

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: P980828

Luminaire Tested: **UFLD-L-CA4-250-740-U-66**

Issue Date: 04/10/2025



**Test Information**

Test Method: LM-79-08  
Report Number: P980828  
Test Lab: INNOVATION CENTER(G2)  
Issue Date: 04/10/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: UFLD-L-CA4-250-740-U-66  
Description: UTILITY FLOOD LARGE SIZE 250W 70CRI 4000K LED FIXTURE NEMA 6  
Light Source: (4) 4000K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 41915.1 lumens  
Efficiency: N/A  
Efficacy: 165.7 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 0.67' x H: 0')  
IES Classification: Type I - Short  
BUG Rating: B5 - U0 - G2

Input Watts (W): 253  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.99  
Total Harmonic Distortion (THDi): 3.50%  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT

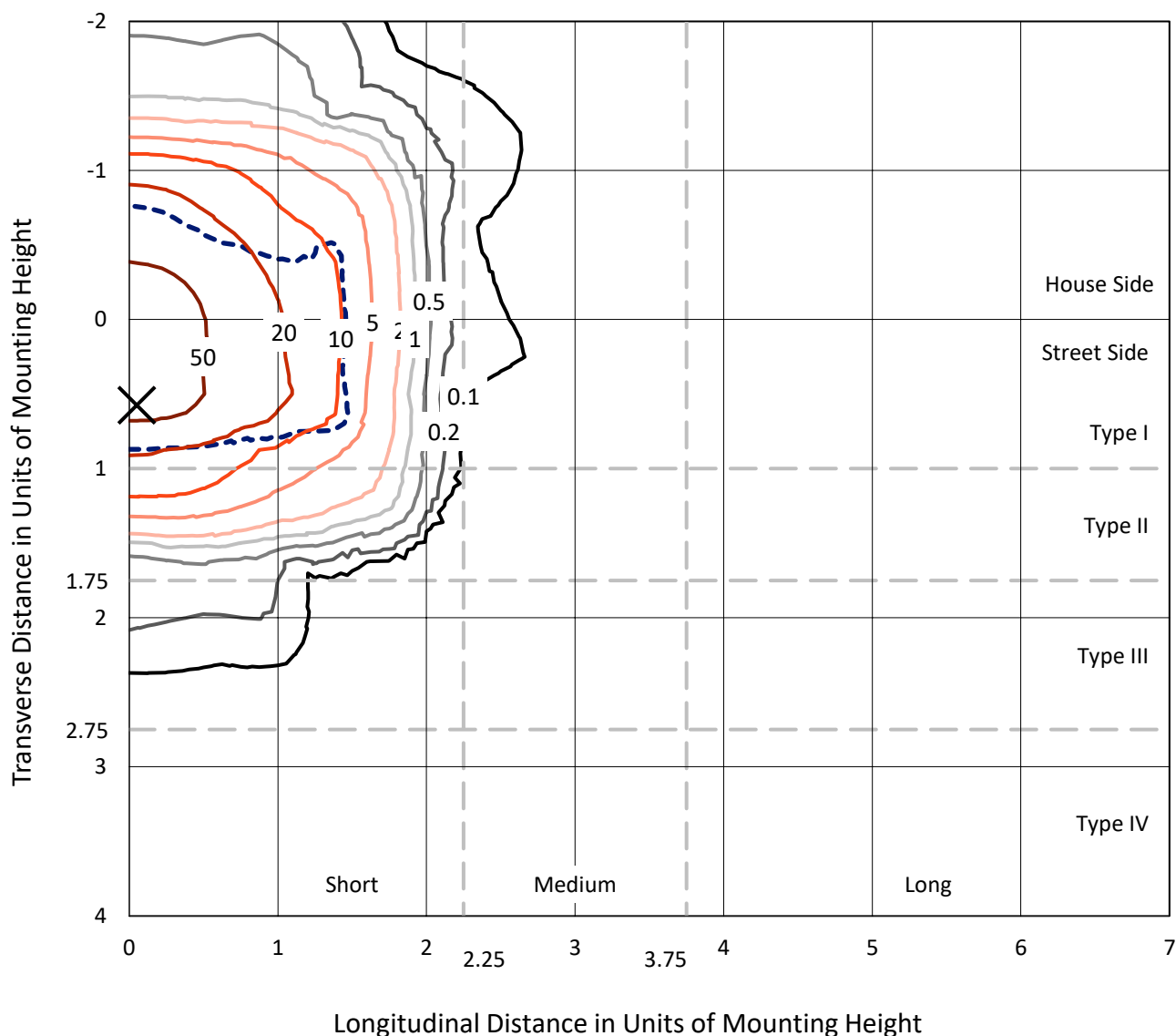
REPORT NUMBER: P980828

CATALOG NUMBER: UFLD-L-CA4-250-740-U-66

## Iso-Footcandle Lines of Horizontal Illumination

× Max cd

--- 1/2 Max cd

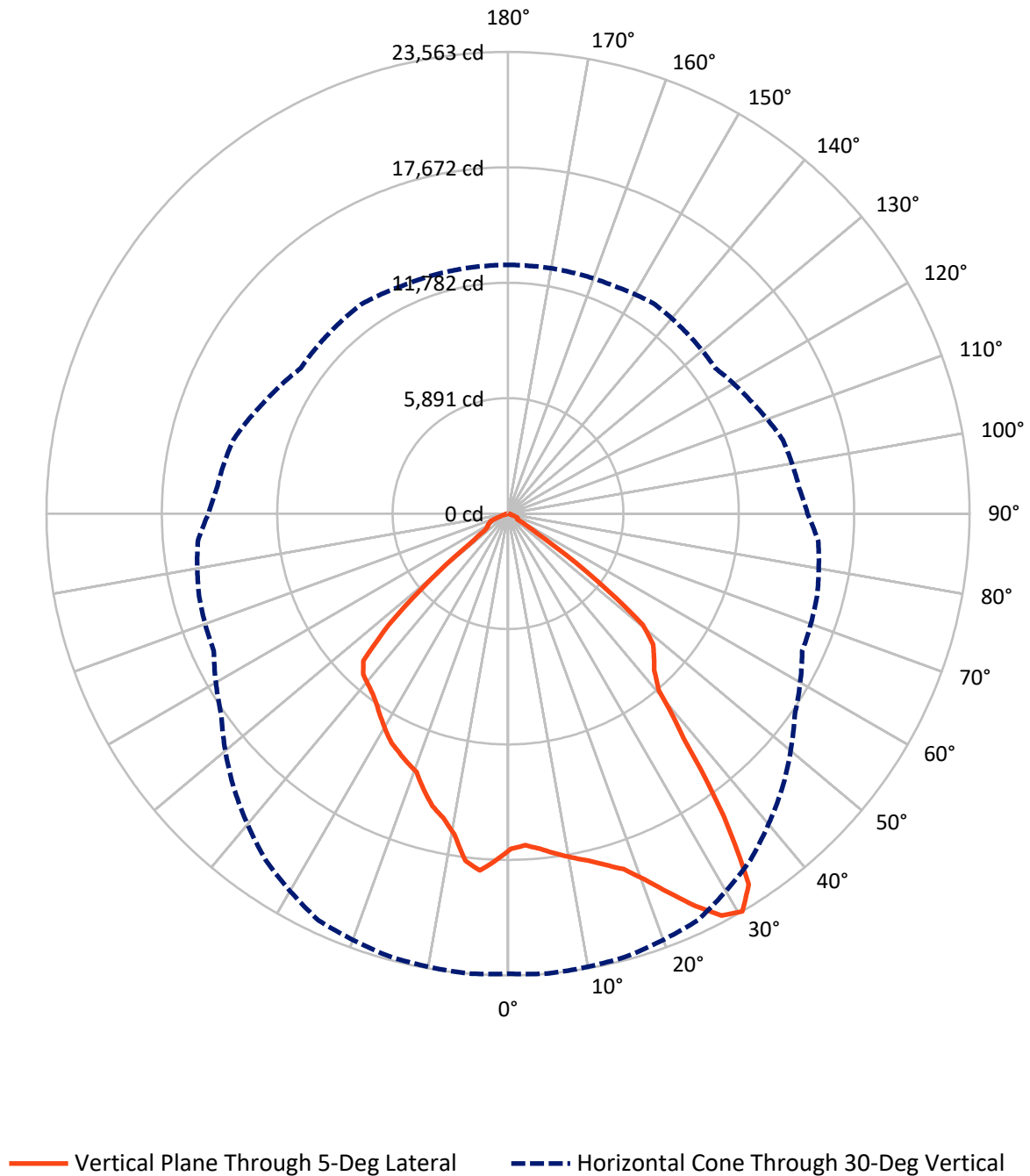


Based on 15 foot mounting height. Maximum calculated value = 77.9 fc

Type I - Short - N/A

REPORT NUMBER: P980828  
CATALOG NUMBER: UFLD-L-CA4-250-740-U-66

## Luminous Intensity Polar Plot



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CATALOG NUMBER: UFLD-L-CA4-250-740-U-66

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 18538.6  | 0.0    | 18538.6 |
|                    | % Fixture | 44.2     | 0.0    | 44.2    |
| <b>Street Side</b> | Lumens    | 23376.5  | 0.0    | 23376.5 |
|                    | % Fixture | 55.8     | 0.0    | 55.8    |
| <b>Total</b>       | Lumens    | 41915.1  | 0.0    | 41915.1 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 1673.6  | 4.0       |
| 10°-20°   | 4848.1  | 11.6      |
| 20°-30°   | 7725.9  | 18.4      |
| 30°-40°   | 9658.6  | 23.0      |
| 40°-50°   | 9478.4  | 22.6      |
| 50°-60°   | 6776.5  | 16.2      |
| 60°-70°   | 1499.3  | 3.6       |
| 70°-80°   | 230.3   | 0.5       |
| 80°-90°   | 24.4    | 0.1       |
| 90°-100°  | 0.0     | 0.0       |
| 100°-110° | 0.0     | 0.0       |
| 110°-120° | 0.0     | 0.0       |
| 120°-130° | 0.0     | 0.0       |
| 130°-140° | 0.0     | 0.0       |
| 140°-150° | 0.0     | 0.0       |
| 150°-160° | 0.0     | 0.0       |
| 160°-170° | 0.0     | 0.0       |
| 170°-180° | 0.0     | 0.0       |
| 0°-90°    | 41915.1 | 100.0     |
| 0°-180°   | 41915.1 | 100.0     |

**Coefficient of Utilization**



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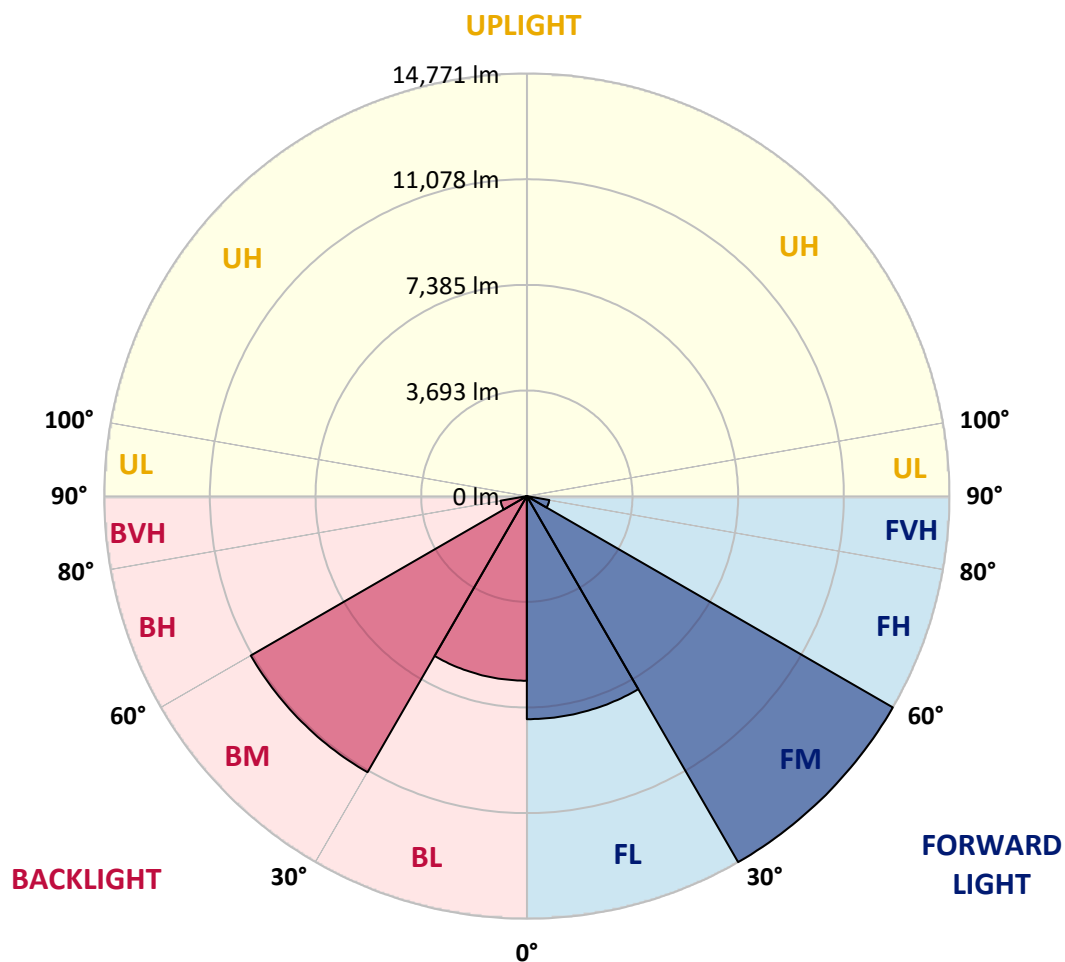
CATALOG NUMBER: UFLD-L-CA4-250-740-U-66

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|---------|-----------|-------------------------|------|---------|
|      |             |         |           | B                       | U    | G       |
| FL   | (0°-30°)    | 7795.8  | 18.6      |                         |      |         |
| FM   | (30°-60°)   | 14770.9 | 35.2      |                         |      |         |
| FH   | (60°-80°)   | 797.5   | 1.9       |                         |      | G1/1800 |
| FVH  | (80°-90°)   | 12.3    | 0.0       |                         |      | G1/100  |
| BL   | (0°-30°)    | 6451.8  | 15.4      | B5                      |      |         |
| BM   | (30°-60°)   | 11142.6 | 26.6      | B5                      |      |         |
| BH   | (60°-80°)   | 932.2   | 2.2       | B2/1000                 |      | G2/1000 |
| BVH  | (80°-90°)   | 12.1    | 0.0       |                         |      | G1/100  |
| UL   | (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0     | 0.0       |                         | U0/0 |         |

**BUG Rating: B5-U0-G2**

Type I Short



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 65°     | 75°     | 85°     | 90°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 17108.3 | 17108.3 | 17108.3 | 17108.3 | 17108.3 | 17108.3 | 17108.3 | 17108.3 | 17108.3 | 17108.3 | 17108.3 |
| 2.5°  | 16916.8 | 16944.2 | 16971.5 | 17012.6 | 17067.3 | 17094.6 | 17067.3 | 17039.9 | 17026.2 | 17053.6 | 17067.3 |
| 5°    | 17149.3 | 17190.3 | 17204.0 | 17231.4 | 17258.7 | 17231.4 | 17217.7 | 17190.3 | 17176.7 | 17190.3 | 17231.4 |
| 7.5°  | 17491.2 | 17518.6 | 17504.9 | 17491.2 | 17477.5 | 17381.8 | 17286.1 | 17245.0 | 17245.0 | 17286.1 | 17395.5 |
| 10°   | 17792.1 | 17846.8 | 17778.4 | 17723.7 | 17628.0 | 17477.5 | 17313.4 | 17217.7 | 17245.0 | 17327.1 | 17463.9 |
| 12.5° | 18175.0 | 18175.0 | 18106.6 | 18051.9 | 17833.1 | 17655.3 | 17436.5 | 17286.1 | 17286.1 | 17436.5 | 17586.9 |
| 15°   | 18640.0 | 18598.9 | 18571.6 | 18421.2 | 18161.3 | 17874.1 | 17600.6 | 17381.8 | 17340.8 | 17573.3 | 17669.0 |
| 17.5° | 19228.0 | 19077.6 | 19009.2 | 18749.4 | 18393.8 | 18024.6 | 17655.3 | 17477.5 | 17354.5 | 17600.6 | 17491.2 |
| 20°   | 20034.9 | 19925.5 | 19706.7 | 19296.4 | 18571.6 | 18092.9 | 17655.3 | 17422.8 | 17327.1 | 17463.9 | 17354.5 |
| 22.5° | 21074.2 | 21005.9 | 20513.5 | 19993.9 | 19036.6 | 18147.6 | 17586.9 | 17272.4 | 17245.0 | 17176.7 | 16944.2 |
| 25°   | 22346.1 | 22168.3 | 21662.3 | 20923.8 | 19734.0 | 18681.0 | 17573.3 | 16998.9 | 16903.2 | 16725.4 | 16315.1 |
| 27.5° | 23426.5 | 23235.0 | 22619.6 | 21963.2 | 20691.3 | 19474.2 | 17682.7 | 16670.7 | 16561.3 | 16438.2 | 15932.2 |
| 30°   | 23481.2 | 23563.2 | 23399.1 | 22906.8 | 21580.2 | 19802.4 | 17874.1 | 16574.9 | 16328.8 | 15891.2 | 15289.4 |
| 32.5° | 22373.4 | 22564.9 | 22961.5 | 23139.3 | 22250.4 | 20199.0 | 18038.2 | 16616.0 | 16164.7 | 15111.6 | 14619.3 |
| 35°   | 18585.3 | 18968.2 | 20595.6 | 22127.3 | 22441.8 | 20773.4 | 18175.0 | 16616.0 | 16110.0 | 14550.9 | 14168.0 |
| 37.5° | 14277.4 | 14592.0 | 15973.2 | 18749.4 | 21593.9 | 21128.9 | 18475.9 | 16520.2 | 16041.6 | 14592.0 | 14072.3 |
| 40°   | 11665.4 | 11843.2 | 12444.9 | 14332.1 | 18612.6 | 20540.9 | 18776.7 | 16629.6 | 15836.5 | 14619.3 | 14127.0 |
| 42.5° | 10954.2 | 10940.6 | 10817.5 | 11514.9 | 14195.4 | 18817.8 | 18981.9 | 16903.2 | 15494.6 | 14441.5 | 14031.3 |
| 45°   | 10475.6 | 10448.2 | 10338.8 | 10475.6 | 11227.7 | 15398.8 | 18831.4 | 17395.5 | 15070.6 | 13812.5 | 13538.9 |
| 47.5° | 9955.9  | 9969.6  | 9928.6  | 9983.3  | 9846.5  | 11692.7 | 17983.5 | 17600.6 | 14345.8 | 12759.4 | 12663.7 |
| 50°   | 8711.4  | 8916.6  | 9463.6  | 9518.3  | 9162.7  | 9436.2  | 15398.8 | 17504.9 | 13826.1 | 12458.6 | 12376.5 |
| 52.5° | 5415.6  | 5743.8  | 7357.5  | 8725.1  | 8520.0  | 8520.0  | 11747.4 | 17641.6 | 12896.2 | 12349.2 | 12403.9 |
| 55°   | 1914.6  | 2160.8  | 3938.6  | 6003.6  | 7631.0  | 7781.5  | 9285.8  | 15699.7 | 12786.8 | 12540.6 | 12595.3 |
| 57.5° | 478.6   | 588.1   | 1203.5  | 2598.4  | 5142.1  | 7056.7  | 8301.1  | 12964.6 | 9709.7  | 9367.8  | 9504.6  |
| 60°   | 560.7   | 547.0   | 752.2   | 834.2   | 1996.7  | 5579.7  | 7480.6  | 8752.4  | 6263.5  | 5866.9  | 5935.3  |
| 62.5° | 601.7   | 560.7   | 588.1   | 738.5   | 328.2   | 2735.1  | 5962.6  | 5210.4  | 2584.7  | 1914.6  | 2024.0  |
| 65°   | 533.4   | 506.0   | 465.0   | 683.8   | 232.5   | 506.0   | 3514.7  | 1531.7  | 369.2   | 588.1   | 533.4   |
| 67.5° | 355.6   | 369.2   | 382.9   | 547.0   | 218.8   | 218.8   | 465.0   | 382.9   | 259.8   | 533.4   | 465.0   |
| 70°   | 205.1   | 218.8   | 259.8   | 328.2   | 218.8   | 177.8   | 205.1   | 314.5   | 218.8   | 533.4   | 465.0   |
| 72.5° | 123.1   | 123.1   | 123.1   | 136.8   | 218.8   | 150.4   | 136.8   | 259.8   | 191.5   | 492.3   | 465.0   |
| 75°   | 95.7    | 95.7    | 95.7    | 82.1    | 191.5   | 95.7    | 95.7    | 205.1   | 164.1   | 355.6   | 355.6   |
| 77.5° | 82.1    | 82.1    | 82.1    | 68.4    | 109.4   | 82.1    | 82.1    | 150.4   | 150.4   | 177.8   | 205.1   |
| 80°   | 54.7    | 54.7    | 54.7    | 54.7    | 68.4    | 68.4    | 54.7    | 82.1    | 68.4    | 82.1    | 95.7    |
| 82.5° | 27.4    | 41.0    | 41.0    | 27.4    | 41.0    | 41.0    | 41.0    | 54.7    | 41.0    | 54.7    | 54.7    |
| 85°   | 13.7    | 13.7    | 13.7    | 13.7    | 13.7    | 13.7    | 13.7    | 27.4    | 13.7    | 13.7    | 27.4    |
| 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     |

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CATALOG NUMBER: UFLD-L-CA4-250-740-U-66

**CANDELA DISTRIBUTION (continued):**

|       | 95°     | 105°    | 115°    | 125°    | 135°    | 145°    | 155°    | 165°    | 175°    | 180°    |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 17108.3 | 17108.3 | 17108.3 | 17108.3 | 17108.3 | 17108.3 | 17108.3 | 17108.3 | 17108.3 | 17108.3 |
| 2.5°  | 17094.6 | 17163.0 | 17258.7 | 17409.2 | 17463.9 | 17559.6 | 17641.6 | 17710.0 | 17710.0 | 17682.7 |
| 5°    | 17313.4 | 17504.9 | 17764.7 | 17997.2 | 18079.3 | 18175.0 | 18216.0 | 18284.4 | 18270.7 | 18257.1 |
| 7.5°  | 17504.9 | 17805.8 | 18079.3 | 18243.4 | 18216.0 | 18092.9 | 18010.9 | 17901.5 | 17860.5 | 17887.8 |
| 10°   | 17655.3 | 17928.8 | 18051.9 | 17942.5 | 17614.3 | 17327.1 | 16957.9 | 16711.7 | 16588.6 | 16629.6 |
| 12.5° | 17710.0 | 17805.8 | 17696.3 | 17094.6 | 16684.3 | 16410.8 | 16110.0 | 15945.9 | 15877.5 | 15891.2 |
| 15°   | 17723.7 | 17504.9 | 16903.2 | 16451.9 | 16151.0 | 15809.1 | 15562.9 | 15412.5 | 15412.5 | 15426.2 |
| 17.5° | 17436.5 | 16903.2 | 16383.5 | 16041.6 | 15617.6 | 15262.1 | 15125.3 | 15070.6 | 14728.7 | 14783.4 |
| 20°   | 17176.7 | 16410.8 | 16123.6 | 15590.3 | 15084.3 | 14851.8 | 14058.6 | 13976.6 | 13990.2 | 14003.9 |
| 22.5° | 16629.6 | 16055.3 | 15795.4 | 15098.0 | 14523.6 | 13880.8 | 13771.4 | 13689.4 | 13703.0 | 13703.0 |
| 25°   | 15877.5 | 15549.3 | 15193.7 | 14468.9 | 13771.4 | 13648.3 | 13566.3 | 13456.9 | 13402.2 | 13415.9 |
| 27.5° | 15453.5 | 15043.3 | 14386.8 | 13771.4 | 13320.1 | 13374.8 | 13279.1 | 13115.0 | 13115.0 | 13128.7 |
| 30°   | 14920.2 | 14523.6 | 13648.3 | 12923.5 | 12964.6 | 13046.6 | 12814.1 | 12732.1 | 12691.0 | 12691.0 |
| 32.5° | 14263.7 | 13716.7 | 12950.9 | 12267.1 | 12513.3 | 12485.9 | 12198.7 | 12226.1 | 12253.4 | 12226.1 |
| 35°   | 13771.4 | 13060.3 | 12417.5 | 12048.3 | 11952.6 | 11843.2 | 11692.7 | 11788.4 | 11829.5 | 11802.1 |
| 37.5° | 13648.3 | 12800.4 | 12130.3 | 11870.5 | 11501.3 | 11296.1 | 11337.1 | 11432.9 | 11487.6 | 11473.9 |
| 40°   | 13607.3 | 12540.6 | 11884.2 | 11610.7 | 11118.3 | 10940.6 | 10995.3 | 11186.7 | 11255.1 | 11241.4 |
| 42.5° | 13552.6 | 12362.8 | 11733.7 | 11405.5 | 10721.7 | 10598.7 | 10858.5 | 11036.3 | 11050.0 | 11036.3 |
| 45°   | 13265.4 | 12171.4 | 11638.0 | 10981.6 | 10120.0 | 10270.4 | 10598.7 | 10694.4 | 10530.3 | 10461.9 |
| 47.5° | 12595.3 | 11815.8 | 11350.8 | 10461.9 | 9627.7  | 9914.9  | 9955.9  | 8916.6  | 8314.8  | 8178.1  |
| 50°   | 12403.9 | 11829.5 | 11022.6 | 9846.5  | 9326.8  | 9614.0  | 7822.5  | 5976.3  | 5224.1  | 5073.7  |
| 52.5° | 12349.2 | 11692.7 | 11145.7 | 9203.7  | 9217.4  | 8109.7  | 4936.9  | 2926.6  | 2352.2  | 2242.8  |
| 55°   | 12485.9 | 12294.4 | 11350.8 | 8820.8  | 8574.7  | 5278.8  | 2297.5  | 1381.2  | 1422.3  | 1381.2  |
| 57.5° | 9422.6  | 10284.1 | 11597.0 | 8219.1  | 6263.5  | 2543.7  | 1449.6  | 1340.2  | 1244.5  | 1217.1  |
| 60°   | 5880.5  | 6701.1  | 8492.6  | 7070.3  | 3213.8  | 1518.0  | 1477.0  | 1244.5  | 1203.5  | 1189.8  |
| 62.5° | 1941.9  | 2981.3  | 4868.5  | 4649.7  | 888.9   | 1504.3  | 1490.7  | 1107.7  | 1107.7  | 1107.7  |
| 65°   | 492.3   | 506.0   | 1340.2  | 1600.1  | 656.4   | 1340.2  | 1422.3  | 1039.4  | 1012.0  | 1053.0  |
| 67.5° | 423.9   | 382.9   | 711.1   | 629.1   | 547.0   | 929.9   | 1244.5  | 998.3   | 943.6   | 943.6   |
| 70°   | 423.9   | 451.3   | 697.5   | 588.1   | 341.9   | 506.0   | 902.6   | 615.4   | 547.0   | 506.0   |
| 72.5° | 396.6   | 437.6   | 615.4   | 533.4   | 232.5   | 246.2   | 396.6   | 205.1   | 191.5   | 164.1   |
| 75°   | 341.9   | 355.6   | 478.6   | 478.6   | 246.2   | 123.1   | 164.1   | 136.8   | 136.8   | 123.1   |
| 77.5° | 232.5   | 177.8   | 273.5   | 341.9   | 177.8   | 82.1    | 68.4    | 68.4    | 68.4    | 54.7    |
| 80°   | 123.1   | 68.4    | 68.4    | 54.7    | 68.4    | 68.4    | 41.0    | 54.7    | 54.7    | 41.0    |
| 82.5° | 68.4    | 41.0    | 41.0    | 27.4    | 27.4    | 41.0    | 27.4    | 27.4    | 27.4    | 27.4    |
| 85°   | 27.4    | 27.4    | 13.7    | 13.7    | 13.7    | 27.4    | 13.7    | 13.7    | 13.7    | 13.7    |
| 87.5° | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 13.7    | 13.7    |
| 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: SP1-2501-319-11

Test Date: 02/05/2025

Luminaire Tested: NFFLD-C55-7050-66

Data in this report applies to families of products including NFFLD-C55-7050-66

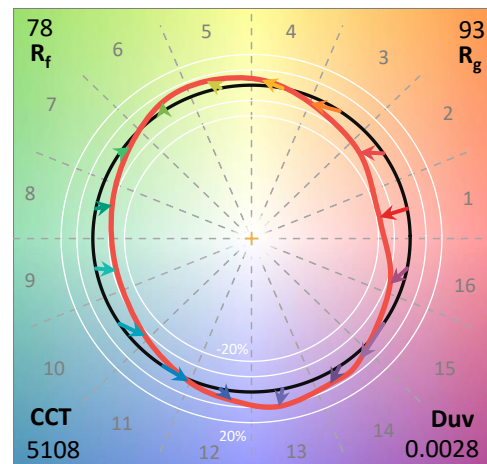
### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2501-319-11  
 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-C55-7050-66**  
 Description: LUMARK NIGHT FALCON 16900LM NEMA 6

### Spectral Parameters

CCT (K): 5108  
 CIE  $u'$ : 0.2083  
 CIE  $v'$ : 0.4860  
 Duv: 0.0028  
 CIE x: 0.3426  
 CIE y: 0.3552  
 CIE z: 0.3022  
 Peak Wavelength (nm): 449  
 Dominant Wavelength (nm): 568  
 Purity: 9.36717  
 R<sub>f</sub>: 77.8  
 R<sub>g</sub>: 93.2

CRI (Ra): 75.3  
 R1: 71.3  
 R2: 82.0  
 R3: 90.0  
 R4: 74.3  
 R5: 73.5  
 R6: 75.6  
 R7: 81.5  
 R8: 54.1  
 R9: -33.6  
 R10: 58.1  
 R11: 71.9  
 R12: 56.4  
 R13: 73.5  
 R14: 94.6  
 R15: 63.4



### Test Conditions

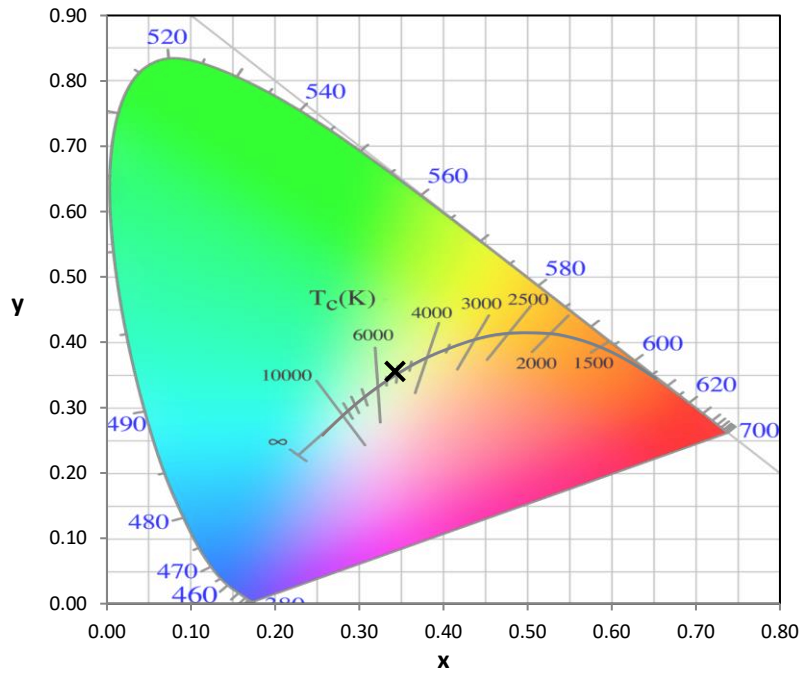
Stabilization Time: 48M  
 Operation Time: 1H 48M  
 Sphere Temperature (°C): 25.0

REPORT NUMBER: SP1-2501-319-11

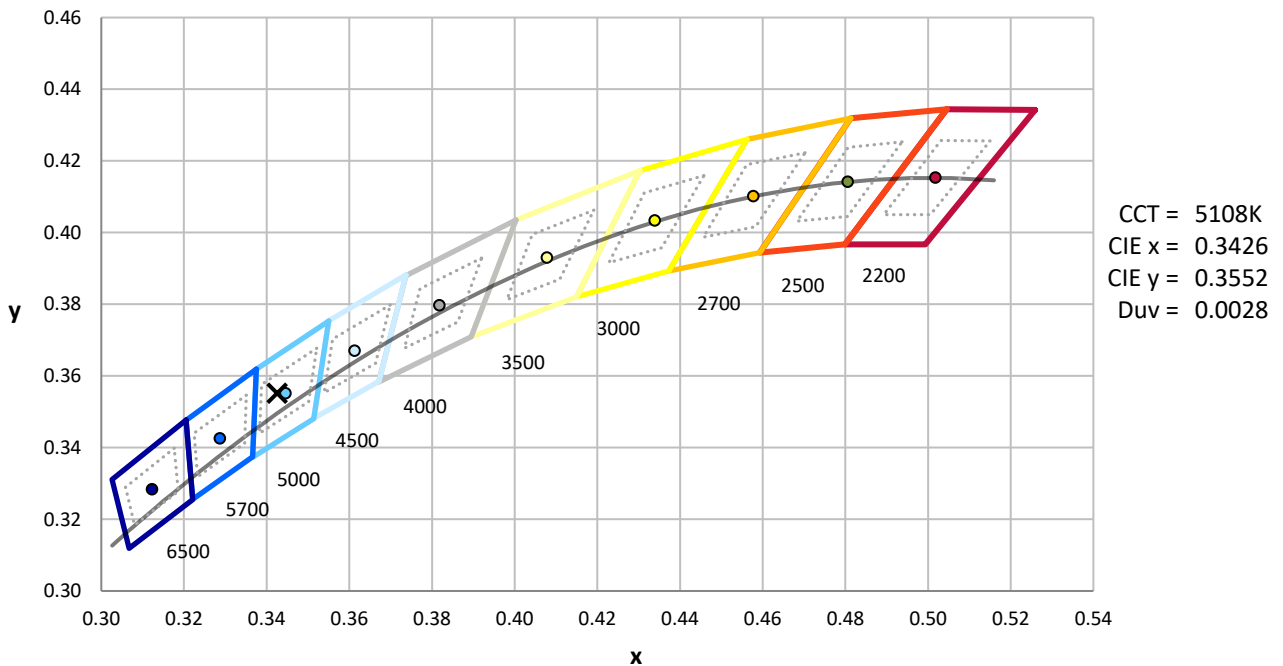
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| 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: SP1-2501-319-11

**CIE 1931 Chromaticity Diagram**



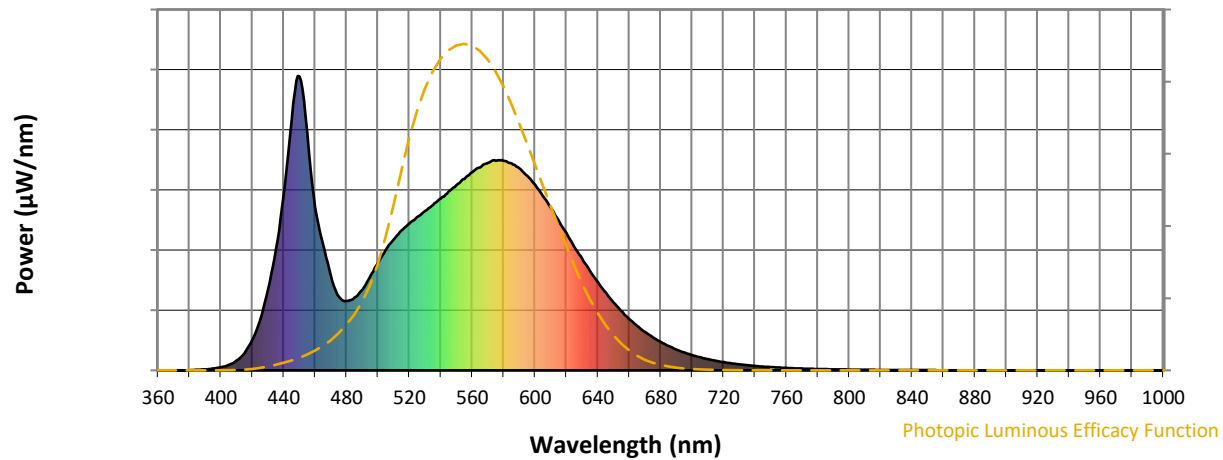
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 5000K 4-step quadrangle

REPORT NUMBER: SP1-2501-319-11

### Photopic Flux vs. Wavelength

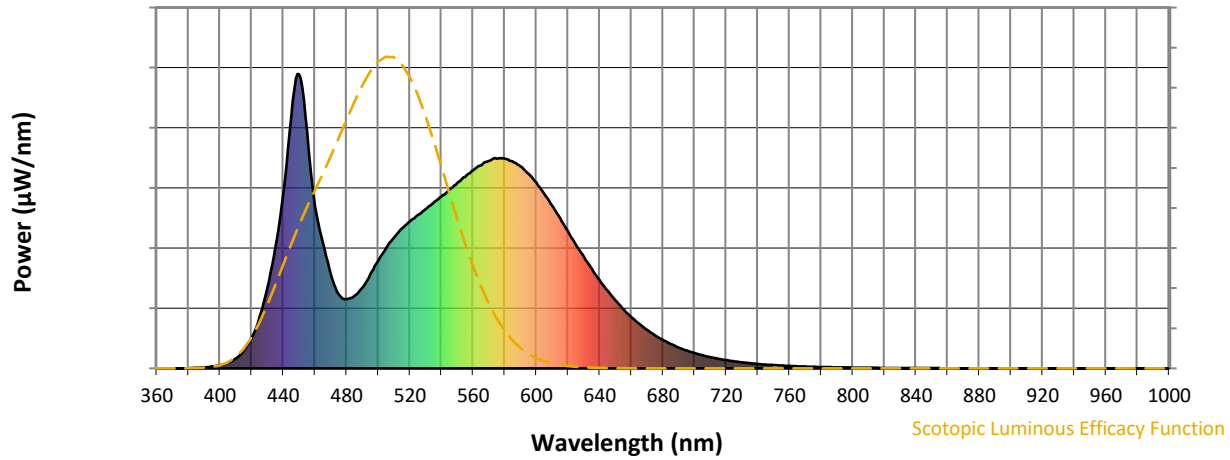


### Photopic Lumens: NR

| $\lambda$<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               | 274                                  | NR                             | 620               | 466                                  | NR                             | 750               | 11                                   | NR                             | 880               | 0                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 319                                  | NR                             | 625               | 420                                  | NR                             | 755               | 10                                   | NR                             | 885               | 0                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 366                                  | NR                             | 630               | 380                                  | NR                             | 760               | 8                                    | NR                             | 890               | 0                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 409                                  | NR                             | 635               | 338                                  | NR                             | 765               | 7                                    | NR                             | 895               | 0                                    | NR                             |
| 380               | 0                                    | NR                             | 510               | 445                                  | NR                             | 640               | 300                                  | NR                             | 770               | 6                                    | NR                             | 900               | 0                                    | NR                             |
| 385               | 2                                    | NR                             | 515               | 475                                  | NR                             | 645               | 264                                  | NR                             | 775               | 5                                    | NR                             | 905               | 0                                    | NR                             |
| 390               | 4                                    | NR                             | 520               | 499                                  | NR                             | 650               | 230                                  | NR                             | 780               | 5                                    | NR                             | 910               | 0                                    | NR                             |
| 395               | 6                                    | NR                             | 525               | 520                                  | NR                             | 655               | 201                                  | NR                             | 785               | 4                                    | NR                             | 915               | 0                                    | NR                             |
| 400               | 10                                   | NR                             | 530               | 542                                  | NR                             | 660               | 174                                  | NR                             | 790               | 3                                    | NR                             | 920               | 0                                    | NR                             |
| 405               | 18                                   | NR                             | 535               | 562                                  | NR                             | 665               | 151                                  | NR                             | 795               | 3                                    | NR                             | 925               | 0                                    | NR                             |
| 410               | 33                                   | NR                             | 540               | 584                                  | NR                             | 670               | 131                                  | NR                             | 800               | 3                                    | NR                             | 930               | 0                                    | NR                             |
| 415               | 59                                   | NR                             | 545               | 607                                  | NR                             | 675               | 112                                  | NR                             | 805               | 2                                    | NR                             | 935               | 0                                    | NR                             |
| 420               | 103                                  | NR                             | 550               | 629                                  | NR                             | 680               | 97                                   | NR                             | 810               | 2                                    | NR                             | 940               | 0                                    | NR                             |
| 425               | 173                                  | NR                             | 555               | 650                                  | NR                             | 685               | 83                                   | NR                             | 815               | 2                                    | NR                             | 945               | 0                                    | NR                             |
| 430               | 274                                  | NR                             | 560               | 673                                  | NR                             | 690               | 71                                   | NR                             | 820               | 2                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 412                                  | NR                             | 565               | 690                                  | NR                             | 695               | 61                                   | NR                             | 825               | 1                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 595                                  | NR                             | 570               | 705                                  | NR                             | 700               | 52                                   | NR                             | 830               | 1                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 849                                  | NR                             | 575               | 712                                  | NR                             | 705               | 44                                   | NR                             | 835               | 1                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 999                                  | NR                             | 580               | 713                                  | NR                             | 710               | 38                                   | NR                             | 840               | 1                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 805                                  | NR                             | 585               | 703                                  | NR                             | 715               | 33                                   | NR                             | 845               | 1                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 555                                  | NR                             | 590               | 686                                  | NR                             | 720               | 28                                   | NR                             | 850               | 1                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 428                                  | NR                             | 595               | 661                                  | NR                             | 725               | 24                                   | NR                             | 855               | 1                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 319                                  | NR                             | 600               | 630                                  | NR                             | 730               | 20                                   | NR                             | 860               | 1                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 251                                  | NR                             | 605               | 593                                  | NR                             | 735               | 18                                   | NR                             | 865               | 1                                    | NR                             | 995               | 0                                    | NR                             |
| 480               | 236                                  | NR                             | 610               | 552                                  | NR                             | 740               | 15                                   | NR                             | 870               | 0                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 247                                  | NR                             | 615               | 510                                  | NR                             | 745               | 13                                   | NR                             | 875               | 0                                    | NR                             |                   |                                      |                                |

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### Scotopic Flux vs. Wavelength



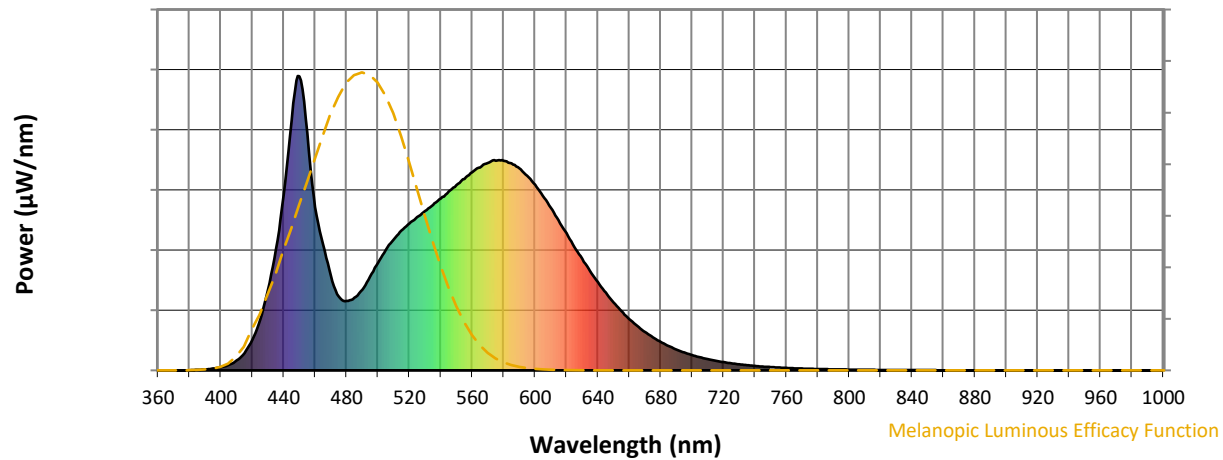
Scotopic Lumens: NR

S/P: 1.89

| λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 274                         | NR               | 620       | 466                         | NR               | 750       | 11                          | NR               | 880       | 0                           | NR               |
| 365       | 0                           | NR               | 495       | 319                         | NR               | 625       | 420                         | NR               | 755       | 10                          | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 366                         | NR               | 630       | 380                         | NR               | 760       | 8                           | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 409                         | NR               | 635       | 338                         | NR               | 765       | 7                           | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 445                         | NR               | 640       | 300                         | NR               | 770       | 6                           | NR               | 900       | 0                           | NR               |
| 385       | 2                           | NR               | 515       | 475                         | NR               | 645       | 264                         | NR               | 775       | 5                           | NR               | 905       | 0                           | NR               |
| 390       | 4                           | NR               | 520       | 499                         | NR               | 650       | 230                         | NR               | 780       | 5                           | NR               | 910       | 0                           | NR               |
| 395       | 6                           | NR               | 525       | 520                         | NR               | 655       | 201                         | NR               | 785       | 4                           | NR               | 915       | 0                           | NR               |
| 400       | 10                          | NR               | 530       | 542                         | NR               | 660       | 174                         | NR               | 790       | 3                           | NR               | 920       | 0                           | NR               |
| 405       | 18                          | NR               | 535       | 562                         | NR               | 665       | 151                         | NR               | 795       | 3                           | NR               | 925       | 0                           | NR               |
| 410       | 33                          | NR               | 540       | 584                         | NR               | 670       | 131                         | NR               | 800       | 3                           | NR               | 930       | 0                           | NR               |
| 415       | 59                          | NR               | 545       | 607                         | NR               | 675       | 112                         | NR               | 805       | 2                           | NR               | 935       | 0                           | NR               |
| 420       | 103                         | NR               | 550       | 629                         | NR               | 680       | 97                          | NR               | 810       | 2                           | NR               | 940       | 0                           | NR               |
| 425       | 173                         | NR               | 555       | 650                         | NR               | 685       | 83                          | NR               | 815       | 2                           | NR               | 945       | 0                           | NR               |
| 430       | 274                         | NR               | 560       | 673                         | NR               | 690       | 71                          | NR               | 820       | 2                           | NR               | 950       | 0                           | NR               |
| 435       | 412                         | NR               | 565       | 690                         | NR               | 695       | 61                          | NR               | 825       | 1                           | NR               | 955       | 0                           | NR               |
| 440       | 595                         | NR               | 570       | 705                         | NR               | 700       | 52                          | NR               | 830       | 1                           | NR               | 960       | 0                           | NR               |
| 445       | 849                         | NR               | 575       | 712                         | NR               | 705       | 44                          | NR               | 835       | 1                           | NR               | 965       | 0                           | NR               |
| 450       | 999                         | NR               | 580       | 713                         | NR               | 710       | 38                          | NR               | 840       | 1                           | NR               | 970       | 0                           | NR               |
| 455       | 805                         | NR               | 585       | 703                         | NR               | 715       | 33                          | NR               | 845       | 1                           | NR               | 975       | 0                           | NR               |
| 460       | 555                         | NR               | 590       | 686                         | NR               | 720       | 28                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 428                         | NR               | 595       | 661                         | NR               | 725       | 24                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 319                         | NR               | 600       | 630                         | NR               | 730       | 20                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 251                         | NR               | 605       | 593                         | NR               | 735       | 18                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 236                         | NR               | 610       | 552                         | NR               | 740       | 15                          | NR               | 870       | 0                           | NR               | 1000      | 0                           | NR               |
| 485       | 247                         | NR               | 615       | 510                         | NR               | 745       | 13                          | NR               | 875       | 0                           | NR               |           |                             |                  |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 3.96

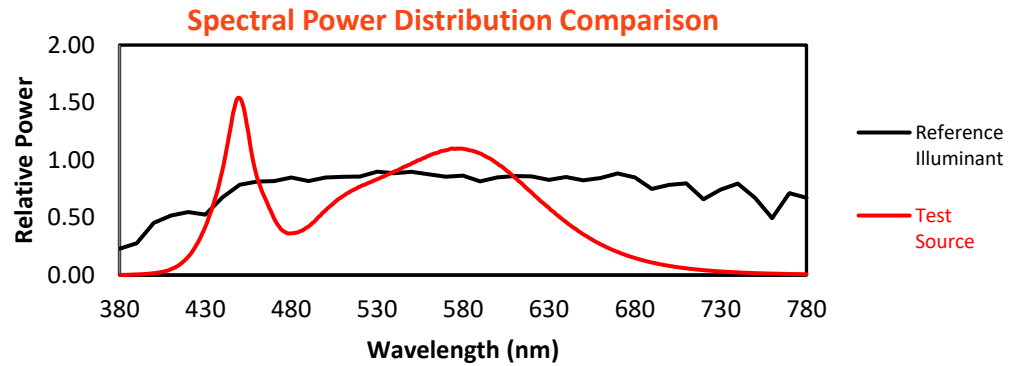
| λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 274                         | NR               | 620       | 466                         | NR               | 750       | 11                          | NR               | 880       | 0                           | NR               |
| 365       | 0                           | NR               | 495       | 319                         | NR               | 625       | 420                         | NR               | 755       | 10                          | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 366                         | NR               | 630       | 380                         | NR               | 760       | 8                           | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 409                         | NR               | 635       | 338                         | NR               | 765       | 7                           | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 445                         | NR               | 640       | 300                         | NR               | 770       | 6                           | NR               | 900       | 0                           | NR               |
| 385       | 2                           | NR               | 515       | 475                         | NR               | 645       | 264                         | NR               | 775       | 5                           | NR               | 905       | 0                           | NR               |
| 390       | 4                           | NR               | 520       | 499                         | NR               | 650       | 230                         | NR               | 780       | 5                           | NR               | 910       | 0                           | NR               |
| 395       | 6                           | NR               | 525       | 520                         | NR               | 655       | 201                         | NR               | 785       | 4                           | NR               | 915       | 0                           | NR               |
| 400       | 10                          | NR               | 530       | 542                         | NR               | 660       | 174                         | NR               | 790       | 3                           | NR               | 920       | 0                           | NR               |
| 405       | 18                          | NR               | 535       | 562                         | NR               | 665       | 151                         | NR               | 795       | 3                           | NR               | 925       | 0                           | NR               |
| 410       | 33                          | NR               | 540       | 584                         | NR               | 670       | 131                         | NR               | 800       | 3                           | NR               | 930       | 0                           | NR               |
| 415       | 59                          | NR               | 545       | 607                         | NR               | 675       | 112                         | NR               | 805       | 2                           | NR               | 935       | 0                           | NR               |
| 420       | 103                         | NR               | 550       | 629                         | NR               | 680       | 97                          | NR               | 810       | 2                           | NR               | 940       | 0                           | NR               |
| 425       | 173                         | NR               | 555       | 650                         | NR               | 685       | 83                          | NR               | 815       | 2                           | NR               | 945       | 0                           | NR               |
| 430       | 274                         | NR               | 560       | 673                         | NR               | 690       | 71                          | NR               | 820       | 2                           | NR               | 950       | 0                           | NR               |
| 435       | 412                         | NR               | 565       | 690                         | NR               | 695       | 61                          | NR               | 825       | 1                           | NR               | 955       | 0                           | NR               |
| 440       | 595                         | NR               | 570       | 705                         | NR               | 700       | 52                          | NR               | 830       | 1                           | NR               | 960       | 0                           | NR               |
| 445       | 849                         | NR               | 575       | 712                         | NR               | 705       | 44                          | NR               | 835       | 1                           | NR               | 965       | 0                           | NR               |
| 450       | 999                         | NR               | 580       | 713                         | NR               | 710       | 38                          | NR               | 840       | 1                           | NR               | 970       | 0                           | NR               |
| 455       | 805                         | NR               | 585       | 703                         | NR               | 715       | 33                          | NR               | 845       | 1                           | NR               | 975       | 0                           | NR               |
| 460       | 555                         | NR               | 590       | 686                         | NR               | 720       | 28                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 428                         | NR               | 595       | 661                         | NR               | 725       | 24                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 319                         | NR               | 600       | 630                         | NR               | 730       | 20                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 251                         | NR               | 605       | 593                         | NR               | 735       | 18                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 236                         | NR               | 610       | 552                         | NR               | 740       | 15                          | NR               | 870       | 0                           | NR               | 1000      | 0                           | NR               |
| 485       | 247                         | NR               | 615       | 510                         | NR               | 745       | 13                          | NR               | 875       | 0                           | NR               |           |                             |                  |

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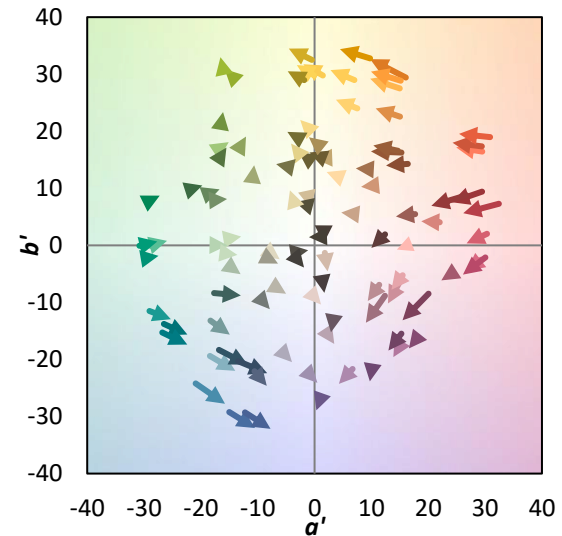
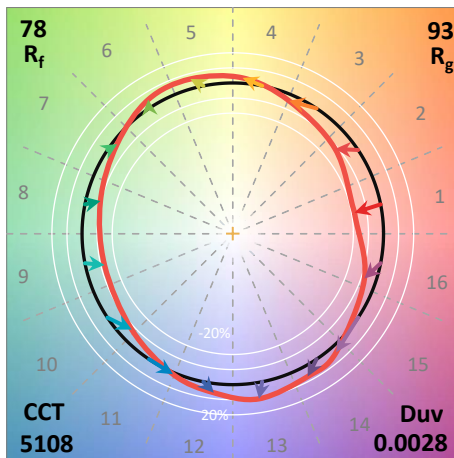
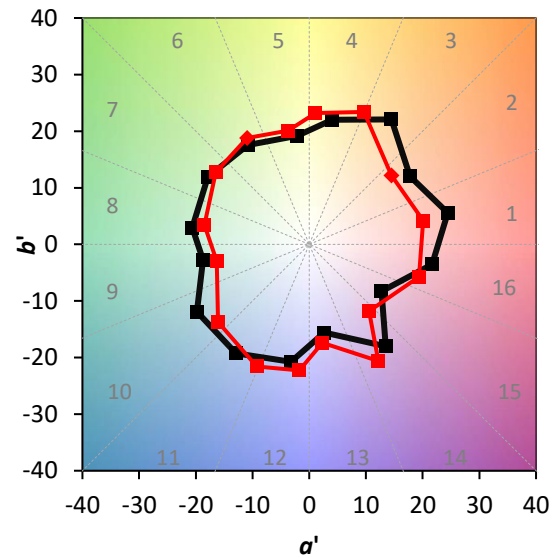
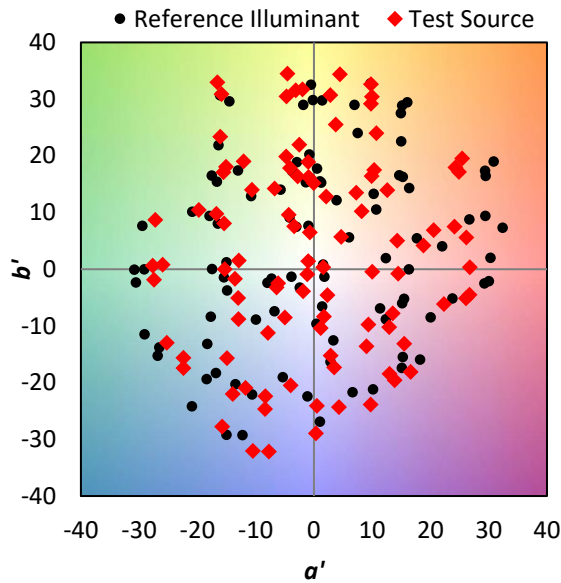
TM-30-18

### Summary

$R_f = 77.8$   
 $R_g = 93.2$   
 $\text{CIE } R_a = 75.3$   
 $R_g = -33.6$

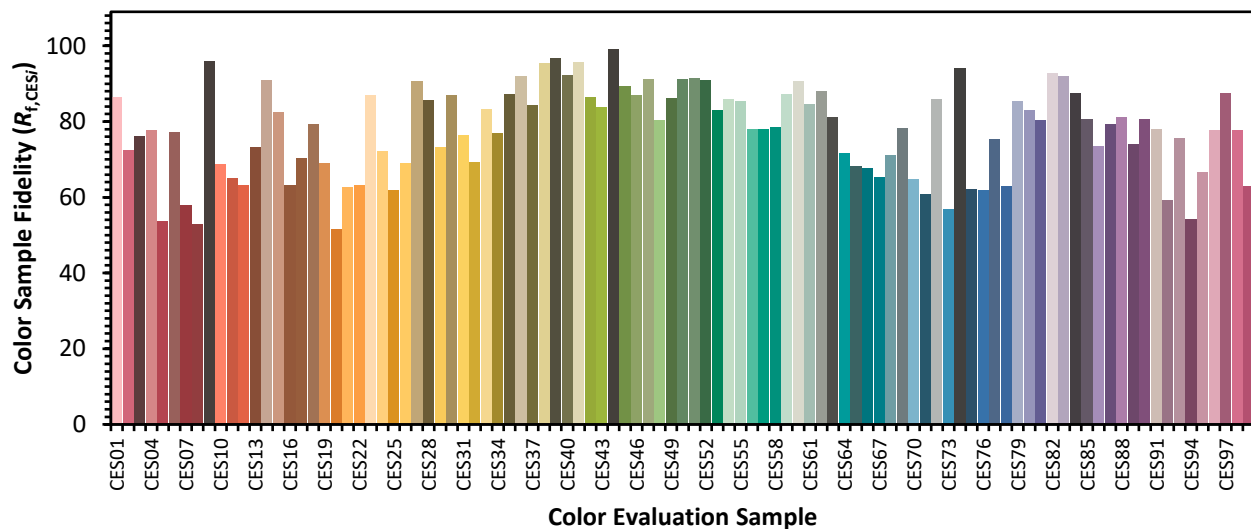


### Color Vector Graphics

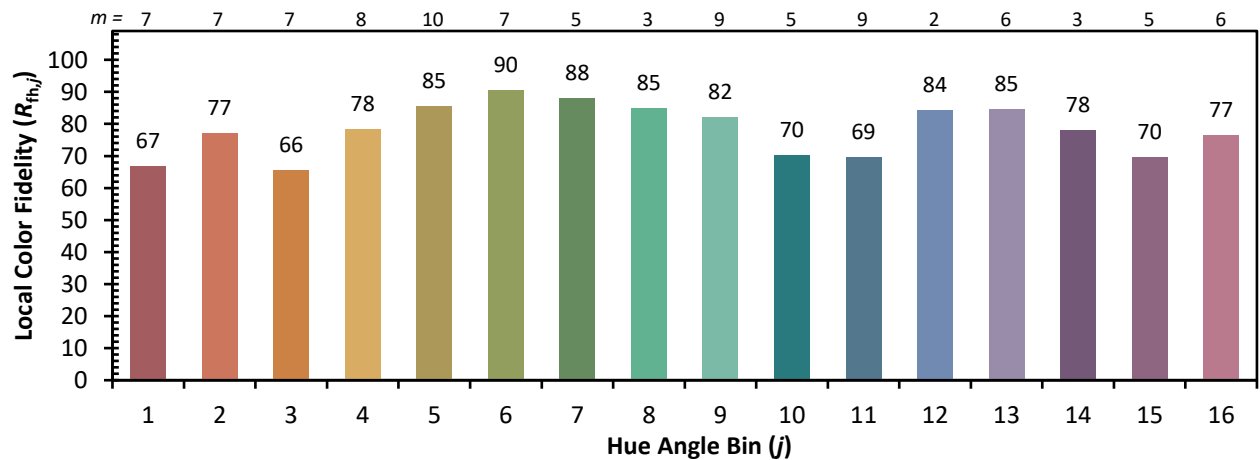
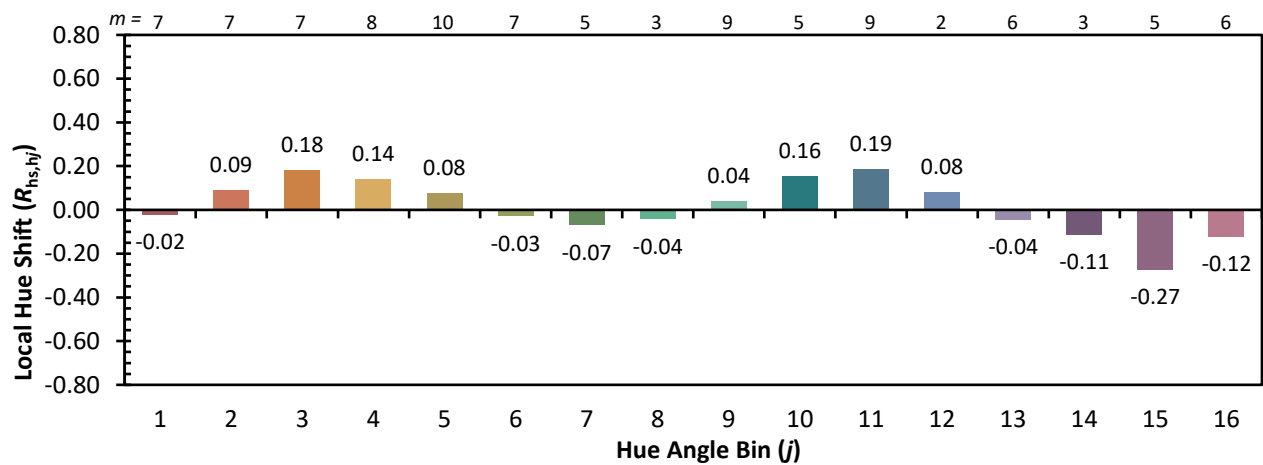
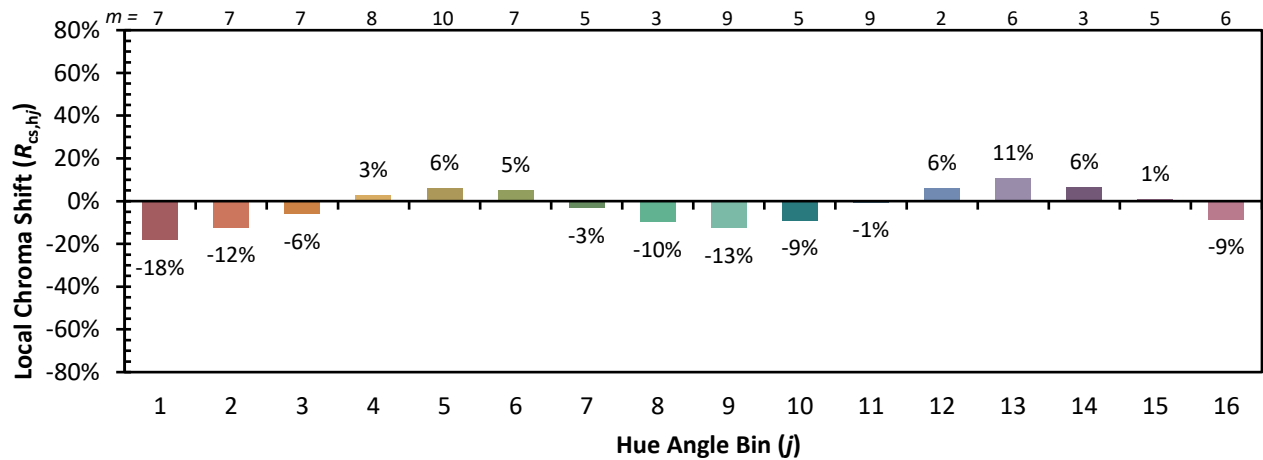


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

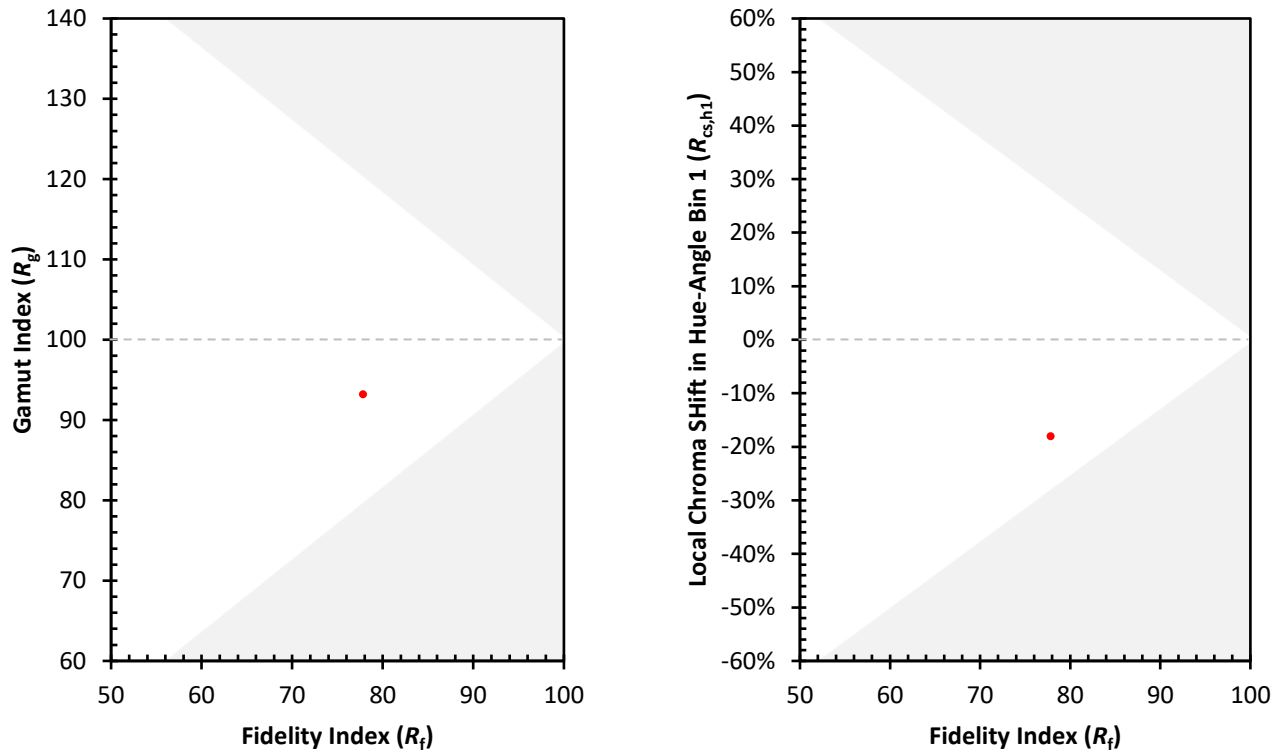
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 69 | CES51 = 92 | CES76 = 62 |
| CES02 = 60 | CES27 = 91 | CES52 = 91 | CES77 = 75 |
| CES03 = 30 | CES28 = 86 | CES53 = 83 | CES78 = 63 |
| CES04 = 69 | CES29 = 73 | CES54 = 86 | CES79 = 85 |
| CES05 = 46 | CES30 = 87 | CES55 = 85 | CES80 = 83 |
| CES06 = 50 | CES31 = 76 | CES56 = 78 | CES81 = 80 |
| CES07 = 39 | CES32 = 69 | CES57 = 78 | CES82 = 93 |
| CES08 = 38 | CES33 = 83 | CES58 = 78 | CES83 = 92 |
| CES09 = 29 | CES34 = 77 | CES59 = 87 | CES84 = 88 |
| CES10 = 73 | CES35 = 87 | CES60 = 91 | CES85 = 81 |
| CES11 = 56 | CES36 = 92 | CES61 = 85 | CES86 = 74 |
| CES12 = 61 | CES37 = 84 | CES62 = 88 | CES87 = 79 |
| CES13 = 41 | CES38 = 95 | CES63 = 81 | CES88 = 81 |
| CES14 = 74 | CES39 = 97 | CES64 = 72 | CES89 = 74 |
| CES15 = 70 | CES40 = 92 | CES65 = 68 | CES90 = 81 |
| CES16 = 46 | CES41 = 96 | CES66 = 68 | CES91 = 78 |
| CES17 = 49 | CES42 = 87 | CES67 = 65 | CES92 = 59 |
| CES18 = 55 | CES43 = 84 | CES68 = 71 | CES93 = 76 |
| CES19 = 71 | CES44 = 99 | CES69 = 78 | CES94 = 54 |
| CES20 = 64 | CES45 = 89 | CES70 = 65 | CES95 = 67 |
| CES21 = 85 | CES46 = 87 | CES71 = 61 | CES96 = 78 |
| CES22 = 77 | CES47 = 91 | CES72 = 86 | CES97 = 88 |
| CES23 = 91 | CES48 = 80 | CES73 = 57 | CES98 = 78 |
| CES24 = 90 | CES49 = 86 | CES74 = 94 | CES99 = 63 |
| CES25 = 71 | CES50 = 91 | CES75 = 62 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)