

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: P323720

Luminaire Tested: **GLEON-SA6B-722-U-SL3-HSS**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P323720  
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: GLEON-SA6B-722-U-SL3-HSS  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(6) 70 CRI, 2200K, 800mA 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: 21466 lumens  
Efficiency: N/A  
Efficacy: 86.2 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type III - Medium  
BUG Rating: B2 - U0 - G4

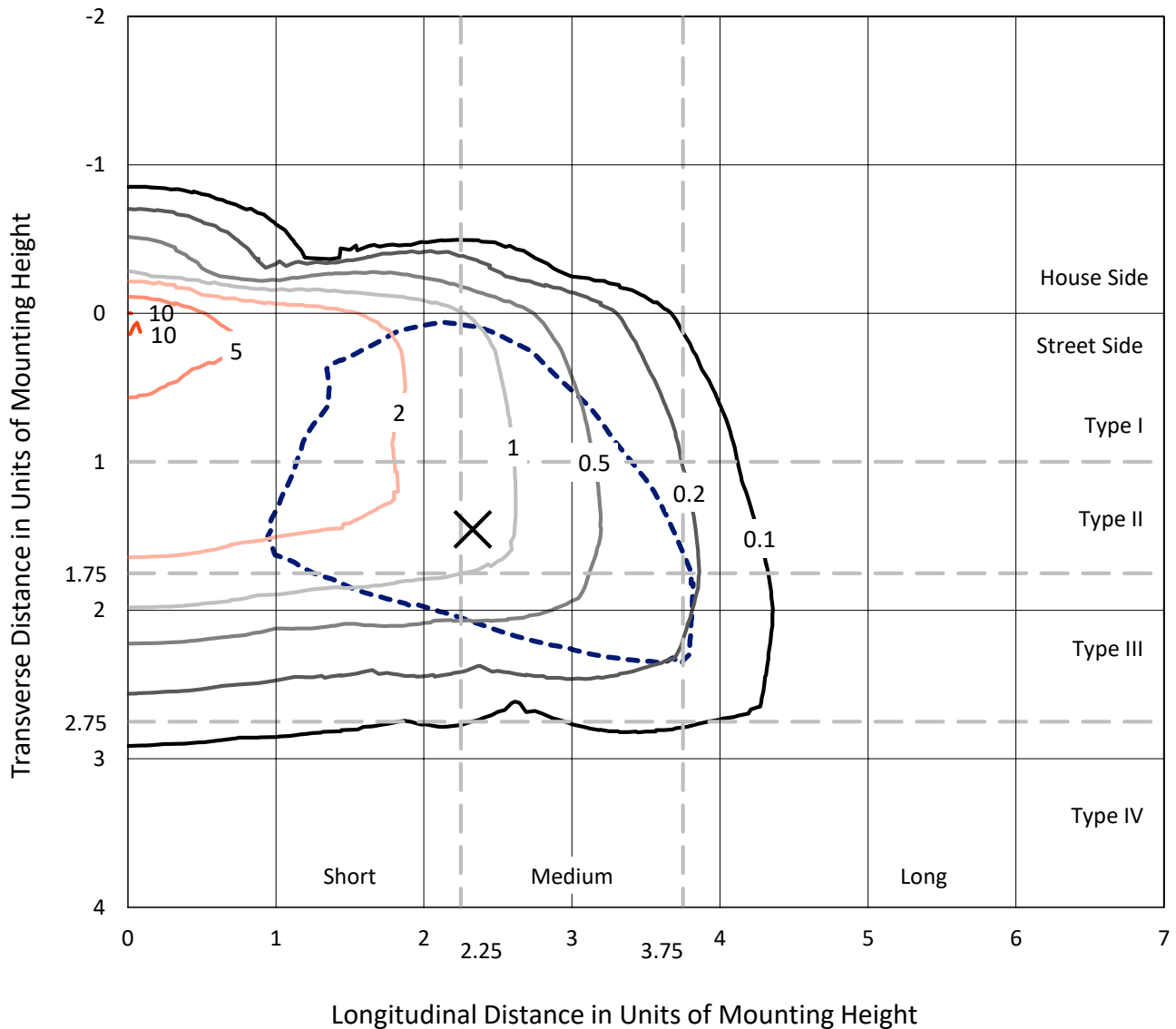
Input Watts (W): 249  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



REPORT NUMBER: P323720  
 CATALOG NUMBER: GLEON-SA6B-722-U-SL3-HSS

## Iso-Footcandle Lines of Horizontal Illumination

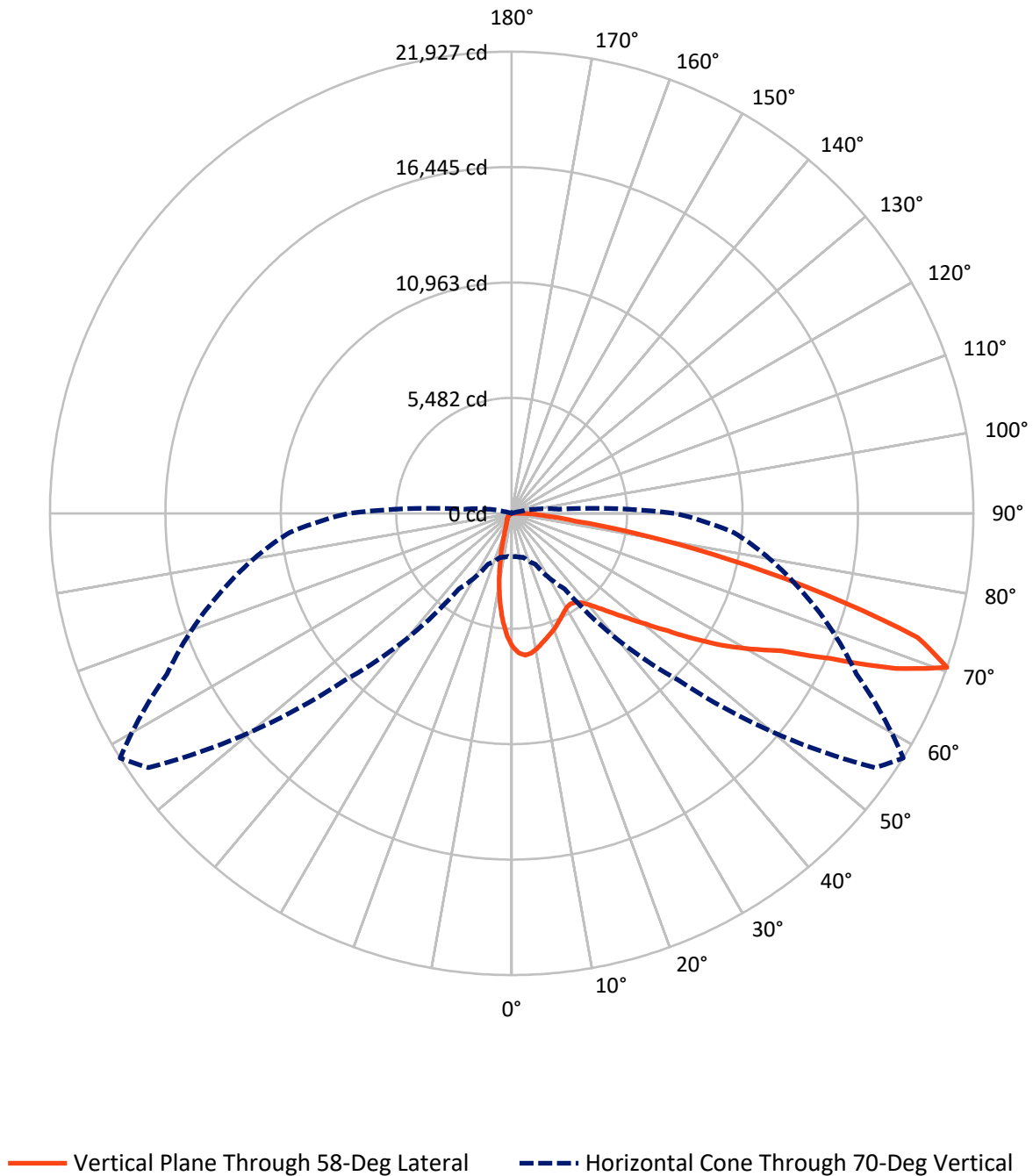
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 10.3 fc  
 Type III - Medium - N/A

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## Luminous Intensity Polar Plot



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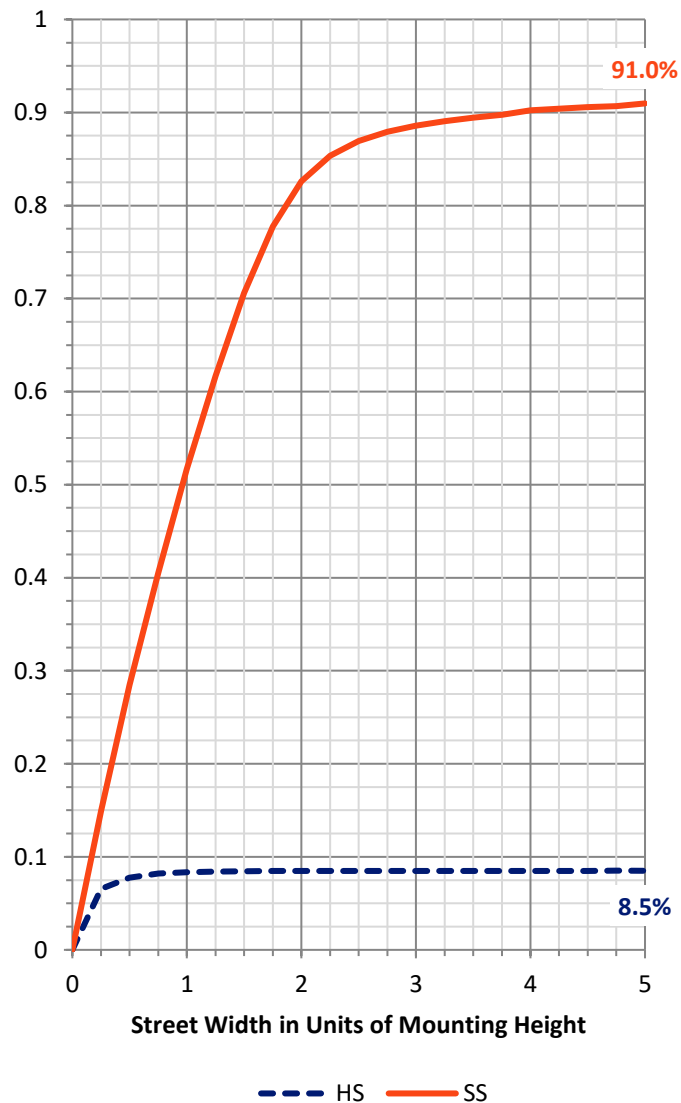
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 1837.0   | 0.0    | 1837.0  |
|                    | % Fixture | 8.6      | 0.0    | 8.6     |
| <b>Street Side</b> | Lumens    | 19629.0  | 0.0    | 19629.0 |
|                    | % Fixture | 91.4     | 0.0    | 91.4    |
| <b>Total</b>       | Lumens    | 21466.0  | 0.0    | 21466.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 518.5   | 2.4       |
| 10°-20°   | 1088.3  | 5.1       |
| 20°-30°   | 1430.7  | 6.7       |
| 30°-40°   | 1894.8  | 8.8       |
| 40°-50°   | 2832.1  | 13.2      |
| 50°-60°   | 4537.0  | 21.1      |
| 60°-70°   | 5718.8  | 26.6      |
| 70°-80°   | 3084.7  | 14.4      |
| 80°-90°   | 361.1   | 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°    | 21466.0 | 100.0     |
| 0°-180°   | 21466.0 | 100.0     |

**Coefficient of Utilization**



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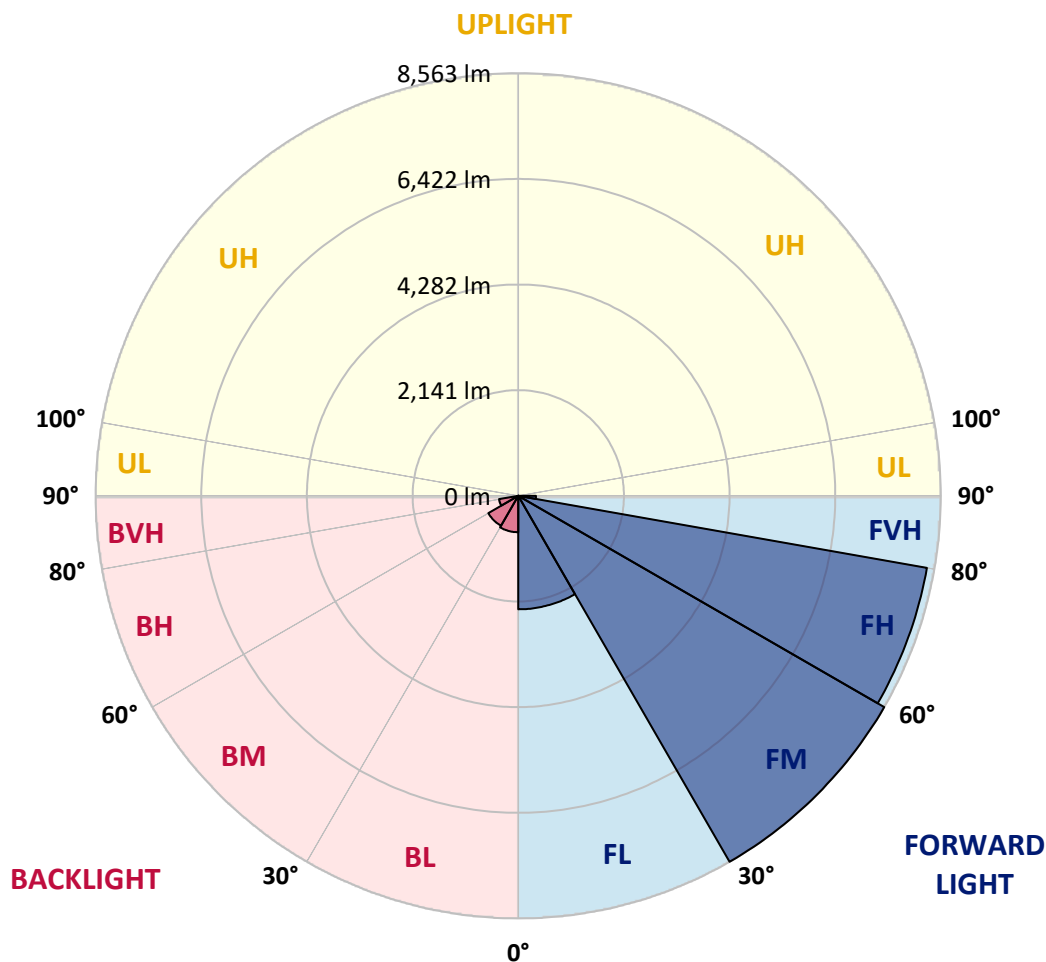
CATALOG NUMBER: GLEON-SA6B-722-U-SL3-HSS

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |          |
|------|-------------|--------|-----------|-------------------------|------|----------|
|      |             |        |           | B                       | U    | G        |
| FL   | (0°-30°)    | 2299.5 | 10.7      |                         |      |          |
| FM   | (30°-60°)   | 8563.1 | 39.9      |                         |      |          |
| FH   | (60°-80°)   | 8408.5 | 39.2      |                         |      | G4/12000 |
| FVH  | (80°-90°)   | 358.0  | 1.7       |                         |      | G3/500   |
| BL   | (0°-30°)    | 738.0  | 3.4       | B2/1000                 |      |          |
| BM   | (30°-60°)   | 700.8  | 3.3       | B1/1000                 |      |          |
| BH   | (60°-80°)   | 395.1  | 1.8       | B1/500                  |      | G1/500   |
| BVH  | (80°-90°)   | 3.1    | 0.0       |                         |      | G0/10    |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |          |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |          |

**BUG Rating: B2-U0-G4**

Type III Medium



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°     | 45°     | 55°     | 58°     | 65°     | 75°     | 85°     |
|-------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 6341.0 | 6341.0 | 6341.0 | 6341.0 | 6341.0  | 6341.0  | 6341.0  | 6341.0  | 6341.0  | 6341.0  | 6341.0  |
| 2.5°  | 6866.7 | 6849.7 | 6843.5 | 6832.8 | 6791.7  | 6751.5  | 6672.1  | 6649.8  | 6599.8  | 6481.1  | 6355.2  |
| 5°    | 6872.0 | 6871.2 | 6889.9 | 6885.4 | 6871.2  | 6852.4  | 6795.3  | 6765.8  | 6681.0  | 6511.4  | 6281.2  |
| 7.5°  | 6540.9 | 6557.9 | 6599.8 | 6633.7 | 6673.0  | 6723.9  | 6731.0  | 6702.5  | 6632.8  | 6449.9  | 6144.6  |
| 10°   | 6096.4 | 6123.2 | 6182.1 | 6249.0 | 6351.7  | 6453.4  | 6544.5  | 6540.9  | 6516.8  | 6336.5  | 5980.3  |
| 12.5° | 5651.0 | 5682.2 | 5750.1 | 5849.1 | 5994.6  | 6160.7  | 6323.1  | 6345.4  | 6385.6  | 6234.7  | 5828.6  |
| 15°   | 5260.9 | 5287.7 | 5354.6 | 5476.0 | 5656.3  | 5879.5  | 6117.8  | 6158.9  | 6262.4  | 6155.3  | 5701.9  |
| 17.5° | 4929.8 | 4946.7 | 4995.8 | 5130.6 | 5339.5  | 5609.9  | 5919.7  | 6000.0  | 6154.4  | 6092.8  | 5592.1  |
| 20°   | 4698.6 | 4701.3 | 4733.4 | 4828.0 | 5036.9  | 5339.5  | 5714.4  | 5829.5  | 6040.2  | 6039.3  | 5478.7  |
| 22.5° | 4584.3 | 4575.4 | 4581.7 | 4636.1 | 4789.6  | 5081.5  | 5509.1  | 5645.6  | 5937.5  | 5993.7  | 5363.6  |
| 25°   | 4562.9 | 4555.8 | 4537.9 | 4545.1 | 4637.9  | 4855.7  | 5302.0  | 5460.0  | 5847.4  | 5966.1  | 5263.6  |
| 27.5° | 4629.9 | 4637.0 | 4606.7 | 4574.5 | 4581.7  | 4709.3  | 5118.1  | 5301.1  | 5774.2  | 5966.1  | 5193.1  |
| 30°   | 4764.6 | 4768.2 | 4745.9 | 4703.9 | 4647.7  | 4668.2  | 4990.5  | 5173.4  | 5737.6  | 6007.1  | 5148.5  |
| 32.5° | 4913.7 | 4933.3 | 4930.7 | 4896.7 | 4816.4  | 4733.4  | 4960.1  | 5127.0  | 5734.9  | 6098.2  | 5144.0  |
| 35°   | 5098.5 | 5120.8 | 5158.3 | 5151.1 | 5067.2  | 4930.7  | 5063.7  | 5194.9  | 5787.5  | 6248.1  | 5192.2  |
| 37.5° | 5294.8 | 5328.8 | 5409.1 | 5447.5 | 5393.0  | 5238.6  | 5295.7  | 5389.5  | 5928.6  | 6490.9  | 5314.5  |
| 40°   | 5485.0 | 5523.3 | 5669.7 | 5820.6 | 5779.5  | 5620.6  | 5647.4  | 5722.4  | 6179.4  | 6839.9  | 5546.6  |
| 42.5° | 5671.5 | 5728.6 | 5943.8 | 6191.9 | 6241.0  | 6114.2  | 6128.5  | 6188.3  | 6551.6  | 7320.1  | 5925.9  |
| 45°   | 5894.7 | 5958.9 | 6277.6 | 6583.7 | 6714.9  | 6659.6  | 6720.3  | 6759.6  | 7038.1  | 7954.8  | 6437.4  |
| 47.5° | 6222.2 | 6296.3 | 6687.3 | 7036.3 | 7266.6  | 7302.3  | 7424.6  | 7450.4  | 7653.1  | 8693.8  | 7104.1  |
| 50°   | 6861.3 | 6881.9 | 7235.3 | 7552.2 | 7884.2  | 8098.5  | 8237.7  | 8257.3  | 8397.5  | 9501.6  | 7936.9  |
| 52.5° | 7665.6 | 7678.9 | 7878.9 | 8091.3 | 8468.9  | 8906.3  | 9232.1  | 9259.7  | 9289.2  | 10288.9 | 8759.0  |
| 55°   | 8464.4 | 8462.6 | 8594.7 | 8719.7 | 9151.7  | 9787.2  | 10494.2 | 10511.1 | 10299.6 | 11036.0 | 9387.4  |
| 57.5° | 8963.4 | 9011.6 | 9212.4 | 9373.1 | 9976.5  | 10791.4 | 11772.4 | 11834.8 | 11360.9 | 11589.4 | 10008.6 |
| 60°   | 8804.5 | 8827.7 | 9273.1 | 9867.6 | 11003.8 | 12218.7 | 13065.7 | 13081.8 | 12158.9 | 12141.9 | 10794.1 |
| 62.5° | 7501.3 | 7513.8 | 8213.6 | 9439.1 | 11524.2 | 14069.9 | 14626.0 | 14364.4 | 13076.4 | 12908.6 | 11734.0 |
| 65°   | 5141.3 | 5222.5 | 5807.2 | 7321.9 | 10568.3 | 15231.1 | 17041.3 | 16608.4 | 14475.1 | 14013.7 | 12583.7 |
| 67.5° | 3027.7 | 3010.7 | 3299.9 | 4415.6 | 7762.0  | 14459.9 | 20096.6 | 19666.4 | 16382.6 | 14753.6 | 12334.7 |
| 70°   | 2068.1 | 2056.5 | 2167.2 | 2673.3 | 4381.7  | 11217.2 | 21058.0 | 21926.5 | 18066.9 | 14255.5 | 10615.6 |
| 72.5° | 1476.3 | 1482.6 | 1645.9 | 2077.1 | 2751.0  | 6535.5  | 18108.9 | 20164.5 | 17539.4 | 12427.5 | 8069.0  |
| 75°   | 1002.4 | 1019.3 | 1253.2 | 1704.0 | 2411.8  | 3324.9  | 12850.6 | 15328.4 | 14282.3 | 9032.1  | 4637.9  |
| 77.5° | 539.1  | 557.9  | 833.7  | 1372.8 | 2180.6  | 2310.0  | 8266.3  | 10549.5 | 8971.4  | 4060.4  | 1344.2  |
| 80°   | 224.9  | 235.6  | 390.1  | 997.9  | 1884.3  | 2028.9  | 4863.7  | 6397.2  | 3823.0  | 800.7   | 299.9   |
| 82.5° | 97.3   | 102.6  | 162.5  | 595.4  | 1408.5  | 1712.9  | 2575.1  | 3077.6  | 1158.6  | 175.8   | 150.8   |
| 85°   | 18.7   | 19.6   | 66.9   | 315.1  | 898.8   | 966.7   | 1669.1  | 1636.1  | 520.4   | 75.9    | 109.8   |
| 87.5° | 0.0    | 0.0    | 16.1   | 99.1   | 264.2   | 526.6   | 1018.4  | 1005.9  | 176.7   | 36.6    | 41.1    |
| 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: P323720

CATALOG NUMBER: GLEON-SA6B-722-U-SL3-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 6341.0 | 6341.0 | 6341.0 | 6341.0 | 6341.0 | 6341.0 | 6341.0 | 6341.0 | 6341.0 | 6341.0 | 6341.0 |
| 2.5°  | 6291.0 | 6229.4 | 6100.0 | 5940.2 | 5817.9 | 5683.1 | 5576.0 | 5440.3 | 5381.4 | 5384.1 | 5352.0 |
| 5°    | 6149.9 | 6023.2 | 5736.7 | 5375.2 | 5096.7 | 4809.3 | 4562.0 | 4315.7 | 4170.2 | 4122.9 | 4078.2 |
| 7.5°  | 5948.2 | 5747.4 | 5290.4 | 4733.4 | 4262.1 | 3801.5 | 3400.8 | 3048.2 | 2825.0 | 2716.1 | 2676.0 |
| 10°   | 5720.6 | 5438.5 | 4777.1 | 4043.4 | 3370.4 | 2747.4 | 2227.9 | 1776.3 | 1595.9 | 1473.7 | 1442.4 |
| 12.5° | 5520.7 | 5138.6 | 4275.5 | 3335.6 | 2536.7 | 1785.2 | 1289.8 | 1008.6 | 886.3  | 838.1  | 830.1  |
| 15°   | 5332.3 | 4858.4 | 3792.6 | 2694.7 | 1756.6 | 1098.8 | 820.3  | 724.8  | 696.2  | 688.2  | 688.2  |
| 17.5° | 5154.7 | 4591.5 | 3320.4 | 2063.7 | 1162.2 | 770.3  | 679.3  | 657.8  | 648.9  | 648.0  | 648.9  |
| 20°   | 4969.0 | 4324.6 | 2856.3 | 1512.0 | 811.4  | 652.5  | 627.5  | 615.9  | 613.2  | 613.2  | 613.2  |
| 22.5° | 4791.4 | 4057.7 | 2404.6 | 1080.0 | 650.7  | 595.4  | 582.9  | 574.8  | 572.1  | 571.3  | 569.5  |
| 25°   | 4620.9 | 3804.2 | 1963.7 | 763.2  | 571.3  | 545.4  | 534.7  | 523.9  | 515.9  | 511.5  | 508.8  |
| 27.5° | 4480.8 | 3578.4 | 1553.1 | 612.3  | 515.9  | 493.6  | 480.2  | 464.1  | 444.5  | 435.6  | 432.0  |
| 30°   | 4369.2 | 3372.2 | 1197.0 | 516.8  | 464.1  | 441.8  | 421.3  | 393.6  | 365.1  | 349.9  | 349.0  |
| 32.5° | 4281.8 | 3169.6 | 908.7  | 457.0  | 417.7  | 390.1  | 360.6  | 325.8  | 292.8  | 275.8  | 274.9  |
| 35°   | 4238.9 | 2991.1 | 694.4  | 413.3  | 376.7  | 341.9  | 305.3  | 266.9  | 234.8  | 218.7  | 216.9  |
| 37.5° | 4267.5 | 2840.2 | 541.8  | 376.7  | 341.9  | 301.7  | 258.9  | 218.7  | 190.1  | 175.8  | 174.9  |
| 40°   | 4371.9 | 2743.8 | 440.0  | 345.4  | 312.4  | 263.3  | 216.9  | 179.4  | 155.3  | 143.7  | 142.8  |
| 42.5° | 4594.2 | 2708.1 | 375.8  | 319.5  | 283.8  | 227.6  | 180.3  | 148.2  | 125.9  | 117.8  | 116.0  |
| 45°   | 4965.5 | 2760.8 | 332.0  | 294.6  | 254.4  | 193.7  | 149.1  | 121.4  | 101.8  | 95.5   | 94.6   |
| 47.5° | 5460.0 | 2899.1 | 300.8  | 270.5  | 227.6  | 163.3  | 124.1  | 98.2   | 83.0   | 76.8   | 75.9   |
| 50°   | 6097.3 | 3118.7 | 274.9  | 246.4  | 202.6  | 138.4  | 102.6  | 77.7   | 64.3   | 59.8   | 59.8   |
| 52.5° | 6790.8 | 3380.2 | 251.7  | 224.0  | 177.6  | 115.1  | 83.0   | 59.8   | 50.9   | 45.5   | 45.5   |
| 55°   | 7363.9 | 3608.7 | 226.7  | 207.1  | 147.3  | 95.5   | 63.4   | 45.5   | 37.5   | 34.8   | 34.8   |
| 57.5° | 7936.0 | 3852.4 | 198.2  | 177.6  | 117.8  | 77.7   | 48.2   | 33.9   | 27.7   | 25.9   | 25.9   |
| 60°   | 8677.8 | 4150.5 | 170.5  | 144.6  | 92.8   | 58.9   | 35.7   | 24.1   | 20.5   | 19.6   | 19.6   |
| 62.5° | 9493.6 | 4325.5 | 145.5  | 116.0  | 72.3   | 43.7   | 25.9   | 16.1   | 15.2   | 15.2   | 14.3   |
| 65°   | 9992.5 | 4078.2 | 122.3  | 92.8   | 56.2   | 33.0   | 17.0   | 11.6   | 13.4   | 12.5   | 10.7   |
| 67.5° | 9356.1 | 3192.8 | 100.0  | 72.3   | 43.7   | 25.0   | 10.7   | 8.0    | 14.3   | 11.6   | 8.9    |
| 70°   | 7746.8 | 2235.0 | 77.7   | 50.9   | 34.8   | 21.4   | 7.1    | 5.4    | 15.2   | 11.6   | 7.1    |
| 72.5° | 5797.4 | 1496.0 | 61.6   | 33.9   | 25.9   | 18.7   | 6.2    | 2.7    | 13.4   | 9.8    | 6.2    |
| 75°   | 3167.8 | 602.5  | 49.1   | 21.4   | 16.1   | 13.4   | 4.5    | 1.8    | 8.9    | 7.1    | 4.5    |
| 77.5° | 833.7  | 158.9  | 35.7   | 14.3   | 8.9    | 5.4    | 2.7    | 0.9    | 4.5    | 3.6    | 1.8    |
| 80°   | 212.4  | 61.6   | 23.2   | 9.8    | 6.2    | 2.7    | 0.0    | 0.0    | 0.9    | 0.0    | 0.0    |
| 82.5° | 113.4  | 25.9   | 14.3   | 7.1    | 3.6    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 85.7   | 17.0   | 8.0    | 4.5    | 0.9    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 33.0   | 5.4    | 2.7    | 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: SP1-1908-441-10-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

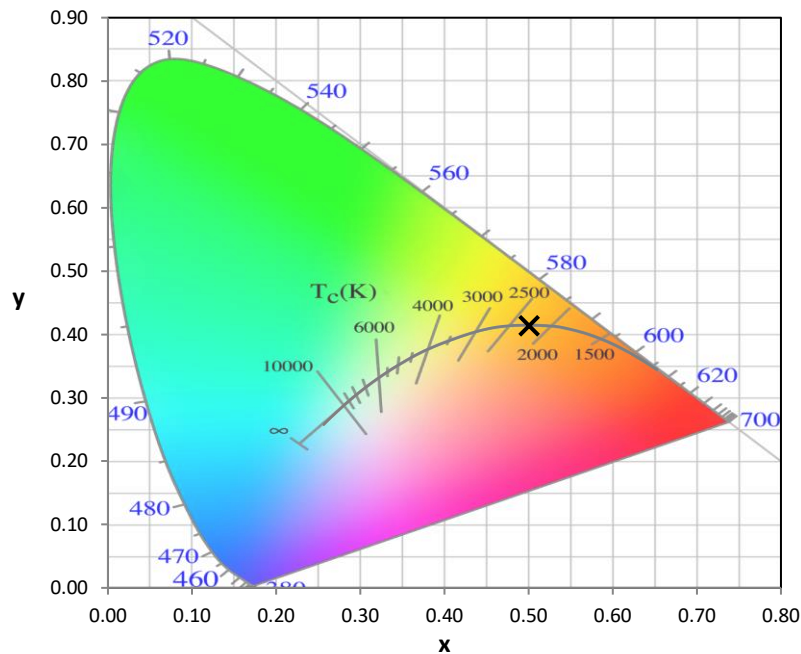
Stabilization Time: 71M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 24.7/41%  
 Sphere Temperature (°C): 25.6

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

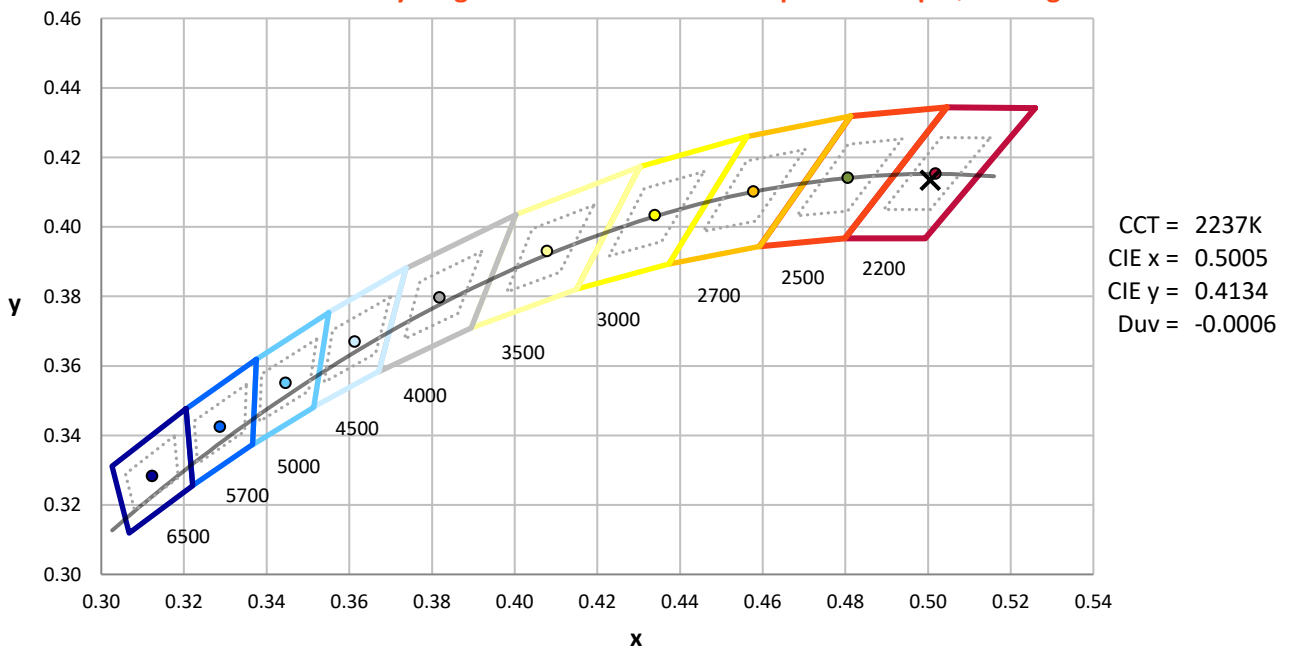
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| 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            |

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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 2200K 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       | 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               |           |                  |                  |

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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               |           |                  |                  |

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**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               |           |                  |                  |

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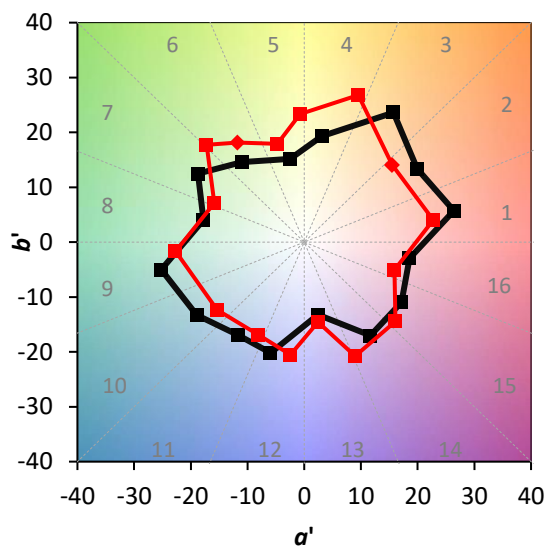
**TM-30-18**

### Summary

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



### Color Vector Graphics





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**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 |            |



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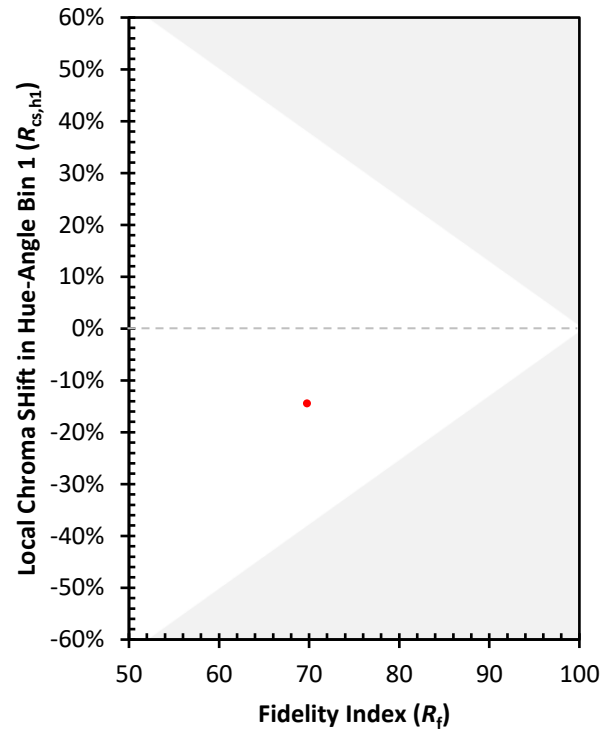
Color Rendition by Hue-Angle Bin



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**Measure Comparisons**



(END OF REPORT)