

Signify Classified - Internal  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



Scaled data based on original data using  
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions  
(formerly Eaton)

Brand: STREETWORKS

Report Number: P980799

Luminaire Tested: **UFLD-CA2-180-727-U-66**

Issue Date: 04/10/2025



**Test Information**

Test Method: LM-79-08  
Report Number: P980799  
Test Lab: INNOVATION CENTER(G2)  
Issue Date: 04/10/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: UFLD-CA2-180-727-U-66  
Description: UTILITY FLOOD MEDIUM SIZE 180W 70CRI 2700K LED FIXTURE NEMA 6  
Light Source: (2) 2700K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 25049.9 lumens  
Efficiency: N/A  
Efficacy: 138.6 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 0.31' x H: 0')  
IES Classification: Type I - Short  
BUG Rating: B4 - U0 - G2

Input Watts (W): 180.8  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.99  
Total Harmonic Distortion (THDi): 2.8%  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT

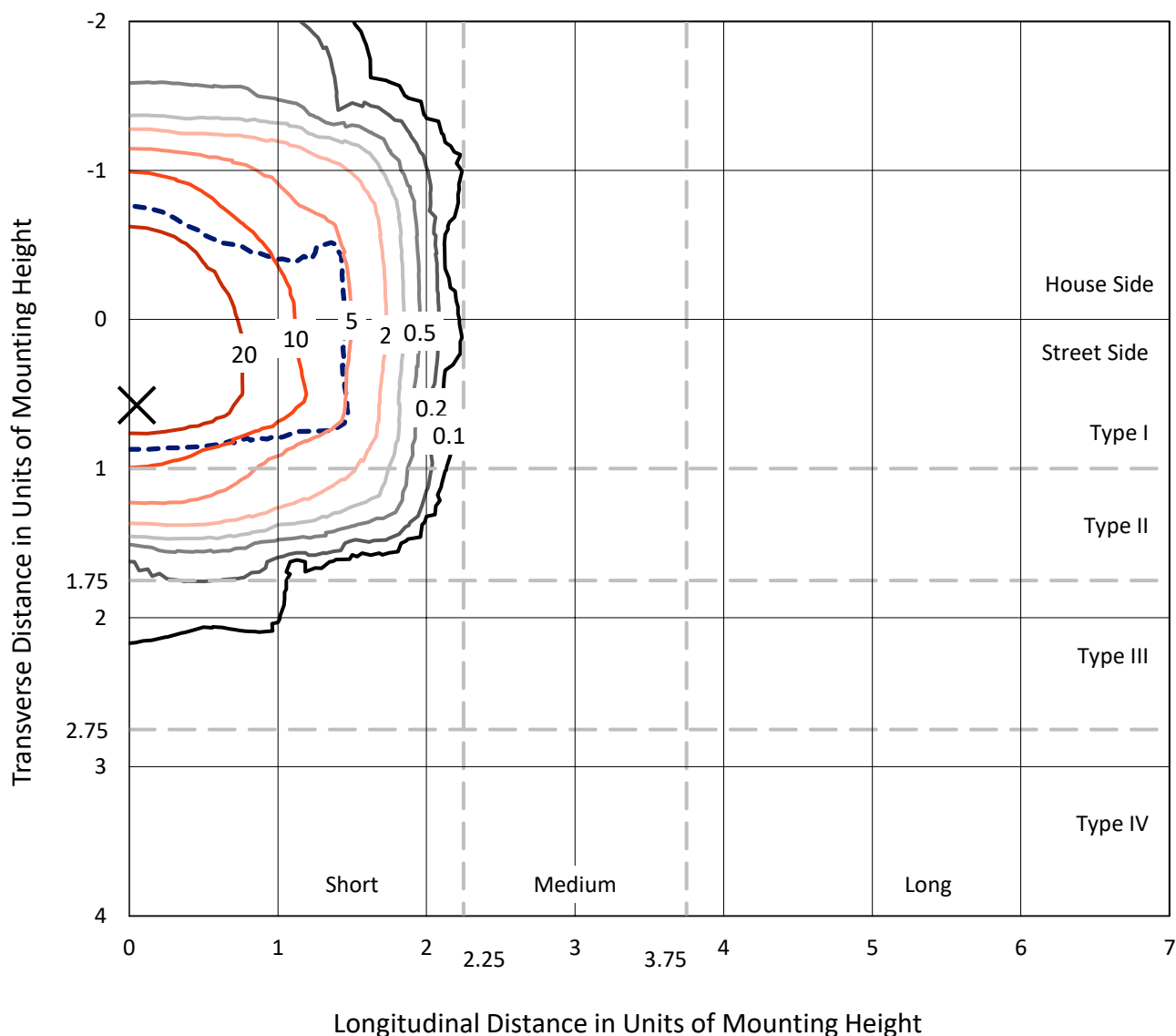
REPORT NUMBER: P980799

CATALOG NUMBER: UFLD-CA2-180-727-U-66

## Iso-Footcandle Lines of Horizontal Illumination

× Max cd

--- 1/2 Max cd

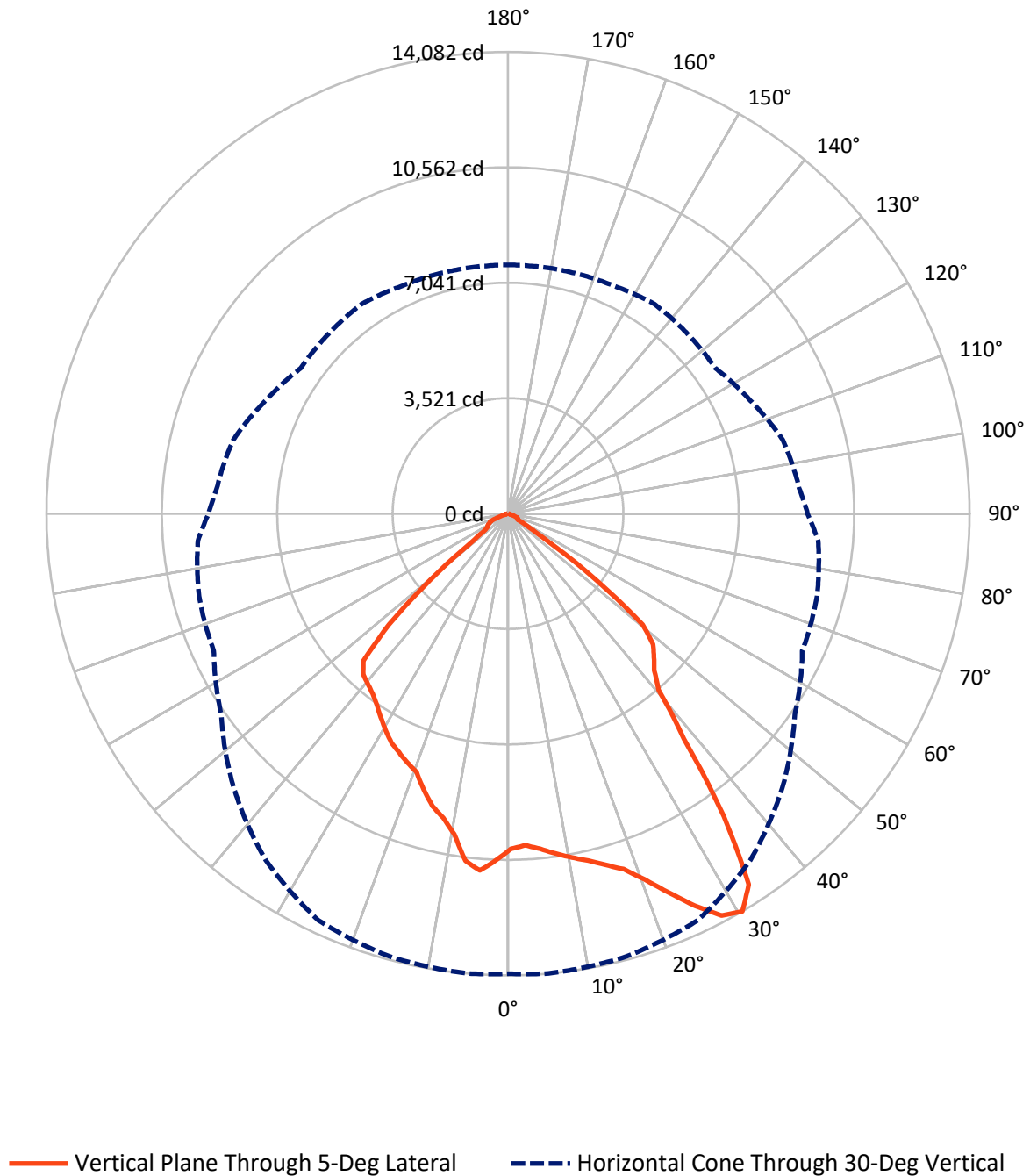


Based on 15 foot mounting height. Maximum calculated value = 46.6 fc

Type I - Short - N/A

REPORT NUMBER: P980799  
CATALOG NUMBER: UFLD-CA2-180-727-U-66

## Luminous Intensity Polar Plot



REPORT NUMBER: P980799

CATALOG NUMBER: UFLD-CA2-180-727-U-66

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 11079.3  | 0.0    | 11079.3 |
|                    | % Fixture | 44.2     | 0.0    | 44.2    |
| <b>Street Side</b> | Lumens    | 13970.6  | 0.0    | 13970.6 |
|                    | % Fixture | 55.8     | 0.0    | 55.8    |
| <b>Total</b>       | Lumens    | 25049.9  | 0.0    | 25049.9 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 1000.2  | 4.0       |
| 10°-20°   | 2897.4  | 11.6      |
| 20°-30°   | 4617.3  | 18.4      |
| 30°-40°   | 5772.4  | 23.0      |
| 40°-50°   | 5664.6  | 22.6      |
| 50°-60°   | 4049.9  | 16.2      |
| 60°-70°   | 896.0   | 3.6       |
| 70°-80°   | 137.6   | 0.5       |
| 80°-90°   | 14.6    | 0.1       |
| 90°-100°  | 0.0     | 0.0       |
| 100°-110° | 0.0     | 0.0       |
| 110°-120° | 0.0     | 0.0       |
| 120°-130° | 0.0     | 0.0       |
| 130°-140° | 0.0     | 0.0       |
| 140°-150° | 0.0     | 0.0       |
| 150°-160° | 0.0     | 0.0       |
| 160°-170° | 0.0     | 0.0       |
| 170°-180° | 0.0     | 0.0       |
| 0°-90°    | 25049.9 | 100.0     |
| 0°-180°   | 25049.9 | 100.0     |

**Coefficient of Utilization**



REPORT NUMBER: P980799

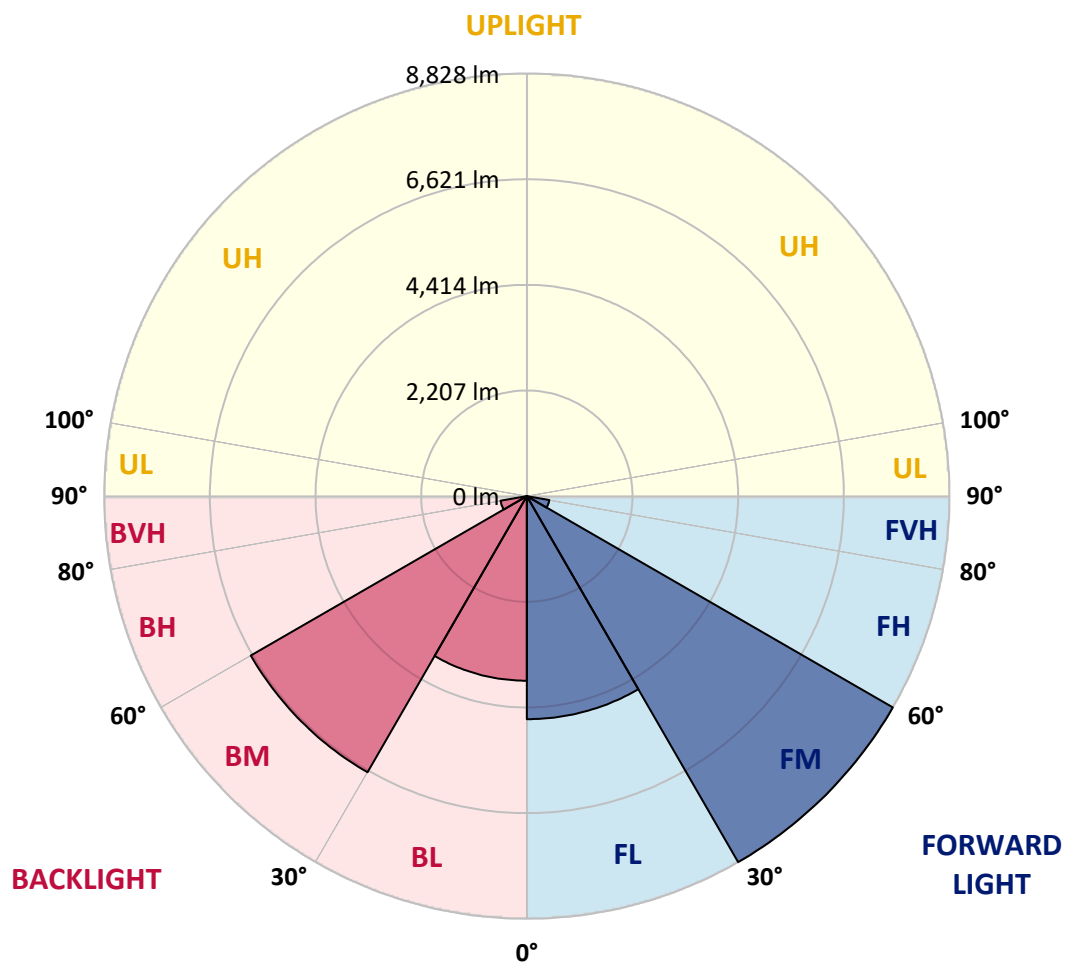
CATALOG NUMBER: UFLD-CA2-180-727-U-66

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 4659.1 | 18.6      |                         |      |         |
| FM   | (30°-60°)   | 8827.6 | 35.2      |                         |      |         |
| FH   | (60°-80°)   | 476.6  | 1.9       |                         |      | G0/660  |
| FVH  | (80°-90°)   | 7.4    | 0.0       |                         |      | G0/10   |
| BL   | (0°-30°)    | 3855.8 | 15.4      | B4/5000                 |      |         |
| BM   | (30°-60°)   | 6659.2 | 26.6      | B4/8500                 |      |         |
| BH   | (60°-80°)   | 557.1  | 2.2       | B2/1000                 |      | G2/1000 |
| BVH  | (80°-90°)   | 7.2    | 0.0       |                         |      | G0/10   |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B4-U0-G2**

Type I Short



REPORT NUMBER: P980799

CATALOG NUMBER: UFLD-CA2-180-727-U-66

**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 65°     | 75°     | 85°     | 90°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 10224.5 | 10224.5 | 10224.5 | 10224.5 | 10224.5 | 10224.5 | 10224.5 | 10224.5 | 10224.5 | 10224.5 | 10224.5 |
| 2.5°  | 10110.1 | 10126.4 | 10142.8 | 10167.3 | 10200.0 | 10216.3 | 10200.0 | 10183.7 | 10175.5 | 10191.8 | 10200.0 |
| 5°    | 10249.0 | 10273.6 | 10281.7 | 10298.1 | 10314.4 | 10298.1 | 10289.9 | 10273.6 | 10265.4 | 10273.6 | 10298.1 |
| 7.5°  | 10453.4 | 10469.7 | 10461.5 | 10453.4 | 10445.2 | 10388.0 | 10330.8 | 10306.2 | 10306.2 | 10330.8 | 10396.2 |
| 10°   | 10633.2 | 10665.9 | 10625.0 | 10592.3 | 10535.1 | 10445.2 | 10347.1 | 10289.9 | 10306.2 | 10355.3 | 10437.0 |
| 12.5° | 10862.0 | 10862.0 | 10821.2 | 10788.5 | 10657.7 | 10551.4 | 10420.7 | 10330.8 | 10330.8 | 10420.7 | 10510.6 |
| 15°   | 11139.9 | 11115.4 | 11099.0 | 11009.1 | 10853.8 | 10682.2 | 10518.7 | 10388.0 | 10363.5 | 10502.4 | 10559.6 |
| 17.5° | 11491.3 | 11401.4 | 11360.6 | 11205.3 | 10992.8 | 10772.1 | 10551.4 | 10445.2 | 10371.6 | 10518.7 | 10453.4 |
| 20°   | 11973.6 | 11908.2 | 11777.4 | 11532.2 | 11099.0 | 10813.0 | 10551.4 | 10412.5 | 10355.3 | 10437.0 | 10371.6 |
| 22.5° | 12594.7 | 12553.8 | 12259.6 | 11949.0 | 11376.9 | 10845.7 | 10510.6 | 10322.6 | 10306.2 | 10265.4 | 10126.4 |
| 25°   | 13354.8 | 13248.6 | 12946.2 | 12504.8 | 11793.7 | 11164.4 | 10502.4 | 10159.1 | 10101.9 | 9995.7  | 9750.5  |
| 27.5° | 14000.5 | 13886.1 | 13518.3 | 13126.0 | 12365.9 | 11638.5 | 10567.8 | 9963.0  | 9897.6  | 9824.0  | 9521.6  |
| 30°   | 14033.2 | 14082.2 | 13984.1 | 13689.9 | 12897.1 | 11834.6 | 10682.2 | 9905.8  | 9758.7  | 9497.1  | 9137.5  |
| 32.5° | 13371.2 | 13485.6 | 13722.6 | 13828.8 | 13297.6 | 12071.6 | 10780.3 | 9930.3  | 9660.6  | 9031.2  | 8737.0  |
| 35°   | 11107.2 | 11336.1 | 12308.7 | 13224.0 | 13412.0 | 12414.9 | 10862.0 | 9930.3  | 9627.9  | 8696.2  | 8467.3  |
| 37.5° | 8532.7  | 8720.7  | 9546.2  | 11205.3 | 12905.3 | 12627.4 | 11041.8 | 9873.1  | 9587.0  | 8720.7  | 8410.1  |
| 40°   | 6971.6  | 7077.9  | 7437.5  | 8565.4  | 11123.6 | 12276.0 | 11221.6 | 9938.5  | 9464.4  | 8737.0  | 8442.8  |
| 42.5° | 6546.6  | 6538.5  | 6464.9  | 6881.7  | 8483.7  | 11246.2 | 11344.2 | 10101.9 | 9260.1  | 8630.8  | 8385.6  |
| 45°   | 6260.6  | 6244.2  | 6178.8  | 6260.6  | 6710.1  | 9202.9  | 11254.3 | 10396.2 | 9006.7  | 8254.8  | 8091.3  |
| 47.5° | 5950.0  | 5958.2  | 5933.7  | 5966.3  | 5884.6  | 6988.0  | 10747.6 | 10518.7 | 8573.6  | 7625.5  | 7568.3  |
| 50°   | 5206.2  | 5328.8  | 5655.8  | 5688.5  | 5476.0  | 5639.4  | 9202.9  | 10461.5 | 8263.0  | 7445.7  | 7396.6  |
| 52.5° | 3236.5  | 3432.7  | 4397.1  | 5214.4  | 5091.8  | 5091.8  | 7020.7  | 10543.3 | 7707.2  | 7380.3  | 7413.0  |
| 55°   | 1144.2  | 1291.3  | 2353.8  | 3588.0  | 4560.6  | 4650.5  | 5549.5  | 9382.7  | 7641.8  | 7494.7  | 7527.4  |
| 57.5° | 286.1   | 351.4   | 719.2   | 1552.9  | 3073.1  | 4217.3  | 4961.1  | 7748.1  | 5802.9  | 5598.6  | 5680.3  |
| 60°   | 335.1   | 326.9   | 449.5   | 498.6   | 1193.3  | 3334.6  | 4470.7  | 5230.8  | 3743.3  | 3506.2  | 3547.1  |
| 62.5° | 359.6   | 335.1   | 351.4   | 441.3   | 196.2   | 1634.6  | 3563.5  | 3113.9  | 1544.7  | 1144.2  | 1209.6  |
| 65°   | 318.7   | 302.4   | 277.9   | 408.7   | 138.9   | 302.4   | 2100.5  | 915.4   | 220.7   | 351.4   | 318.7   |
| 67.5° | 212.5   | 220.7   | 228.8   | 326.9   | 130.8   | 130.8   | 277.9   | 228.8   | 155.3   | 318.7   | 277.9   |
| 70°   | 122.6   | 130.8   | 155.3   | 196.2   | 130.8   | 106.2   | 122.6   | 188.0   | 130.8   | 318.7   | 277.9   |
| 72.5° | 73.6    | 73.6    | 73.6    | 81.7    | 130.8   | 89.9    | 81.7    | 155.3   | 114.4   | 294.2   | 277.9   |
| 75°   | 57.2    | 57.2    | 57.2    | 49.0    | 114.4   | 57.2    | 57.2    | 122.6   | 98.1    | 212.5   | 212.5   |
| 77.5° | 49.0    | 49.0    | 49.0    | 40.9    | 65.4    | 49.0    | 49.0    | 89.9    | 89.9    | 106.2   | 122.6   |
| 80°   | 32.7    | 32.7    | 32.7    | 32.7    | 40.9    | 40.9    | 32.7    | 49.0    | 40.9    | 49.0    | 57.2    |
| 82.5° | 16.3    | 24.5    | 24.5    | 16.3    | 24.5    | 24.5    | 24.5    | 32.7    | 24.5    | 32.7    | 32.7    |
| 85°   | 8.2     | 8.2     | 8.2     | 8.2     | 8.2     | 8.2     | 8.2     | 16.3    | 8.2     | 8.2     | 16.3    |
| 87.5° | 0.0     | 0.0     | 0.0     | 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     |

REPORT NUMBER: P980799

CATALOG NUMBER: UFLD-CA2-180-727-U-66

**CANDELA DISTRIBUTION (continued):**

|       | 95°     | 105°    | 115°    | 125°    | 135°    | 145°    | 155°    | 165°    | 175°    | 180°    |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 10224.5 | 10224.5 | 10224.5 | 10224.5 | 10224.5 | 10224.5 | 10224.5 | 10224.5 | 10224.5 | 10224.5 |
| 2.5°  | 10216.3 | 10257.2 | 10314.4 | 10404.3 | 10437.0 | 10494.2 | 10543.3 | 10584.1 | 10584.1 | 10567.8 |
| 5°    | 10347.1 | 10461.5 | 10616.8 | 10755.8 | 10804.8 | 10862.0 | 10886.5 | 10927.4 | 10919.2 | 10911.1 |
| 7.5°  | 10461.5 | 10641.3 | 10804.8 | 10902.9 | 10886.5 | 10813.0 | 10763.9 | 10698.6 | 10674.0 | 10690.4 |
| 10°   | 10551.4 | 10714.9 | 10788.5 | 10723.1 | 10526.9 | 10355.3 | 10134.6 | 9987.5  | 9913.9  | 9938.5  |
| 12.5° | 10584.1 | 10641.3 | 10576.0 | 10216.3 | 9971.2  | 9807.7  | 9627.9  | 9529.8  | 9488.9  | 9497.1  |
| 15°   | 10592.3 | 10461.5 | 10101.9 | 9832.2  | 9652.4  | 9448.1  | 9301.0  | 9211.1  | 9211.1  | 9219.2  |
| 17.5° | 10420.7 | 10101.9 | 9791.3  | 9587.0  | 9333.7  | 9121.2  | 9039.4  | 9006.7  | 8802.4  | 8835.1  |
| 20°   | 10265.4 | 9807.7  | 9636.1  | 9317.3  | 9014.9  | 8876.0  | 8401.9  | 8352.9  | 8361.1  | 8369.2  |
| 22.5° | 9938.5  | 9595.2  | 9439.9  | 9023.1  | 8679.8  | 8295.7  | 8230.3  | 8181.2  | 8189.4  | 8189.4  |
| 25°   | 9488.9  | 9292.8  | 9080.3  | 8647.1  | 8230.3  | 8156.7  | 8107.7  | 8042.3  | 8009.6  | 8017.8  |
| 27.5° | 9235.6  | 8990.4  | 8598.1  | 8230.3  | 7960.6  | 7993.3  | 7936.1  | 7838.0  | 7838.0  | 7846.2  |
| 30°   | 8916.8  | 8679.8  | 8156.7  | 7723.6  | 7748.1  | 7797.1  | 7658.2  | 7609.1  | 7584.6  | 7584.6  |
| 32.5° | 8524.5  | 8197.6  | 7739.9  | 7331.2  | 7478.4  | 7462.0  | 7290.4  | 7306.7  | 7323.1  | 7306.7  |
| 35°   | 8230.3  | 7805.3  | 7421.2  | 7200.5  | 7143.3  | 7077.9  | 6988.0  | 7045.2  | 7069.7  | 7053.4  |
| 37.5° | 8156.7  | 7650.0  | 7249.5  | 7094.2  | 6873.6  | 6751.0  | 6775.5  | 6832.7  | 6865.4  | 6857.2  |
| 40°   | 8132.2  | 7494.7  | 7102.4  | 6938.9  | 6644.7  | 6538.5  | 6571.2  | 6685.6  | 6726.4  | 6718.3  |
| 42.5° | 8099.5  | 7388.5  | 7012.5  | 6816.3  | 6407.7  | 6334.1  | 6489.4  | 6595.7  | 6603.8  | 6595.7  |
| 45°   | 7927.9  | 7274.0  | 6955.3  | 6563.0  | 6048.1  | 6138.0  | 6334.1  | 6391.3  | 6293.3  | 6252.4  |
| 47.5° | 7527.4  | 7061.5  | 6783.7  | 6252.4  | 5753.8  | 5925.5  | 5950.0  | 5328.8  | 4969.2  | 4887.5  |
| 50°   | 7413.0  | 7069.7  | 6587.5  | 5884.6  | 5574.0  | 5745.7  | 4675.0  | 3571.6  | 3122.1  | 3032.2  |
| 52.5° | 7380.3  | 6988.0  | 6661.1  | 5500.5  | 5508.7  | 4846.6  | 2950.5  | 1749.0  | 1405.8  | 1340.4  |
| 55°   | 7462.0  | 7347.6  | 6783.7  | 5271.6  | 5124.5  | 3154.8  | 1373.1  | 825.5   | 850.0   | 825.5   |
| 57.5° | 5631.2  | 6146.2  | 6930.8  | 4912.0  | 3743.3  | 1520.2  | 866.3   | 801.0   | 743.7   | 727.4   |
| 60°   | 3514.4  | 4004.8  | 5075.5  | 4225.5  | 1920.7  | 907.2   | 882.7   | 743.7   | 719.2   | 711.1   |
| 62.5° | 1160.6  | 1781.7  | 2909.6  | 2778.8  | 531.2   | 899.0   | 890.9   | 662.0   | 662.0   | 662.0   |
| 65°   | 294.2   | 302.4   | 801.0   | 956.2   | 392.3   | 801.0   | 850.0   | 621.2   | 604.8   | 629.3   |
| 67.5° | 253.4   | 228.8   | 425.0   | 376.0   | 326.9   | 555.8   | 743.7   | 596.6   | 563.9   | 563.9   |
| 70°   | 253.4   | 269.7   | 416.8   | 351.4   | 204.3   | 302.4   | 539.4   | 367.8   | 326.9   | 302.4   |
| 72.5° | 237.0   | 261.5   | 367.8   | 318.7   | 138.9   | 147.1   | 237.0   | 122.6   | 114.4   | 98.1    |
| 75°   | 204.3   | 212.5   | 286.1   | 286.1   | 147.1   | 73.6    | 98.1    | 81.7    | 81.7    | 73.6    |
| 77.5° | 138.9   | 106.2   | 163.5   | 204.3   | 106.2   | 49.0    | 40.9    | 40.9    | 40.9    | 32.7    |
| 80°   | 73.6    | 40.9    | 40.9    | 32.7    | 40.9    | 40.9    | 24.5    | 32.7    | 32.7    | 24.5    |
| 82.5° | 40.9    | 24.5    | 24.5    | 16.3    | 16.3    | 24.5    | 16.3    | 16.3    | 16.3    | 16.3    |
| 85°   | 16.3    | 16.3    | 8.2     | 8.2     | 8.2     | 16.3    | 8.2     | 8.2     | 8.2     | 8.2     |
| 87.5° | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 8.2     | 8.2     |
| 90°   | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     |

LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

Lumark

Report Number: SP1-2501-319-9

Test Date: 02/05/2025

Luminaire Tested: NFFLD-C55-7027-66

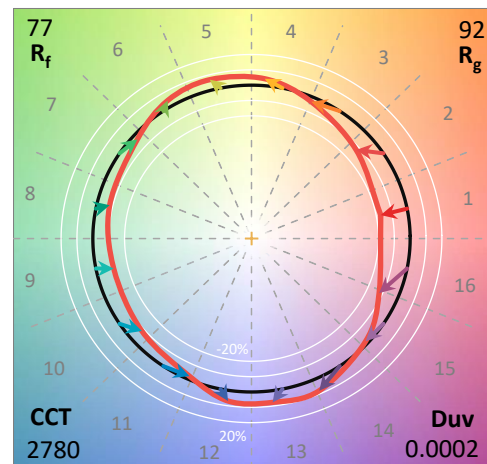
Data in this report applies to families of products including NFFLD-C55-7027-66

### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2501-319-9  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 02/06/2025  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: Lumark  
 Catalog Number: **NFFLD-C55-7027-66**  
 Description: LUMARK NIGHT FALCON 16900LM NEMA 6

### Spectral Parameters

|                           |          |           |      |      |       |
|---------------------------|----------|-----------|------|------|-------|
| CCT (K):                  | 2780     | CRI (Ra): | 72.0 |      |       |
| CIE u':                   | 0.2590   | R1:       | 68.2 | R9:  | -35.8 |
| CIE v':                   | 0.5260   | R2:       | 85.1 | R10: | 68.0  |
| Duv:                      | 0.0002   | R3:       | 93.3 | R11: | 62.3  |
| CIE x:                    | 0.4536   | R4:       | 66.5 | R12: | 62.2  |
| CIE y:                    | 0.4095   | R5:       | 68.5 | R13: | 71.6  |
| CIE z:                    | 0.1369   | R6:       | 81.1 | R14: | 96.6  |
| Peak Wavelength (nm):     | 597      | R7:       | 74.6 | R15: | 59.0  |
| Dominant Wavelength (nm): | 583      | R8:       | 38.9 |      |       |
| Purity:                   | 59.08593 |           |      |      |       |
| Rf:                       | 77.4     |           |      |      |       |
| Rg:                       | 92.5     |           |      |      |       |



### Test Conditions

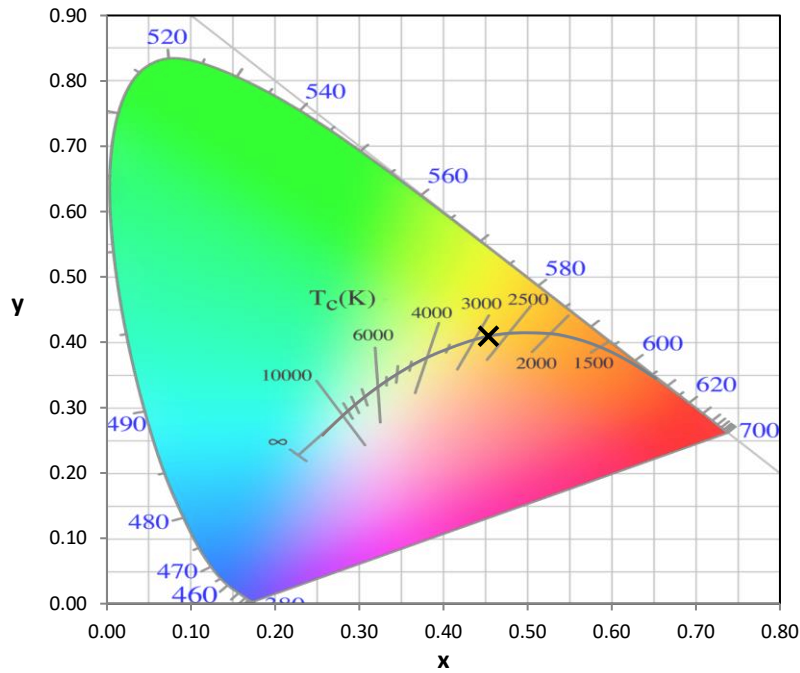
Stabilization Time: 20M  
 Operation Time: 1H 20M  
 Sphere Temperature (°C): 25.0

REPORT NUMBER: SP1-2501-319-9

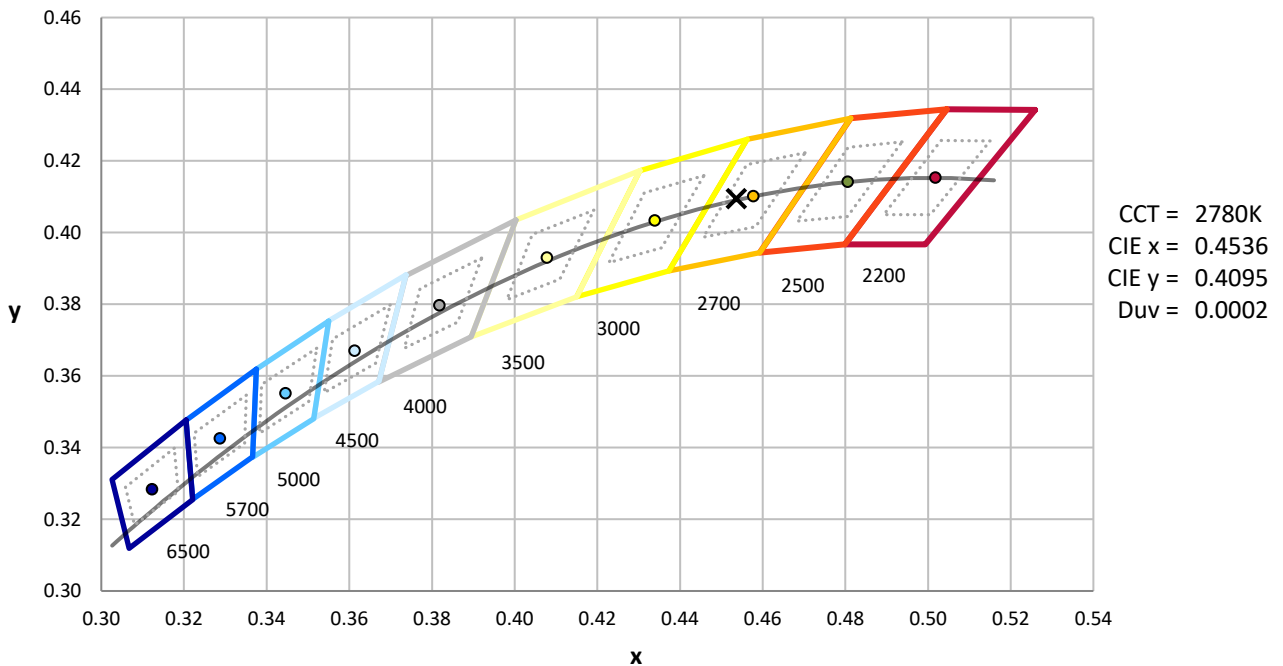
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 12/16/2024       | 6/16/2025            |
| Power Meter                    | INXT2011004           | 1/21/2025        | 1/21/2026            |
| AC Power Source                | IN0063                | 10/22/2024       | 10/22/2025           |
| DC Power Source                | IN0208                | 10/22/2024       | 10/22/2025           |
| Sphere Thermometer             | IN0085                | 10/22/2024       | 10/22/2025           |
| Room Thermometer               | IN0046                | 10/22/2024       | 10/22/2025           |

REPORT NUMBER: SP1-2501-319-9

**CIE 1931 Chromaticity Diagram**



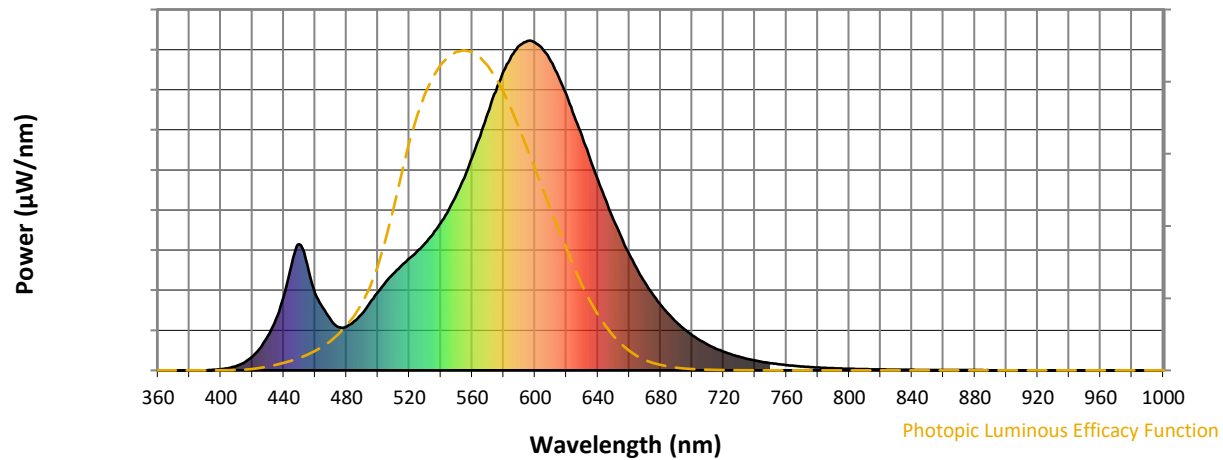
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 2700K 4-step quadrangle

REPORT NUMBER: SP1-2501-319-9

### Photopic Flux vs. Wavelength

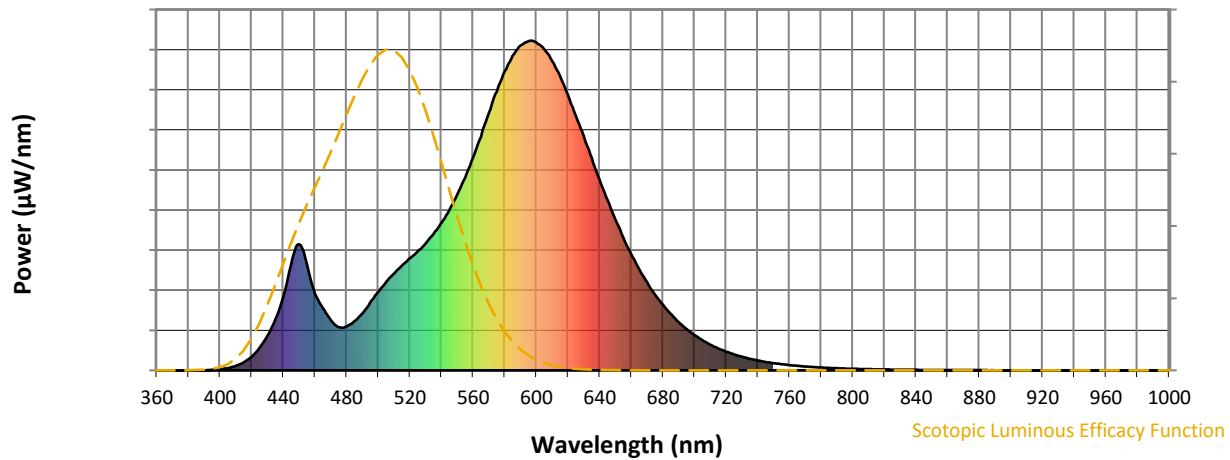


### Photopic Lumens: NR

| $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360               | 0                                    | NR                             | 490               | 173                                  | NR                             | 620               | 836                                  | NR                             | 750               | 22                                   | NR                             | 880               | 1                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 205                                  | NR                             | 625               | 771                                  | NR                             | 755               | 19                                   | NR                             | 885               | 1                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 238                                  | NR                             | 630               | 710                                  | NR                             | 760               | 16                                   | NR                             | 890               | 0                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 268                                  | NR                             | 635               | 643                                  | NR                             | 765               | 14                                   | NR                             | 895               | 0                                    | NR                             |
| 380               | 0                                    | NR                             | 510               | 294                                  | NR                             | 640               | 578                                  | NR                             | 770               | 12                                   | NR                             | 900               | 0                                    | NR                             |
| 385               | 0                                    | NR                             | 515               | 317                                  | NR                             | 645               | 516                                  | NR                             | 775               | 10                                   | NR                             | 905               | 0                                    | NR                             |
| 390               | 0                                    | NR                             | 520               | 340                                  | NR                             | 650               | 456                                  | NR                             | 780               | 9                                    | NR                             | 910               | 0                                    | NR                             |
| 395               | 2                                    | NR                             | 525               | 361                                  | NR                             | 655               | 403                                  | NR                             | 785               | 8                                    | NR                             | 915               | 0                                    | NR                             |
| 400               | 4                                    | NR                             | 530               | 386                                  | NR                             | 660               | 352                                  | NR                             | 790               | 6                                    | NR                             | 920               | 0                                    | NR                             |
| 405               | 7                                    | NR                             | 535               | 413                                  | NR                             | 665               | 307                                  | NR                             | 795               | 6                                    | NR                             | 925               | 0                                    | NR                             |
| 410               | 14                                   | NR                             | 540               | 447                                  | NR                             | 670               | 266                                  | NR                             | 800               | 5                                    | NR                             | 930               | 0                                    | NR                             |
| 415               | 25                                   | NR                             | 545               | 487                                  | NR                             | 675               | 230                                  | NR                             | 805               | 4                                    | NR                             | 935               | 0                                    | NR                             |
| 420               | 42                                   | NR                             | 550               | 533                                  | NR                             | 680               | 199                                  | NR                             | 810               | 4                                    | NR                             | 940               | 0                                    | NR                             |
| 425               | 68                                   | NR                             | 555               | 585                                  | NR                             | 685               | 170                                  | NR                             | 815               | 3                                    | NR                             | 945               | 0                                    | NR                             |
| 430               | 104                                  | NR                             | 560               | 647                                  | NR                             | 690               | 147                                  | NR                             | 820               | 3                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 155                                  | NR                             | 565               | 710                                  | NR                             | 695               | 125                                  | NR                             | 825               | 2                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 224                                  | NR                             | 570               | 780                                  | NR                             | 700               | 107                                  | NR                             | 830               | 2                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 322                                  | NR                             | 575               | 846                                  | NR                             | 705               | 92                                   | NR                             | 835               | 2                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 382                                  | NR                             | 580               | 907                                  | NR                             | 710               | 78                                   | NR                             | 840               | 2                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 321                                  | NR                             | 585               | 954                                  | NR                             | 715               | 66                                   | NR                             | 845               | 1                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 234                                  | NR                             | 590               | 985                                  | NR                             | 720               | 57                                   | NR                             | 850               | 1                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 189                                  | NR                             | 595               | 999                                  | NR                             | 725               | 48                                   | NR                             | 855               | 1                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 152                                  | NR                             | 600               | 994                                  | NR                             | 730               | 41                                   | NR                             | 860               | 1                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 131                                  | NR                             | 605               | 973                                  | NR                             | 735               | 35                                   | NR                             | 865               | 1                                    | NR                             | 995               | 0                                    | NR                             |
| 480               | 133                                  | NR                             | 610               | 938                                  | NR                             | 740               | 30                                   | NR                             | 870               | 1                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 150                                  | NR                             | 615               | 891                                  | NR                             | 745               | 26                                   | NR                             | 875               | 1                                    | NR                             |                   |                                      |                                |

REPORT NUMBER: SP1-2501-319-9

### Scotopic Flux vs. Wavelength



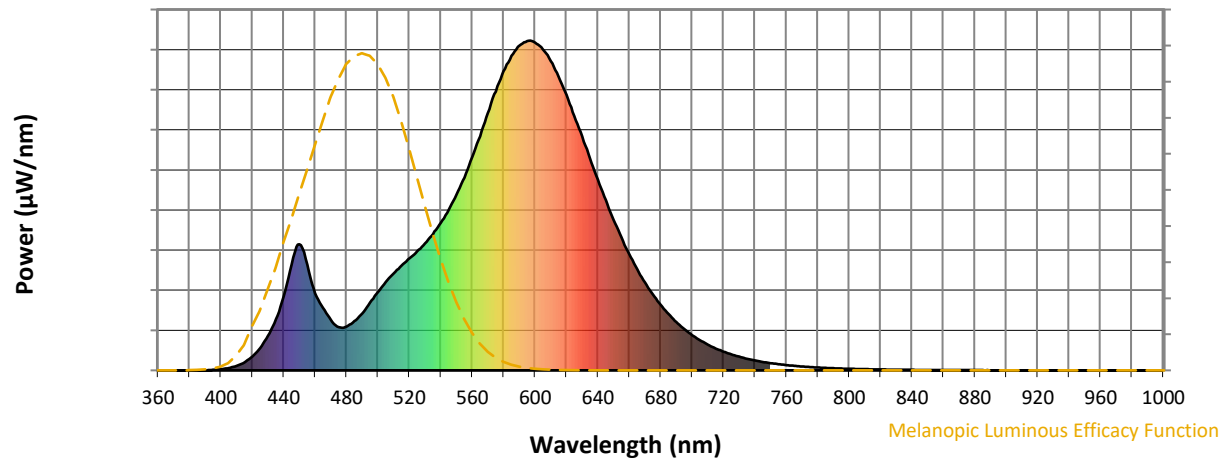
Scotopic Lumens: NR

S/P: 1.17

| λ (nm) | Power W <sup>^</sup> /nm | Lumens (Φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (Φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (Φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (Φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (Φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 173                      | NR            | 620    | 836                      | NR            | 750    | 22                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 205                      | NR            | 625    | 771                      | NR            | 755    | 19                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 238                      | NR            | 630    | 710                      | NR            | 760    | 16                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 268                      | NR            | 635    | 643                      | NR            | 765    | 14                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 294                      | NR            | 640    | 578                      | NR            | 770    | 12                       | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 317                      | NR            | 645    | 516                      | NR            | 775    | 10                       | NR            | 905    | 0                        | NR            |
| 390    | 0                        | NR            | 520    | 340                      | NR            | 650    | 456                      | NR            | 780    | 9                        | NR            | 910    | 0                        | NR            |
| 395    | 2                        | NR            | 525    | 361                      | NR            | 655    | 403                      | NR            | 785    | 8                        | NR            | 915    | 0                        | NR            |
| 400    | 4                        | NR            | 530    | 386                      | NR            | 660    | 352                      | NR            | 790    | 6                        | NR            | 920    | 0                        | NR            |
| 405    | 7                        | NR            | 535    | 413                      | NR            | 665    | 307                      | NR            | 795    | 6                        | NR            | 925    | 0                        | NR            |
| 410    | 14                       | NR            | 540    | 447                      | NR            | 670    | 266                      | NR            | 800    | 5                        | NR            | 930    | 0                        | NR            |
| 415    | 25                       | NR            | 545    | 487                      | NR            | 675    | 230                      | NR            | 805    | 4                        | NR            | 935    | 0                        | NR            |
| 420    | 42                       | NR            | 550    | 533                      | NR            | 680    | 199                      | NR            | 810    | 4                        | NR            | 940    | 0                        | NR            |
| 425    | 68                       | NR            | 555    | 585                      | NR            | 685    | 170                      | NR            | 815    | 3                        | NR            | 945    | 0                        | NR            |
| 430    | 104                      | NR            | 560    | 647                      | NR            | 690    | 147                      | NR            | 820    | 3                        | NR            | 950    | 0                        | NR            |
| 435    | 155                      | NR            | 565    | 710                      | NR            | 695    | 125                      | NR            | 825    | 2                        | NR            | 955    | 0                        | NR            |
| 440    | 224                      | NR            | 570    | 780                      | NR            | 700    | 107                      | NR            | 830    | 2                        | NR            | 960    | 0                        | NR            |
| 445    | 322                      | NR            | 575    | 846                      | NR            | 705    | 92                       | NR            | 835    | 2                        | NR            | 965    | 0                        | NR            |
| 450    | 382                      | NR            | 580    | 907                      | NR            | 710    | 78                       | NR            | 840    | 2                        | NR            | 970    | 0                        | NR            |
| 455    | 321                      | NR            | 585    | 954                      | NR            | 715    | 66                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 234                      | NR            | 590    | 985                      | NR            | 720    | 57                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 189                      | NR            | 595    | 999                      | NR            | 725    | 48                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 152                      | NR            | 600    | 994                      | NR            | 730    | 41                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 131                      | NR            | 605    | 973                      | NR            | 735    | 35                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 133                      | NR            | 610    | 938                      | NR            | 740    | 30                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 150                      | NR            | 615    | 891                      | NR            | 745    | 26                       | NR            | 875    | 1                        | NR            |        |                          |               |

REPORT NUMBER: SP1-2501-319-9

### Melanopic Flux vs. Wavelength


**Melanopic Lumens: NR**
**M/P: 2.15**

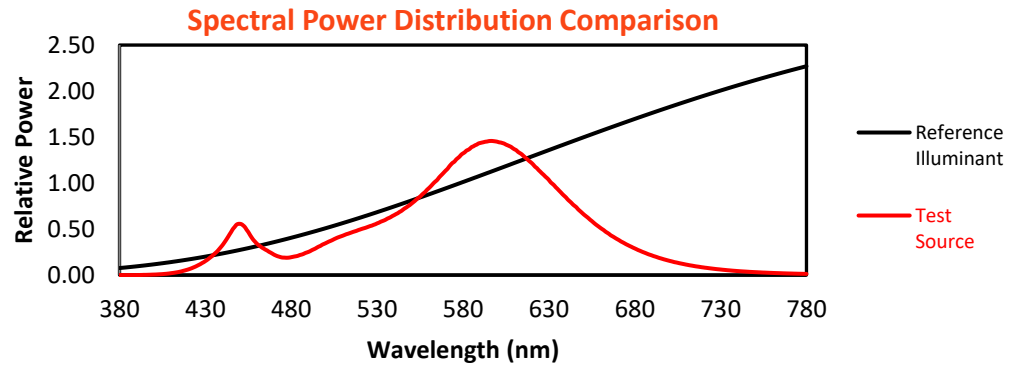
| $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360               | 0                                    | NR                             | 490               | 173                                  | NR                             | 620               | 836                                  | NR                             | 750               | 22                                   | NR                             | 880               | 1                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 205                                  | NR                             | 625               | 771                                  | NR                             | 755               | 19                                   | NR                             | 885               | 1                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 238                                  | NR                             | 630               | 710                                  | NR                             | 760               | 16                                   | NR                             | 890               | 0                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 268                                  | NR                             | 635               | 643                                  | NR                             | 765               | 14                                   | NR                             | 895               | 0                                    | NR                             |
| 380               | 0                                    | NR                             | 510               | 294                                  | NR                             | 640               | 578                                  | NR                             | 770               | 12                                   | NR                             | 900               | 0                                    | NR                             |
| 385               | 0                                    | NR                             | 515               | 317                                  | NR                             | 645               | 516                                  | NR                             | 775               | 10                                   | NR                             | 905               | 0                                    | NR                             |
| 390               | 0                                    | NR                             | 520               | 340                                  | NR                             | 650               | 456                                  | NR                             | 780               | 9                                    | NR                             | 910               | 0                                    | NR                             |
| 395               | 2                                    | NR                             | 525               | 361                                  | NR                             | 655               | 403                                  | NR                             | 785               | 8                                    | NR                             | 915               | 0                                    | NR                             |
| 400               | 4                                    | NR                             | 530               | 386                                  | NR                             | 660               | 352                                  | NR                             | 790               | 6                                    | NR                             | 920               | 0                                    | NR                             |
| 405               | 7                                    | NR                             | 535               | 413                                  | NR                             | 665               | 307                                  | NR                             | 795               | 6                                    | NR                             | 925               | 0                                    | NR                             |
| 410               | 14                                   | NR                             | 540               | 447                                  | NR                             | 670               | 266                                  | NR                             | 800               | 5                                    | NR                             | 930               | 0                                    | NR                             |
| 415               | 25                                   | NR                             | 545               | 487                                  | NR                             | 675               | 230                                  | NR                             | 805               | 4                                    | NR                             | 935               | 0                                    | NR                             |
| 420               | 42                                   | NR                             | 550               | 533                                  | NR                             | 680               | 199                                  | NR                             | 810               | 4                                    | NR                             | 940               | 0                                    | NR                             |
| 425               | 68                                   | NR                             | 555               | 585                                  | NR                             | 685               | 170                                  | NR                             | 815               | 3                                    | NR                             | 945               | 0                                    | NR                             |
| 430               | 104                                  | NR                             | 560               | 647                                  | NR                             | 690               | 147                                  | NR                             | 820               | 3                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 155                                  | NR                             | 565               | 710                                  | NR                             | 695               | 125                                  | NR                             | 825               | 2                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 224                                  | NR                             | 570               | 780                                  | NR                             | 700               | 107                                  | NR                             | 830               | 2                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 322                                  | NR                             | 575               | 846                                  | NR                             | 705               | 92                                   | NR                             | 835               | 2                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 382                                  | NR                             | 580               | 907                                  | NR                             | 710               | 78                                   | NR                             | 840               | 2                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 321                                  | NR                             | 585               | 954                                  | NR                             | 715               | 66                                   | NR                             | 845               | 1                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 234                                  | NR                             | 590               | 985                                  | NR                             | 720               | 57                                   | NR                             | 850               | 1                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 189                                  | NR                             | 595               | 999                                  | NR                             | 725               | 48                                   | NR                             | 855               | 1                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 152                                  | NR                             | 600               | 994                                  | NR                             | 730               | 41                                   | NR                             | 860               | 1                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 131                                  | NR                             | 605               | 973                                  | NR                             | 735               | 35                                   | NR                             | 865               | 1                                    | NR                             | 995               | 0                                    | NR                             |
| 480               | 133                                  | NR                             | 610               | 938                                  | NR                             | 740               | 30                                   | NR                             | 870               | 1                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 150                                  | NR                             | 615               | 891                                  | NR                             | 745               | 26                                   | NR                             | 875               | 1                                    | NR                             |                   |                                      |                                |

REPORT NUMBER: SP1-2501-319-9

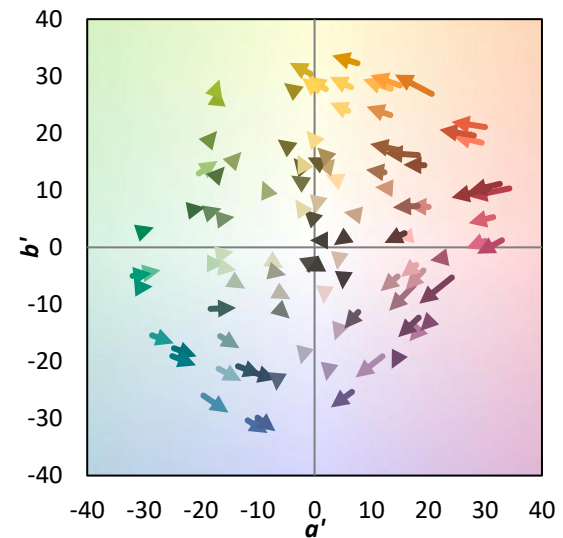
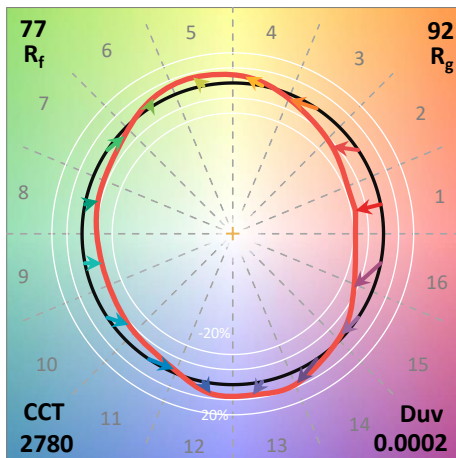
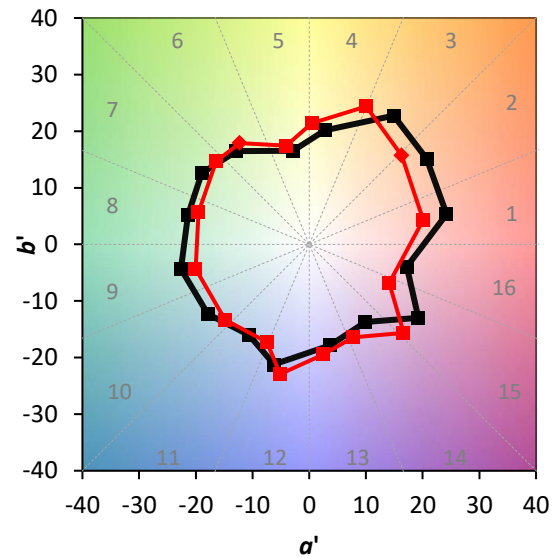
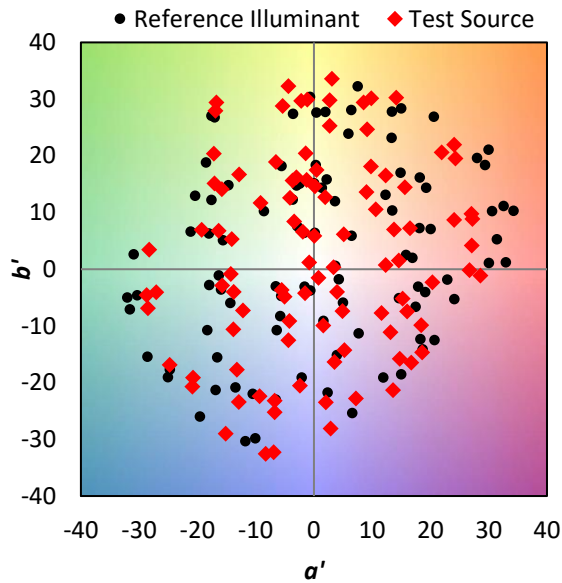
TM-30-18

### Summary

$R_f = 77.4$   
 $R_g = 92.5$   
 $CIE R_a = 72.0$   
 $R_g = -35.8$

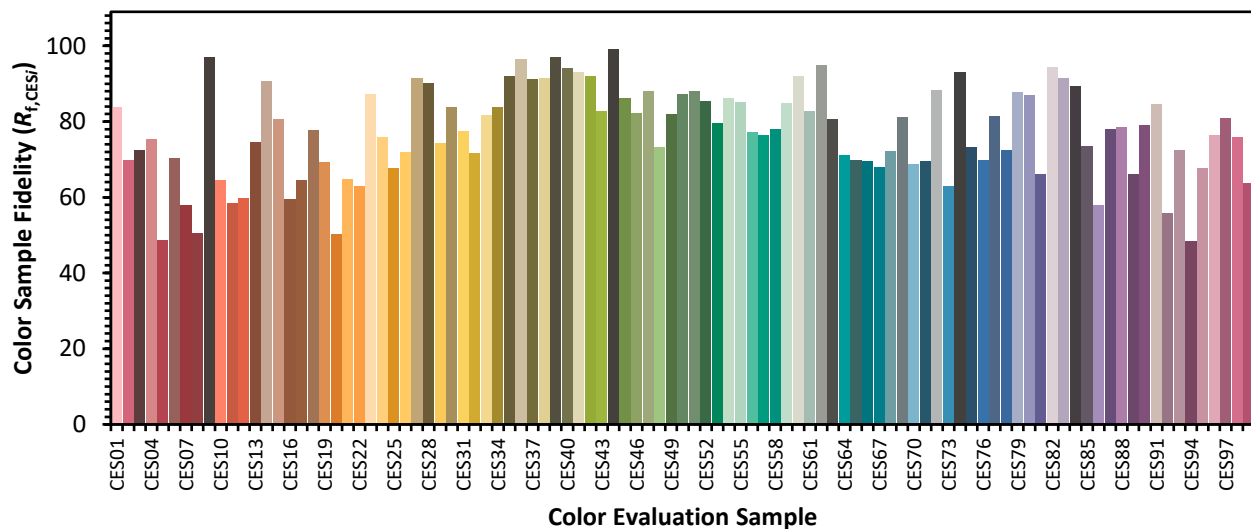


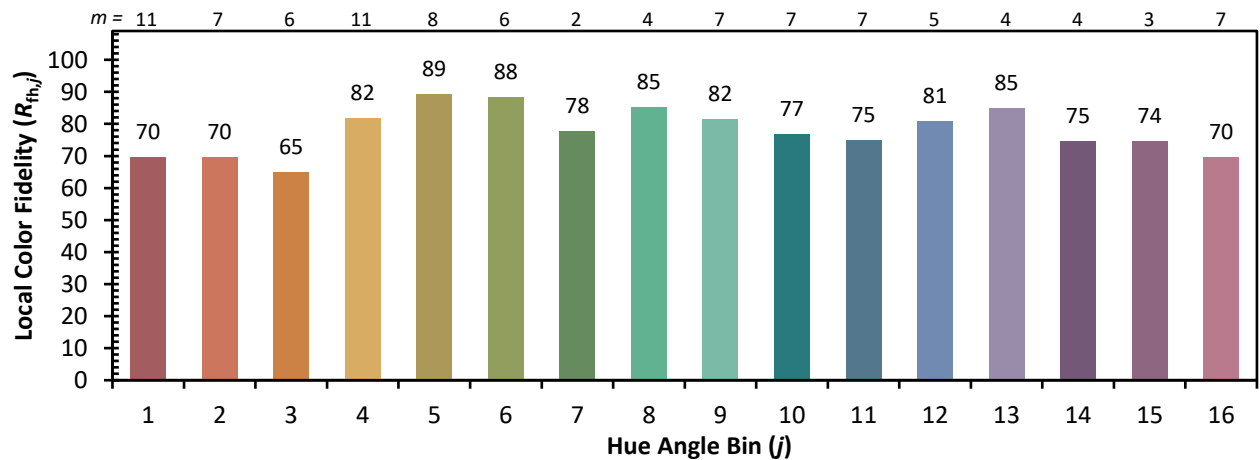
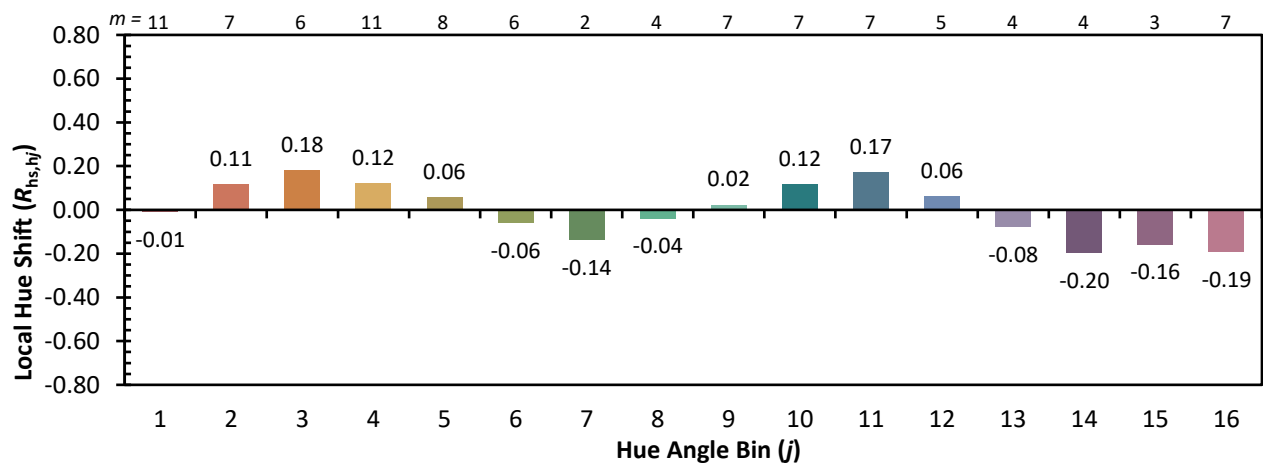
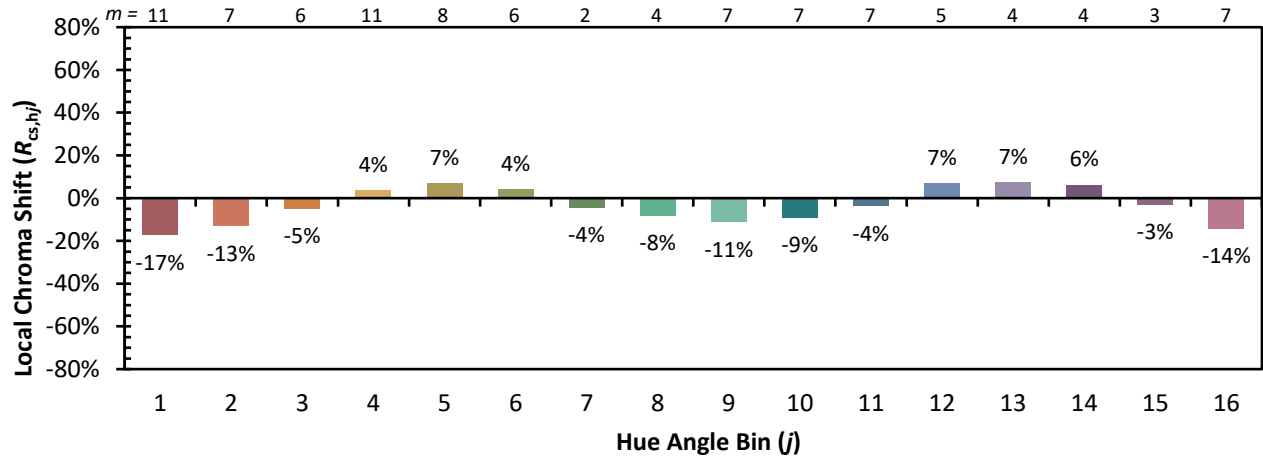
### Color Vector Graphics



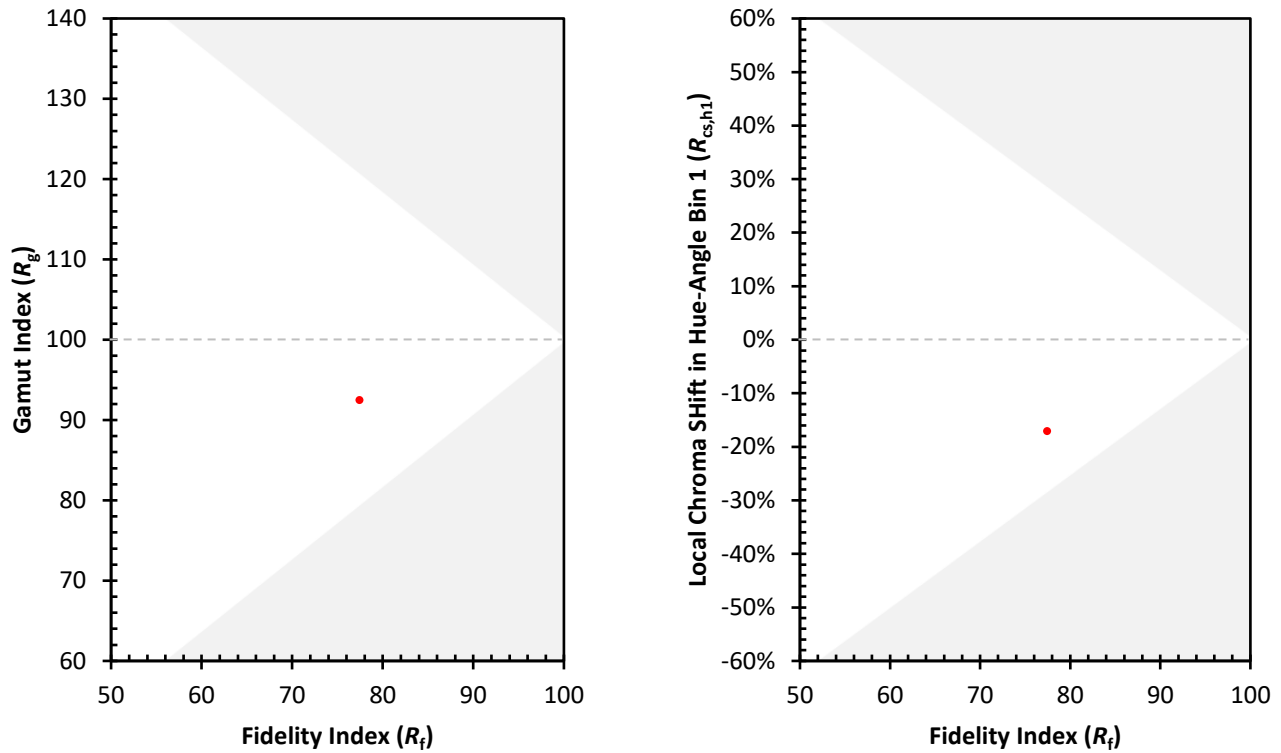
**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 72 | CES51 = 88 | CES76 = 70 |
| CES02 = 63 | CES27 = 91 | CES52 = 85 | CES77 = 81 |
| CES03 = 31 | CES28 = 90 | CES53 = 80 | CES78 = 73 |
| CES04 = 71 | CES29 = 74 | CES54 = 86 | CES79 = 88 |
| CES05 = 50 | CES30 = 84 | CES55 = 85 | CES80 = 87 |
| CES06 = 52 | CES31 = 77 | CES56 = 77 | CES81 = 66 |
| CES07 = 42 | CES32 = 72 | CES57 = 76 | CES82 = 95 |
| CES08 = 40 | CES33 = 82 | CES58 = 78 | CES83 = 91 |
| CES09 = 29 | CES34 = 84 | CES59 = 85 | CES84 = 89 |
| CES10 = 77 | CES35 = 92 | CES60 = 92 | CES85 = 74 |
| CES11 = 60 | CES36 = 96 | CES61 = 83 | CES86 = 58 |
| CES12 = 66 | CES37 = 91 | CES62 = 95 | CES87 = 78 |
| CES13 = 43 | CES38 = 92 | CES63 = 81 | CES88 = 78 |
| CES14 = 74 | CES39 = 97 | CES64 = 71 | CES89 = 66 |
| CES15 = 72 | CES40 = 94 | CES65 = 70 | CES90 = 79 |
| CES16 = 47 | CES41 = 93 | CES66 = 70 | CES91 = 85 |
| CES17 = 50 | CES42 = 92 | CES67 = 68 | CES92 = 56 |
| CES18 = 57 | CES43 = 83 | CES68 = 72 | CES93 = 73 |
| CES19 = 73 | CES44 = 99 | CES69 = 81 | CES94 = 48 |
| CES20 = 67 | CES45 = 86 | CES70 = 69 | CES95 = 68 |
| CES21 = 87 | CES46 = 82 | CES71 = 70 | CES96 = 77 |
| CES22 = 80 | CES47 = 88 | CES72 = 88 | CES97 = 81 |
| CES23 = 92 | CES48 = 73 | CES73 = 63 | CES98 = 76 |
| CES24 = 91 | CES49 = 82 | CES74 = 93 | CES99 = 64 |
| CES25 = 73 | CES50 = 87 | CES75 = 73 |            |



**Color Rendition by Hue-Angle Bin**


**Measure Comparisons**



(END OF REPORT)