

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: P348645

Luminaire Tested: **ARCH-N-PA1-10-730-12VDC-T4W**

Issue Date: 3/3/2020



**Test Information**

Test Method: LM-79-08  
Report Number: P348645  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-18)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: ARCH-N-PA1-10-730-12VDC-T4W  
Description: ARCHEON ROADWAY AND AREA LUMINAIRE  
(1) 70 CRI, 3000K, 270mA LIGHT ENGINE WITH 16 LEDS AND  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 2045 lumens  
Efficiency: N/A  
Efficacy: 146.1 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.75' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B1 - U0 - G1

Input Watts (W): 14  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT

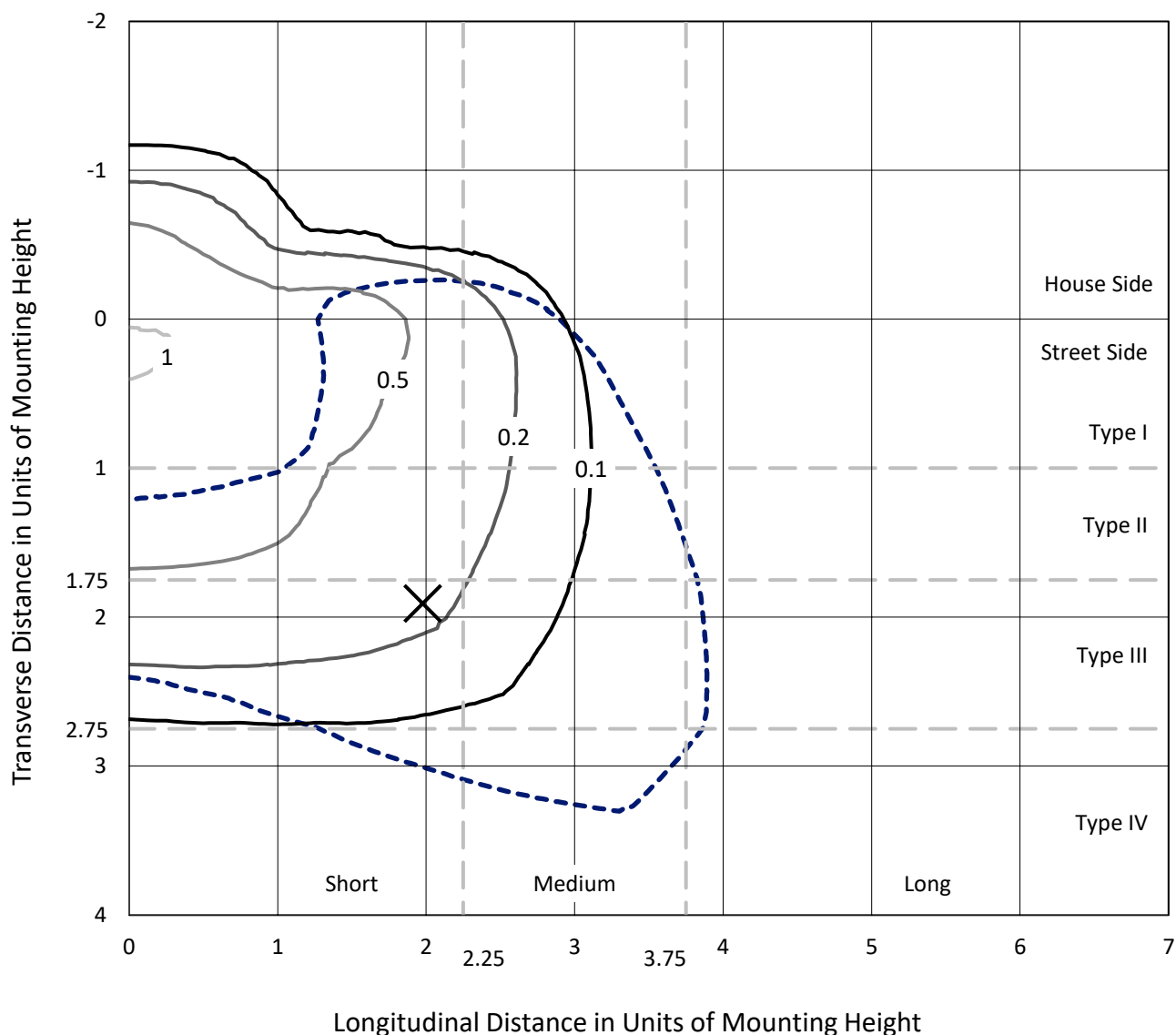
REPORT NUMBER: P348645

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## Iso-Footcandle Lines of Horizontal Illumination

✕ Max cd

--- 1/2 Max cd



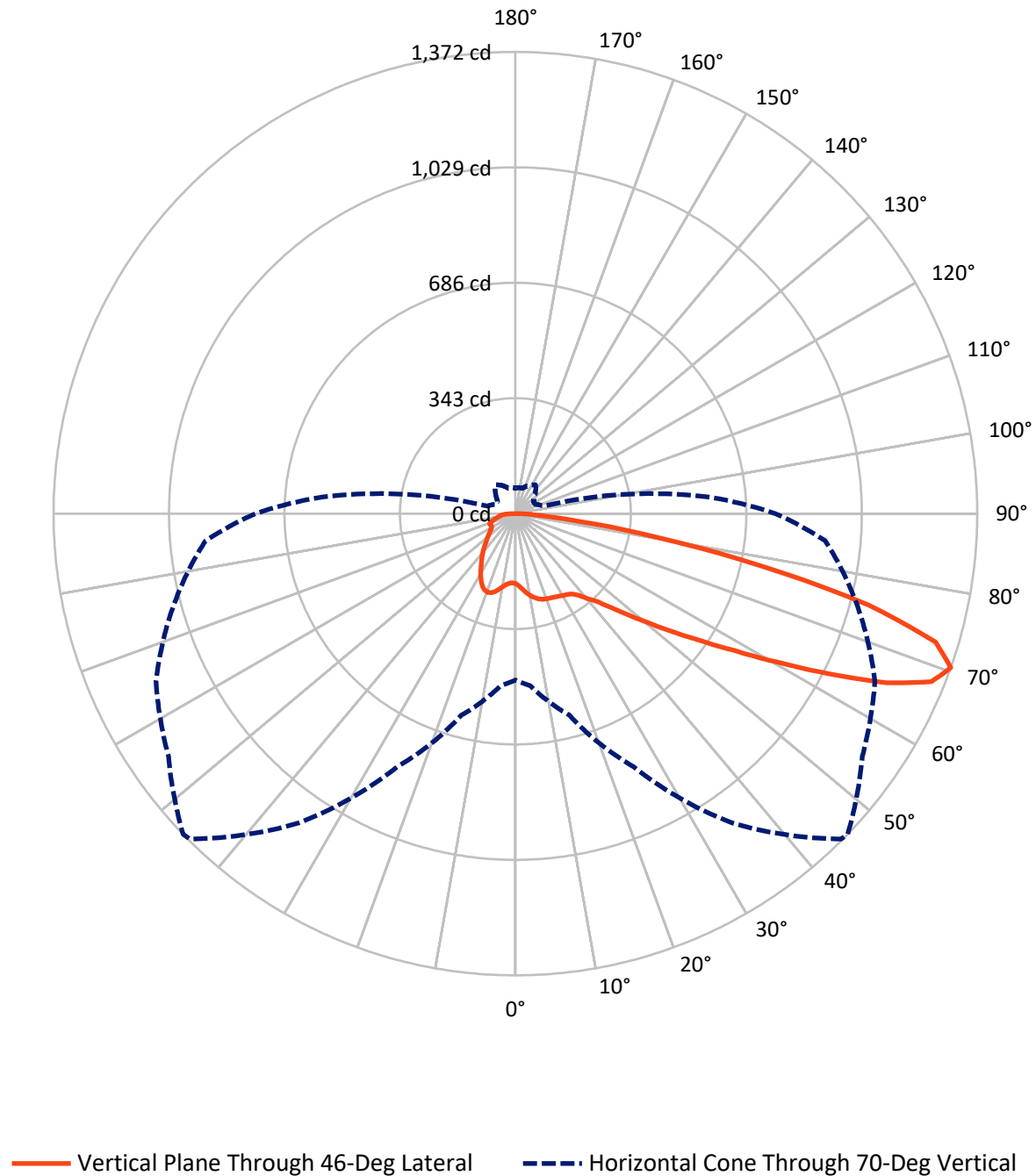
Based on 15 foot mounting height. Maximum calculated value = 1.2 fc

Type IV - Short - N/A

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## Luminous Intensity Polar Plot



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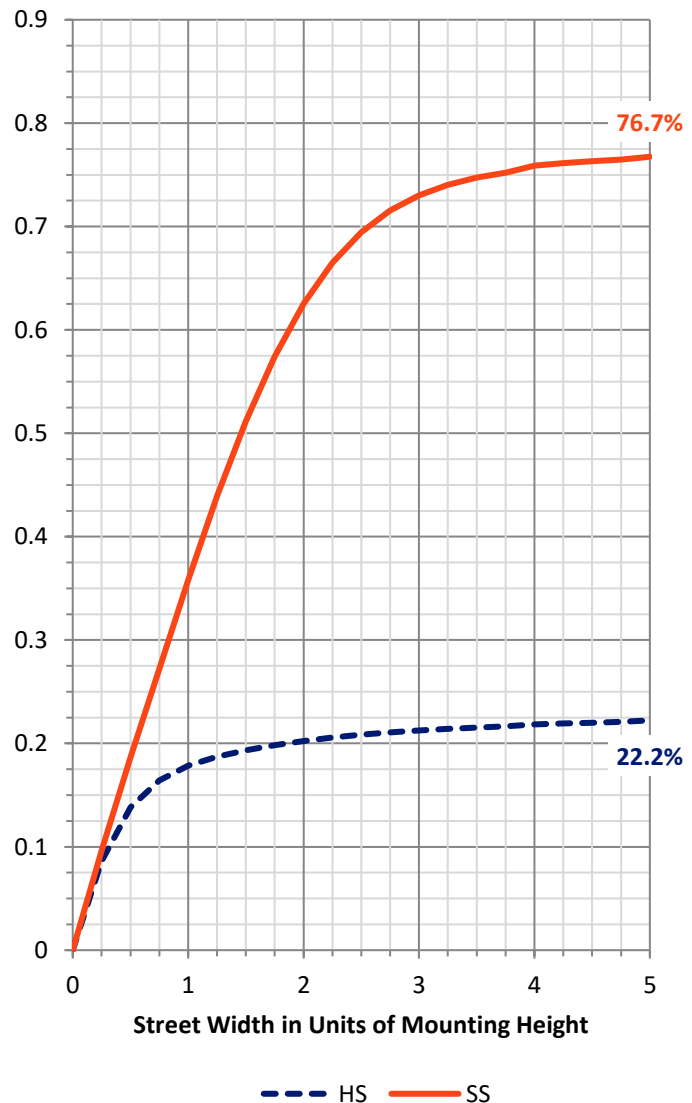
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 468.7    | 0.0    | 468.7  |
|                    | % Fixture | 22.9     | 0.0    | 22.9   |
| <b>Street Side</b> | Lumens    | 1576.3   | 0.0    | 1576.3 |
|                    | % Fixture | 77.1     | 0.0    | 77.1   |
| <b>Total</b>       | Lumens    | 2045.0   | 0.0    | 2045.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 21.2   | 1.0       |
| 10°-20°   | 70.8   | 3.5       |
| 20°-30°   | 118.0  | 5.8       |
| 30°-40°   | 167.4  | 8.2       |
| 40°-50°   | 246.3  | 12.0      |
| 50°-60°   | 417.1  | 20.4      |
| 60°-70°   | 592.0  | 29.0      |
| 70°-80°   | 359.7  | 17.6      |
| 80°-90°   | 52.5   | 2.6       |
| 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°    | 2045.0 | 100.0     |
| 0°-180°   | 2045.0 | 100.0     |

**Coefficient of Utilization**



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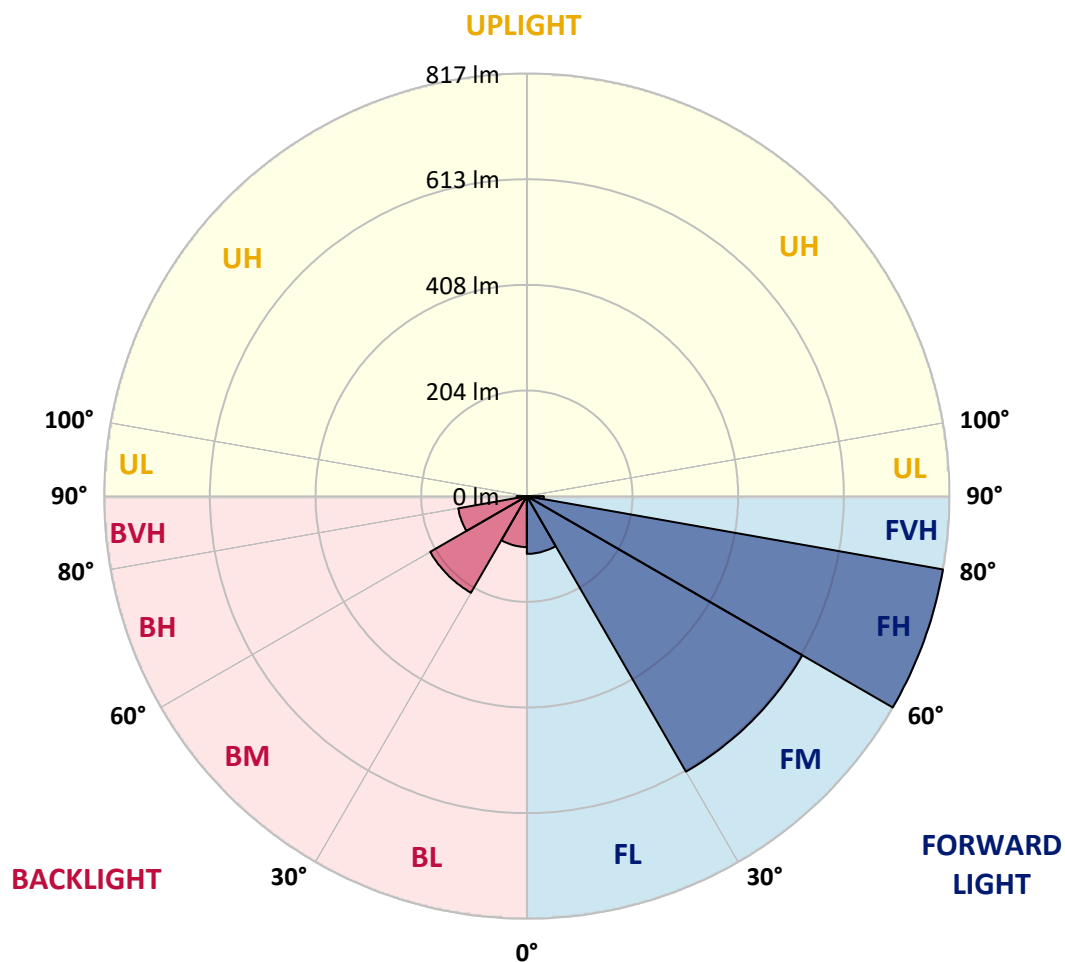
CATALOG NUMBER: ARCH-N-PA1-10-730-12VDC-T4W

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 111.6  | 5.5       |                         |      |         |
| FM   | (30°-60°)   | 615.0  | 30.1      |                         |      |         |
| FH   | (60°-80°)   | 817.0  | 39.9      |                         |      | G1/1800 |
| FVH  | (80°-90°)   | 32.7   | 1.6       |                         |      | G1/100  |
| BL   | (0°-30°)    | 98.4   | 4.8       | B0/110                  |      |         |
| BM   | (30°-60°)   | 215.8  | 10.6      | B0/220                  |      |         |
| BH   | (60°-80°)   | 134.7  | 6.6       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 19.8   | 1.0       |                         |      | G1/100  |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B1-U0-G1**

Type IV Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°    | 5°    | 15°   | 25°    | 35°    | 45°    | 46°    | 55°    | 65°    | 75°    | 85°    |
|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 208.3 | 208.3 | 208.3 | 208.3  | 208.3  | 208.3  | 208.3  | 208.3  | 208.3  | 208.3  | 208.3  |
| 2.5°  | 218.8 | 218.9 | 219.2 | 218.5  | 216.5  | 216.0  | 215.8  | 213.7  | 212.4  | 210.4  | 208.8  |
| 5°    | 236.3 | 236.4 | 236.0 | 234.0  | 229.7  | 226.5  | 226.2  | 221.6  | 217.4  | 212.9  | 209.5  |
| 7.5°  | 254.5 | 254.7 | 253.4 | 249.7  | 243.6  | 238.0  | 237.7  | 231.4  | 225.0  | 218.2  | 213.2  |
| 10°   | 270.7 | 269.9 | 267.7 | 262.5  | 255.3  | 248.4  | 248.2  | 241.6  | 234.2  | 226.1  | 219.3  |
| 12.5° | 281.5 | 280.8 | 278.0 | 271.7  | 263.8  | 257.5  | 256.9  | 250.8  | 243.7  | 234.7  | 226.7  |
| 15°   | 287.4 | 287.9 | 284.1 | 277.0  | 269.3  | 264.0  | 263.5  | 259.2  | 252.8  | 243.8  | 234.5  |
| 17.5° | 288.2 | 288.6 | 285.0 | 277.9  | 271.6  | 268.0  | 267.8  | 264.9  | 260.3  | 251.6  | 241.9  |
| 20°   | 283.7 | 284.0 | 281.0 | 275.2  | 271.1  | 269.9  | 269.9  | 268.6  | 265.2  | 257.5  | 248.1  |
| 22.5° | 277.2 | 277.4 | 275.3 | 271.1  | 269.7  | 271.4  | 271.9  | 271.4  | 269.0  | 261.7  | 252.9  |
| 25°   | 275.6 | 275.5 | 273.2 | 269.0  | 270.1  | 273.9  | 274.5  | 274.7  | 273.0  | 266.7  | 259.1  |
| 27.5° | 283.4 | 282.9 | 278.6 | 271.8  | 272.5  | 277.0  | 277.8  | 279.9  | 278.8  | 273.3  | 266.1  |
| 30°   | 305.8 | 305.0 | 296.2 | 282.4  | 278.6  | 280.9  | 282.0  | 285.2  | 285.4  | 280.8  | 275.4  |
| 32.5° | 343.8 | 342.7 | 327.0 | 302.3  | 288.9  | 284.9  | 285.9  | 290.7  | 293.3  | 289.7  | 283.9  |
| 35°   | 391.7 | 390.5 | 369.9 | 336.1  | 306.1  | 292.5  | 293.2  | 297.1  | 302.3  | 297.2  | 289.5  |
| 37.5° | 441.7 | 438.8 | 419.0 | 375.8  | 333.5  | 308.8  | 308.8  | 309.3  | 311.8  | 301.3  | 296.1  |
| 40°   | 491.4 | 488.5 | 470.6 | 422.6  | 368.9  | 334.5  | 332.9  | 322.1  | 320.1  | 311.1  | 309.3  |
| 42.5° | 537.6 | 536.7 | 526.1 | 475.4  | 410.5  | 359.8  | 357.6  | 339.1  | 339.6  | 334.0  | 334.0  |
| 45°   | 586.7 | 586.7 | 578.1 | 528.7  | 458.9  | 400.4  | 398.1  | 371.1  | 375.3  | 372.7  | 378.9  |
| 47.5° | 626.8 | 628.0 | 626.9 | 584.3  | 515.2  | 452.0  | 447.9  | 415.3  | 427.0  | 435.9  | 454.1  |
| 50°   | 667.7 | 669.7 | 669.9 | 645.3  | 583.3  | 513.3  | 508.7  | 474.0  | 500.3  | 525.7  | 561.4  |
| 52.5° | 727.1 | 731.6 | 714.0 | 706.1  | 666.7  | 586.1  | 581.5  | 549.5  | 593.3  | 629.1  | 690.5  |
| 55°   | 782.2 | 778.4 | 765.8 | 770.7  | 756.0  | 668.9  | 665.5  | 637.4  | 697.1  | 743.5  | 823.2  |
| 57.5° | 812.0 | 811.8 | 824.4 | 845.3  | 852.3  | 771.1  | 768.2  | 740.9  | 814.0  | 848.9  | 947.9  |
| 60°   | 847.0 | 847.5 | 878.7 | 926.4  | 955.2  | 898.3  | 897.1  | 876.4  | 927.6  | 947.3  | 1045.6 |
| 62.5° | 851.9 | 860.7 | 914.5 | 996.5  | 1051.5 | 1047.0 | 1049.8 | 998.3  | 1029.2 | 1025.8 | 1118.6 |
| 65°   | 795.6 | 807.2 | 904.5 | 1017.7 | 1147.3 | 1209.6 | 1212.1 | 1121.0 | 1109.3 | 1093.0 | 1144.7 |
| 67.5° | 680.1 | 697.3 | 803.0 | 971.6  | 1178.8 | 1329.7 | 1333.4 | 1216.1 | 1175.8 | 1115.7 | 1081.9 |
| 70°   | 494.9 | 514.0 | 620.4 | 829.8  | 1122.6 | 1368.1 | 1372.3 | 1258.2 | 1178.3 | 1051.0 | 923.6  |
| 72.5° | 299.0 | 314.0 | 401.6 | 610.9  | 947.5  | 1298.2 | 1305.5 | 1204.9 | 1075.8 | 890.2  | 682.0  |
| 75°   | 131.3 | 141.1 | 194.2 | 352.0  | 678.3  | 1074.1 | 1083.2 | 1031.3 | 874.1  | 646.9  | 403.1  |
| 77.5° | 55.9  | 58.7  | 79.6  | 152.9  | 383.4  | 733.9  | 746.5  | 753.5  | 593.1  | 352.0  | 170.3  |
| 80°   | 34.9  | 36.0  | 45.1  | 69.2   | 179.4  | 412.2  | 425.8  | 443.4  | 294.5  | 129.4  | 59.5   |
| 82.5° | 21.2  | 22.5  | 30.0  | 41.9   | 93.4   | 186.9  | 193.4  | 205.8  | 114.3  | 55.9   | 30.8   |
| 85°   | 12.7  | 13.6  | 18.3  | 26.5   | 53.2   | 73.5   | 73.4   | 81.2   | 53.8   | 36.0   | 16.2   |
| 87.5° | 6.1   | 6.8   | 9.8   | 13.7   | 26.8   | 27.6   | 25.8   | 29.3   | 32.7   | 23.6   | 8.2    |
| 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: ARCH-N-PA1-10-730-12VDC-T4W

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 208.3  | 208.3 | 208.3 | 208.3 | 208.3 | 208.3 | 208.3 | 208.3 | 208.3 | 208.3 | 208.3 |
| 2.5°  | 208.2  | 207.9 | 207.0 | 206.3 | 206.2 | 205.8 | 205.4 | 205.6 | 205.9 | 206.0 | 206.0 |
| 5°    | 208.1  | 207.4 | 206.2 | 205.7 | 206.3 | 207.2 | 208.2 | 209.6 | 210.4 | 211.1 | 211.5 |
| 7.5°  | 211.5  | 210.0 | 208.7 | 208.4 | 209.7 | 211.9 | 214.3 | 217.2 | 219.3 | 220.7 | 220.9 |
| 10°   | 217.1  | 215.3 | 213.9 | 214.2 | 216.5 | 219.7 | 223.0 | 226.8 | 229.9 | 231.8 | 231.9 |
| 12.5° | 223.5  | 221.8 | 220.5 | 221.7 | 225.4 | 229.3 | 232.8 | 236.1 | 238.9 | 240.8 | 240.8 |
| 15°   | 231.0  | 229.7 | 228.2 | 231.0 | 236.0 | 239.5 | 241.0 | 242.6 | 244.1 | 245.5 | 245.2 |
| 17.5° | 238.1  | 236.9 | 236.1 | 239.3 | 244.6 | 246.2 | 245.2 | 244.0 | 244.0 | 244.8 | 244.9 |
| 20°   | 244.2  | 243.2 | 243.7 | 246.8 | 249.6 | 247.9 | 244.2 | 240.5 | 238.9 | 239.3 | 239.8 |
| 22.5° | 249.6  | 249.1 | 250.6 | 252.1 | 250.1 | 244.2 | 237.5 | 232.4 | 230.5 | 230.4 | 230.5 |
| 25°   | 255.9  | 255.9 | 257.7 | 255.0 | 246.3 | 235.5 | 226.5 | 221.5 | 220.5 | 221.3 | 222.7 |
| 27.5° | 263.8  | 264.5 | 265.5 | 255.7 | 238.6 | 222.3 | 213.1 | 209.7 | 210.7 | 212.8 | 214.1 |
| 30°   | 273.8  | 275.9 | 273.9 | 254.0 | 227.6 | 207.2 | 198.4 | 197.4 | 200.3 | 203.2 | 204.6 |
| 32.5° | 283.5  | 286.8 | 282.0 | 249.4 | 213.3 | 191.1 | 184.3 | 184.1 | 187.6 | 190.4 | 192.3 |
| 35°   | 291.3  | 297.9 | 288.1 | 240.4 | 196.8 | 176.4 | 171.4 | 169.5 | 170.8 | 174.1 | 176.3 |
| 37.5° | 301.6  | 312.4 | 292.3 | 226.6 | 178.9 | 164.2 | 158.4 | 154.0 | 152.9 | 154.2 | 155.4 |
| 40°   | 320.3  | 334.6 | 294.3 | 207.4 | 161.4 | 152.0 | 146.1 | 139.8 | 135.4 | 132.1 | 132.2 |
| 42.5° | 350.8  | 363.5 | 293.0 | 184.0 | 145.2 | 140.1 | 133.5 | 126.1 | 119.0 | 111.7 | 111.1 |
| 45°   | 400.3  | 406.5 | 289.2 | 159.2 | 131.0 | 127.7 | 121.4 | 114.1 | 104.6 | 96.3  | 95.5  |
| 47.5° | 479.6  | 466.0 | 283.4 | 137.6 | 118.5 | 117.1 | 111.3 | 102.9 | 92.8  | 86.2  | 85.6  |
| 50°   | 587.7  | 551.8 | 280.5 | 120.4 | 107.4 | 107.8 | 103.2 | 94.2  | 84.7  | 79.8  | 79.2  |
| 52.5° | 717.1  | 651.8 | 286.0 | 107.1 | 98.5  | 100.0 | 96.5  | 88.1  | 80.1  | 76.3  | 75.7  |
| 55°   | 851.2  | 755.4 | 292.0 | 97.4  | 90.1  | 93.0  | 91.8  | 84.9  | 77.7  | 74.1  | 73.6  |
| 57.5° | 966.1  | 832.8 | 280.1 | 89.6  | 82.7  | 87.1  | 88.2  | 82.9  | 76.4  | 73.2  | 72.6  |
| 60°   | 1038.4 | 863.9 | 248.9 | 82.2  | 76.7  | 82.4  | 86.1  | 82.3  | 76.9  | 76.6  | 76.2  |
| 62.5° | 1072.7 | 861.2 | 202.0 | 76.4  | 73.0  | 80.4  | 87.6  | 85.5  | 82.5  | 85.0  | 85.2  |
| 65°   | 1057.3 | 820.0 | 150.5 | 72.6  | 70.3  | 81.2  | 92.2  | 91.4  | 84.1  | 86.6  | 87.0  |
| 67.5° | 955.9  | 721.8 | 111.4 | 69.2  | 67.4  | 83.4  | 100.6 | 93.4  | 81.0  | 82.8  | 81.7  |
| 70°   | 772.6  | 572.3 | 85.9  | 65.4  | 64.4  | 83.1  | 104.4 | 92.2  | 77.5  | 78.0  | 75.0  |
| 72.5° | 532.8  | 390.2 | 69.9  | 61.9  | 60.0  | 75.7  | 101.8 | 89.2  | 74.7  | 71.5  | 67.5  |
| 75°   | 289.7  | 209.5 | 59.4  | 58.3  | 52.4  | 66.5  | 96.9  | 87.1  | 72.1  | 67.8  | 65.6  |
| 77.5° | 114.0  | 86.9  | 51.6  | 53.3  | 45.8  | 58.7  | 91.4  | 83.1  | 68.5  | 62.9  | 61.8  |
| 80°   | 46.5   | 44.4  | 42.8  | 46.1  | 39.4  | 51.4  | 84.8  | 78.5  | 64.2  | 58.4  | 56.1  |
| 82.5° | 26.4   | 27.6  | 33.2  | 36.4  | 32.0  | 47.3  | 81.7  | 74.7  | 59.1  | 52.3  | 49.6  |
| 85°   | 13.5   | 16.2  | 23.2  | 26.1  | 23.5  | 40.2  | 75.2  | 65.4  | 47.4  | 40.0  | 40.2  |
| 87.5° | 6.5    | 9.0   | 14.6  | 16.4  | 15.3  | 29.1  | 56.2  | 47.4  | 37.0  | 29.3  | 28.3  |
| 90°   | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |

Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

STREETWORKS

Report Number: SP1-2101-121-6

Luminaire Tested: IFLD-S-SA2E-730-U-T2

Test Date: 03/04/2021

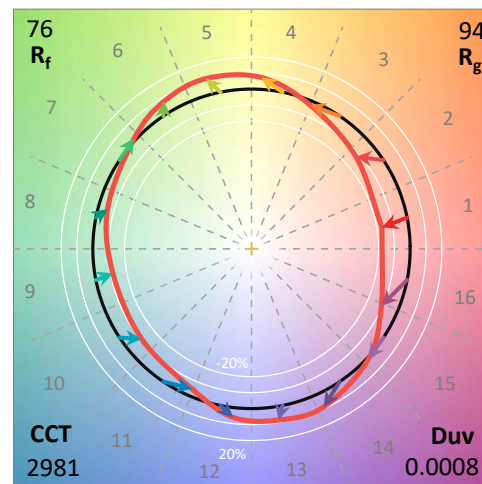
### Test Information

Test Method: LM-79-08  
 Report Number: SP1-2101-121-6  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1  
 Measurement Geometry:  $4\pi$   
 Issue Date: 03/04/2021  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: STREETWORKS  
 Catalog Number: **IFLD-S-SA2E-730-U-T2**  
 Description: STREETWORKS INF FLOOD

PROGRAMMED @ 615mA.

### Spectral Parameters

|                           |        |           |      |      |       |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K):                  | 2981   | CRI (Ra): | 72.3 |      |       |
| CIE u':                   | 0.2509 | R1:       | 68.0 | R9:  | -36.9 |
| CIE v':                   | 0.5228 | R2:       | 82.9 | R10: | 62.7  |
| Duv:                      | 0.0008 | R3:       | 95.0 | R11: | 65.3  |
| CIE x:                    | 0.4393 | R4:       | 68.7 | R12: | 58.3  |
| CIE y:                    | 0.4068 | R5:       | 68.4 | R13: | 70.8  |
| CIE z:                    | 0.1540 | R6:       | 77.8 | R14: | 97.4  |
| Peak Wavelength (nm):     | 598    | R7:       | 76.5 |      |       |
| Dominant Wavelength (nm): | 582    | R8:       | 41.3 |      |       |
| Purity:                   | 54.3   |           |      |      |       |
| Rf:                       | 76.2   |           |      |      |       |
| Rg:                       | 94.1   |           |      |      |       |



### Test Conditions

Stabilization Time: 64M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.0/30%  
 Sphere Temperature (°C): 24.1

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| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 1/31/2021        | 7/31/2021            |
| Power Meter                    | IN0071                | 12/1/2020        | 12/1/2021            |
| AC Power Source                | IN0063                | 12/1/2020        | 12/1/2021            |
| DC Power Source                | IN0208                | 12/1/2020        | 12/1/2021            |
| Sphere Thermometer             | IN0085                | 12/1/2020        | 12/1/2021            |
| Room Thermometer               | IN0046                | 12/1/2020        | 12/1/2021            |

REPORT NUMBER: SP1-2101-121-6

**CIE 1931 Chromaticity Diagram**



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



Point lies inside the ANSI 3000K 4-step quadrangle

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### Photopic Flux vs. Wavelength

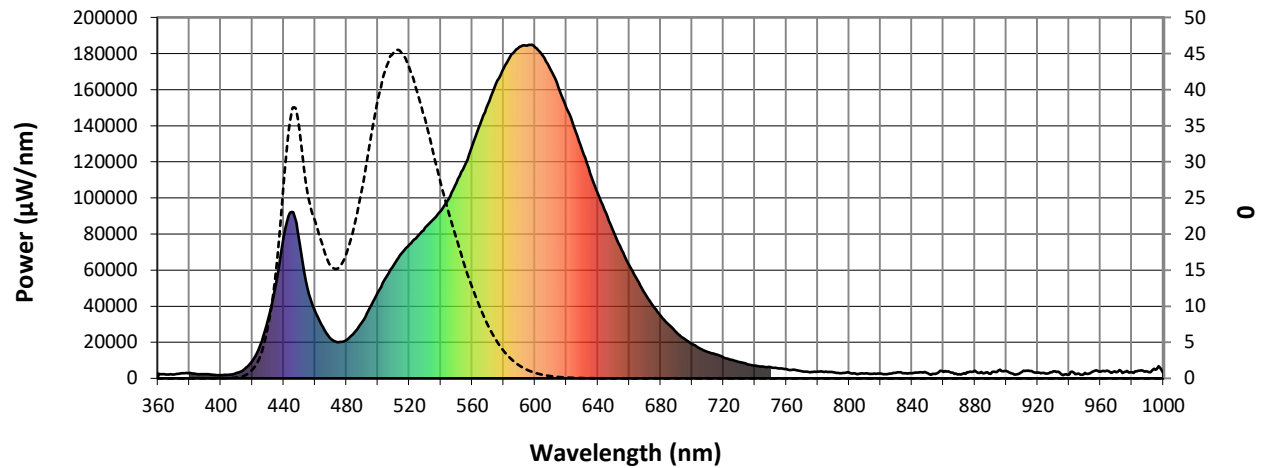


#####

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 2718             | 0.0              | 490       | 31388            | 4.5              | 620       | 149681           | 39.0             | 750       | 6127             | 0.0              | 880       | 4244             | 0.0              |
| 365       | 2104             | 0.0              | 495       | 39325            | 7.1              | 625       | 139059           | 30.7             | 755       | 5537             | 0.0              | 885       | 2890             | 0.0              |
| 370       | 2172             | 0.0              | 500       | 47816            | 10.5             | 630       | 126485           | 22.9             | 760       | 5066             | 0.0              | 890       | 2506             | 0.0              |
| 375       | 2770             | 0.0              | 505       | 55667            | 15.6             | 635       | 114115           | 17.1             | 765       | 4739             | 0.0              | 895       | 4522             | 0.0              |
| 380       | 2942             | 0.0              | 510       | 62766            | 21.6             | 640       | 102385           | 12.2             | 770       | 3828             | 0.0              | 900       | 4104             | 0.0              |
| 385       | 2372             | 0.0              | 515       | 69117            | 28.6             | 645       | 91895            | 8.8              | 775       | 3411             | 0.0              | 905       | 2090             | 0.0              |
| 390       | 2265             | 0.0              | 520       | 74088            | 35.9             | 650       | 81196            | 5.9              | 780       | 3776             | 0.0              | 910       | 3618             | 0.0              |
| 395       | 2023             | 0.0              | 525       | 78477            | 42.1             | 655       | 71232            | 4.1              | 785       | 3744             | 0.0              | 915       | 4126             | 0.0              |
| 400       | 1804             | 0.0              | 530       | 83585            | 49.2             | 660       | 62529            | 2.6              | 790       | 3446             | 0.0              | 920       | 3214             | 0.0              |
| 405       | 2029             | 0.0              | 535       | 87899            | 54.5             | 665       | 54721            | 1.7              | 795       | 2834             | 0.0              | 925       | 2696             | 0.0              |
| 410       | 2968             | 0.0              | 540       | 92850            | 60.5             | 670       | 47069            | 1.0              | 800       | 3213             | 0.0              | 930       | 3892             | 0.0              |
| 415       | 5120             | 0.0              | 545       | 99487            | 66.2             | 675       | 40348            | 0.7              | 805       | 2357             | 0.0              | 935       | 2376             | 0.0              |
| 420       | 9660             | 0.0              | 550       | 108411           | 73.7             | 680       | 34816            | 0.4              | 810       | 2616             | 0.0              | 940       | 2172             | 0.0              |
| 425       | 18379            | 0.1              | 555       | 117570           | 80.3             | 685       | 29890            | 0.3              | 815       | 2510             | 0.0              | 945       | 2531             | 0.0              |
| 430       | 32455            | 0.3              | 560       | 128783           | 87.5             | 690       | 25584            | 0.1              | 820       | 2684             | 0.0              | 950       | 3041             | 0.0              |
| 435       | 52561            | 0.6              | 565       | 140888           | 93.7             | 695       | 21945            | 0.1              | 825       | 2434             | 0.0              | 955       | 3777             | 0.0              |
| 440       | 78320            | 1.2              | 570       | 151789           | 98.7             | 700       | 19163            | 0.1              | 830       | 3163             | 0.0              | 960       | 3733             | 0.0              |
| 445       | 92278            | 1.9              | 575       | 163210           | 101.6            | 705       | 16563            | 0.0              | 835       | 2905             | 0.0              | 965       | 4082             | 0.0              |
| 450       | 75996            | 2.0              | 580       | 171760           | 102.1            | 710       | 14632            | 0.0              | 840       | 2917             | 0.0              | 970       | 3333             | 0.0              |
| 455       | 50251            | 1.7              | 585       | 179606           | 99.8             | 715       | 13282            | 0.0              | 845       | 3384             | 0.0              | 975       | 3396             | 0.0              |
| 460       | 37320            | 1.5              | 590       | 183682           | 95.0             | 720       | 11587            | 0.0              | 850       | 2926             | 0.0              | 980       | 3415             | 0.0              |
| 465       | 28321            | 1.5              | 595       | 184440           | 87.4             | 725       | 10271            | 0.0              | 855       | 2420             | 0.0              | 985       | 4316             | 0.0              |
| 470       | 21814            | 1.4              | 600       | 183413           | 79.0             | 730       | 9052             | 0.0              | 860       | 3637             | 0.0              | 990       | 3771             | 0.0              |
| 475       | 19996            | 1.6              | 605       | 178745           | 69.2             | 735       | 7872             | 0.0              | 865       | 3162             | 0.0              | 995       | 4745             | 0.0              |
| 480       | 21364            | 2.0              | 610       | 170867           | 58.7             | 740       | 7066             | 0.0              | 870       | 2292             | 0.0              | 1000      | 2768             | 0.0              |
| 485       | 25425            | 3.0              | 615       | 161088           | 48.6             | 745       | 6501             | 0.0              | 875       | 3357             | 0.0              |           |                  |                  |

REPORT NUMBER: SP1-2101-121-6

### Scotopic Flux vs. Wavelength



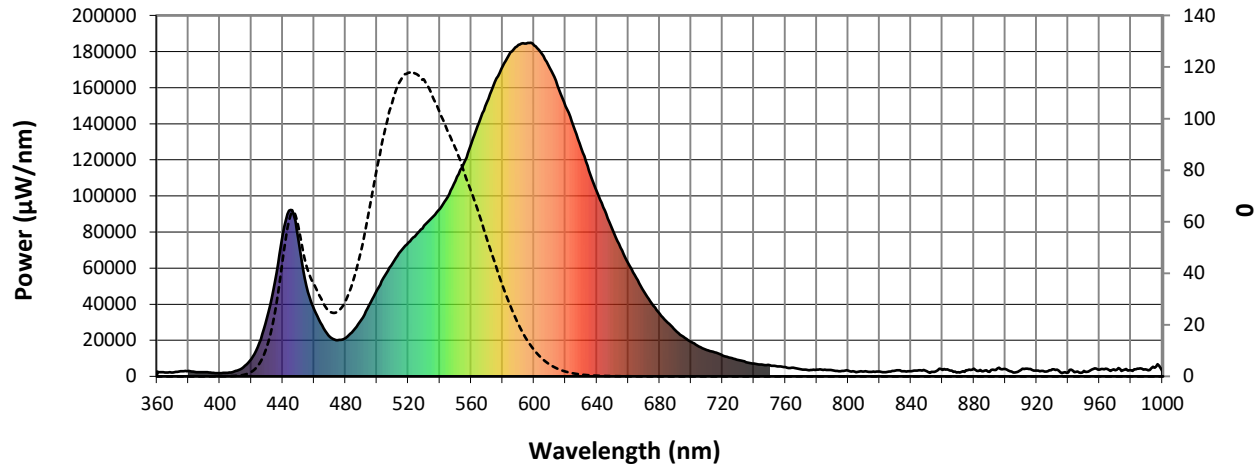
Scotopic Lumens: 10635.1

S/P: 1.22

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 2718             | 0.0              | 490       | 31388            | 48.3             | 620       | 149681           | 1.9              | 750       | 6127             | 0.0              | 880       | 4244             | 0.0              |
| 365       | 2104             | 0.0              | 495       | 39325            | 63.6             | 625       | 139059           | 1.2              | 755       | 5537             | 0.0              | 885       | 2890             | 0.0              |
| 370       | 2172             | 0.0              | 500       | 47816            | 80.0             | 630       | 126485           | 0.7              | 760       | 5066             | 0.0              | 890       | 2506             | 0.0              |
| 375       | 2770             | 0.0              | 505       | 55667            | 94.6             | 635       | 114115           | 0.4              | 765       | 4739             | 0.0              | 895       | 4522             | 0.0              |
| 380       | 2942             | 0.0              | 510       | 62766            | 106.4            | 640       | 102385           | 0.3              | 770       | 3828             | 0.0              | 900       | 4104             | 0.0              |
| 385       | 2372             | 0.0              | 515       | 69117            | 114.6            | 645       | 91895            | 0.2              | 775       | 3411             | 0.0              | 905       | 2090             | 0.0              |
| 390       | 2265             | 0.0              | 520       | 74088            | 117.8            | 650       | 81196            | 0.1              | 780       | 3776             | 0.0              | 910       | 3618             | 0.0              |
| 395       | 2023             | 0.0              | 525       | 78477            | 117.4            | 655       | 71232            | 0.1              | 785       | 3744             | 0.0              | 915       | 4126             | 0.0              |
| 400       | 1804             | 0.0              | 530       | 83585            | 115.2            | 660       | 62529            | 0.0              | 790       | 3446             | 0.0              | 920       | 3214             | 0.0              |
| 405       | 2029             | 0.1              | 535       | 87899            | 109.5            | 665       | 54721            | 0.0              | 795       | 2834             | 0.0              | 925       | 2696             | 0.0              |
| 410       | 2968             | 0.2              | 540       | 92850            | 102.6            | 670       | 47069            | 0.0              | 800       | 3213             | 0.0              | 930       | 3892             | 0.0              |
| 415       | 5120             | 0.5              | 545       | 99487            | 95.4             | 675       | 40348            | 0.0              | 805       | 2357             | 0.0              | 935       | 2376             | 0.0              |
| 420       | 9660             | 1.6              | 550       | 108411           | 88.6             | 680       | 34816            | 0.0              | 810       | 2616             | 0.0              | 940       | 2172             | 0.0              |
| 425       | 18379            | 4.5              | 555       | 117570           | 80.3             | 685       | 29890            | 0.0              | 815       | 2510             | 0.0              | 945       | 2531             | 0.0              |
| 430       | 32455            | 11.0             | 560       | 128783           | 72.0             | 690       | 25584            | 0.0              | 820       | 2684             | 0.0              | 950       | 3041             | 0.0              |
| 435       | 52561            | 23.5             | 565       | 140888           | 63.2             | 695       | 21945            | 0.0              | 825       | 2434             | 0.0              | 955       | 3777             | 0.0              |
| 440       | 78320            | 43.8             | 570       | 151789           | 53.6             | 700       | 19163            | 0.0              | 830       | 3163             | 0.0              | 960       | 3733             | 0.0              |
| 445       | 92278            | 61.8             | 575       | 163210           | 44.4             | 705       | 16563            | 0.0              | 835       | 2905             | 0.0              | 965       | 4082             | 0.0              |
| 450       | 75996            | 58.9             | 580       | 171760           | 35.4             | 710       | 14632            | 0.0              | 840       | 2917             | 0.0              | 970       | 3333             | 0.0              |
| 455       | 50251            | 43.9             | 585       | 179606           | 27.4             | 715       | 13282            | 0.0              | 845       | 3384             | 0.0              | 975       | 3396             | 0.0              |
| 460       | 37320            | 36.0             | 590       | 183682           | 20.5             | 720       | 11587            | 0.0              | 850       | 2926             | 0.0              | 980       | 3415             | 0.0              |
| 465       | 28321            | 29.9             | 595       | 184440           | 14.7             | 725       | 10271            | 0.0              | 855       | 2420             | 0.0              | 985       | 4316             | 0.0              |
| 470       | 21814            | 25.1             | 600       | 183413           | 10.3             | 730       | 9052             | 0.0              | 860       | 3637             | 0.0              | 990       | 3771             | 0.0              |
| 475       | 19996            | 25.0             | 605       | 178745           | 7.0              | 735       | 7872             | 0.0              | 865       | 3162             | 0.0              | 995       | 4745             | 0.0              |
| 480       | 21364            | 28.9             | 610       | 170867           | 4.6              | 740       | 7066             | 0.0              | 870       | 2292             | 0.0              | 1000      | 2768             | 0.0              |
| 485       | 25425            | 36.9             | 615       | 161088           | 3.0              | 745       | 6501             | 0.0              | 875       | 3357             | 0.0              |           |                  |                  |

REPORT NUMBER: SP1-2101-121-6

### Melanopic Flux vs. Wavelength



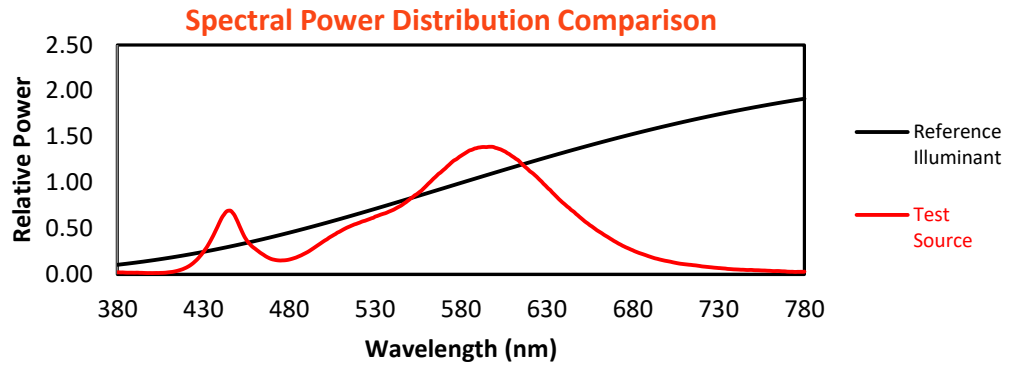
**Melanopic Lumens: 3860**

**M/P: 0.44**

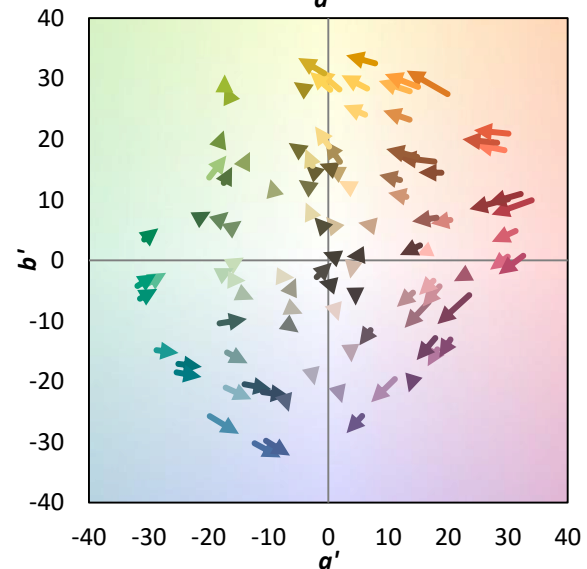
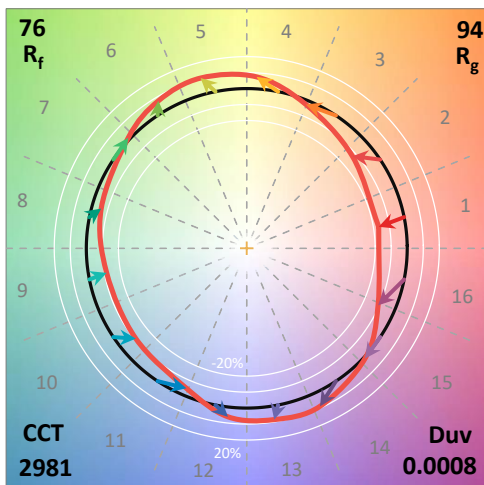
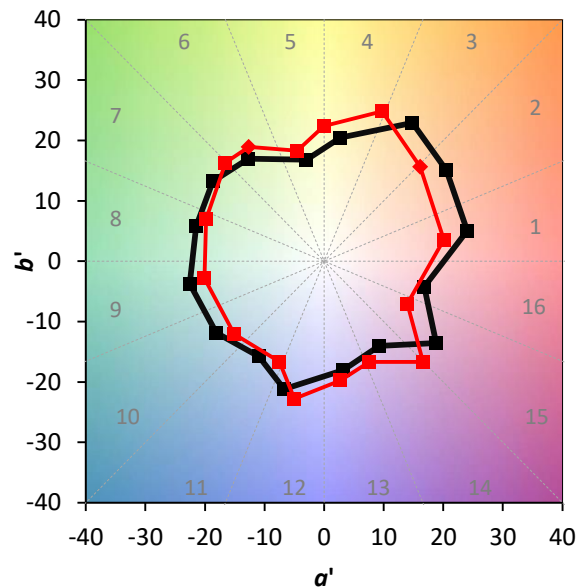
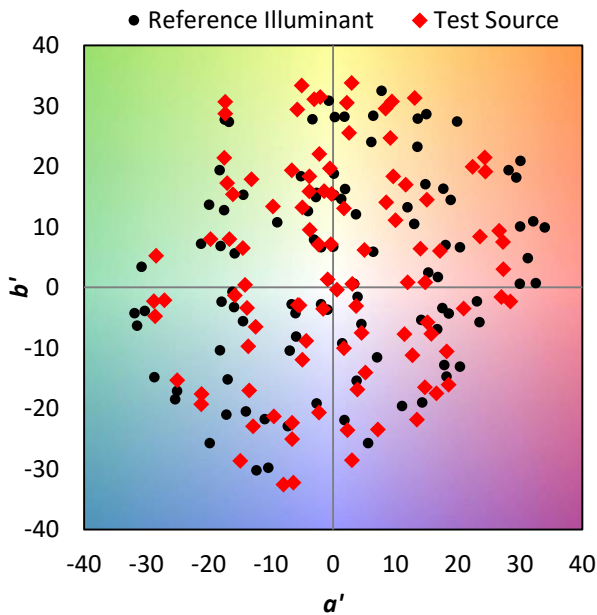
| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 2718             | 0.0              | 490       | 31388            | 26.1             | 620       | 149681           | 0.1              | 750       | 6127             | 0.0              | 880       | 4244             | 0.0              |
| 365       | 2104             | 0.0              | 495       | 39325            | 32.5             | 625       | 139059           | 0.1              | 755       | 5537             | 0.0              | 885       | 2890             | 0.0              |
| 370       | 2172             | 0.0              | 500       | 47816            | 38.4             | 630       | 126485           | 0.0              | 760       | 5066             | 0.0              | 890       | 2506             | 0.0              |
| 375       | 2770             | 0.0              | 505       | 55667            | 42.7             | 635       | 114115           | 0.0              | 765       | 4739             | 0.0              | 895       | 4522             | 0.0              |
| 380       | 2942             | 0.0              | 510       | 62766            | 45.1             | 640       | 102385           | 0.0              | 770       | 3828             | 0.0              | 900       | 4104             | 0.0              |
| 385       | 2372             | 0.0              | 515       | 69117            | 45.2             | 645       | 91895            | 0.0              | 775       | 3411             | 0.0              | 905       | 2090             | 0.0              |
| 390       | 2265             | 0.0              | 520       | 74088            | 43.1             | 650       | 81196            | 0.0              | 780       | 3776             | 0.0              | 910       | 3618             | 0.0              |
| 395       | 2023             | 0.0              | 525       | 78477            | 39.8             | 655       | 71232            | 0.0              | 785       | 3744             | 0.0              | 915       | 4126             | 0.0              |
| 400       | 1804             | 0.0              | 530       | 83585            | 36.1             | 660       | 62529            | 0.0              | 790       | 3446             | 0.0              | 920       | 3214             | 0.0              |
| 405       | 2029             | 0.0              | 535       | 87899            | 31.6             | 665       | 54721            | 0.0              | 795       | 2834             | 0.0              | 925       | 2696             | 0.0              |
| 410       | 2968             | 0.1              | 540       | 92850            | 27.2             | 670       | 47069            | 0.0              | 800       | 3213             | 0.0              | 930       | 3892             | 0.0              |
| 415       | 5120             | 0.3              | 545       | 99487            | 23.1             | 675       | 40348            | 0.0              | 805       | 2357             | 0.0              | 935       | 2376             | 0.0              |
| 420       | 9660             | 1.1              | 550       | 108411           | 19.5             | 680       | 34816            | 0.0              | 810       | 2616             | 0.0              | 940       | 2172             | 0.0              |
| 425       | 18379            | 2.9              | 555       | 117570           | 15.9             | 685       | 29890            | 0.0              | 815       | 2510             | 0.0              | 945       | 2531             | 0.0              |
| 430       | 32455            | 6.9              | 560       | 128783           | 12.7             | 690       | 25584            | 0.0              | 820       | 2684             | 0.0              | 950       | 3041             | 0.0              |
| 435       | 52561            | 14.0             | 565       | 140888           | 9.9              | 695       | 21945            | 0.0              | 825       | 2434             | 0.0              | 955       | 3777             | 0.0              |
| 440       | 78320            | 26.2             | 570       | 151789           | 7.4              | 700       | 19163            | 0.0              | 830       | 3163             | 0.0              | 960       | 3733             | 0.0              |
| 445       | 92278            | 36.4             | 575       | 163210           | 5.4              | 705       | 16563            | 0.0              | 835       | 2905             | 0.0              | 965       | 4082             | 0.0              |
| 450       | 75996            | 35.0             | 580       | 171760           | 3.8              | 710       | 14632            | 0.0              | 840       | 2917             | 0.0              | 970       | 3333             | 0.0              |
| 455       | 50251            | 26.3             | 585       | 179606           | 2.7              | 715       | 13282            | 0.0              | 845       | 3384             | 0.0              | 975       | 3396             | 0.0              |
| 460       | 37320            | 22.0             | 590       | 183682           | 1.8              | 720       | 11587            | 0.0              | 850       | 2926             | 0.0              | 980       | 3415             | 0.0              |
| 465       | 28321            | 18.5             | 595       | 184440           | 1.2              | 725       | 10271            | 0.0              | 855       | 2420             | 0.0              | 985       | 4316             | 0.0              |
| 470       | 21814            | 15.6             | 600       | 183413           | 0.8              | 730       | 9052             | 0.0              | 860       | 3637             | 0.0              | 990       | 3771             | 0.0              |
| 475       | 19996            | 15.3             | 605       | 178745           | 0.5              | 735       | 7872             | 0.0              | 865       | 3162             | 0.0              | 995       | 4745             | 0.0              |
| 480       | 21364            | 17.2             | 610       | 170867           | 0.3              | 740       | 7066             | 0.0              | 870       | 2292             | 0.0              | 1000      | 2768             | 0.0              |
| 485       | 25425            | 21.0             | 615       | 161088           | 0.2              | 745       | 6501             | 0.0              | 875       | 3357             | 0.0              |           |                  |                  |

### Summary

$R_f = 76.2$   
 $R_g = 94.1$   
 CIE  $R_a = 72.3$   
 $R_g = -36.9$



### Color Vector Graphics

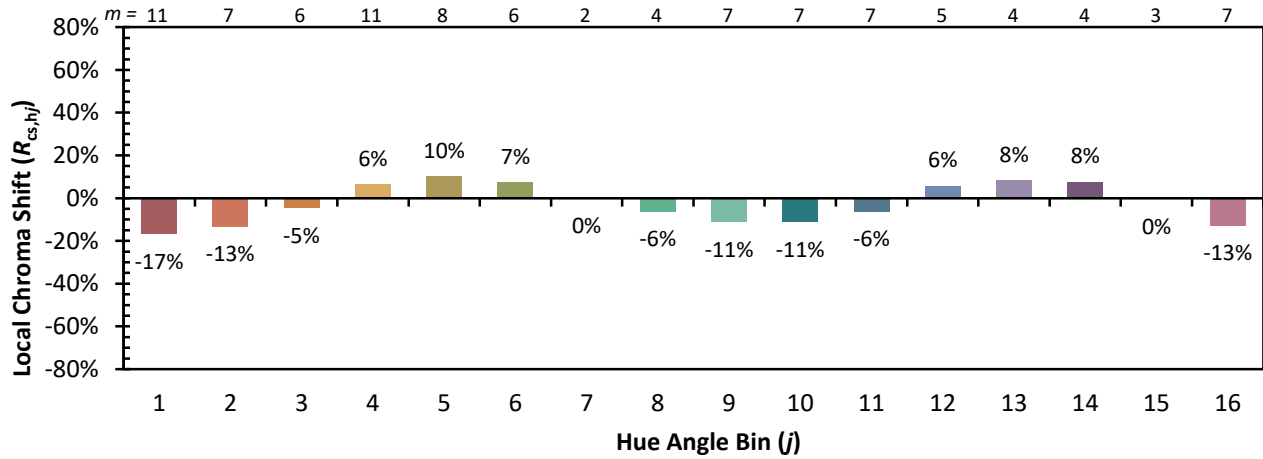


Individual Sample Fidelity Index ( $R_{f,i}$ )

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 67 | CES51 = 88 | CES76 = 64 |
| CES02 = 63 | CES27 = 88 | CES52 = 87 | CES77 = 81 |
| CES03 = 31 | CES28 = 88 | CES53 = 79 | CES78 = 67 |
| CES04 = 71 | CES29 = 66 | CES54 = 84 | CES79 = 87 |
| CES05 = 49 | CES30 = 72 | CES55 = 84 | CES80 = 87 |
| CES06 = 51 | CES31 = 70 | CES56 = 75 | CES81 = 71 |
| CES07 = 41 | CES32 = 66 | CES57 = 74 | CES82 = 94 |
| CES08 = 40 | CES33 = 73 | CES58 = 77 | CES83 = 90 |
| CES09 = 29 | CES34 = 80 | CES59 = 86 | CES84 = 90 |
| CES10 = 76 | CES35 = 90 | CES60 = 93 | CES85 = 78 |
| CES11 = 59 | CES36 = 96 | CES61 = 85 | CES86 = 61 |
| CES12 = 65 | CES37 = 88 | CES62 = 90 | CES87 = 79 |
| CES13 = 43 | CES38 = 80 | CES63 = 77 | CES88 = 77 |
| CES14 = 74 | CES39 = 95 | CES64 = 73 | CES89 = 67 |
| CES15 = 71 | CES40 = 91 | CES65 = 69 | CES90 = 76 |
| CES16 = 47 | CES41 = 88 | CES66 = 71 | CES91 = 90 |
| CES17 = 50 | CES42 = 89 | CES67 = 69 | CES92 = 59 |
| CES18 = 56 | CES43 = 80 | CES68 = 73 | CES93 = 75 |
| CES19 = 73 | CES44 = 99 | CES69 = 82 | CES94 = 50 |
| CES20 = 66 | CES45 = 85 | CES70 = 68 | CES95 = 69 |
| CES21 = 87 | CES46 = 80 | CES71 = 68 | CES96 = 77 |
| CES22 = 79 | CES47 = 81 | CES72 = 88 | CES97 = 83 |
| CES23 = 92 | CES48 = 69 | CES73 = 61 | CES98 = 75 |
| CES24 = 91 | CES49 = 80 | CES74 = 95 | CES99 = 63 |
| CES25 = 73 | CES50 = 87 | CES75 = 70 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)