

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: P323877

Luminaire Tested: **GLEON-SA3B-750-U-SL4-HSS**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P323877  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-25)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA3B-750-U-SL4-HSS  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(3) 70 CRI, 5000K, 800mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE IV SPILL  
LIGHT ELIMINATOR OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 14160 lumens  
Efficiency: N/A  
Efficacy: 114.2 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 1' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B1 - U0 - G3

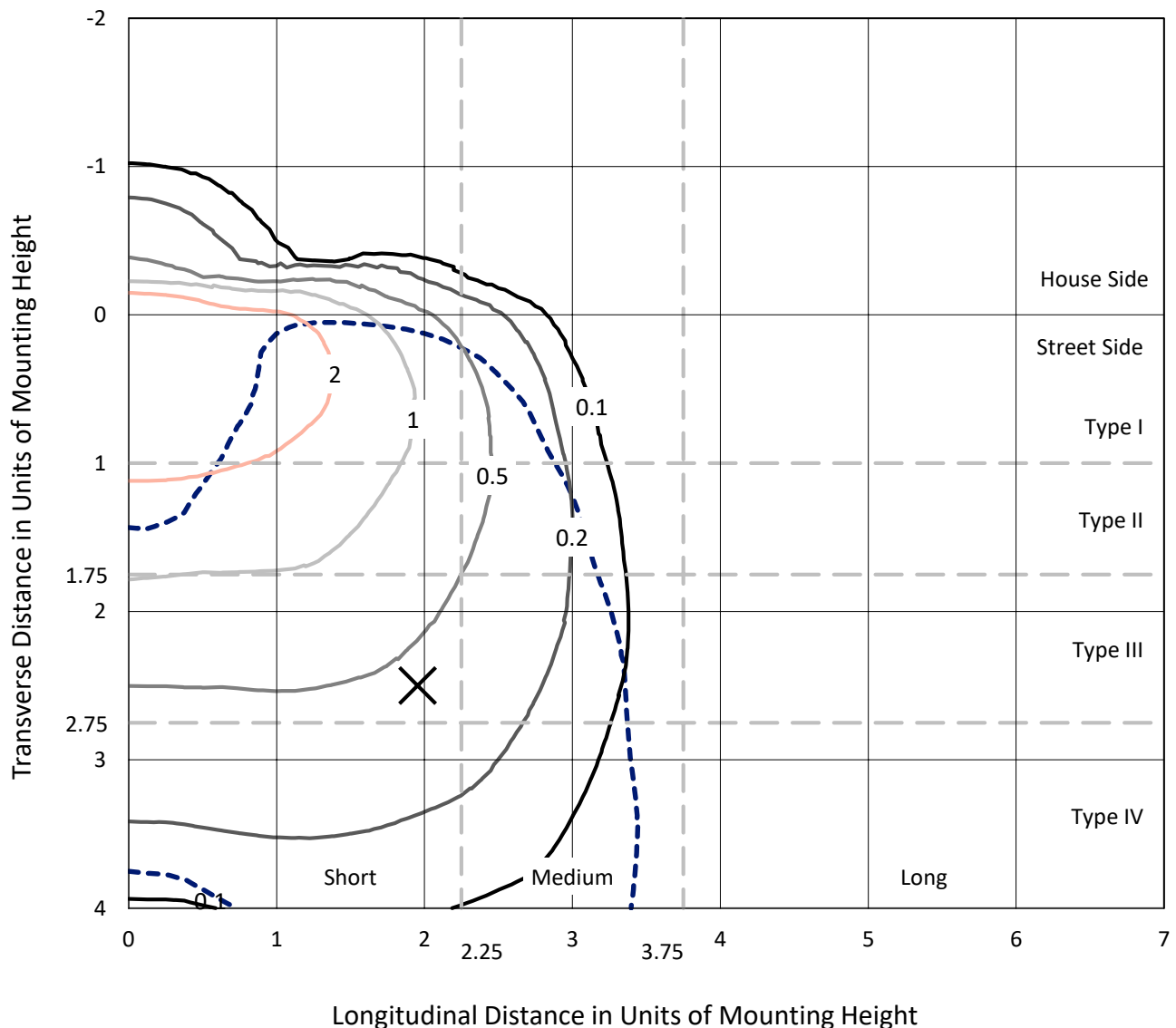
Input Watts (W): 124  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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## Iso-Footcandle Lines of Horizontal Illumination

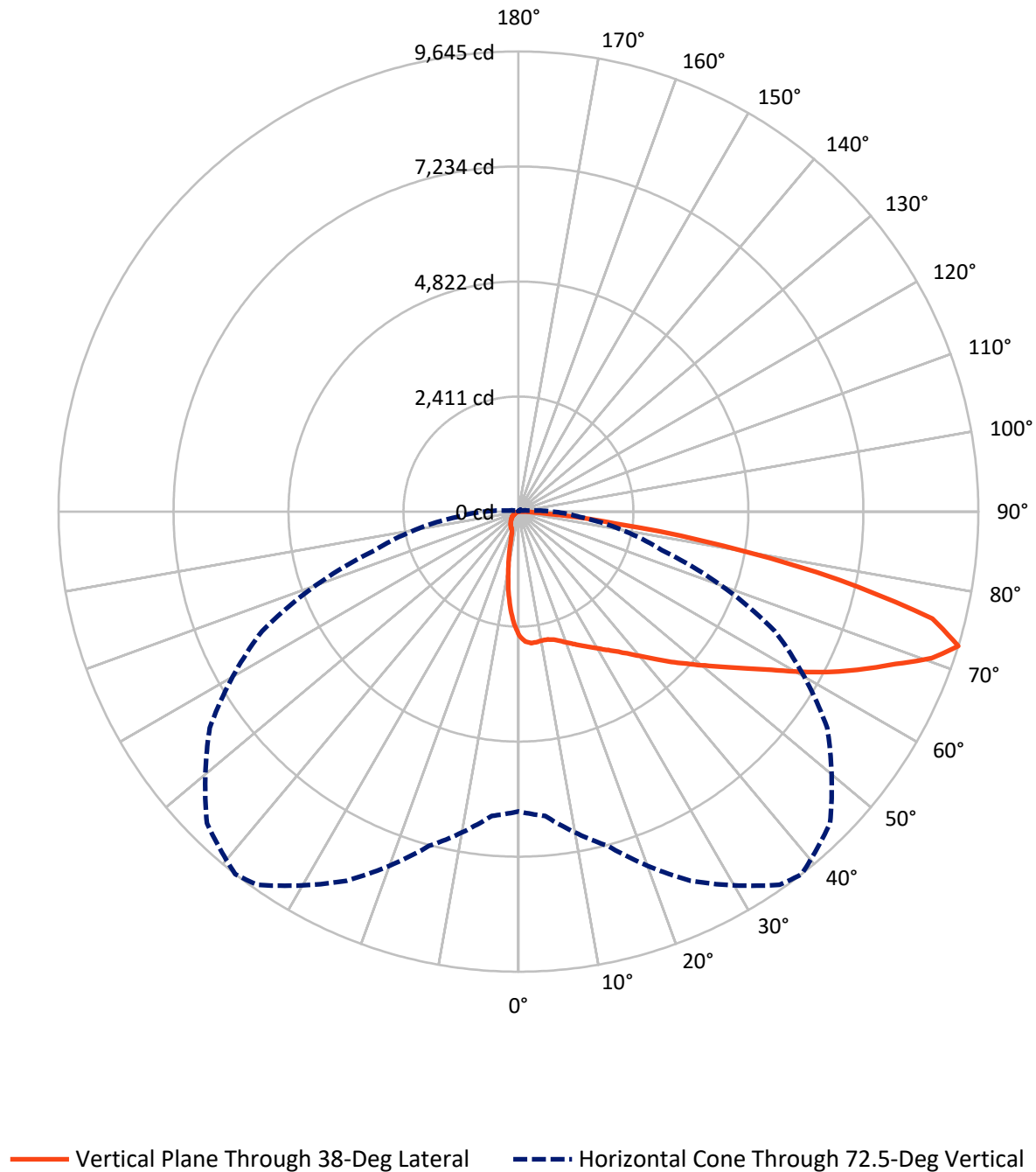
× Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 4.4 fc  
 Type IV - 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    | 1191.6   | 0.0    | 1191.6  |
|                    | % Fixture | 8.4      | 0.0    | 8.4     |
| <b>Street Side</b> | Lumens    | 12968.4  | 0.0    | 12968.4 |
|                    | % Fixture | 91.6     | 0.0    | 91.6    |
| <b>Total</b>       | Lumens    | 14160.0  | 0.0    | 14160.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 221.9   | 1.6       |
| 10°-20°   | 542.6   | 3.8       |
| 20°-30°   | 863.0   | 6.1       |
| 30°-40°   | 1297.5  | 9.2       |
| 40°-50°   | 1979.4  | 14.0      |
| 50°-60°   | 2797.5  | 19.8      |
| 60°-70°   | 3509.0  | 24.8      |
| 70°-80°   | 2623.8  | 18.5      |
| 80°-90°   | 325.3   | 2.3       |
| 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°    | 14160.0 | 100.0     |
| 0°-180°   | 14160.0 | 100.0     |

**Coefficient of Utilization**



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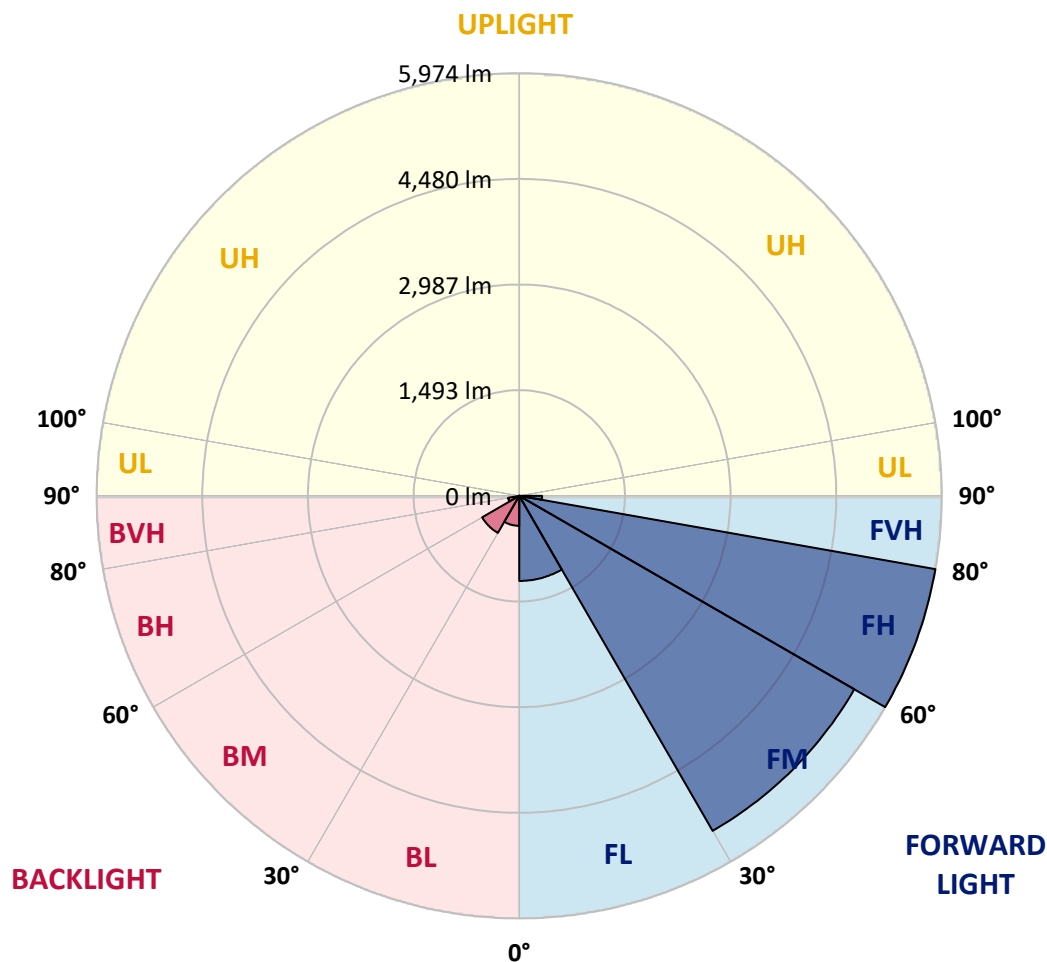
CATALOG NUMBER: GLEON-SA3B-750-U-SL4-HSS

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 1203.3 | 8.5       |                         |      |         |
| FM   | (30°-60°)   | 5469.2 | 38.6      |                         |      |         |
| FH   | (60°-80°)   | 5973.6 | 42.2      |                         |      | G3/7500 |
| FVH  | (80°-90°)   | 322.3  | 2.3       |                         |      | G3/500  |
| BL   | (0°-30°)    | 424.3  | 3.0       | B1/500                  |      |         |
| BM   | (30°-60°)   | 605.1  | 4.3       | B1/1000                 |      |         |
| BH   | (60°-80°)   | 159.2  | 1.1       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 3.0    | 0.0       |                         |      | G0/10   |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

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

Type IV Short



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CATALOG NUMBER: GLEON-SA3B-750-U-SL4-HSS

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 38°    | 45°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 2604.0 | 2604.0 | 2604.0 | 2604.0 | 2604.0 | 2604.0 | 2604.0 | 2604.0 | 2604.0 | 2604.0 | 2604.0 |
| 2.5°  | 2763.9 | 2764.5 | 2758.1 | 2747.5 | 2733.9 | 2726.9 | 2715.1 | 2696.3 | 2676.3 | 2640.4 | 2601.6 |
| 5°    | 2820.4 | 2820.4 | 2812.2 | 2798.0 | 2776.3 | 2769.8 | 2747.5 | 2717.5 | 2676.3 | 2618.1 | 2552.8 |
| 7.5°  | 2814.5 | 2815.7 | 2804.5 | 2789.8 | 2768.0 | 2762.2 | 2735.1 | 2701.6 | 2650.4 | 2579.9 | 2496.4 |
| 10°   | 2783.9 | 2786.9 | 2778.0 | 2771.0 | 2751.0 | 2744.5 | 2719.2 | 2685.7 | 2634.6 | 2559.3 | 2463.4 |
| 12.5° | 2752.8 | 2755.7 | 2758.6 | 2765.1 | 2752.8 | 2750.4 | 2730.4 | 2702.2 | 2653.4 | 2575.2 | 2467.0 |
| 15°   | 2732.8 | 2738.6 | 2759.8 | 2785.1 | 2788.0 | 2785.7 | 2772.8 | 2746.3 | 2696.9 | 2615.7 | 2492.2 |
| 17.5° | 2732.8 | 2742.2 | 2786.3 | 2834.5 | 2851.6 | 2853.3 | 2842.1 | 2805.1 | 2746.3 | 2659.3 | 2515.8 |
| 20°   | 2755.7 | 2768.6 | 2837.4 | 2905.7 | 2933.9 | 2933.9 | 2912.1 | 2860.4 | 2791.6 | 2698.7 | 2531.6 |
| 22.5° | 2814.5 | 2831.6 | 2918.0 | 2996.8 | 3026.8 | 3020.3 | 2990.9 | 2915.7 | 2838.6 | 2743.4 | 2551.6 |
| 25°   | 2930.4 | 2943.3 | 3033.3 | 3112.7 | 3130.9 | 3116.2 | 3079.1 | 2982.7 | 2898.6 | 2803.9 | 2588.1 |
| 27.5° | 3079.7 | 3081.5 | 3174.4 | 3241.4 | 3230.3 | 3220.3 | 3173.8 | 3066.8 | 2985.0 | 2890.4 | 2651.0 |
| 30°   | 3243.8 | 3243.8 | 3325.5 | 3376.7 | 3342.6 | 3334.4 | 3287.9 | 3168.5 | 3095.6 | 3008.0 | 2740.4 |
| 32.5° | 3402.6 | 3409.6 | 3476.1 | 3508.4 | 3470.2 | 3462.0 | 3416.7 | 3297.3 | 3242.6 | 3187.3 | 2879.8 |
| 35°   | 3556.1 | 3561.4 | 3624.3 | 3641.9 | 3605.5 | 3607.8 | 3575.5 | 3474.3 | 3453.7 | 3446.7 | 3089.7 |
| 37.5° | 3704.8 | 3706.0 | 3770.1 | 3781.3 | 3763.1 | 3783.1 | 3786.0 | 3696.6 | 3734.8 | 3791.9 | 3385.5 |
| 40°   | 3840.7 | 3841.9 | 3905.4 | 3934.2 | 3965.4 | 3991.2 | 4014.2 | 3966.5 | 4093.0 | 4225.3 | 3737.8 |
| 42.5° | 3949.5 | 3961.8 | 4042.4 | 4097.1 | 4179.4 | 4228.8 | 4291.2 | 4288.8 | 4519.3 | 4718.1 | 4163.5 |
| 45°   | 4045.3 | 4066.5 | 4178.8 | 4274.7 | 4415.8 | 4494.6 | 4592.2 | 4668.7 | 4999.2 | 5266.8 | 4594.6 |
| 47.5° | 4171.8 | 4191.8 | 4320.0 | 4477.0 | 4665.2 | 4768.7 | 4930.4 | 5095.6 | 5526.7 | 5805.4 | 5015.7 |
| 50°   | 4350.0 | 4341.1 | 4467.6 | 4692.8 | 4934.5 | 5070.3 | 5300.9 | 5548.4 | 6050.1 | 6274.7 | 5263.2 |
| 52.5° | 4539.9 | 4536.4 | 4629.9 | 4927.4 | 5252.1 | 5410.8 | 5715.5 | 6016.6 | 6550.5 | 6598.2 | 5376.7 |
| 55°   | 4775.1 | 4749.8 | 4828.6 | 5195.0 | 5629.0 | 5799.6 | 6158.3 | 6480.0 | 6949.2 | 6780.5 | 5433.8 |
| 57.5° | 5021.5 | 4979.8 | 5055.1 | 5493.2 | 6054.2 | 6255.9 | 6648.7 | 6931.6 | 7214.5 | 6905.1 | 5433.2 |
| 60°   | 5276.2 | 5226.8 | 5316.2 | 5866.0 | 6582.3 | 6815.7 | 7180.3 | 7236.8 | 7462.0 | 6968.1 | 5393.2 |
| 62.5° | 5489.1 | 5459.6 | 5592.6 | 6264.7 | 7172.1 | 7401.5 | 7582.0 | 7514.4 | 7670.8 | 7016.9 | 5299.7 |
| 65°   | 5714.3 | 5716.0 | 5930.7 | 6729.9 | 7799.0 | 7953.7 | 7968.9 | 7874.3 | 7845.5 | 7006.9 | 4983.3 |
| 67.5° | 6018.9 | 6047.1 | 6405.3 | 7361.5 | 8408.8 | 8528.2 | 8527.0 | 8264.2 | 7973.1 | 6609.3 | 4281.7 |
| 70°   | 6341.2 | 6407.6 | 6952.2 | 8084.2 | 9074.5 | 9195.7 | 9133.3 | 8512.3 | 7507.3 | 5344.4 | 3030.3 |
| 72.5° | 6287.1 | 6402.3 | 7256.2 | 8540.0 | 9552.6 | 9644.9 | 9239.8 | 7902.5 | 5933.6 | 3106.2 | 1290.2 |
| 75°   | 4850.4 | 4983.9 | 6653.4 | 8088.3 | 9051.0 | 8968.1 | 7939.0 | 6149.5 | 3242.6 | 866.8  | 290.5  |
| 77.5° | 2562.2 | 2633.4 | 4395.2 | 6161.8 | 7057.4 | 6884.0 | 5592.6 | 3411.4 | 988.5  | 214.6  | 130.6  |
| 80°   | 1342.0 | 1358.4 | 1915.3 | 3496.1 | 4355.8 | 4357.0 | 3314.4 | 1498.4 | 407.5  | 110.0  | 87.6   |
| 82.5° | 718.6  | 732.7  | 1012.1 | 1615.4 | 2282.3 | 2068.8 | 1269.1 | 824.5  | 237.0  | 62.3   | 84.1   |
| 85°   | 172.9  | 175.8  | 574.0  | 738.0  | 897.4  | 641.0  | 377.0  | 692.2  | 64.1   | 36.5   | 68.2   |
| 87.5° | 66.5   | 67.6   | 212.9  | 319.3  | 228.8  | 148.2  | 176.4  | 258.2  | 8.2    | 14.1   | 10.6   |
| 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: P323877

CATALOG NUMBER: GLEON-SA3B-750-U-SL4-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 2604.0 | 2604.0 | 2604.0 | 2604.0 | 2604.0 | 2604.0 | 2604.0 | 2604.0 | 2604.0 | 2604.0 | 2604.0 |
| 2.5°  | 2578.1 | 2562.8 | 2525.2 | 2477.5 | 2435.2 | 2404.6 | 2358.8 | 2328.8 | 2308.8 | 2308.2 | 2300.5 |
| 5°    | 2512.8 | 2481.7 | 2400.5 | 2304.1 | 2216.4 | 2137.6 | 2044.7 | 1971.2 | 1916.5 | 1907.7 | 1888.9 |
| 7.5°  | 2442.8 | 2391.7 | 2267.0 | 2116.5 | 1969.4 | 1820.1 | 1646.6 | 1539.0 | 1446.7 | 1402.5 | 1397.8 |
| 10°   | 2399.9 | 2328.2 | 2151.2 | 1933.6 | 1703.1 | 1460.2 | 1233.2 | 1076.2 | 962.7  | 930.3  | 906.2  |
| 12.5° | 2391.1 | 2296.4 | 2061.8 | 1761.9 | 1432.5 | 1111.5 | 860.3  | 693.3  | 602.8  | 574.0  | 566.3  |
| 15°   | 2399.9 | 2281.7 | 1986.5 | 1591.9 | 1158.5 | 788.6  | 577.5  | 480.5  | 446.3  | 438.1  | 437.5  |
| 17.5° | 2405.2 | 2264.1 | 1901.2 | 1403.1 | 892.7  | 563.4  | 442.2  | 414.0  | 408.7  | 408.1  | 409.3  |
| 20°   | 2404.6 | 2237.0 | 1799.5 | 1192.6 | 663.9  | 442.8  | 399.9  | 394.0  | 392.8  | 393.4  | 392.8  |
| 22.5° | 2400.5 | 2205.3 | 1687.8 | 975.6  | 501.6  | 395.8  | 381.7  | 378.1  | 377.5  | 377.5  | 377.5  |
| 25°   | 2408.1 | 2180.0 | 1564.9 | 768.0  | 413.4  | 374.0  | 365.2  | 362.3  | 361.7  | 361.7  | 360.5  |
| 27.5° | 2435.8 | 2165.9 | 1430.2 | 591.0  | 373.4  | 354.6  | 347.5  | 347.0  | 345.2  | 344.6  | 345.8  |
| 30°   | 2480.5 | 2165.9 | 1282.6 | 459.9  | 349.3  | 334.6  | 329.3  | 328.1  | 327.6  | 327.0  | 327.6  |
| 32.5° | 2559.3 | 2182.3 | 1121.5 | 382.2  | 326.4  | 312.3  | 308.7  | 310.5  | 308.7  | 308.7  | 308.7  |
| 35°   | 2701.6 | 2231.7 | 952.7  | 333.4  | 302.3  | 290.5  | 287.0  | 289.3  | 288.2  | 288.2  | 287.6  |
| 37.5° | 2909.2 | 2323.5 | 782.7  | 304.0  | 281.1  | 268.7  | 264.0  | 267.6  | 266.4  | 266.4  | 265.8  |
| 40°   | 3162.1 | 2457.0 | 621.0  | 281.7  | 260.5  | 247.6  | 243.5  | 245.2  | 242.3  | 242.3  | 243.5  |
| 42.5° | 3474.3 | 2626.3 | 479.9  | 259.9  | 239.9  | 227.6  | 225.2  | 223.5  | 218.2  | 215.2  | 215.8  |
| 45°   | 3821.3 | 2802.7 | 374.0  | 238.8  | 220.5  | 210.5  | 207.0  | 202.3  | 193.5  | 187.6  | 188.2  |
| 47.5° | 4131.2 | 2938.6 | 304.0  | 218.2  | 202.9  | 195.2  | 189.9  | 181.1  | 168.2  | 161.1  | 161.7  |
| 50°   | 4294.1 | 2959.2 | 258.8  | 197.6  | 186.4  | 178.8  | 171.1  | 157.6  | 142.3  | 134.7  | 134.1  |
| 52.5° | 4335.8 | 2862.7 | 225.2  | 178.8  | 170.0  | 161.1  | 151.1  | 132.9  | 115.8  | 107.6  | 106.4  |
| 55°   | 4351.1 | 2715.7 | 195.2  | 161.1  | 152.3  | 142.3  | 129.4  | 108.8  | 92.9   | 84.7   | 84.1   |
| 57.5° | 4300.6 | 2496.4 | 171.7  | 145.3  | 134.7  | 122.3  | 106.4  | 87.0   | 71.7   | 65.3   | 65.3   |
| 60°   | 4188.2 | 2199.4 | 153.5  | 128.2  | 116.4  | 102.3  | 85.9   | 67.6   | 53.5   | 48.2   | 48.2   |
| 62.5° | 3964.2 | 1814.8 | 136.4  | 110.6  | 99.4   | 84.7   | 69.4   | 51.2   | 37.6   | 34.7   | 35.3   |
| 65°   | 3541.4 | 1376.7 | 119.4  | 94.7   | 84.7   | 70.0   | 54.1   | 36.5   | 25.3   | 25.3   | 26.5   |
| 67.5° | 2888.0 | 956.2  | 101.7  | 80.6   | 72.9   | 57.0   | 41.2   | 25.3   | 17.6   | 20.0   | 22.3   |
| 70°   | 1911.8 | 536.3  | 87.0   | 66.5   | 62.3   | 45.3   | 30.6   | 17.1   | 14.1   | 18.8   | 22.9   |
| 72.5° | 721.6  | 208.8  | 72.9   | 53.5   | 54.1   | 34.7   | 21.8   | 12.9   | 12.9   | 20.6   | 27.1   |
| 75°   | 201.1  | 102.3  | 52.3   | 39.4   | 42.3   | 25.3   | 15.9   | 11.2   | 12.3   | 23.5   | 31.8   |
| 77.5° | 118.2  | 75.3   | 34.1   | 22.9   | 28.8   | 17.6   | 10.6   | 8.8    | 10.6   | 20.0   | 30.6   |
| 80°   | 95.3   | 40.0   | 20.0   | 11.8   | 15.9   | 10.0   | 7.1    | 5.3    | 2.9    | 7.6    | 15.9   |
| 82.5° | 95.3   | 24.1   | 9.4    | 8.2    | 8.2    | 5.3    | 3.5    | 2.4    | 0.6    | 0.0    | 4.1    |
| 85°   | 64.1   | 10.0   | 5.9    | 5.3    | 4.1    | 1.8    | 1.2    | 0.6    | 0.0    | 0.0    | 0.0    |
| 87.5° | 10.6   | 4.1    | 2.4    | 1.2    | 0.6    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

LM-79-2008: Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

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

Test Date: 10/02/2019

Luminaire Tested: SA1C-750-U-5WQ

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

### Test Information

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

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

### Spectral Parameters

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



### Test Conditions

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

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

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CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 5000K 4-step quadrangle

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**Photopic Flux vs. Wavelength**



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

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Scotopic Flux vs. Wavelength



Scotopic Lumens: 13493.5

S/P: 1.77

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

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 5378.9**

**M/P: 0.71**

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

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**Summary**

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

**Spectral Power Distribution Comparison**



**Color Vector Graphics**



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

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



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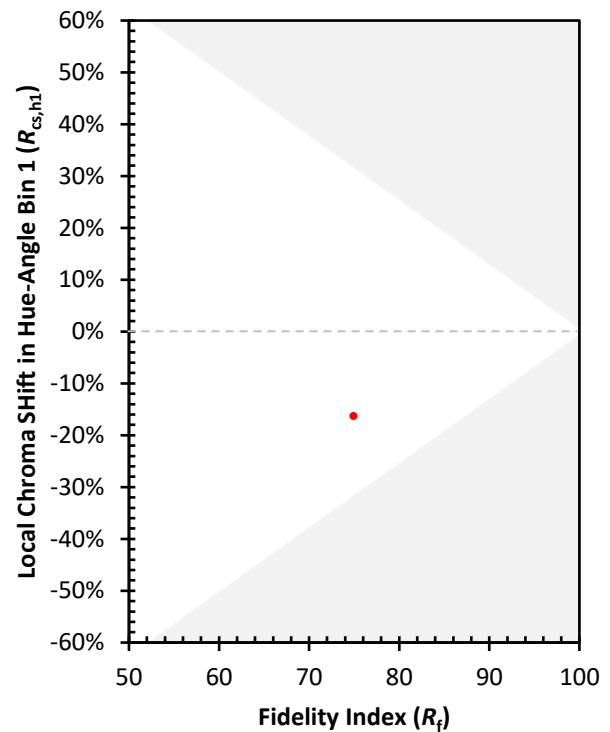
Color Rendition by Hue-Angle Bin



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**Measure Comparisons**



(END OF REPORT)