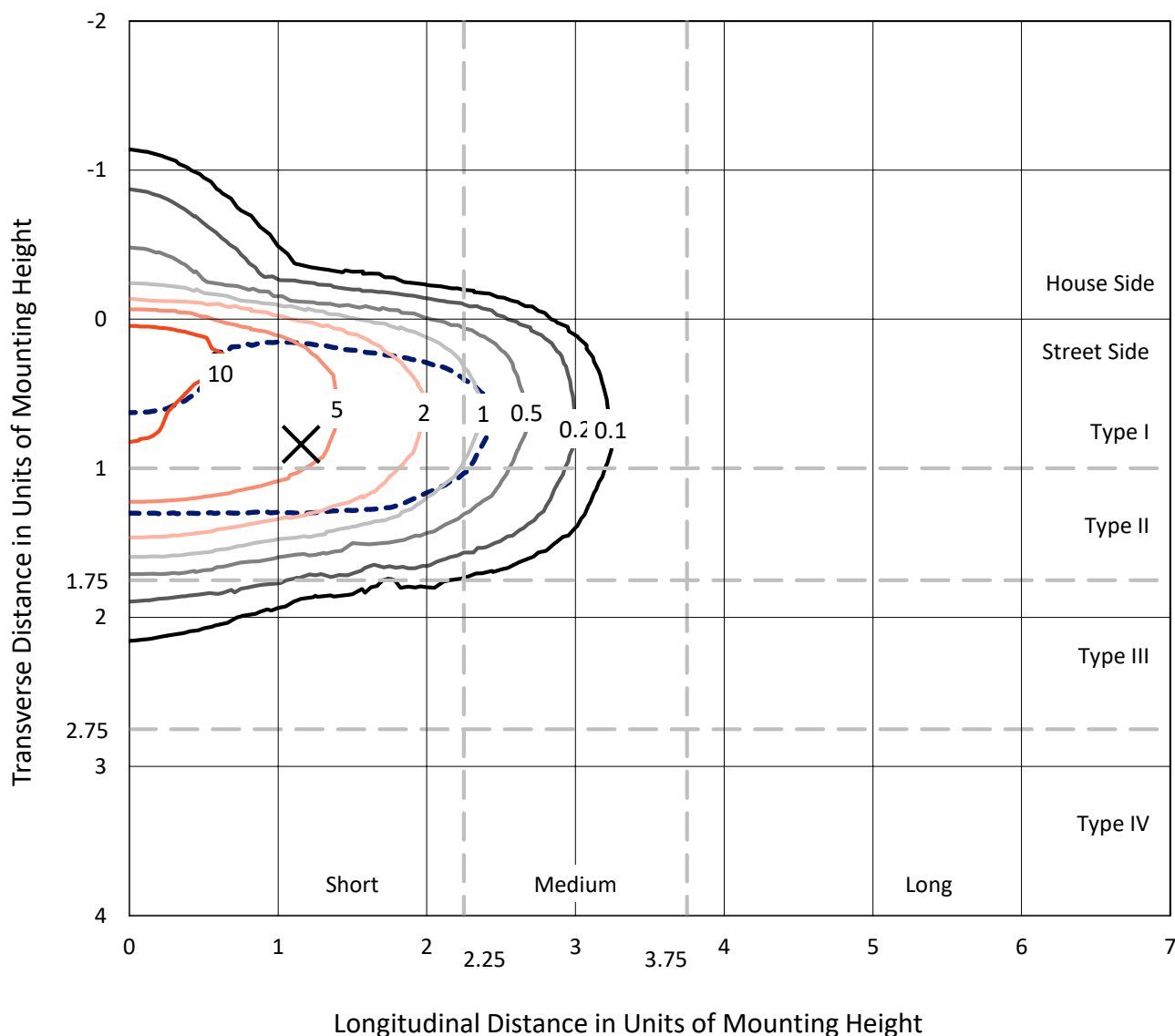
Input Watts (W): 225  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



REPORT NUMBER: P324888  
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## Iso-Footcandle Lines of Horizontal Illumination

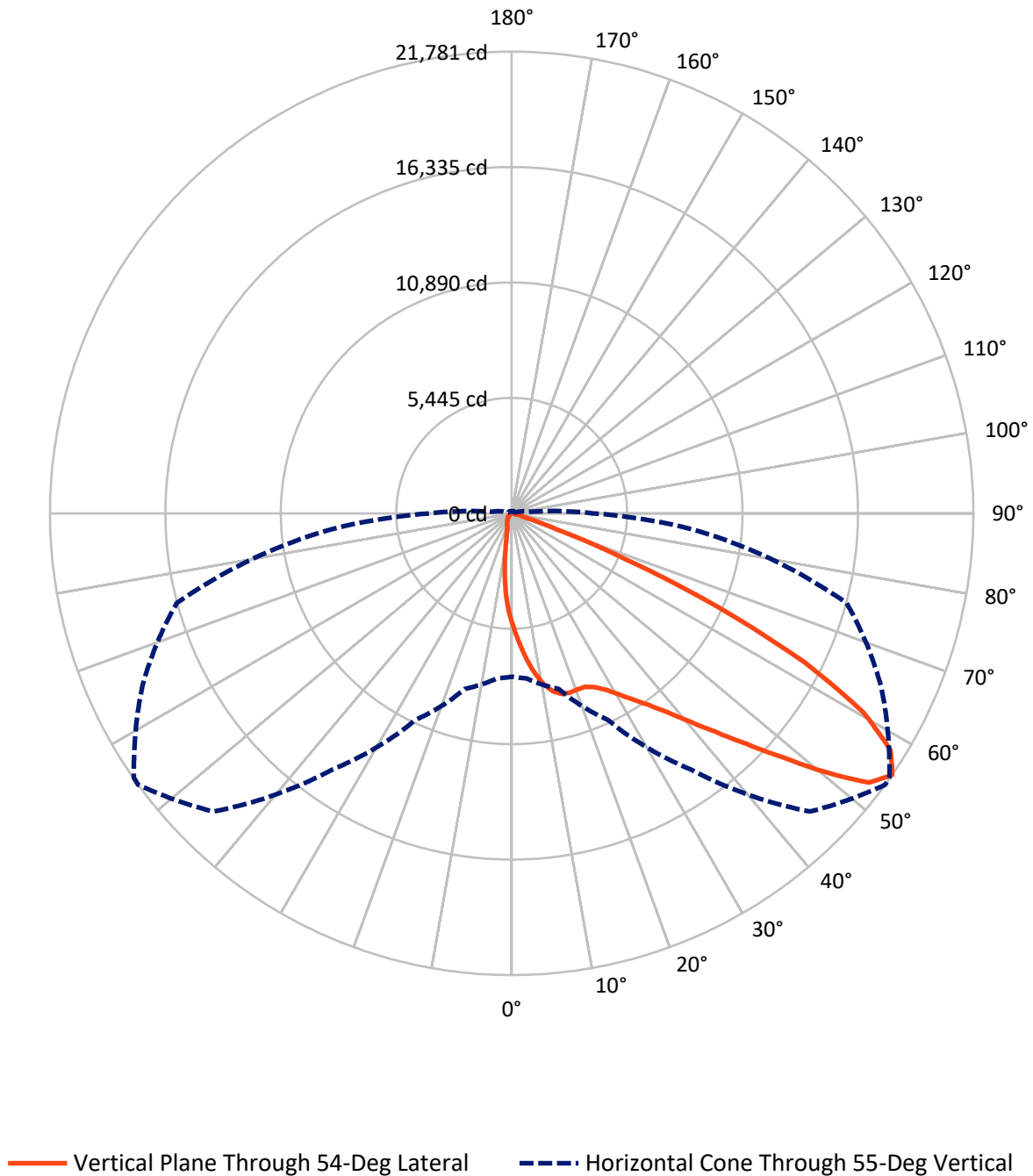
× Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 12.9 fc  
 Type II - Short - N/A

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## Luminous Intensity Polar Plot



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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 1165.3   | 0.0    | 1165.3  |
|                    | % Fixture | 5.0      | 0.0    | 5.0     |
| <b>Street Side</b> | Lumens    | 22190.7  | 0.0    | 22190.7 |
|                    | % Fixture | 95.0     | 0.0    | 95.0    |
| <b>Total</b>       | Lumens    | 23356.0  | 0.0    | 23356.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 481.7   | 2.1       |
| 10°-20°   | 1321.1  | 5.7       |
| 20°-30°   | 2255.5  | 9.7       |
| 30°-40°   | 3619.7  | 15.5      |
| 40°-50°   | 5784.3  | 24.8      |
| 50°-60°   | 6198.0  | 26.5      |
| 60°-70°   | 3182.3  | 13.6      |
| 70°-80°   | 482.0   | 2.1       |
| 80°-90°   | 31.4    | 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°    | 23356.0 | 100.0     |
| 0°-180°   | 23356.0 | 100.0     |

**Coefficient of Utilization**



REPORT NUMBER: P324888

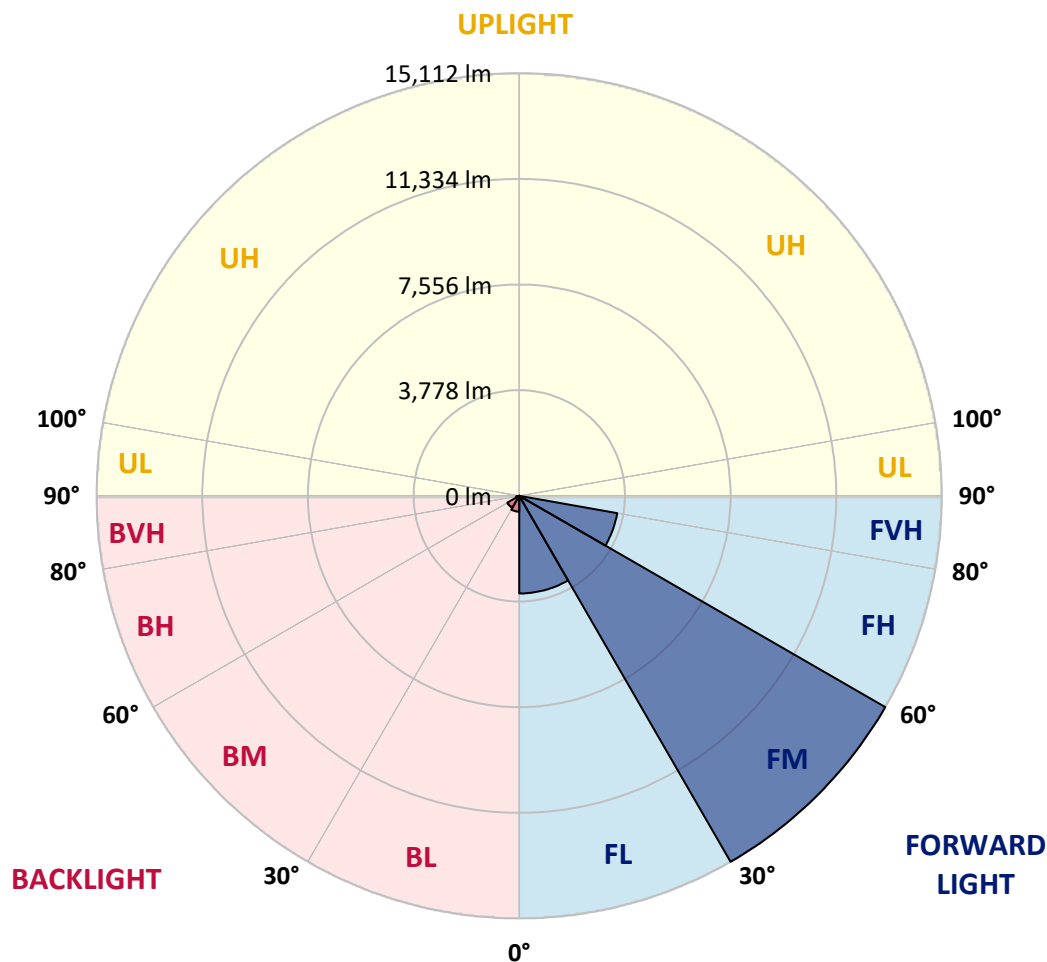
CATALOG NUMBER: GLEON-SA4C-760-U-AFL-HSS

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|---------|-----------|-------------------------|------|---------|
|      |             |         |           | B                       | U    | G       |
| FL   | (0°-30°)    | 3491.3  | 14.9      |                         |      |         |
| FM   | (30°-60°)   | 15112.4 | 64.7      |                         |      |         |
| FH   | (60°-80°)   | 3556.9  | 15.2      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 30.1    | 0.1       |                         |      | G1/100  |
| BL   | (0°-30°)    | 567.0   | 2.4       | B2/1000                 |      |         |
| BM   | (30°-60°)   | 489.7   | 2.1       | B1/1000                 |      |         |
| BH   | (60°-80°)   | 107.4   | 0.5       | B0/110                  |      | G0/110  |
| BVH  | (80°-90°)   | 1.3     | 0.0       |                         |      | G0/10   |
| UL   | (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0     | 0.0       |                         | U0/0 |         |

**BUG Rating: B2-U0-G2**

Type II Short





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CATALOG NUMBER: GLEON-SA4C-760-U-AFL-HSS

**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 54°     | 55°     | 65°     | 75°     | 85°    |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| 0°    | 5230.8  | 5230.8  | 5230.8  | 5230.8  | 5230.8  | 5230.8  | 5230.8  | 5230.8  | 5230.8  | 5230.8  | 5230.8 |
| 2.5°  | 6564.2  | 6466.4  | 6469.4  | 6425.0  | 6262.6  | 6135.6  | 6003.4  | 5972.2  | 5766.4  | 5550.5  | 5342.8 |
| 5°    | 7698.9  | 7627.3  | 7610.2  | 7524.5  | 7298.5  | 7059.5  | 6803.3  | 6743.8  | 6341.3  | 5899.5  | 5464.8 |
| 7.5°  | 8281.9  | 8283.0  | 8268.8  | 8237.6  | 8096.4  | 7864.4  | 7551.7  | 7489.2  | 6941.5  | 6278.8  | 5591.9 |
| 10°   | 8112.5  | 8150.8  | 8229.5  | 8333.4  | 8441.3  | 8412.1  | 8177.0  | 8120.6  | 7525.5  | 6680.2  | 5733.1 |
| 12.5° | 7717.1  | 7722.1  | 7809.9  | 7980.4  | 8291.0  | 8609.8  | 8613.8  | 8594.6  | 8083.2  | 7099.8  | 5888.4 |
| 15°   | 7520.4  | 7539.6  | 7571.9  | 7681.8  | 7976.3  | 8486.7  | 8851.8  | 8879.1  | 8594.6  | 7545.6  | 6053.9 |
| 17.5° | 7649.5  | 7676.8  | 7649.5  | 7662.6  | 7833.1  | 8292.0  | 8893.2  | 8962.8  | 9041.4  | 7986.4  | 6210.2 |
| 20°   | 7999.5  | 8024.7  | 7976.3  | 7922.9  | 7956.2  | 8235.5  | 8863.9  | 8957.7  | 9391.4  | 8377.8  | 6341.3 |
| 22.5° | 8471.6  | 8481.7  | 8408.0  | 8320.3  | 8296.1  | 8427.2  | 8888.1  | 8985.0  | 9671.8  | 8731.8  | 6424.0 |
| 25°   | 8991.0  | 9000.1  | 8908.3  | 8807.4  | 8750.0  | 8803.4  | 9086.8  | 9159.5  | 9919.0  | 9069.7  | 6471.4 |
| 27.5° | 9556.9  | 9564.9  | 9449.9  | 9325.9  | 9259.3  | 9261.3  | 9414.6  | 9492.3  | 10182.2 | 9455.0  | 6509.8 |
| 30°   | 10155.0 | 10151.0 | 10045.0 | 9872.6  | 9787.8  | 9785.8  | 9886.7  | 9965.4  | 10563.5 | 9949.2  | 6562.2 |
| 32.5° | 10826.7 | 10818.7 | 10668.4 | 10454.6 | 10358.7 | 10372.9 | 10462.6 | 10508.0 | 11036.5 | 10475.7 | 6656.0 |
| 35°   | 11711.3 | 11688.1 | 11461.2 | 11195.9 | 11019.4 | 11014.3 | 11090.0 | 11126.3 | 11639.7 | 11113.2 | 6812.4 |
| 37.5° | 12859.2 | 12838.0 | 12530.3 | 12145.0 | 11896.9 | 11804.1 | 11893.9 | 11940.3 | 12500.1 | 11931.2 | 7063.5 |
| 40°   | 13990.8 | 13969.7 | 13787.1 | 13434.1 | 13051.8 | 12828.9 | 12899.5 | 12948.9 | 13574.3 | 12923.7 | 7380.2 |
| 42.5° | 14771.5 | 14789.7 | 14853.2 | 14882.5 | 14524.4 | 14056.4 | 14088.7 | 14140.1 | 14702.9 | 13984.8 | 7742.3 |
| 45°   | 14977.3 | 15016.6 | 15375.7 | 16080.7 | 16214.9 | 15849.8 | 15511.9 | 15540.1 | 15849.8 | 15045.9 | 8104.4 |
| 47.5° | 14359.0 | 14431.6 | 15124.6 | 16435.8 | 17571.5 | 17829.7 | 17190.3 | 17152.9 | 16950.2 | 15904.2 | 8361.6 |
| 50°   | 12954.0 | 13020.5 | 13918.2 | 15857.8 | 17983.0 | 19719.9 | 19201.5 | 19091.5 | 17915.5 | 16417.6 | 8452.4 |
| 52.5° | 10920.5 | 11001.2 | 11730.5 | 14038.3 | 17207.4 | 20563.1 | 21105.8 | 21014.0 | 18623.5 | 16458.0 | 8467.5 |
| 55°   | 7712.1  | 7809.9  | 8581.5  | 10759.2 | 14749.3 | 19892.4 | 21780.6 | 21753.3 | 19211.6 | 16351.1 | 8499.8 |
| 57.5° | 4334.1  | 4404.7  | 5236.9  | 6897.1  | 10802.5 | 17326.4 | 21075.5 | 21256.1 | 19566.6 | 16165.5 | 8548.2 |
| 60°   | 1924.5  | 1943.6  | 2374.3  | 3433.4  | 6324.2  | 13241.4 | 19057.2 | 19361.9 | 19262.0 | 15917.3 | 8629.9 |
| 62.5° | 1067.1  | 1051.0  | 1051.0  | 1427.2  | 2748.5  | 8197.2  | 15540.1 | 16043.4 | 17961.9 | 15623.8 | 8634.0 |
| 65°   | 836.2   | 821.0   | 777.7   | 783.7   | 1047.0  | 3638.2  | 10761.2 | 11655.8 | 15492.7 | 14763.5 | 8343.5 |
| 67.5° | 709.1   | 696.0   | 652.6   | 635.4   | 650.6   | 1200.3  | 5912.6  | 6841.6  | 11755.7 | 12527.3 | 7226.9 |
| 70°   | 599.1   | 590.1   | 567.9   | 546.7   | 508.4   | 593.1   | 2262.4  | 2893.8  | 7244.1  | 8333.4  | 4933.3 |
| 72.5° | 482.1   | 478.1   | 486.2   | 468.0   | 421.6   | 395.4   | 773.6   | 937.0   | 3253.9  | 3718.9  | 2032.4 |
| 75°   | 415.6   | 413.5   | 417.6   | 399.4   | 347.0   | 275.4   | 393.4   | 429.7   | 917.9   | 909.8   | 411.5  |
| 77.5° | 270.3   | 273.3   | 346.0   | 337.9   | 298.6   | 183.6   | 203.7   | 219.9   | 278.4   | 208.8   | 125.1  |
| 80°   | 172.5   | 170.5   | 175.5   | 280.4   | 268.3   | 140.2   | 101.9   | 106.9   | 134.1   | 102.9   | 60.5   |
| 82.5° | 104.9   | 102.9   | 115.0   | 131.1   | 135.2   | 97.8    | 62.5    | 63.5    | 83.7    | 66.6    | 32.3   |
| 85°   | 9.1     | 12.1    | 69.6    | 64.6    | 46.4    | 30.3    | 30.3    | 32.3    | 44.4    | 39.3    | 18.2   |
| 87.5° | 0.0     | 0.0     | 12.1    | 18.2    | 10.1    | 11.1    | 11.1    | 12.1    | 17.1    | 17.1    | 9.1    |
| 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: P324888

CATALOG NUMBER: GLEON-SA4C-760-U-AFL-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 5230.8 | 5230.8 | 5230.8 | 5230.8 | 5230.8 | 5230.8 | 5230.8 | 5230.8 | 5230.8 | 5230.8 | 5230.8 |
| 2.5°  | 5234.8 | 5129.9 | 4918.1 | 4714.4 | 4541.9 | 4375.5 | 4185.9 | 3998.2 | 3910.5 | 3875.2 | 3838.9 |
| 5°    | 5243.9 | 5028.1 | 4591.3 | 4151.6 | 3695.7 | 3285.1 | 2935.1 | 2576.1 | 2396.5 | 2317.9 | 2281.5 |
| 7.5°  | 5256.0 | 4927.2 | 4221.2 | 3482.8 | 2748.5 | 2191.8 | 1705.6 | 1392.9 | 1257.8 | 1236.6 | 1184.1 |
| 10°   | 5258.0 | 4805.2 | 3791.5 | 2744.5 | 1842.8 | 1321.3 | 1016.7 | 855.3  | 795.8  | 785.7  | 768.6  |
| 12.5° | 5262.1 | 4660.9 | 3314.4 | 2032.4 | 1228.5 | 883.6  | 735.3  | 681.8  | 665.7  | 664.7  | 664.7  |
| 15°   | 5274.2 | 4509.6 | 2819.1 | 1464.5 | 882.6  | 700.0  | 645.5  | 624.3  | 618.3  | 621.3  | 620.3  |
| 17.5° | 5274.2 | 4331.1 | 2333.0 | 1091.3 | 713.1  | 629.4  | 599.1  | 585.0  | 583.0  | 586.0  | 587.0  |
| 20°   | 5235.8 | 4114.2 | 1887.2 | 849.3  | 632.4  | 584.0  | 556.8  | 543.7  | 538.6  | 540.6  | 541.6  |
| 22.5° | 5144.1 | 3848.0 | 1524.1 | 703.0  | 579.0  | 542.6  | 513.4  | 493.2  | 485.2  | 486.2  | 486.2  |
| 25°   | 5000.8 | 3532.3 | 1192.2 | 608.2  | 535.6  | 498.3  | 464.0  | 440.8  | 435.7  | 434.7  | 436.7  |
| 27.5° | 4817.3 | 3183.3 | 949.1  | 535.6  | 484.1  | 448.8  | 414.6  | 395.4  | 391.4  | 392.4  | 393.4  |
| 30°   | 4636.7 | 2821.2 | 748.4  | 474.1  | 426.7  | 393.4  | 367.1  | 358.1  | 358.1  | 361.1  | 362.1  |
| 32.5° | 4471.3 | 2473.2 | 592.1  | 420.6  | 375.2  | 345.0  | 329.8  | 328.8  | 333.9  | 335.9  | 336.9  |
| 35°   | 4329.1 | 2151.4 | 490.2  | 379.2  | 334.9  | 308.6  | 303.6  | 307.6  | 313.7  | 317.7  | 318.7  |
| 37.5° | 4228.2 | 1864.0 | 428.7  | 345.0  | 303.6  | 282.4  | 281.4  | 289.5  | 297.5  | 306.6  | 308.6  |
| 40°   | 4185.9 | 1620.9 | 386.3  | 314.7  | 278.4  | 262.2  | 259.2  | 270.3  | 285.4  | 298.6  | 300.6  |
| 42.5° | 4150.6 | 1422.2 | 350.0  | 285.4  | 258.2  | 235.0  | 234.0  | 248.1  | 266.3  | 279.4  | 282.4  |
| 45°   | 4120.3 | 1262.8 | 316.7  | 254.2  | 232.0  | 201.7  | 204.8  | 222.9  | 237.0  | 251.2  | 254.2  |
| 47.5° | 4057.8 | 1131.7 | 280.4  | 220.9  | 191.6  | 172.5  | 178.5  | 194.7  | 205.8  | 226.9  | 230.0  |
| 50°   | 3945.8 | 1024.8 | 243.1  | 180.5  | 156.3  | 149.3  | 158.4  | 169.5  | 183.6  | 201.7  | 203.7  |
| 52.5° | 3870.2 | 944.1  | 210.8  | 151.3  | 129.1  | 131.1  | 140.2  | 144.2  | 152.3  | 159.4  | 157.3  |
| 55°   | 3826.8 | 899.7  | 184.6  | 131.1  | 109.9  | 116.0  | 118.0  | 113.0  | 108.9  | 101.9  | 98.8   |
| 57.5° | 3821.7 | 859.4  | 164.4  | 114.0  | 96.8   | 99.9   | 92.8   | 75.6   | 61.5   | 53.5   | 51.4   |
| 60°   | 3813.7 | 809.9  | 148.3  | 95.8   | 85.7   | 81.7   | 66.6   | 41.4   | 29.3   | 27.2   | 27.2   |
| 62.5° | 3725.9 | 733.3  | 136.2  | 80.7   | 72.6   | 61.5   | 38.3   | 19.2   | 16.1   | 17.1   | 17.1   |
| 65°   | 3446.5 | 626.4  | 124.1  | 65.6   | 57.5   | 44.4   | 19.2   | 11.1   | 6.1    | 7.1    | 7.1    |
| 67.5° | 2930.1 | 499.3  | 111.0  | 50.4   | 43.4   | 28.2   | 11.1   | 5.0    | 0.0    | 0.0    | 0.0    |
| 70°   | 1961.8 | 309.7  | 93.8   | 35.3   | 28.2   | 17.1   | 8.1    | 1.0    | 0.0    | 0.0    | 0.0    |
| 72.5° | 752.4  | 167.4  | 75.6   | 21.2   | 18.2   | 12.1   | 5.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 75°   | 169.5  | 109.9  | 52.4   | 15.1   | 13.1   | 8.1    | 2.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 77.5° | 64.6   | 79.7   | 30.3   | 10.1   | 9.1    | 5.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 80°   | 31.3   | 47.4   | 14.1   | 6.1    | 5.0    | 2.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 82.5° | 16.1   | 18.2   | 6.1    | 3.0    | 2.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 9.1    | 9.1    | 3.0    | 2.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 5.0    | 3.0    | 1.0    | 1.0    | 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: SP1-1908-441-9-R4

Test Date: 10/23/2019

Luminaire Tested: SA1C-760-U-5WQ

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

### Test Information

Test Method: LM-79-2008  
 Report Number: SP1-1908-441-9-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-760-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):                  | 5474   | CRI (Ra): | 71.7 |      |       |
| CIE u':                   | 0.2052 | R1:       | 70.6 | R9:  | -27.1 |
| CIE v':                   | 0.4804 | R2:       | 74.6 | R10: | 40.8  |
| Duv:                      | 0.0025 | R3:       | 78.3 | R11: | 74.6  |
| CIE x:                    | 0.3330 | R4:       | 73.8 | R12: | 50.4  |
| CIE y:                    | 0.3466 | R5:       | 72.4 | R13: | 70.0  |
| CIE z:                    | 0.3204 | R6:       | 67.5 | R14: | 87.8  |
| Peak Wavelength (nm):     | 442    | R7:       | 77.5 |      |       |
| Dominant Wavelength (nm): | 554    | R8:       | 58.9 |      |       |
| Purity:                   | 4.1    |           |      |      |       |
| Rf:                       | 72.1   |           |      |      |       |
| Rg:                       | 97.2   |           |      |      |       |



### Test Conditions

Stabilization Time: 240M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 24.6/31%  
 Sphere Temperature (°C): 25.9

REPORT NUMBER: SP1-1908-441-9-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 5700K 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       | 3540             | NR               | 490       | 33363            | NR               | 620       | 80193            | NR               | 750       | 4663             | NR               | 880       | 4678             | NR               |
| 365       | 2862             | NR               | 495       | 44177            | NR               | 625       | 73091            | NR               | 755       | 4147             | NR               | 885       | 4128             | NR               |
| 370       | 2865             | NR               | 500       | 57019            | NR               | 630       | 66269            | NR               | 760       | 4040             | NR               | 890       | 4504             | NR               |
| 375       | 3254             | NR               | 505       | 70030            | NR               | 635       | 60012            | NR               | 765       | 3474             | NR               | 895       | 4371             | NR               |
| 380       | 3076             | NR               | 510       | 81972            | NR               | 640       | 53914            | NR               | 770       | 3469             | NR               | 900       | 4082             | NR               |
| 385       | 2904             | NR               | 515       | 92590            | NR               | 645       | 48385            | NR               | 775       | 3181             | NR               | 905       | 2982             | NR               |
| 390       | 2689             | NR               | 520       | 100305           | NR               | 650       | 43219            | NR               | 780       | 2969             | NR               | 910       | 4351             | NR               |
| 395       | 2619             | NR               | 525       | 107452           | NR               | 655       | 38562            | NR               | 785       | 3132             | NR               | 915       | 3365             | NR               |
| 400       | 2679             | NR               | 530       | 111373           | NR               | 660       | 34110            | NR               | 790       | 2507             | NR               | 920       | 3430             | NR               |
| 405       | 3515             | NR               | 535       | 114505           | NR               | 665       | 30085            | NR               | 795       | 2968             | NR               | 925       | 4264             | NR               |
| 410       | 6934             | NR               | 540       | 116408           | NR               | 670       | 26205            | NR               | 800       | 2758             | NR               | 930       | 4095             | NR               |
| 415       | 14943            | NR               | 545       | 118700           | NR               | 675       | 22906            | NR               | 805       | 2872             | NR               | 935       | 5048             | NR               |
| 420       | 31939            | NR               | 550       | 119209           | NR               | 680       | 20058            | NR               | 810       | 3094             | NR               | 940       | 4074             | NR               |
| 425       | 64701            | NR               | 555       | 120742           | NR               | 685       | 17413            | NR               | 815       | 3222             | NR               | 945       | 4949             | NR               |
| 430       | 110939           | NR               | 560       | 121594           | NR               | 690       | 15447            | NR               | 820       | 3238             | NR               | 950       | 4387             | NR               |
| 435       | 164597           | NR               | 565       | 121913           | NR               | 695       | 13398            | NR               | 825       | 3524             | NR               | 955       | 4978             | NR               |
| 440       | 207696           | NR               | 570       | 122147           | NR               | 700       | 11777            | NR               | 830       | 2921             | NR               | 960       | 4706             | NR               |
| 445       | 201830           | NR               | 575       | 121605           | NR               | 705       | 10412            | NR               | 835       | 3595             | NR               | 965       | 5083             | NR               |
| 450       | 145410           | NR               | 580       | 120248           | NR               | 710       | 9544             | NR               | 840       | 3016             | NR               | 970       | 4522             | NR               |
| 455       | 89594            | NR               | 585       | 117717           | NR               | 715       | 8940             | NR               | 845       | 4032             | NR               | 975       | 4740             | NR               |
| 460       | 58321            | NR               | 590       | 114359           | NR               | 720       | 7897             | NR               | 850       | 3579             | NR               | 980       | 6122             | NR               |
| 465       | 39318            | NR               | 595       | 109974           | NR               | 725       | 7045             | NR               | 855       | 4571             | NR               | 985       | 6450             | NR               |
| 470       | 27693            | NR               | 600       | 105269           | NR               | 730       | 6483             | NR               | 860       | 4485             | NR               | 990       | 4875             | NR               |
| 475       | 23081            | NR               | 605       | 99453            | NR               | 735       | 5838             | NR               | 865       | 3978             | NR               | 995       | 4764             | NR               |
| 480       | 23002            | NR               | 610       | 92921            | NR               | 740       | 5261             | NR               | 870       | 4298             | NR               | 1000      | 3640             | NR               |
| 485       | 26201            | NR               | 615       | 86989            | NR               | 745       | 4760             | NR               | 875       | 4356             | NR               |           |                  |                  |

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Scotopic Flux vs. Wavelength



Scotopic Lumens: 13759.3

S/P: 1.85

| 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       | 3540             | NR               | 490       | 33363            | NR               | 620       | 80193            | NR               | 750       | 4663             | NR               | 880       | 4678             | NR               |
| 365       | 2862             | NR               | 495       | 44177            | NR               | 625       | 73091            | NR               | 755       | 4147             | NR               | 885       | 4128             | NR               |
| 370       | 2865             | NR               | 500       | 57019            | NR               | 630       | 66269            | NR               | 760       | 4040             | NR               | 890       | 4504             | NR               |
| 375       | 3254             | NR               | 505       | 70030            | NR               | 635       | 60012            | NR               | 765       | 3474             | NR               | 895       | 4371             | NR               |
| 380       | 3076             | NR               | 510       | 81972            | NR               | 640       | 53914            | NR               | 770       | 3469             | NR               | 900       | 4082             | NR               |
| 385       | 2904             | NR               | 515       | 92590            | NR               | 645       | 48385            | NR               | 775       | 3181             | NR               | 905       | 2982             | NR               |
| 390       | 2689             | NR               | 520       | 100305           | NR               | 650       | 43219            | NR               | 780       | 2969             | NR               | 910       | 4351             | NR               |
| 395       | 2619             | NR               | 525       | 107452           | NR               | 655       | 38562            | NR               | 785       | 3132             | NR               | 915       | 3365             | NR               |
| 400       | 2679             | NR               | 530       | 111373           | NR               | 660       | 34110            | NR               | 790       | 2507             | NR               | 920       | 3430             | NR               |
| 405       | 3515             | NR               | 535       | 114505           | NR               | 665       | 30085            | NR               | 795       | 2968             | NR               | 925       | 4264             | NR               |
| 410       | 6934             | NR               | 540       | 116408           | NR               | 670       | 26205            | NR               | 800       | 2758             | NR               | 930       | 4095             | NR               |
| 415       | 14943            | NR               | 545       | 118700           | NR               | 675       | 22906            | NR               | 805       | 2872             | NR               | 935       | 5048             | NR               |
| 420       | 31939            | NR               | 550       | 119209           | NR               | 680       | 20058            | NR               | 810       | 3094             | NR               | 940       | 4074             | NR               |
| 425       | 64701            | NR               | 555       | 120742           | NR               | 685       | 17413            | NR               | 815       | 3222             | NR               | 945       | 4949             | NR               |
| 430       | 110939           | NR               | 560       | 121594           | NR               | 690       | 15447            | NR               | 820       | 3238             | NR               | 950       | 4387             | NR               |
| 435       | 164597           | NR               | 565       | 121913           | NR               | 695       | 13398            | NR               | 825       | 3524             | NR               | 955       | 4978             | NR               |
| 440       | 207696           | NR               | 570       | 122147           | NR               | 700       | 11777            | NR               | 830       | 2921             | NR               | 960       | 4706             | NR               |
| 445       | 201830           | NR               | 575       | 121605           | NR               | 705       | 10412            | NR               | 835       | 3595             | NR               | 965       | 5083             | NR               |
| 450       | 145410           | NR               | 580       | 120248           | NR               | 710       | 9544             | NR               | 840       | 3016             | NR               | 970       | 4522             | NR               |
| 455       | 89594            | NR               | 585       | 117717           | NR               | 715       | 8940             | NR               | 845       | 4032             | NR               | 975       | 4740             | NR               |
| 460       | 58321            | NR               | 590       | 114359           | NR               | 720       | 7897             | NR               | 850       | 3579             | NR               | 980       | 6122             | NR               |
| 465       | 39318            | NR               | 595       | 109974           | NR               | 725       | 7045             | NR               | 855       | 4571             | NR               | 985       | 6450             | NR               |
| 470       | 27693            | NR               | 600       | 105269           | NR               | 730       | 6483             | NR               | 860       | 4485             | NR               | 990       | 4875             | NR               |
| 475       | 23081            | NR               | 605       | 99453            | NR               | 735       | 5838             | NR               | 865       | 3978             | NR               | 995       | 4764             | NR               |
| 480       | 23002            | NR               | 610       | 92921            | NR               | 740       | 5261             | NR               | 870       | 4298             | NR               | 1000      | 3640             | NR               |
| 485       | 26201            | NR               | 615       | 86989            | NR               | 745       | 4760             | NR               | 875       | 4356             | NR               |           |                  |                  |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 5527.6 M/P: 0.74**

| 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       | 3540             | NR               | 490       | 33363            | NR               | 620       | 80193            | NR               | 750       | 4663             | NR               | 880       | 4678             | NR               |
| 365       | 2862             | NR               | 495       | 44177            | NR               | 625       | 73091            | NR               | 755       | 4147             | NR               | 885       | 4128             | NR               |
| 370       | 2865             | NR               | 500       | 57019            | NR               | 630       | 66269            | NR               | 760       | 4040             | NR               | 890       | 4504             | NR               |
| 375       | 3254             | NR               | 505       | 70030            | NR               | 635       | 60012            | NR               | 765       | 3474             | NR               | 895       | 4371             | NR               |
| 380       | 3076             | NR               | 510       | 81972            | NR               | 640       | 53914            | NR               | 770       | 3469             | NR               | 900       | 4082             | NR               |
| 385       | 2904             | NR               | 515       | 92590            | NR               | 645       | 48385            | NR               | 775       | 3181             | NR               | 905       | 2982             | NR               |
| 390       | 2689             | NR               | 520       | 100305           | NR               | 650       | 43219            | NR               | 780       | 2969             | NR               | 910       | 4351             | NR               |
| 395       | 2619             | NR               | 525       | 107452           | NR               | 655       | 38562            | NR               | 785       | 3132             | NR               | 915       | 3365             | NR               |
| 400       | 2679             | NR               | 530       | 111373           | NR               | 660       | 34110            | NR               | 790       | 2507             | NR               | 920       | 3430             | NR               |
| 405       | 3515             | NR               | 535       | 114505           | NR               | 665       | 30085            | NR               | 795       | 2968             | NR               | 925       | 4264             | NR               |
| 410       | 6934             | NR               | 540       | 116408           | NR               | 670       | 26205            | NR               | 800       | 2758             | NR               | 930       | 4095             | NR               |
| 415       | 14943            | NR               | 545       | 118700           | NR               | 675       | 22906            | NR               | 805       | 2872             | NR               | 935       | 5048             | NR               |
| 420       | 31939            | NR               | 550       | 119209           | NR               | 680       | 20058            | NR               | 810       | 3094             | NR               | 940       | 4074             | NR               |
| 425       | 64701            | NR               | 555       | 120742           | NR               | 685       | 17413            | NR               | 815       | 3222             | NR               | 945       | 4949             | NR               |
| 430       | 110939           | NR               | 560       | 121594           | NR               | 690       | 15447            | NR               | 820       | 3238             | NR               | 950       | 4387             | NR               |
| 435       | 164597           | NR               | 565       | 121913           | NR               | 695       | 13398            | NR               | 825       | 3524             | NR               | 955       | 4978             | NR               |
| 440       | 207696           | NR               | 570       | 122147           | NR               | 700       | 11777            | NR               | 830       | 2921             | NR               | 960       | 4706             | NR               |
| 445       | 201830           | NR               | 575       | 121605           | NR               | 705       | 10412            | NR               | 835       | 3595             | NR               | 965       | 5083             | NR               |
| 450       | 145410           | NR               | 580       | 120248           | NR               | 710       | 9544             | NR               | 840       | 3016             | NR               | 970       | 4522             | NR               |
| 455       | 89594            | NR               | 585       | 117717           | NR               | 715       | 8940             | NR               | 845       | 4032             | NR               | 975       | 4740             | NR               |
| 460       | 58321            | NR               | 590       | 114359           | NR               | 720       | 7897             | NR               | 850       | 3579             | NR               | 980       | 6122             | NR               |
| 465       | 39318            | NR               | 595       | 109974           | NR               | 725       | 7045             | NR               | 855       | 4571             | NR               | 985       | 6450             | NR               |
| 470       | 27693            | NR               | 600       | 105269           | NR               | 730       | 6483             | NR               | 860       | 4485             | NR               | 990       | 4875             | NR               |
| 475       | 23081            | NR               | 605       | 99453            | NR               | 735       | 5838             | NR               | 865       | 3978             | NR               | 995       | 4764             | NR               |
| 480       | 23002            | NR               | 610       | 92921            | NR               | 740       | 5261             | NR               | 870       | 4298             | NR               | 1000      | 3640             | NR               |
| 485       | 26201            | NR               | 615       | 86989            | NR               | 745       | 4760             | NR               | 875       | 4356             | NR               |           |                  |                  |

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**Summary**

$R_f = 72.1$   
 $R_g = 97.2$   
 CIE  $R_a = 71.7$   
 $R_g = -27.1$



**Color Vector Graphics**



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

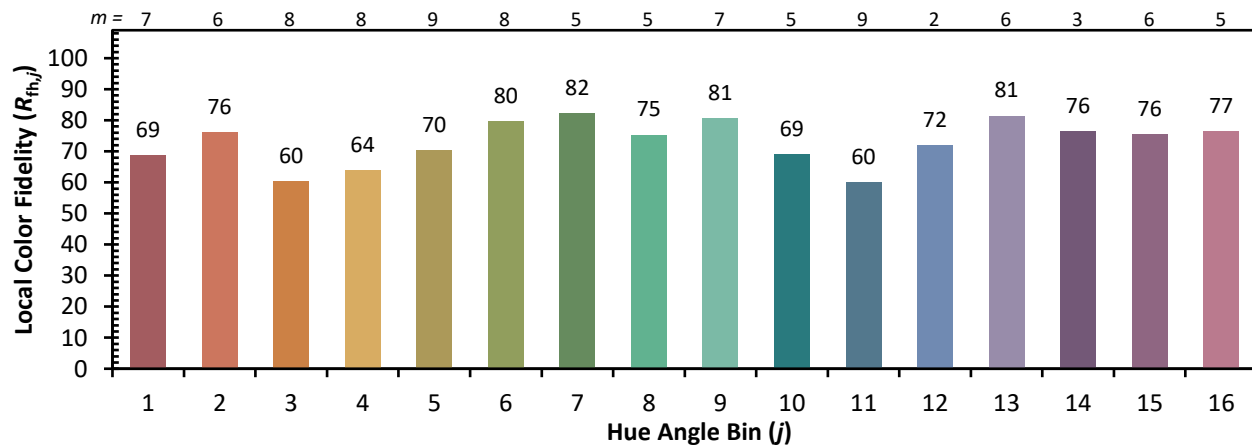
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 54 | CES51 = 88 | CES76 = 43 |
| CES02 = 59 | CES27 = 79 | CES52 = 90 | CES77 = 64 |
| CES03 = 30 | CES28 = 77 | CES53 = 77 | CES78 = 46 |
| CES04 = 69 | CES29 = 50 | CES54 = 81 | CES79 = 74 |
| CES05 = 46 | CES30 = 59 | CES55 = 80 | CES80 = 70 |
| CES06 = 50 | CES31 = 55 | CES56 = 70 | CES81 = 71 |
| CES07 = 38 | CES32 = 52 | CES57 = 68 | CES82 = 88 |
| CES08 = 38 | CES33 = 63 | CES58 = 70 | CES83 = 82 |
| CES09 = 29 | CES34 = 63 | CES59 = 88 | CES84 = 87 |
| CES10 = 72 | CES35 = 79 | CES60 = 92 | CES85 = 84 |
| CES11 = 55 | CES36 = 90 | CES61 = 88 | CES86 = 76 |
| CES12 = 61 | CES37 = 72 | CES62 = 81 | CES87 = 75 |
| CES13 = 41 | CES38 = 68 | CES63 = 75 | CES88 = 77 |
| CES14 = 74 | CES39 = 91 | CES64 = 72 | CES89 = 76 |
| CES15 = 70 | CES40 = 83 | CES65 = 65 | CES90 = 76 |
| CES16 = 46 | CES41 = 84 | CES66 = 66 | CES91 = 92 |
| CES17 = 48 | CES42 = 70 | CES67 = 64 | CES92 = 70 |
| CES18 = 55 | CES43 = 69 | CES68 = 71 | CES93 = 83 |
| CES19 = 70 | CES44 = 98 | CES69 = 80 | CES94 = 60 |
| CES20 = 64 | CES45 = 79 | CES70 = 58 | CES95 = 73 |
| CES21 = 85 | CES46 = 78 | CES71 = 55 | CES96 = 79 |
| CES22 = 77 | CES47 = 76 | CES72 = 84 | CES97 = 84 |
| CES23 = 91 | CES48 = 68 | CES73 = 47 | CES98 = 73 |
| CES24 = 90 | CES49 = 78 | CES74 = 94 | CES99 = 62 |
| CES25 = 71 | CES50 = 87 | CES75 = 51 |            |



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Color Rendition by Hue-Angle Bin



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**Measure Comparisons**



(END OF REPORT)