

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: P980843

Luminaire Tested: **UFLD-L-CA4-320-750-U-66**

Issue Date: 04/10/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P980843  
Test Lab: INNOVATION CENTER(G2)  
Issue Date: 04/10/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: UFLD-L-CA4-320-750-U-66  
Description: UTILITY FLOOD LARGE SIZE 320W 70CRI 5000K LED FIXTURE NEMA 6  
Light Source: (4) 5000K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 50177.9 lumens  
Efficiency: N/A  
Efficacy: 154.8 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 0.67' x H: 0')  
IES Classification: Type I - Short  
BUG Rating: B5 - U0 - G3

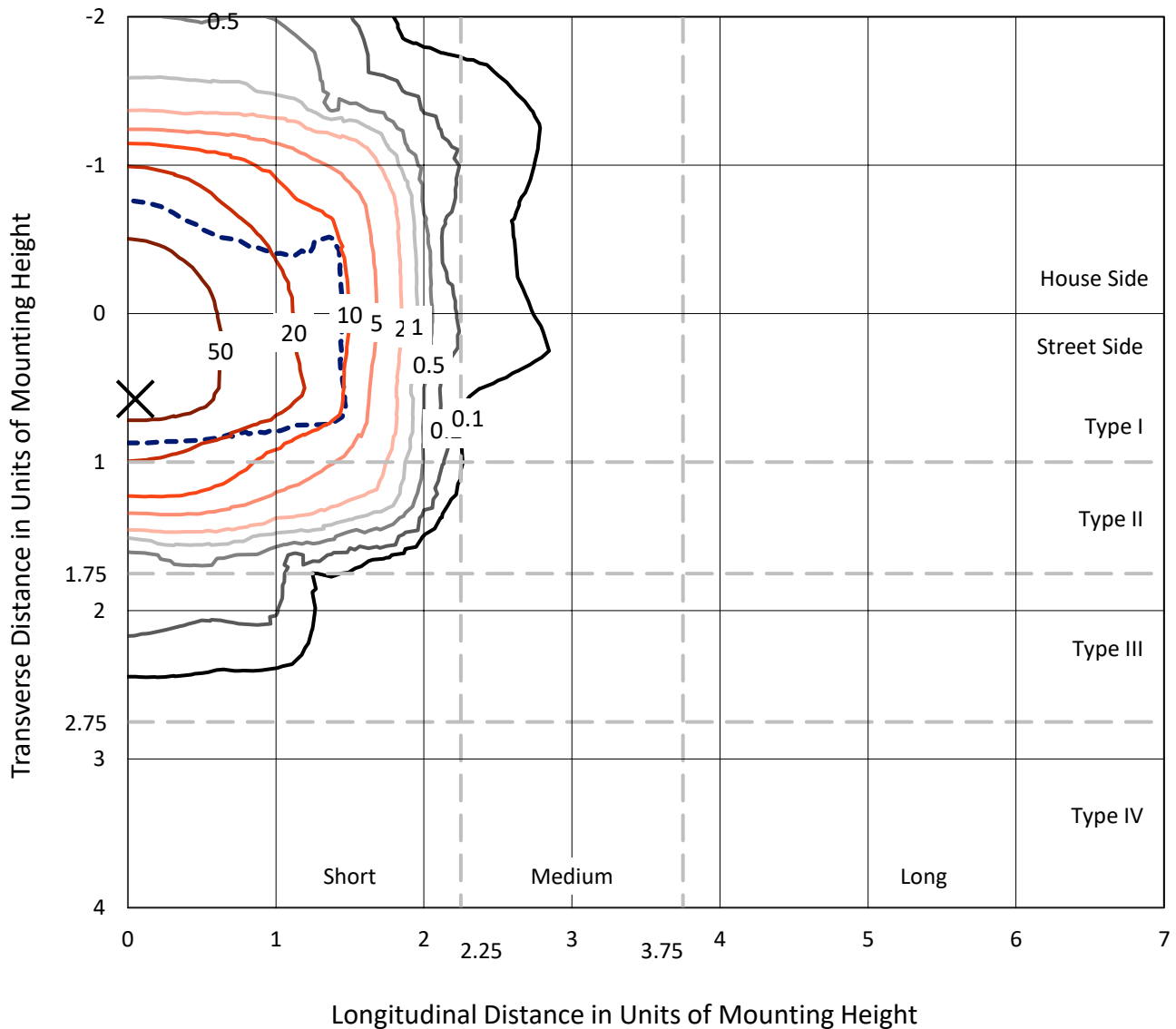
Input Watts (W): 324.1  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.99  
Total Harmonic Distortion (THDi): 2.79%  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT



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 CATALOG NUMBER: UFLD-L-CA4-320-750-U-66

## Iso-Footcandle Lines of Horizontal Illumination

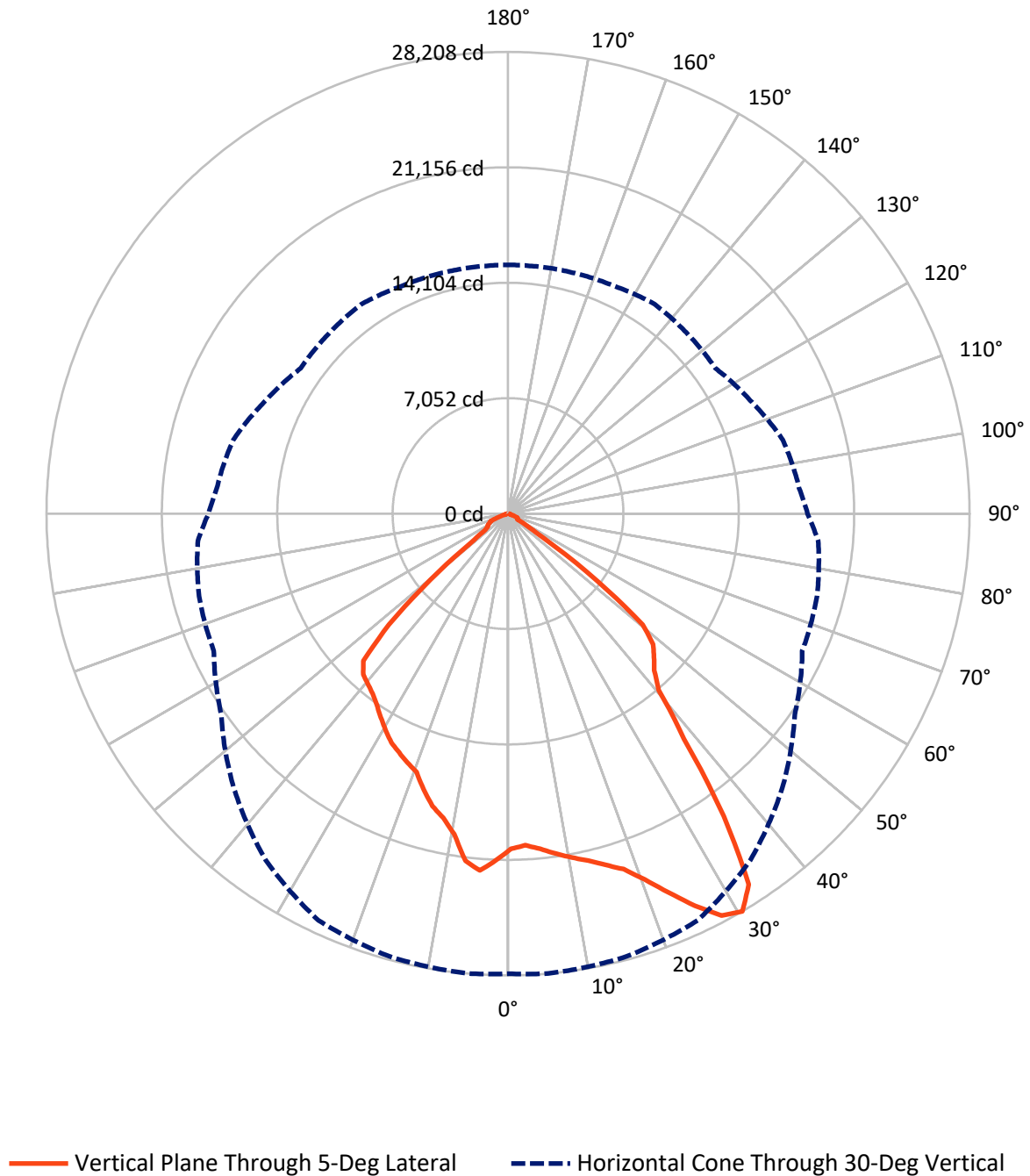
✕ Max cd  
 - - - 1/2 Max cd



Based on 15 foot mounting height. Maximum calculated value = 93.3 fc  
 Type I - Short - N/A

REPORT NUMBER: P980843  
CATALOG NUMBER: UFLD-L-CA4-320-750-U-66

## Luminous Intensity Polar Plot



REPORT NUMBER: P980843

CATALOG NUMBER: UFLD-L-CA4-320-750-U-66

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 22193.2  | 0.0    | 22193.2 |
|                    | % Fixture | 44.2     | 0.0    | 44.2    |
| <b>Street Side</b> | Lumens    | 27984.7  | 0.0    | 27984.7 |
|                    | % Fixture | 55.8     | 0.0    | 55.8    |
| <b>Total</b>       | Lumens    | 50177.9  | 0.0    | 50177.9 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 2003.5  | 4.0       |
| 10°-20°   | 5803.9  | 11.6      |
| 20°-30°   | 9248.9  | 18.4      |
| 30°-40°   | 11562.7 | 23.0      |
| 40°-50°   | 11346.9 | 22.6      |
| 50°-60°   | 8112.3  | 16.2      |
| 60°-70°   | 1794.9  | 3.6       |
| 70°-80°   | 275.7   | 0.5       |
| 80°-90°   | 29.2    | 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°    | 50177.9 | 100.0     |
| 0°-180°   | 50177.9 | 100.0     |

**Coefficient of Utilization**



REPORT NUMBER: P980843

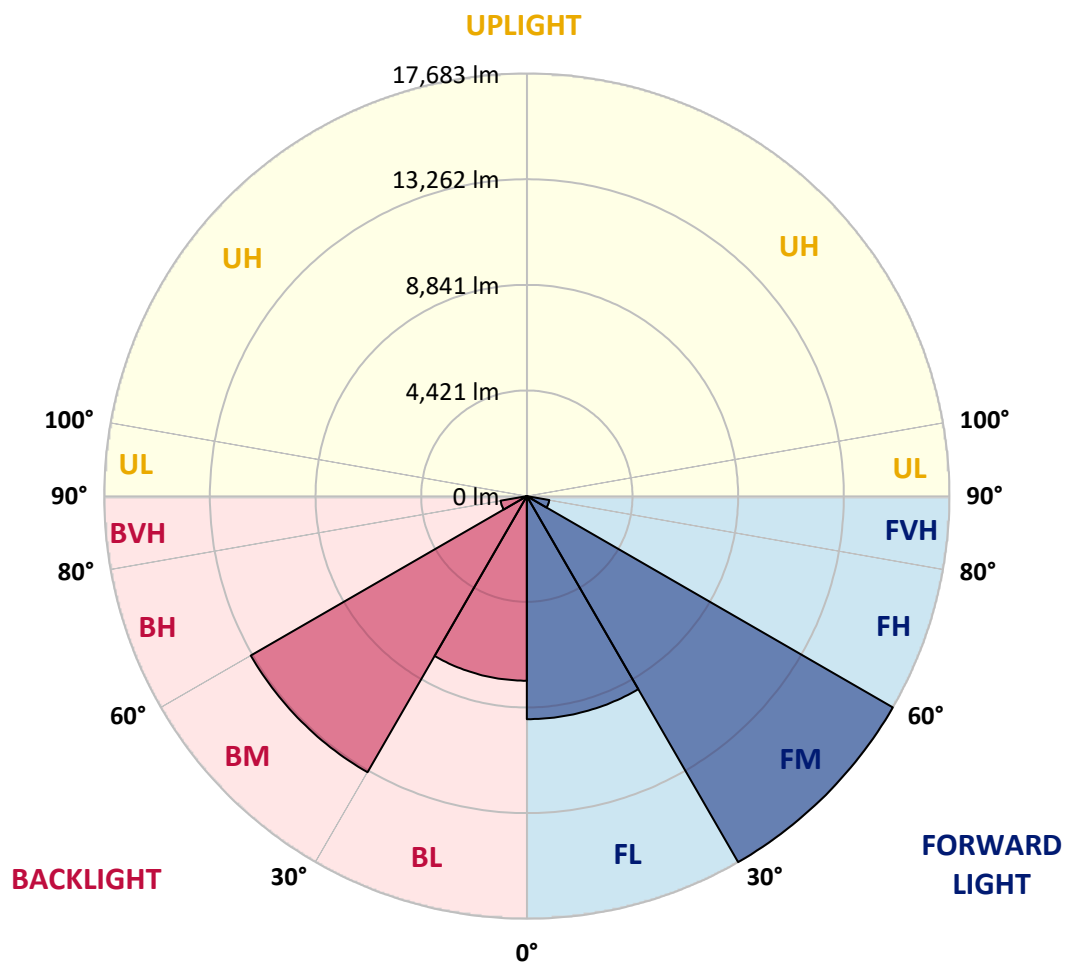
CATALOG NUMBER: UFLD-L-CA4-320-750-U-66

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|---------|-----------|-------------------------|------|---------|
|      |             |         |           | B                       | U    | G       |
| FL   | (0°-30°)    | 9332.6  | 18.6      |                         |      |         |
| FM   | (30°-60°)   | 17682.7 | 35.2      |                         |      |         |
| FH   | (60°-80°)   | 954.7   | 1.9       |                         |      | G1/1800 |
| FVH  | (80°-90°)   | 14.7    | 0.0       |                         |      | G1/100  |
| BL   | (0°-30°)    | 7723.7  | 15.4      | B5                      |      |         |
| BM   | (30°-60°)   | 13339.2 | 26.6      | B5                      |      |         |
| BH   | (60°-80°)   | 1115.9  | 2.2       | B3/2500                 |      | G3/2500 |
| BVH  | (80°-90°)   | 14.4    | 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-G3**

Type I Short





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CATALOG NUMBER: UFLD-L-CA4-320-750-U-66

**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 65°     | 75°     | 85°     | 90°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 20480.9 | 20480.9 | 20480.9 | 20480.9 | 20480.9 | 20480.9 | 20480.9 | 20480.9 | 20480.9 | 20480.9 | 20480.9 |
| 2.5°  | 20251.7 | 20284.4 | 20317.2 | 20366.3 | 20431.8 | 20464.5 | 20431.8 | 20399.0 | 20382.7 | 20415.4 | 20431.8 |
| 5°    | 20530.0 | 20579.1 | 20595.5 | 20628.2 | 20661.0 | 20628.2 | 20611.9 | 20579.1 | 20562.7 | 20579.1 | 20628.2 |
| 7.5°  | 20939.3 | 20972.0 | 20955.7 | 20939.3 | 20922.9 | 20808.3 | 20693.7 | 20644.6 | 20644.6 | 20693.7 | 20824.7 |
| 10°   | 21299.5 | 21365.0 | 21283.1 | 21217.6 | 21103.0 | 20922.9 | 20726.5 | 20611.9 | 20644.6 | 20742.8 | 20906.6 |
| 12.5° | 21757.9 | 21757.9 | 21676.0 | 21610.5 | 21348.6 | 21135.8 | 20873.8 | 20693.7 | 20693.7 | 20873.8 | 21053.9 |
| 15°   | 22314.5 | 22265.4 | 22232.7 | 22052.6 | 21741.5 | 21397.7 | 21070.3 | 20808.3 | 20759.2 | 21037.5 | 21152.1 |
| 17.5° | 23018.5 | 22838.4 | 22756.5 | 22445.5 | 22019.8 | 21577.8 | 21135.8 | 20922.9 | 20775.6 | 21070.3 | 20939.3 |
| 20°   | 23984.4 | 23853.4 | 23591.5 | 23100.3 | 22232.7 | 21659.6 | 21135.8 | 20857.4 | 20742.8 | 20906.6 | 20775.6 |
| 22.5° | 25228.7 | 25146.8 | 24557.4 | 23935.3 | 22789.3 | 21725.1 | 21053.9 | 20677.3 | 20644.6 | 20562.7 | 20284.4 |
| 25°   | 26751.2 | 26538.4 | 25932.6 | 25048.6 | 23624.2 | 22363.6 | 21037.5 | 20349.9 | 20235.3 | 20022.5 | 19531.3 |
| 27.5° | 28044.6 | 27815.4 | 27078.7 | 26292.8 | 24770.3 | 23313.2 | 21168.5 | 19957.0 | 19826.0 | 19678.7 | 19072.9 |
| 30°   | 28110.1 | 28208.3 | 28011.8 | 27422.5 | 25834.4 | 23706.1 | 21397.7 | 19842.4 | 19547.7 | 19023.8 | 18303.5 |
| 32.5° | 26784.0 | 27013.2 | 27487.9 | 27700.8 | 26636.6 | 24180.9 | 21594.2 | 19891.5 | 19351.2 | 18090.6 | 17501.3 |
| 35°   | 22249.0 | 22707.4 | 24655.7 | 26489.3 | 26865.8 | 24868.5 | 21757.9 | 19891.5 | 19285.8 | 17419.4 | 16961.0 |
| 37.5° | 17092.0 | 17468.5 | 19122.0 | 22445.5 | 25850.8 | 25294.1 | 22118.1 | 19776.9 | 19203.9 | 17468.5 | 16846.4 |
| 40°   | 13965.0 | 14177.8 | 14898.2 | 17157.5 | 22281.8 | 24590.2 | 22478.2 | 19907.9 | 18958.3 | 17501.3 | 16911.9 |
| 42.5° | 13113.7 | 13097.3 | 12949.9 | 13784.9 | 16993.7 | 22527.3 | 22723.8 | 20235.3 | 18549.0 | 17288.4 | 16797.3 |
| 45°   | 12540.7 | 12507.9 | 12376.9 | 12540.7 | 13441.1 | 18434.4 | 22543.7 | 20824.7 | 18041.5 | 16535.3 | 16207.9 |
| 47.5° | 11918.5 | 11934.9 | 11885.8 | 11951.3 | 11787.6 | 13997.7 | 21528.7 | 21070.3 | 17173.8 | 15274.7 | 15160.1 |
| 50°   | 10428.7 | 10674.3 | 11329.2 | 11394.6 | 10969.0 | 11296.4 | 18434.4 | 20955.7 | 16551.7 | 14914.5 | 14816.3 |
| 52.5° | 6483.2  | 6876.1  | 8807.9  | 10445.1 | 10199.5 | 10199.5 | 14063.2 | 21119.4 | 15438.4 | 14783.6 | 14849.1 |
| 55°   | 2292.0  | 2586.7  | 4715.0  | 7187.1  | 9135.4  | 9315.4  | 11116.3 | 18794.6 | 15307.5 | 15012.8 | 15078.3 |
| 57.5° | 573.0   | 704.0   | 1440.7  | 3110.6  | 6155.7  | 8447.8  | 9937.6  | 15520.3 | 11623.8 | 11214.6 | 11378.3 |
| 60°   | 671.2   | 654.9   | 900.4   | 998.7   | 2390.3  | 6679.6  | 8955.3  | 10477.8 | 7498.2  | 7023.4  | 7105.3  |
| 62.5° | 720.4   | 671.2   | 704.0   | 884.1   | 392.9   | 3274.3  | 7138.0  | 6237.6  | 3094.2  | 2292.0  | 2423.0  |
| 65°   | 638.5   | 605.7   | 556.6   | 818.6   | 278.3   | 605.7   | 4207.5  | 1833.6  | 442.0   | 704.0   | 638.5   |
| 67.5° | 425.7   | 442.0   | 458.4   | 654.9   | 261.9   | 261.9   | 556.6   | 458.4   | 311.1   | 638.5   | 556.6   |
| 70°   | 245.6   | 261.9   | 311.1   | 392.9   | 261.9   | 212.8   | 245.6   | 376.5   | 261.9   | 638.5   | 556.6   |
| 72.5° | 147.3   | 147.3   | 147.3   | 163.7   | 261.9   | 180.1   | 163.7   | 311.1   | 229.2   | 589.4   | 556.6   |
| 75°   | 114.6   | 114.6   | 114.6   | 98.2    | 229.2   | 114.6   | 114.6   | 245.6   | 196.5   | 425.7   | 425.7   |
| 77.5° | 98.2    | 98.2    | 98.2    | 81.9    | 131.0   | 98.2    | 98.2    | 180.1   | 180.1   | 212.8   | 245.6   |
| 80°   | 65.5    | 65.5    | 65.5    | 65.5    | 81.9    | 81.9    | 65.5    | 98.2    | 81.9    | 98.2    | 114.6   |
| 82.5° | 32.7    | 49.1    | 49.1    | 32.7    | 49.1    | 49.1    | 49.1    | 65.5    | 49.1    | 65.5    | 65.5    |
| 85°   | 16.4    | 16.4    | 16.4    | 16.4    | 16.4    | 16.4    | 16.4    | 32.7    | 16.4    | 16.4    | 32.7    |
| 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: P980843

CATALOG NUMBER: UFLD-L-CA4-320-750-U-66

**CANDELA DISTRIBUTION (continued):**

|       | 95°     | 105°    | 115°    | 125°    | 135°    | 145°    | 155°    | 165°    | 175°    | 180°    |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 20480.9 | 20480.9 | 20480.9 | 20480.9 | 20480.9 | 20480.9 | 20480.9 | 20480.9 | 20480.9 | 20480.9 |
| 2.5°  | 20464.5 | 20546.4 | 20661.0 | 20841.1 | 20906.6 | 21021.2 | 21119.4 | 21201.2 | 21201.2 | 21168.5 |
| 5°    | 20726.5 | 20955.7 | 21266.7 | 21545.0 | 21643.3 | 21757.9 | 21807.0 | 21888.8 | 21872.5 | 21856.1 |
| 7.5°  | 20955.7 | 21315.8 | 21643.3 | 21839.7 | 21807.0 | 21659.6 | 21561.4 | 21430.4 | 21381.3 | 21414.1 |
| 10°   | 21135.8 | 21463.2 | 21610.5 | 21479.6 | 21086.6 | 20742.8 | 20300.8 | 20006.1 | 19858.8 | 19907.9 |
| 12.5° | 21201.2 | 21315.8 | 21184.9 | 20464.5 | 19973.4 | 19645.9 | 19285.8 | 19089.3 | 19007.4 | 19023.8 |
| 15°   | 21217.6 | 20955.7 | 20235.3 | 19695.1 | 19334.9 | 18925.6 | 18630.9 | 18450.8 | 18450.8 | 18467.2 |
| 17.5° | 20873.8 | 20235.3 | 19613.2 | 19203.9 | 18696.4 | 18270.7 | 18107.0 | 18041.5 | 17632.2 | 17697.7 |
| 20°   | 20562.7 | 19645.9 | 19302.1 | 18663.6 | 18057.9 | 17779.6 | 16830.0 | 16731.8 | 16748.2 | 16764.5 |
| 22.5° | 19907.9 | 19220.3 | 18909.2 | 18074.3 | 17386.7 | 16617.2 | 16486.2 | 16388.0 | 16404.4 | 16404.4 |
| 25°   | 19007.4 | 18614.5 | 18188.9 | 17321.2 | 16486.2 | 16338.9 | 16240.6 | 16109.7 | 16044.2 | 16060.6 |
| 27.5° | 18499.9 | 18008.8 | 17222.9 | 16486.2 | 15946.0 | 16011.4 | 15896.8 | 15700.4 | 15700.4 | 15716.8 |
| 30°   | 17861.4 | 17386.7 | 16338.9 | 15471.2 | 15520.3 | 15618.5 | 15340.2 | 15242.0 | 15192.9 | 15192.9 |
| 32.5° | 17075.6 | 16420.7 | 15503.9 | 14685.3 | 14980.0 | 14947.3 | 14603.5 | 14636.2 | 14669.0 | 14636.2 |
| 35°   | 16486.2 | 15634.9 | 14865.4 | 14423.4 | 14308.8 | 14177.8 | 13997.7 | 14112.3 | 14161.4 | 14128.7 |
| 37.5° | 16338.9 | 15323.8 | 14521.6 | 14210.6 | 13768.5 | 13523.0 | 13572.1 | 13686.7 | 13752.2 | 13735.8 |
| 40°   | 16289.8 | 15012.8 | 14226.9 | 13899.5 | 13310.1 | 13097.3 | 13162.8 | 13392.0 | 13473.8 | 13457.5 |
| 42.5° | 16224.3 | 14799.9 | 14046.8 | 13653.9 | 12835.3 | 12688.0 | 12999.1 | 13211.9 | 13228.3 | 13211.9 |
| 45°   | 15880.5 | 14570.7 | 13932.2 | 13146.4 | 12115.0 | 12295.1 | 12688.0 | 12802.6 | 12606.1 | 12524.3 |
| 47.5° | 15078.3 | 14145.1 | 13588.4 | 12524.3 | 11525.6 | 11869.4 | 11918.5 | 10674.3 | 9953.9  | 9790.2  |
| 50°   | 14849.1 | 14161.4 | 13195.5 | 11787.6 | 11165.4 | 11509.2 | 9364.6  | 7154.4  | 6254.0  | 6073.9  |
| 52.5° | 14783.6 | 13997.7 | 13342.9 | 11018.1 | 11034.5 | 9708.4  | 5910.2  | 3503.5  | 2815.9  | 2684.9  |
| 55°   | 14947.3 | 14718.1 | 13588.4 | 10559.7 | 10265.0 | 6319.4  | 2750.4  | 1653.5  | 1702.6  | 1653.5  |
| 57.5° | 11280.0 | 12311.5 | 13883.1 | 9839.3  | 7498.2  | 3045.1  | 1735.4  | 1604.4  | 1489.8  | 1457.1  |
| 60°   | 7039.8  | 8022.1  | 10166.8 | 8464.1  | 3847.3  | 1817.2  | 1768.1  | 1489.8  | 1440.7  | 1424.3  |
| 62.5° | 2324.8  | 3569.0  | 5828.3  | 5566.3  | 1064.2  | 1800.9  | 1784.5  | 1326.1  | 1326.1  | 1326.1  |
| 65°   | 589.4   | 605.7   | 1604.4  | 1915.5  | 785.8   | 1604.4  | 1702.6  | 1244.2  | 1211.5  | 1260.6  |
| 67.5° | 507.5   | 458.4   | 851.3   | 753.1   | 654.9   | 1113.3  | 1489.8  | 1195.1  | 1129.6  | 1129.6  |
| 70°   | 507.5   | 540.3   | 835.0   | 704.0   | 409.3   | 605.7   | 1080.5  | 736.7   | 654.9   | 605.7   |
| 72.5° | 474.8   | 523.9   | 736.7   | 638.5   | 278.3   | 294.7   | 474.8   | 245.6   | 229.2   | 196.5   |
| 75°   | 409.3   | 425.7   | 573.0   | 573.0   | 294.7   | 147.3   | 196.5   | 163.7   | 163.7   | 147.3   |
| 77.5° | 278.3   | 212.8   | 327.4   | 409.3   | 212.8   | 98.2    | 81.9    | 81.9    | 81.9    | 65.5    |
| 80°   | 147.3   | 81.9    | 81.9    | 65.5    | 81.9    | 81.9    | 49.1    | 65.5    | 65.5    | 49.1    |
| 82.5° | 81.9    | 49.1    | 49.1    | 32.7    | 32.7    | 49.1    | 32.7    | 32.7    | 32.7    | 32.7    |
| 85°   | 32.7    | 32.7    | 16.4    | 16.4    | 16.4    | 32.7    | 16.4    | 16.4    | 16.4    | 16.4    |
| 87.5° | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 16.4    | 16.4    |
| 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

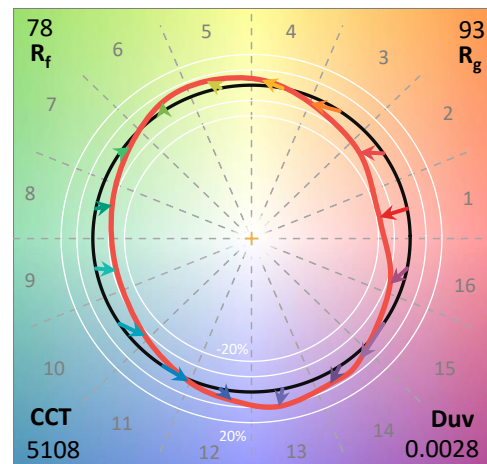
### Test Information

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

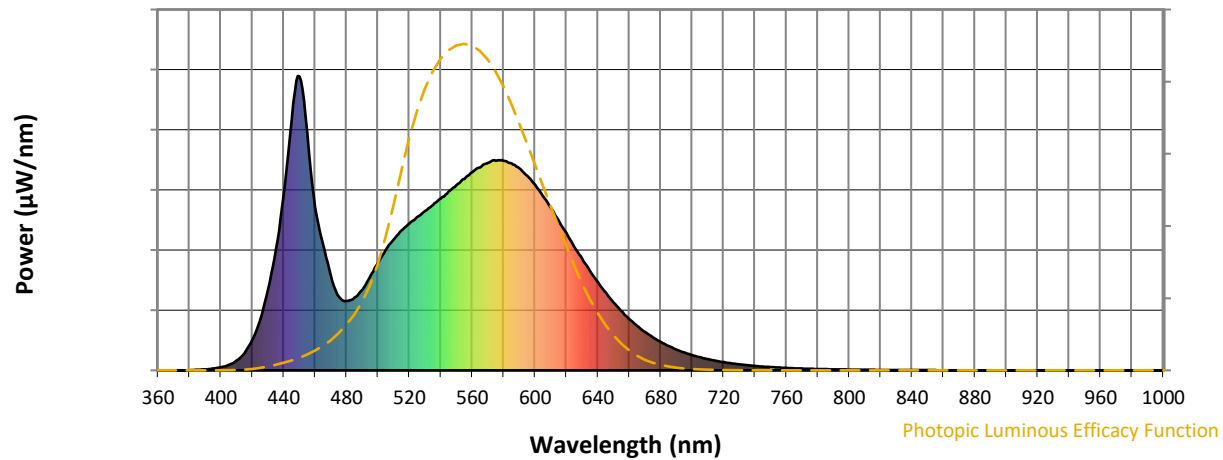
REPORT NUMBER: SP1-2501-319-11

| 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

### Photopic Flux vs. Wavelength

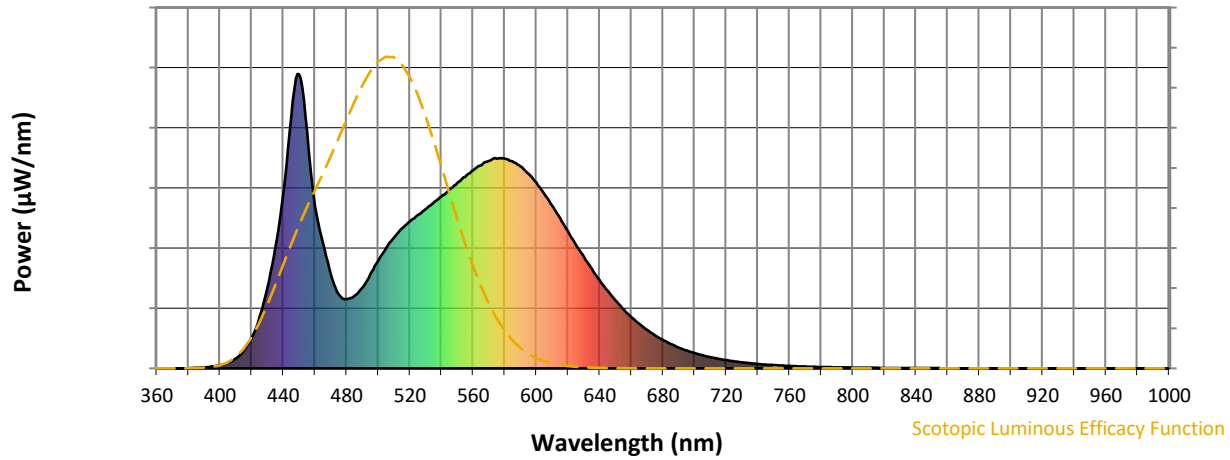


### Photopic Lumens: NR

| 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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### Scotopic Flux vs. Wavelength



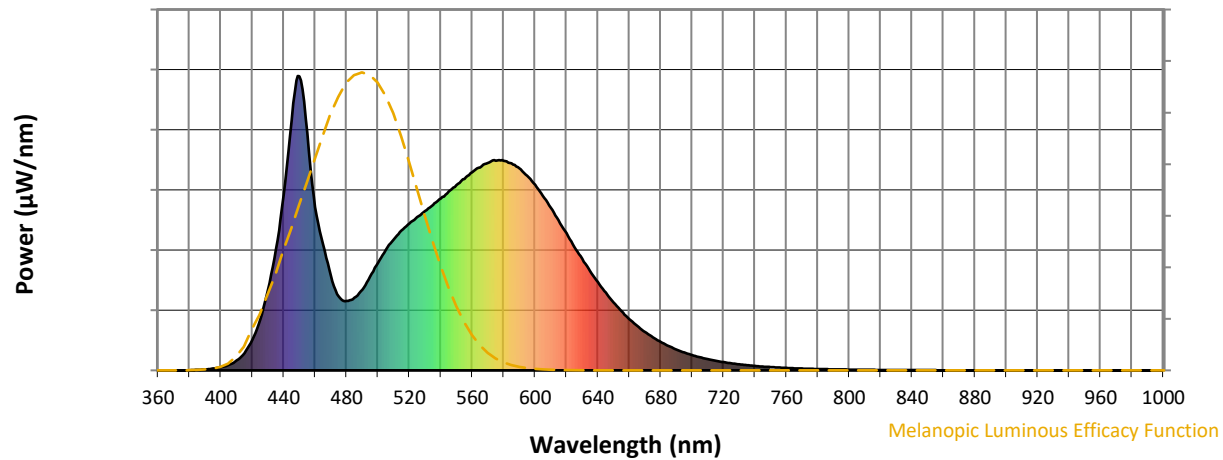
Scotopic Lumens: NR

S/P: 1.89

| 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               |           |                             |                  |

REPORT NUMBER: SP1-2501-319-11

### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 3.96

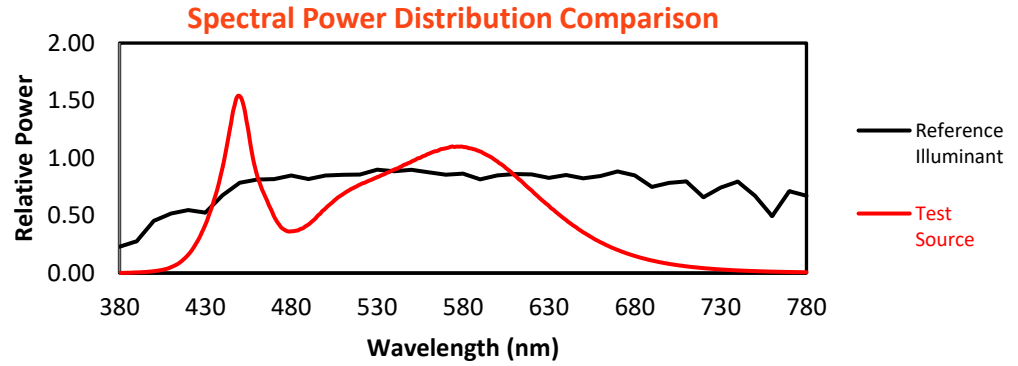
| λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 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               |           |                             |                  |

REPORT NUMBER: SP1-2501-319-11

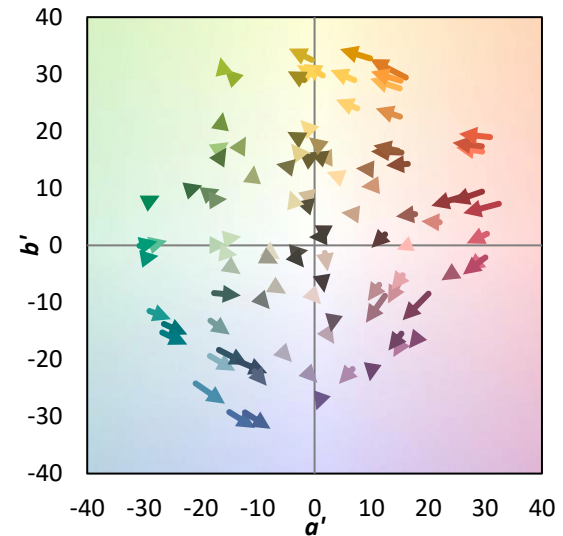
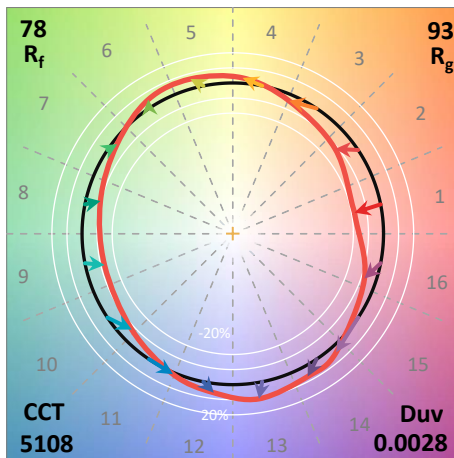
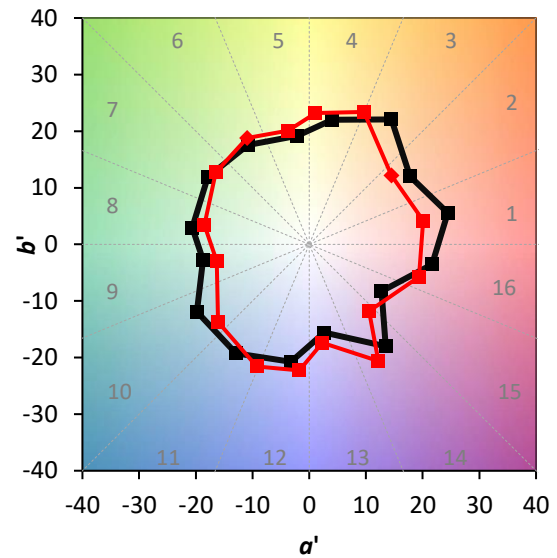
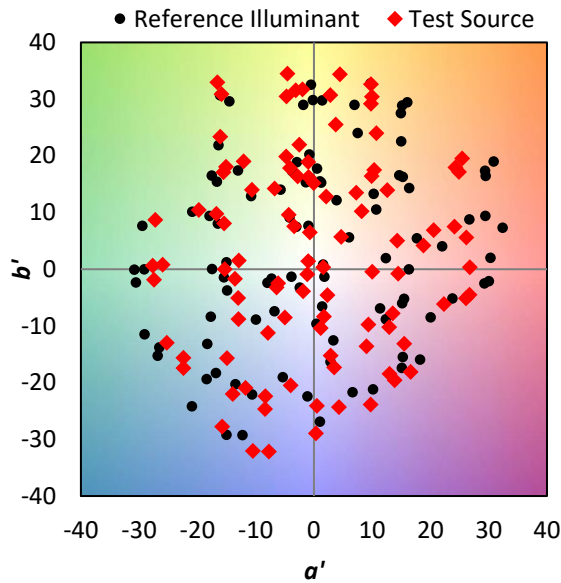
TM-30-18

### Summary

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

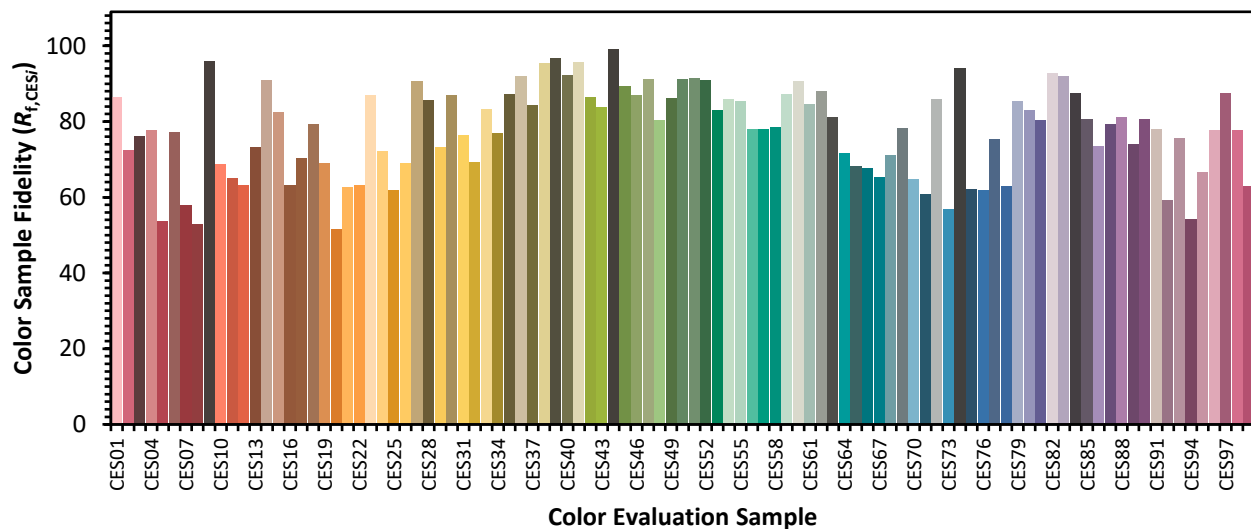


### Color Vector Graphics

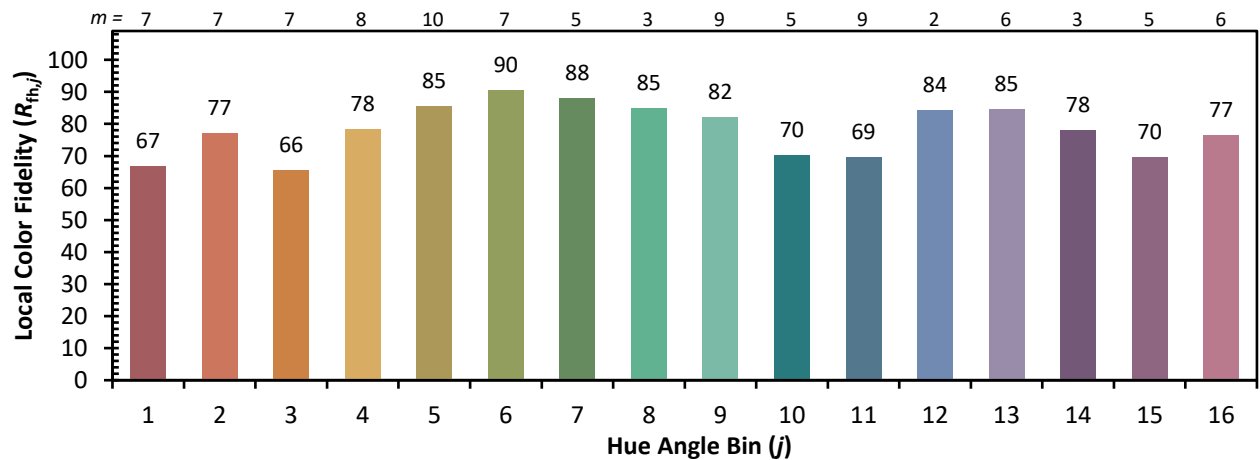
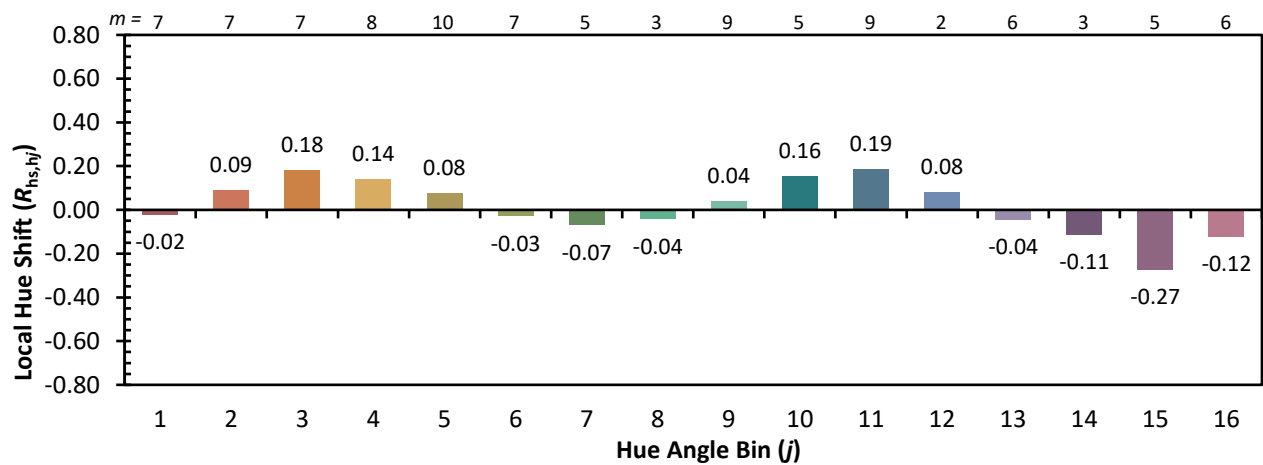
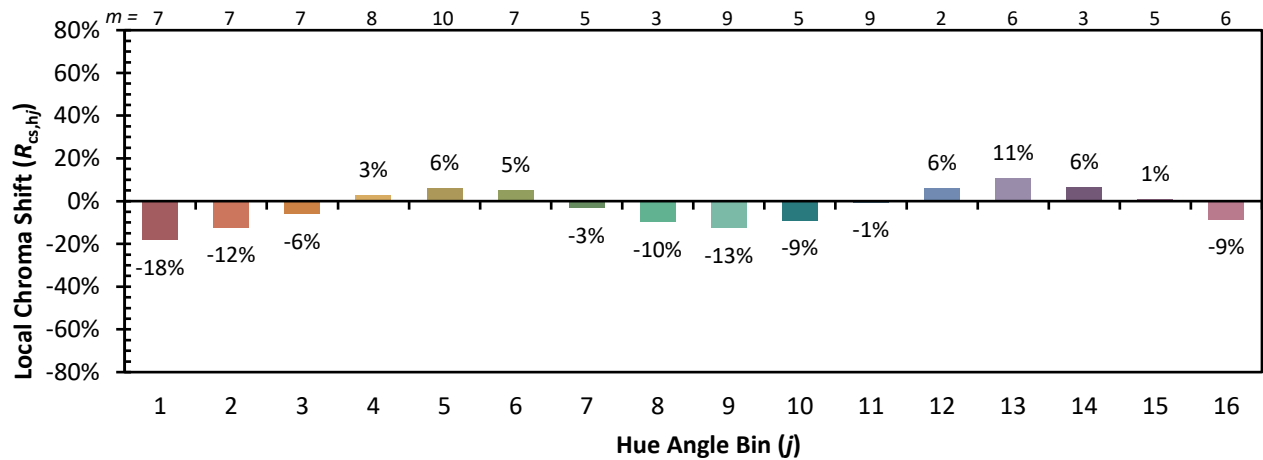


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

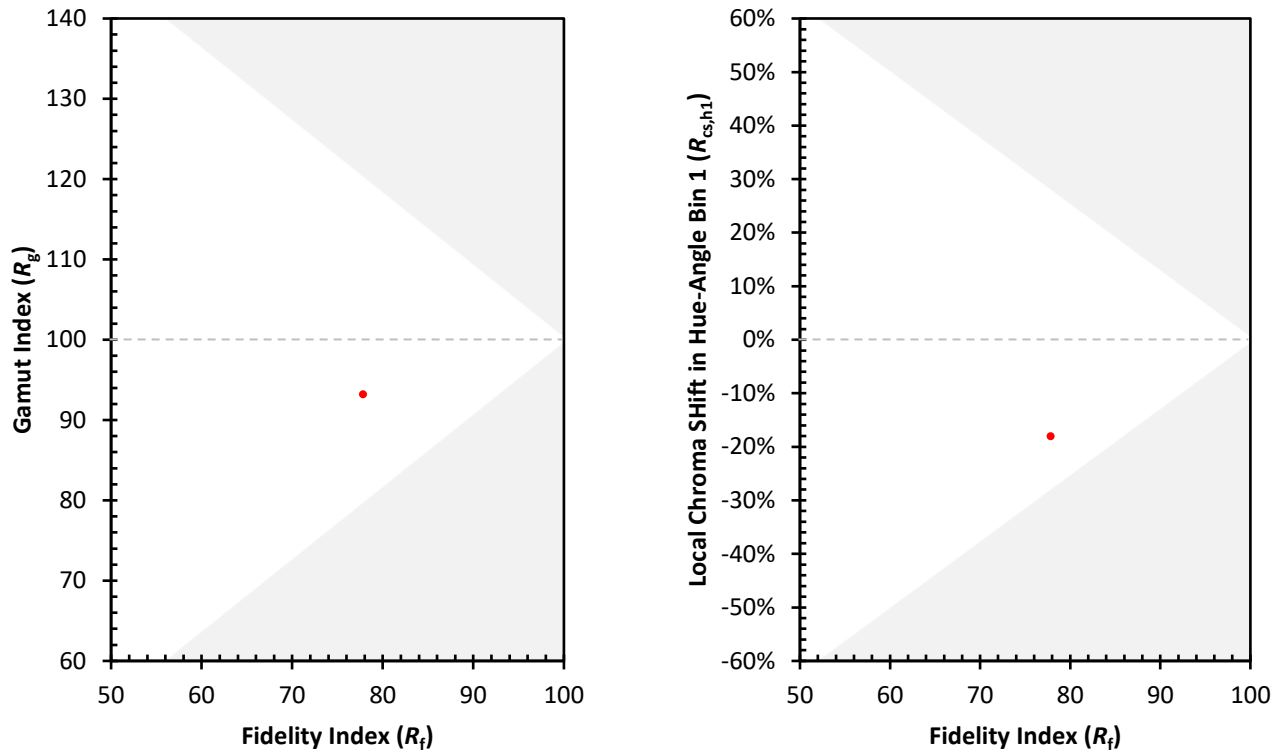
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 69 | CES51 = 92 | CES76 = 62 |
| CES02 = 60 | CES27 = 91 | CES52 = 91 | CES77 = 75 |
| CES03 = 30 | CES28 = 86 | CES53 = 83 | CES78 = 63 |
| CES04 = 69 | CES29 = 73 | CES54 = 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)