

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: P348771

Luminaire Tested: **ARCH-N-PA1-10-750-12VDC-T2R-HSS**

Issue Date: 3/3/2020



**Test Information**

Test Method: LM-79-08  
Report Number: P348771  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-9)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: ARCH-N-PA1-10-750-12VDC-T2R-HSS  
Description: ARCHEON ROADWAY AND AREA LUMINAIRE  
(1) 70 CRI, 5000K, 270mA LIGHT ENGINE WITH 16 LEDS AND  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1780 lumens  
Efficiency: N/A  
Efficacy: 127.1 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.75' x H: 0')  
IES Classification: Type II - Medium  
BUG Rating: B0 - U0 - G0

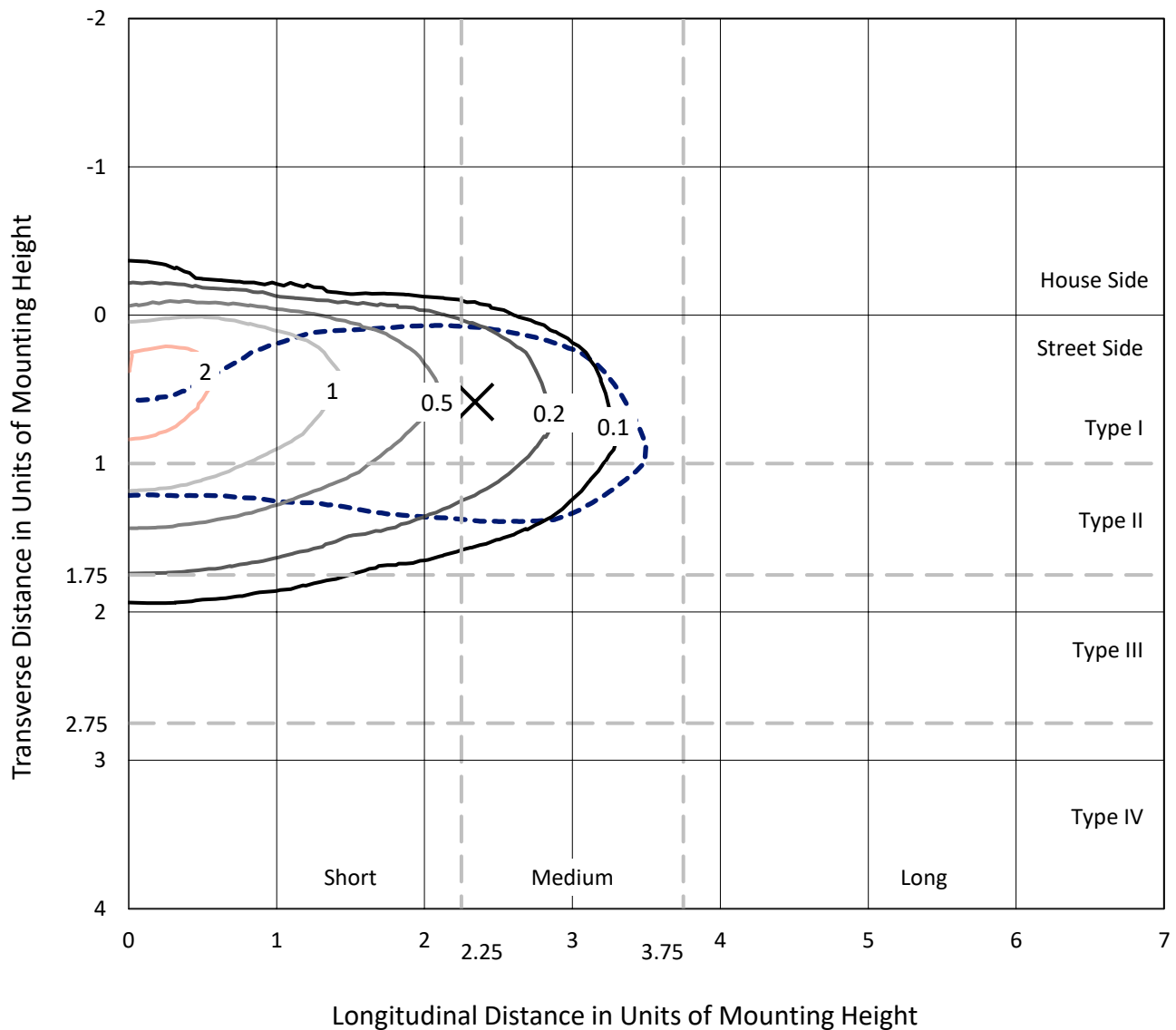
Input Watts (W): 14  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT

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## Iso-Footcandle Lines of Horizontal Illumination

✕ Max cd  
 - - - 1/2 Max cd

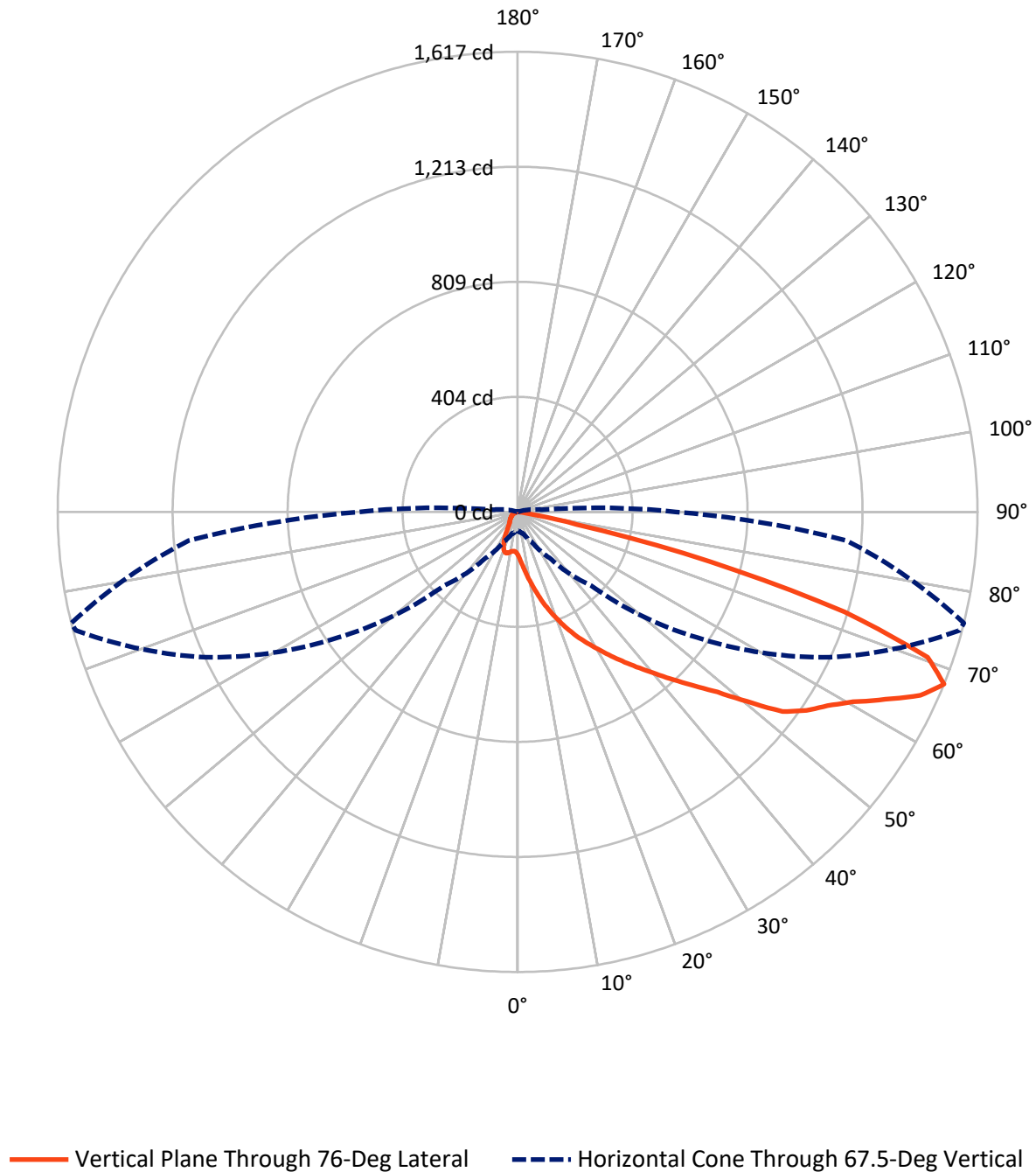


Based on 15 foot mounting height. Maximum calculated value = 2.4 fc  
 Type II - Medium - N/A

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## Luminous Intensity Polar Plot



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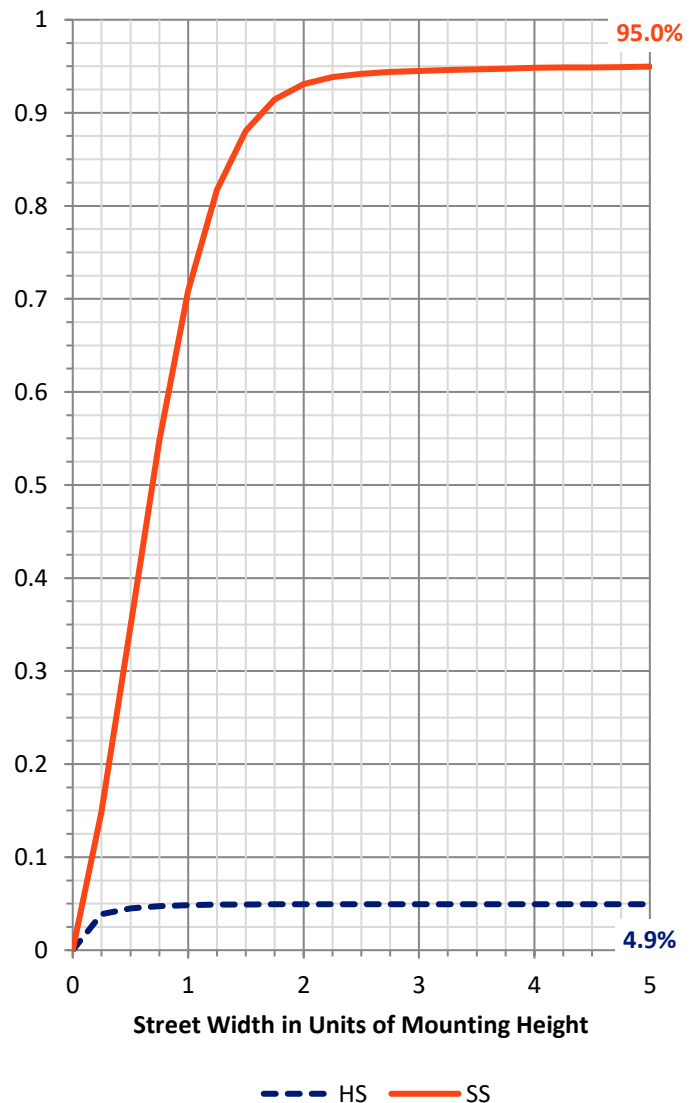
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 88.4     | 0.0    | 88.4   |
|                    | % Fixture | 5.0      | 0.0    | 5.0    |
| <b>Street Side</b> | Lumens    | 1691.6   | 0.0    | 1691.6 |
|                    | % Fixture | 95.0     | 0.0    | 95.0   |
| <b>Total</b>       | Lumens    | 1780.0   | 0.0    | 1780.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 18.8   | 1.1       |
| 10°-20°   | 74.4   | 4.2       |
| 20°-30°   | 151.4  | 8.5       |
| 30°-40°   | 262.9  | 14.8      |
| 40°-50°   | 371.4  | 20.9      |
| 50°-60°   | 421.2  | 23.7      |
| 60°-70°   | 349.3  | 19.6      |
| 70°-80°   | 126.5  | 7.1       |
| 80°-90°   | 4.1    | 0.2       |
| 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°    | 1780.0 | 100.0     |
| 0°-180°   | 1780.0 | 100.0     |

**Coefficient of Utilization**



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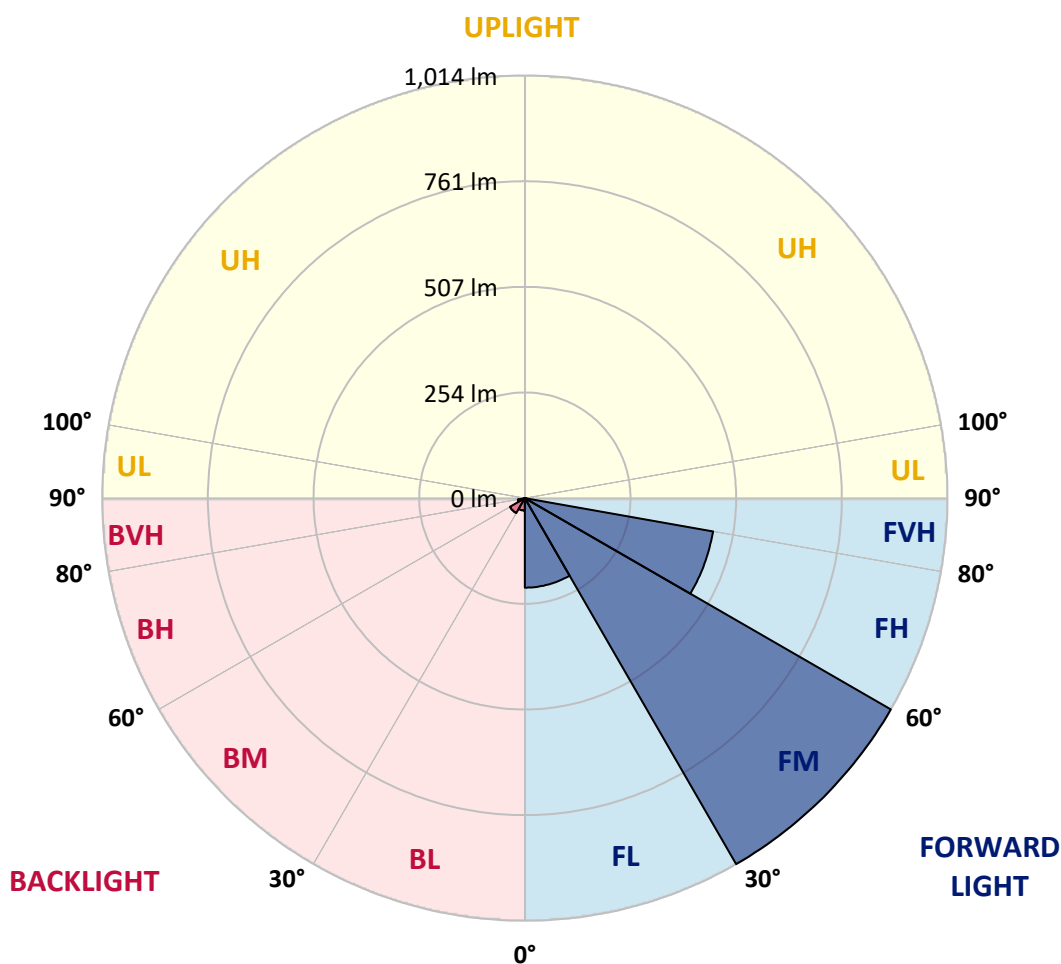
CATALOG NUMBER: ARCH-N-PA1-10-750-12VDC-T2R-HSS

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |        |
|------|-------------|--------|-----------|-------------------------|------|--------|
|      |             |        |           | B                       | U    | G      |
| FL   | (0°-30°)    | 214.8  | 12.1      |                         |      |        |
| FM   | (30°-60°)   | 1014.0 | 57.0      |                         |      |        |
| FH   | (60°-80°)   | 458.8  | 25.8      |                         |      | G0/660 |
| FVH  | (80°-90°)   | 4.0    | 0.2       |                         |      | G0/10  |
| BL   | (0°-30°)    | 29.8   | 1.7       | B0/110                  |      |        |
| BM   | (30°-60°)   | 41.4   | 2.3       | B0/220                  |      |        |
| BH   | (60°-80°)   | 17.1   | 1.0       | B0/110                  |      | G0/110 |
| BVH  | (80°-90°)   | 0.1    | 0.0       |                         |      | G0/10  |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |        |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |        |

**BUG Rating: B0-U0-G0**

Type II Medium



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°   | 25°   | 35°   | 45°    | 55°    | 65°    | 75°    | 76°    | 85°    |
|-------|--------|--------|-------|-------|-------|--------|--------|--------|--------|--------|--------|
| 0°    | 151.0  | 151.0  | 151.0 | 151.0 | 151.0 | 151.0  | 151.0  | 151.0  | 151.0  | 151.0  | 151.0  |
| 2.5°  | 225.4  | 220.3  | 221.5 | 218.2 | 212.3 | 200.1  | 189.8  | 179.9  | 168.5  | 168.1  | 158.6  |
| 5°    | 303.9  | 299.7  | 299.1 | 292.5 | 281.7 | 261.0  | 240.9  | 218.0  | 192.4  | 190.5  | 170.5  |
| 7.5°  | 375.2  | 371.8  | 370.5 | 362.7 | 342.6 | 322.5  | 296.3  | 262.6  | 222.6  | 219.2  | 186.5  |
| 10°   | 430.0  | 428.3  | 428.7 | 423.0 | 405.9 | 387.2  | 352.8  | 309.8  | 256.8  | 251.5  | 205.7  |
| 12.5° | 471.5  | 471.9  | 474.7 | 471.2 | 461.6 | 447.8  | 411.0  | 360.1  | 294.7  | 287.5  | 227.6  |
| 15°   | 502.0  | 503.9  | 509.1 | 513.4 | 512.7 | 500.6  | 466.9  | 411.2  | 335.0  | 326.9  | 252.0  |
| 17.5° | 521.7  | 523.9  | 531.4 | 540.9 | 549.6 | 546.8  | 520.9  | 460.5  | 375.7  | 366.4  | 278.1  |
| 20°   | 539.0  | 541.6  | 549.6 | 562.2 | 578.5 | 582.0  | 565.0  | 508.3  | 416.3  | 405.0  | 305.1  |
| 22.5° | 576.5  | 576.5  | 581.4 | 588.7 | 604.2 | 613.3  | 602.5  | 552.7  | 456.5  | 444.7  | 332.6  |
| 25°   | 644.4  | 641.8  | 640.1 | 634.3 | 637.8 | 643.4  | 637.4  | 594.2  | 496.9  | 485.0  | 360.6  |
| 27.5° | 725.0  | 726.6  | 712.7 | 697.2 | 685.2 | 679.4  | 669.6  | 632.6  | 535.7  | 522.6  | 387.9  |
| 30°   | 810.1  | 810.6  | 794.2 | 774.4 | 748.0 | 726.0  | 709.0  | 669.3  | 575.7  | 561.4  | 414.4  |
| 32.5° | 886.9  | 883.8  | 867.6 | 840.6 | 807.2 | 782.6  | 747.3  | 710.4  | 617.9  | 604.1  | 443.9  |
| 35°   | 947.7  | 944.1  | 924.4 | 899.8 | 865.2 | 840.4  | 797.9  | 751.3  | 662.4  | 648.9  | 473.4  |
| 37.5° | 992.2  | 987.9  | 967.7 | 942.4 | 912.5 | 898.1  | 856.6  | 795.8  | 710.9  | 696.4  | 504.5  |
| 40°   | 1007.6 | 1003.9 | 991.2 | 972.7 | 948.7 | 945.4  | 918.9  | 847.1  | 763.7  | 748.3  | 539.8  |
| 42.5° | 998.4  | 994.8  | 990.3 | 984.0 | 974.1 | 977.2  | 977.7  | 905.5  | 822.4  | 807.2  | 578.7  |
| 45°   | 961.9  | 958.7  | 963.4 | 972.5 | 984.9 | 1000.3 | 1031.4 | 968.3  | 887.9  | 871.7  | 623.7  |
| 47.5° | 908.2  | 905.8  | 918.8 | 941.5 | 977.8 | 1020.4 | 1080.4 | 1034.3 | 961.4  | 946.4  | 679.9  |
| 50°   | 831.7  | 831.3  | 857.2 | 898.8 | 954.6 | 1030.1 | 1131.1 | 1109.3 | 1063.6 | 1047.8 | 757.9  |
| 52.5° | 712.7  | 713.5  | 764.4 | 830.9 | 913.8 | 1023.5 | 1163.7 | 1205.7 | 1182.5 | 1166.0 | 825.6  |
| 55°   | 599.4  | 604.1  | 640.2 | 736.1 | 851.2 | 999.2  | 1175.0 | 1250.7 | 1248.1 | 1232.5 | 863.2  |
| 57.5° | 488.4  | 496.9  | 531.7 | 621.3 | 759.9 | 943.1  | 1168.8 | 1270.2 | 1296.9 | 1284.9 | 912.8  |
| 60°   | 368.1  | 372.0  | 412.1 | 495.9 | 642.7 | 840.8  | 1124.1 | 1280.8 | 1363.6 | 1355.4 | 984.7  |
| 62.5° | 234.2  | 244.0  | 279.5 | 360.3 | 500.4 | 698.7  | 1048.8 | 1280.7 | 1447.2 | 1451.7 | 1077.6 |
| 65°   | 123.4  | 134.8  | 153.6 | 223.3 | 343.9 | 539.9  | 935.5  | 1268.6 | 1549.7 | 1556.0 | 1150.2 |
| 67.5° | 66.5   | 69.8   | 79.8  | 115.9 | 199.4 | 365.8  | 768.9  | 1209.4 | 1609.0 | 1617.4 | 1160.4 |
| 70°   | 48.7   | 50.5   | 54.2  | 64.1  | 100.4 | 212.5  | 561.1  | 1075.0 | 1532.5 | 1529.4 | 1031.0 |
| 72.5° | 37.4   | 40.2   | 43.0  | 47.0  | 57.7  | 113.4  | 349.3  | 841.8  | 1222.8 | 1202.2 | 770.7  |
| 75°   | 29.5   | 29.9   | 33.9  | 37.5  | 43.3  | 64.6   | 155.1  | 490.3  | 746.3  | 697.6  | 399.6  |
| 77.5° | 23.6   | 23.9   | 26.2  | 29.3  | 34.8  | 42.4   | 48.0   | 192.9  | 238.3  | 212.6  | 86.7   |
| 80°   | 14.0   | 14.7   | 19.5  | 22.6  | 28.9  | 26.8   | 17.5   | 41.9   | 37.2   | 33.7   | 14.6   |
| 82.5° | 7.8    | 8.4    | 11.0  | 17.9  | 20.1  | 12.8   | 8.7    | 11.3   | 8.7    | 8.5    | 4.1    |
| 85°   | 0.0    | 0.4    | 7.1   | 11.1  | 8.2   | 2.8    | 3.7    | 3.7    | 2.6    | 2.4    | 1.6    |
| 87.5° | 0.0    | 0.0    | 2.2   | 2.1   | 0.3   | 0.5    | 0.9    | 1.2    | 1.0    | 1.0    | 0.9    |
| 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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**CANDELA DISTRIBUTION (continued):**

|       | 90°   | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 151.0 | 151.0 | 151.0 | 151.0 | 151.0 | 151.0 | 151.0 | 151.0 | 151.0 | 151.0 | 151.0 |
| 2.5°  | 154.0 | 149.7 | 141.8 | 134.0 | 127.4 | 122.1 | 117.2 | 115.3 | 113.7 | 113.5 | 112.2 |
| 5°    | 160.8 | 152.3 | 137.1 | 124.6 | 116.3 | 110.4 | 105.3 | 102.2 | 99.8  | 98.8  | 98.0  |
| 7.5°  | 171.2 | 158.3 | 136.5 | 122.1 | 112.2 | 102.2 | 92.8  | 82.7  | 76.4  | 73.9  | 72.5  |
| 10°   | 183.8 | 166.3 | 138.8 | 121.4 | 104.0 | 82.9  | 67.4  | 54.5  | 49.3  | 47.6  | 47.1  |
| 12.5° | 198.6 | 176.2 | 142.9 | 117.1 | 86.5  | 58.9  | 46.5  | 42.1  | 40.9  | 40.4  | 40.4  |
| 15°   | 215.5 | 187.0 | 145.8 | 104.4 | 64.0  | 44.5  | 40.2  | 38.2  | 37.0  | 36.3  | 36.3  |
| 17.5° | 232.8 | 197.6 | 144.4 | 86.1  | 47.2  | 39.6  | 36.4  | 34.2  | 32.5  | 31.8  | 31.7  |
| 20°   | 250.3 | 207.5 | 136.6 | 64.1  | 39.9  | 36.0  | 32.4  | 29.9  | 28.2  | 27.5  | 27.4  |
| 22.5° | 268.4 | 215.8 | 122.8 | 47.0  | 35.9  | 31.9  | 28.4  | 26.0  | 24.3  | 23.7  | 23.4  |
| 25°   | 286.0 | 222.6 | 103.7 | 38.1  | 32.1  | 28.1  | 24.7  | 22.5  | 21.0  | 20.4  | 20.3  |
| 27.5° | 302.5 | 226.9 | 81.4  | 33.6  | 28.7  | 24.6  | 21.6  | 19.6  | 18.3  | 17.9  | 17.8  |
| 30°   | 317.3 | 227.3 | 60.2  | 30.3  | 25.7  | 21.7  | 18.9  | 17.1  | 16.0  | 15.5  | 15.4  |
| 32.5° | 332.3 | 224.0 | 43.8  | 27.4  | 23.0  | 19.1  | 16.4  | 15.0  | 14.2  | 13.8  | 13.8  |
| 35°   | 346.4 | 216.4 | 34.2  | 24.8  | 20.4  | 16.6  | 14.4  | 13.4  | 12.9  | 12.6  | 12.6  |
| 37.5° | 360.2 | 205.6 | 29.0  | 22.5  | 17.9  | 14.5  | 12.7  | 12.1  | 11.7  | 11.3  | 11.3  |
| 40°   | 374.2 | 191.9 | 26.4  | 20.4  | 15.8  | 12.9  | 11.3  | 10.8  | 10.4  | 10.1  | 10.0  |
| 42.5° | 391.4 | 176.2 | 24.6  | 18.5  | 14.0  | 11.4  | 10.0  | 9.4   | 9.0   | 8.7   | 8.6   |
| 45°   | 411.4 | 162.6 | 23.2  | 16.5  | 12.6  | 10.1  | 8.7   | 8.0   | 7.6   | 7.2   | 7.1   |
| 47.5° | 440.2 | 152.8 | 21.4  | 14.4  | 11.2  | 8.8   | 7.5   | 6.8   | 6.1   | 5.7   | 5.6   |
| 50°   | 476.9 | 144.7 | 19.0  | 12.6  | 9.7   | 7.5   | 6.2   | 5.4   | 4.8   | 4.4   | 4.4   |
| 52.5° | 495.2 | 134.1 | 16.8  | 10.9  | 8.2   | 6.3   | 5.1   | 4.1   | 3.7   | 3.4   | 3.4   |
| 55°   | 502.5 | 126.0 | 14.6  | 9.3   | 6.8   | 5.2   | 4.0   | 3.1   | 2.9   | 2.7   | 2.6   |
| 57.5° | 523.1 | 123.6 | 12.7  | 7.9   | 5.6   | 4.1   | 3.0   | 2.3   | 2.2   | 1.9   | 1.9   |
| 60°   | 556.3 | 124.8 | 11.0  | 6.7   | 4.5   | 3.2   | 2.3   | 1.8   | 1.6   | 1.3   | 1.3   |
| 62.5° | 592.0 | 123.3 | 9.3   | 5.8   | 3.5   | 2.3   | 1.6   | 1.3   | 1.3   | 0.8   | 0.7   |
| 65°   | 598.9 | 109.8 | 8.0   | 4.8   | 2.7   | 1.7   | 1.0   | 0.9   | 1.2   | 0.2   | 0.0   |
| 67.5° | 555.9 | 85.2  | 6.9   | 3.7   | 2.0   | 1.3   | 0.8   | 0.4   | 1.0   | 0.0   | 0.0   |
| 70°   | 444.5 | 54.1  | 5.5   | 2.7   | 1.6   | 1.1   | 0.6   | 0.2   | 0.8   | 0.0   | 0.0   |
| 72.5° | 314.3 | 31.4  | 4.4   | 1.9   | 1.3   | 0.9   | 0.5   | 0.0   | 0.5   | 0.0   | 0.0   |
| 75°   | 159.0 | 16.8  | 2.7   | 1.4   | 1.0   | 0.6   | 0.3   | 0.0   | 0.1   | 0.0   | 0.0   |
| 77.5° | 34.4  | 7.8   | 1.7   | 1.0   | 0.7   | 0.4   | 0.2   | 0.0   | 0.0   | 0.0   | 0.0   |
| 80°   | 7.5   | 3.4   | 1.1   | 0.6   | 0.4   | 0.2   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 82.5° | 2.7   | 1.8   | 0.5   | 0.3   | 0.2   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 85°   | 1.5   | 0.9   | 0.3   | 0.2   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 87.5° | 0.8   | 0.3   | 0.1   | 0.1   | 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 Prepared for

Cooper Lighting Solutions

(formerly Eaton)

STREETWORKS

Report Number: SP1-2101-121-8

Luminaire Tested: IFLD-S-SA2E-750-U-T2

Test Date: 03/05/2021

### Test Information

Test Method: LM-79-08  
 Report Number: SP1-2101-121-8  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1  
 Measurement Geometry:  $4\pi$   
 Issue Date: 03/05/2021  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: STREETWORKS  
 Catalog Number: **IFLD-S-SA2E-750-U-T2**  
 Description: STREETWORKS INF FLOOD

PROGRAMMED @ 615mA.

### Spectral Parameters

|                           |        |           |      |      |       |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K):                  | 4832   | CRI (Ra): | 71.7 |      |       |
| CIE u':                   | 0.2115 | R1:       | 69.5 | R9:  | -27.7 |
| CIE v':                   | 0.4900 | R2:       | 75.7 | R10: | 42.9  |
| Duv:                      | 0.0025 | R3:       | 80.8 | R11: | 71.2  |
| CIE x:                    | 0.3506 | R4:       | 73.2 | R12: | 44.6  |
| CIE y:                    | 0.3611 | R5:       | 70.3 | R13: | 69.8  |
| CIE z:                    | 0.2884 | R6:       | 67.3 | R14: | 89.2  |
| Peak Wavelength (nm):     | 444    | R7:       | 79.9 |      |       |
| Dominant Wavelength (nm): | 572    | R8:       | 57.2 |      |       |
| Purity:                   | 13.7   |           |      |      |       |
| Rf:                       | 72.3   |           |      |      |       |
| Rg:                       | 96.7   |           |      |      |       |



### Test Conditions

Stabilization Time: 47M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 24.9/31%  
 Sphere Temperature (°C): 24.4

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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            |

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**CIE 1931 Chromaticity Diagram**



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



Point lies inside the ANSI 5000K 4-step quadrangle

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### Photopic Flux vs. Wavelength



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| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 3353             | 0.0              | 490       | 32805            | 4.7              | 620       | 107081           | 27.9             | 750       | 5910             | 0.0              | 880       | 4619             | 0.0              |
| 365       | 2862             | 0.0              | 495       | 44523            | 8.1              | 625       | 98536            | 21.7             | 755       | 5030             | 0.0              | 885       | 4614             | 0.0              |
| 370       | 2810             | 0.0              | 500       | 59272            | 13.1             | 630       | 89745            | 16.2             | 760       | 4853             | 0.0              | 890       | 3959             | 0.0              |
| 375       | 3214             | 0.0              | 505       | 75789            | 21.2             | 635       | 80639            | 12.1             | 765       | 4704             | 0.0              | 895       | 3106             | 0.0              |
| 380       | 3349             | 0.0              | 510       | 91523            | 31.4             | 640       | 72702            | 8.7              | 770       | 3920             | 0.0              | 900       | 4270             | 0.0              |
| 385       | 3025             | 0.0              | 515       | 105611           | 43.7             | 645       | 65679            | 6.3              | 775       | 3859             | 0.0              | 905       | 3918             | 0.0              |
| 390       | 2882             | 0.0              | 520       | 117273           | 56.9             | 650       | 59001            | 4.3              | 780       | 3115             | 0.0              | 910       | 3872             | 0.0              |
| 395       | 2575             | 0.0              | 525       | 125211           | 67.2             | 655       | 52143            | 3.0              | 785       | 3474             | 0.0              | 915       | 3970             | 0.0              |
| 400       | 2553             | 0.0              | 530       | 132145           | 77.8             | 660       | 46377            | 1.9              | 790       | 3401             | 0.0              | 920       | 4123             | 0.0              |
| 405       | 3040             | 0.0              | 535       | 135784           | 84.2             | 665       | 41029            | 1.3              | 795       | 3536             | 0.0              | 925       | 4692             | 0.0              |
| 410       | 5218             | 0.0              | 540       | 138313           | 90.1             | 670       | 35613            | 0.8              | 800       | 3687             | 0.0              | 930       | 4313             | 0.0              |
| 415       | 10898            | 0.0              | 545       | 141311           | 94.1             | 675       | 31345            | 0.5              | 805       | 3213             | 0.0              | 935       | 2374             | 0.0              |
| 420       | 23692            | 0.1              | 550       | 144916           | 98.5             | 680       | 27204            | 0.3              | 810       | 2541             | 0.0              | 940       | 3564             | 0.0              |
| 425       | 50574            | 0.3              | 555       | 147753           | 100.9            | 685       | 23938            | 0.2              | 815       | 3033             | 0.0              | 945       | 3888             | 0.0              |
| 430       | 93101            | 0.7              | 560       | 150201           | 102.1            | 690       | 21157            | 0.1              | 820       | 3270             | 0.0              | 950       | 5143             | 0.0              |
| 435       | 146856           | 1.7              | 565       | 152596           | 101.5            | 695       | 18244            | 0.1              | 825       | 3208             | 0.0              | 955       | 3966             | 0.0              |
| 440       | 206284           | 3.2              | 570       | 153241           | 99.6             | 700       | 16063            | 0.0              | 830       | 2991             | 0.0              | 960       | 4927             | 0.0              |
| 445       | 230963           | 4.8              | 575       | 154079           | 95.9             | 705       | 14433            | 0.0              | 835       | 3477             | 0.0              | 965       | 3279             | 0.0              |
| 450       | 184279           | 4.8              | 580       | 152658           | 90.7             | 710       | 12921            | 0.0              | 840       | 2982             | 0.0              | 970       | 5201             | 0.0              |
| 455       | 112612           | 3.8              | 585       | 151127           | 84.0             | 715       | 11715            | 0.0              | 845       | 3443             | 0.0              | 975       | 3421             | 0.0              |
| 460       | 69904            | 2.9              | 590       | 148249           | 76.6             | 720       | 10565            | 0.0              | 850       | 4753             | 0.0              | 980       | 6148             | 0.0              |
| 465       | 47480            | 2.4              | 595       | 143567           | 68.1             | 725       | 9312             | 0.0              | 855       | 3744             | 0.0              | 985       | 5069             | 0.0              |
| 470       | 32573            | 2.0              | 600       | 138422           | 59.7             | 730       | 8354             | 0.0              | 860       | 4355             | 0.0              | 990       | 8231             | 0.0              |
| 475       | 25178            | 2.0              | 605       | 131783           | 51.0             | 735       | 7425             | 0.0              | 865       | 4984             | 0.0              | 995       | 5852             | 0.0              |
| 480       | 23726            | 2.3              | 610       | 124021           | 42.6             | 740       | 6965             | 0.0              | 870       | 5065             | 0.0              | 1000      | 5471             | 0.0              |
| 485       | 26206            | 3.1              | 615       | 115646           | 34.9             | 745       | 6343             | 0.0              | 875       | 5430             | 0.0              |           |                  |                  |

REPORT NUMBER: SP1-2101-121-8

### Scotopic Flux vs. Wavelength



Scotopic Lumens: 15745.7

S/P: 1.71

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 3353             | 0.0              | 490       | 32805            | 50.5             | 620       | 107081           | 1.3              | 750       | 5910             | 0.0              | 880       | 4619             | 0.0              |
| 365       | 2862             | 0.0              | 495       | 44523            | 72.0             | 625       | 98536            | 0.8              | 755       | 5030             | 0.0              | 885       | 4614             | 0.0              |
| 370       | 2810             | 0.0              | 500       | 59272            | 99.1             | 630       | 89745            | 0.5              | 760       | 4853             | 0.0              | 890       | 3959             | 0.0              |
| 375       | 3214             | 0.0              | 505       | 75789            | 128.8            | 635       | 80639            | 0.3              | 765       | 4704             | 0.0              | 895       | 3106             | 0.0              |
| 380       | 3349             | 0.0              | 510       | 91523            | 155.1            | 640       | 72702            | 0.2              | 770       | 3920             | 0.0              | 900       | 4270             | 0.0              |
| 385       | 3025             | 0.0              | 515       | 105611           | 175.1            | 645       | 65679            | 0.1              | 775       | 3859             | 0.0              | 905       | 3918             | 0.0              |
| 390       | 2882             | 0.0              | 520       | 117273           | 186.4            | 650       | 59001            | 0.1              | 780       | 3115             | 0.0              | 910       | 3872             | 0.0              |
| 395       | 2575             | 0.0              | 525       | 125211           | 187.3            | 655       | 52143            | 0.0              | 785       | 3474             | 0.0              | 915       | 3970             | 0.0              |
| 400       | 2553             | 0.0              | 530       | 132145           | 182.2            | 660       | 46377            | 0.0              | 790       | 3401             | 0.0              | 920       | 4123             | 0.0              |
| 405       | 3040             | 0.1              | 535       | 135784           | 169.2            | 665       | 41029            | 0.0              | 795       | 3536             | 0.0              | 925       | 4692             | 0.0              |
| 410       | 5218             | 0.3              | 540       | 138313           | 152.8            | 670       | 35613            | 0.0              | 800       | 3687             | 0.0              | 930       | 4313             | 0.0              |
| 415       | 10898            | 1.1              | 545       | 141311           | 135.5            | 675       | 31345            | 0.0              | 805       | 3213             | 0.0              | 935       | 2374             | 0.0              |
| 420       | 23692            | 3.9              | 550       | 144916           | 118.5            | 680       | 27204            | 0.0              | 810       | 2541             | 0.0              | 940       | 3564             | 0.0              |
| 425       | 50574            | 12.4             | 555       | 147753           | 101.0            | 685       | 23938            | 0.0              | 815       | 3033             | 0.0              | 945       | 3888             | 0.0              |
| 430       | 93101            | 31.7             | 560       | 150201           | 84.0             | 690       | 21157            | 0.0              | 820       | 3270             | 0.0              | 950       | 5143             | 0.0              |
| 435       | 146856           | 65.7             | 565       | 152596           | 68.5             | 695       | 18244            | 0.0              | 825       | 3208             | 0.0              | 955       | 3966             | 0.0              |
| 440       | 206284           | 115.3            | 570       | 153241           | 54.1             | 700       | 16063            | 0.0              | 830       | 2991             | 0.0              | 960       | 4927             | 0.0              |
| 445       | 230963           | 154.7            | 575       | 154079           | 42.0             | 705       | 14433            | 0.0              | 835       | 3477             | 0.0              | 965       | 3279             | 0.0              |
| 450       | 184279           | 142.8            | 580       | 152658           | 31.5             | 710       | 12921            | 0.0              | 840       | 2982             | 0.0              | 970       | 5201             | 0.0              |
| 455       | 112612           | 98.4             | 585       | 151127           | 23.1             | 715       | 11715            | 0.0              | 845       | 3443             | 0.0              | 975       | 3421             | 0.0              |
| 460       | 69904            | 67.5             | 590       | 148249           | 16.5             | 720       | 10565            | 0.0              | 850       | 4753             | 0.0              | 980       | 6148             | 0.0              |
| 465       | 47480            | 50.1             | 595       | 143567           | 11.4             | 725       | 9312             | 0.0              | 855       | 3744             | 0.0              | 985       | 5069             | 0.0              |
| 470       | 32573            | 37.5             | 600       | 138422           | 7.8              | 730       | 8354             | 0.0              | 860       | 4355             | 0.0              | 990       | 8231             | 0.0              |
| 475       | 25178            | 31.5             | 605       | 131783           | 5.2              | 735       | 7425             | 0.0              | 865       | 4984             | 0.0              | 995       | 5852             | 0.0              |
| 480       | 23726            | 32.0             | 610       | 124021           | 3.4              | 740       | 6965             | 0.0              | 870       | 5065             | 0.0              | 1000      | 5471             | 0.0              |
| 485       | 26206            | 38.0             | 615       | 115646           | 2.1              | 745       | 6343             | 0.0              | 875       | 5430             | 0.0              |           |                  |                  |

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### Melanopic Flux vs. Wavelength



**Melanopic Lumens: 6193.8**

**M/P: 0.67**

| 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       | 3353             | 0.0              | 490       | 32805            | 27.3             | 620       | 107081           | 0.1              | 750       | 5910             | 0.0              | 880       | 4619             | 0.0              |
| 365       | 2862             | 0.0              | 495       | 44523            | 36.8             | 625       | 98536            | 0.1              | 755       | 5030             | 0.0              | 885       | 4614             | 0.0              |
| 370       | 2810             | 0.0              | 500       | 59272            | 47.6             | 630       | 89745            | 0.0              | 760       | 4853             | 0.0              | 890       | 3959             | 0.0              |
| 375       | 3214             | 0.0              | 505       | 75789            | 58.2             | 635       | 80639            | 0.0              | 765       | 4704             | 0.0              | 895       | 3106             | 0.0              |
| 380       | 3349             | 0.0              | 510       | 91523            | 65.7             | 640       | 72702            | 0.0              | 770       | 3920             | 0.0              | 900       | 4270             | 0.0              |
| 385       | 3025             | 0.0              | 515       | 105611           | 69.0             | 645       | 65679            | 0.0              | 775       | 3859             | 0.0              | 905       | 3918             | 0.0              |
| 390       | 2882             | 0.0              | 520       | 117273           | 68.3             | 650       | 59001            | 0.0              | 780       | 3115             | 0.0              | 910       | 3872             | 0.0              |
| 395       | 2575             | 0.0              | 525       | 125211           | 63.5             | 655       | 52143            | 0.0              | 785       | 3474             | 0.0              | 915       | 3970             | 0.0              |
| 400       | 2553             | 0.0              | 530       | 132145           | 57.1             | 660       | 46377            | 0.0              | 790       | 3401             | 0.0              | 920       | 4123             | 0.0              |
| 405       | 3040             | 0.1              | 535       | 135784           | 48.9             | 665       | 41029            | 0.0              | 795       | 3536             | 0.0              | 925       | 4692             | 0.0              |
| 410       | 5218             | 0.2              | 540       | 138313           | 40.5             | 670       | 35613            | 0.0              | 800       | 3687             | 0.0              | 930       | 4313             | 0.0              |
| 415       | 10898            | 0.7              | 545       | 141311           | 32.8             | 675       | 31345            | 0.0              | 805       | 3213             | 0.0              | 935       | 2374             | 0.0              |
| 420       | 23692            | 2.7              | 550       | 144916           | 26.0             | 680       | 27204            | 0.0              | 810       | 2541             | 0.0              | 940       | 3564             | 0.0              |
| 425       | 50574            | 7.9              | 555       | 147753           | 19.9             | 685       | 23938            | 0.0              | 815       | 3033             | 0.0              | 945       | 3888             | 0.0              |
| 430       | 93101            | 19.7             | 560       | 150201           | 14.8             | 690       | 21157            | 0.0              | 820       | 3270             | 0.0              | 950       | 5143             | 0.0              |
| 435       | 146856           | 39.2             | 565       | 152596           | 10.7             | 695       | 18244            | 0.0              | 825       | 3208             | 0.0              | 955       | 3966             | 0.0              |
| 440       | 206284           | 68.9             | 570       | 153241           | 7.5              | 700       | 16063            | 0.0              | 830       | 2991             | 0.0              | 960       | 4927             | 0.0              |
| 445       | 230963           | 91.1             | 575       | 154079           | 5.1              | 705       | 14433            | 0.0              | 835       | 3477             | 0.0              | 965       | 3279             | 0.0              |
| 450       | 184279           | 84.9             | 580       | 152658           | 3.4              | 710       | 12921            | 0.0              | 840       | 2982             | 0.0              | 970       | 5201             | 0.0              |
| 455       | 112612           | 59.0             | 585       | 151127           | 2.2              | 715       | 11715            | 0.0              | 845       | 3443             | 0.0              | 975       | 3421             | 0.0              |
| 460       | 69904            | 41.2             | 590       | 148249           | 1.5              | 720       | 10565            | 0.0              | 850       | 4753             | 0.0              | 980       | 6148             | 0.0              |
| 465       | 47480            | 31.0             | 595       | 143567           | 0.9              | 725       | 9312             | 0.0              | 855       | 3744             | 0.0              | 985       | 5069             | 0.0              |
| 470       | 32573            | 23.3             | 600       | 138422           | 0.6              | 730       | 8354             | 0.0              | 860       | 4355             | 0.0              | 990       | 8231             | 0.0              |
| 475       | 25178            | 19.2             | 605       | 131783           | 0.4              | 735       | 7425             | 0.0              | 865       | 4984             | 0.0              | 995       | 5852             | 0.0              |
| 480       | 23726            | 19.1             | 610       | 124021           | 0.2              | 740       | 6965             | 0.0              | 870       | 5065             | 0.0              | 1000      | 5471             | 0.0              |
| 485       | 26206            | 21.6             | 615       | 115646           | 0.1              | 745       | 6343             | 0.0              | 875       | 5430             | 0.0              |           |                  |                  |

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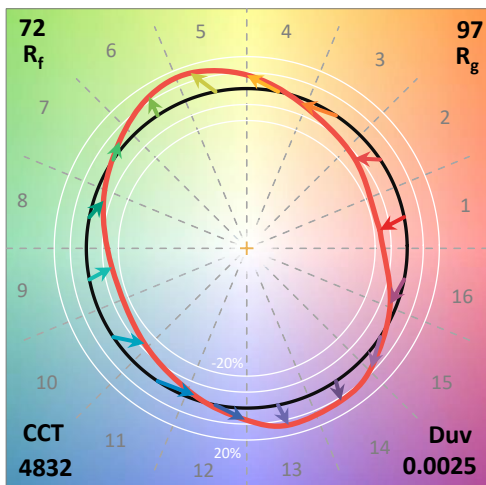
TM-30-18

### Summary

$R_f = 72.3$   
 $R_g = 96.7$   
 $CIE R_a = 71.7$   
 $R_g = -27.7$

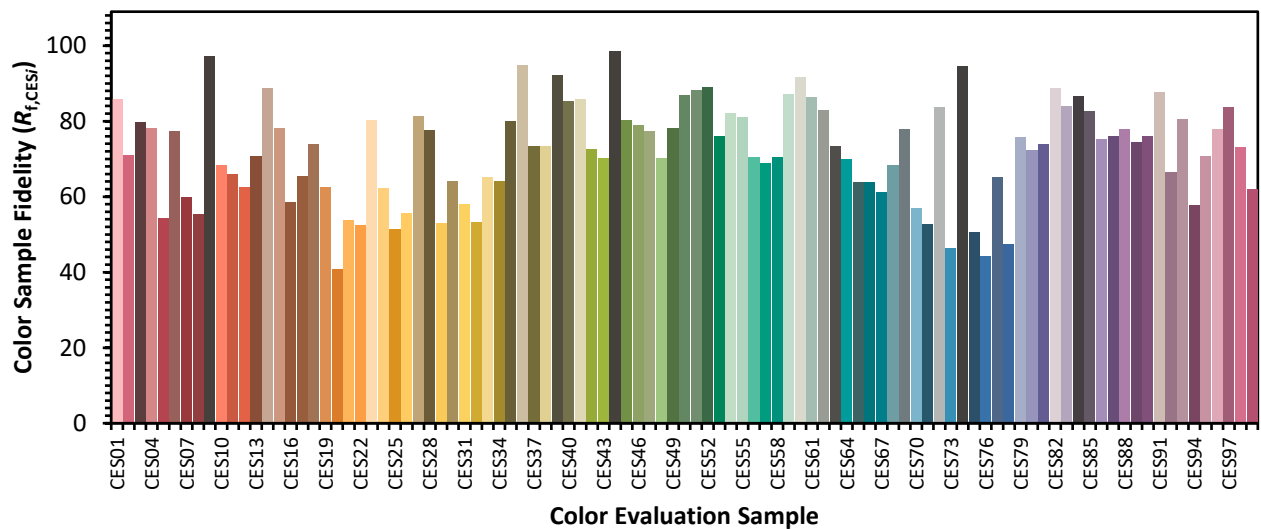


### Color Vector Graphics



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 56 | CES51 = 88 | CES76 = 44 |
| CES02 = 60 | CES27 = 81 | CES52 = 89 | CES77 = 65 |
| CES03 = 30 | CES28 = 78 | CES53 = 76 | CES78 = 47 |
| CES04 = 69 | CES29 = 53 | CES54 = 82 | CES79 = 76 |
| CES05 = 46 | CES30 = 64 | CES55 = 81 | CES80 = 72 |
| CES06 = 50 | CES31 = 58 | CES56 = 70 | CES81 = 74 |
| CES07 = 39 | CES32 = 53 | CES57 = 69 | CES82 = 89 |
| CES08 = 38 | CES33 = 65 | CES58 = 70 | CES83 = 84 |
| CES09 = 29 | CES34 = 64 | CES59 = 87 | CES84 = 87 |
| CES10 = 73 | CES35 = 80 | CES60 = 92 | CES85 = 83 |
| CES11 = 56 | CES36 = 95 | CES61 = 86 | CES86 = 75 |
| CES12 = 62 | CES37 = 73 | CES62 = 83 | CES87 = 76 |
| CES13 = 42 | CES38 = 73 | CES63 = 73 | CES88 = 78 |
| CES14 = 74 | CES39 = 92 | CES64 = 70 | CES89 = 74 |
| CES15 = 70 | CES40 = 85 | CES65 = 64 | CES90 = 76 |
| CES16 = 46 | CES41 = 86 | CES66 = 64 | CES91 = 88 |
| CES17 = 49 | CES42 = 73 | CES67 = 61 | CES92 = 66 |
| CES18 = 55 | CES43 = 70 | CES68 = 68 | CES93 = 81 |
| CES19 = 71 | CES44 = 98 | CES69 = 78 | CES94 = 58 |
| CES20 = 64 | CES45 = 80 | CES70 = 57 | CES95 = 71 |
| CES21 = 85 | CES46 = 79 | CES71 = 53 | CES96 = 78 |
| CES22 = 77 | CES47 = 77 | CES72 = 84 | CES97 = 84 |
| CES23 = 91 | CES48 = 70 | CES73 = 46 | CES98 = 73 |
| CES24 = 90 | CES49 = 78 | CES74 = 95 | CES99 = 62 |
| CES25 = 71 | CES50 = 87 | CES75 = 50 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)