

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: McGRAW-EDISON

Report Number: P438590

Luminaire Tested: **IST-SA1D-760-U-T3-HSS**

Issue Date: 12/10/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P438590  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2011-074-9)  
Test Lab: INNOVATION CENTER  
Issue Date: 12/10/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: IST-SA1D-760-U-T3-HSS  
Description: IMPACT ELITE LED TRAPEZOID LUMINAIRE  
(1) 70 CRI, 5700K, 800mA LIGHTSQUARE WITH 16 LEDS AND TYPE III OPTICS  
WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

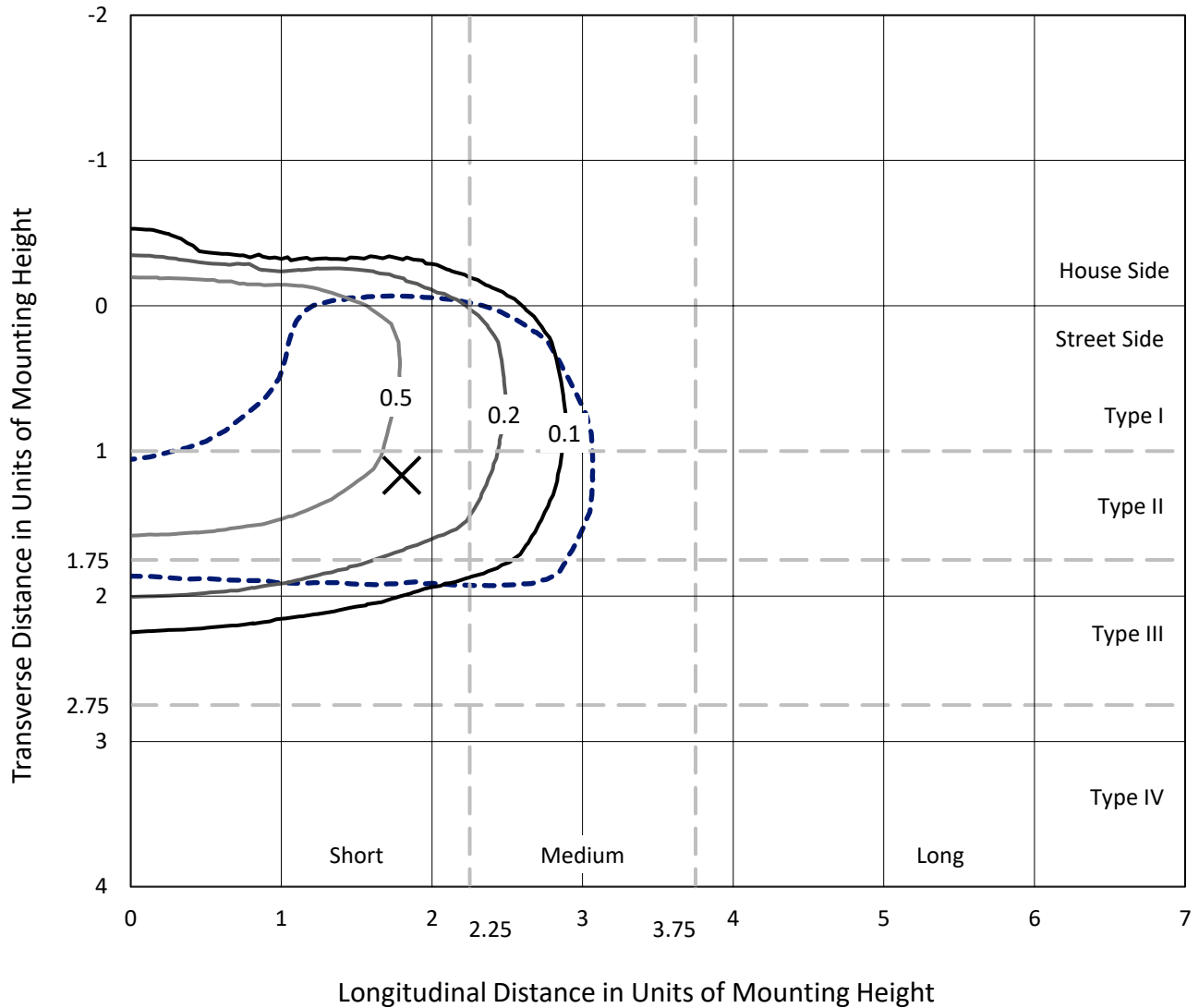
Lumens per Lamp: N/A  
Luminaire Lumens: 4033 lumens  
Efficiency: N/A  
Efficacy: 89.2 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
IES Classification: Type III - Short  
BUG Rating: B1 - U0 - G1  
  
Input Watts (W): 45.2  
Input Voltage (V): NR  
Input Current (Ain): NR  
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: 28.75 FT



REPORT NUMBER: P438590  
 CATALOG NUMBER: IST-SA1D-760-U-T3-HSS

### Iso-Footcandle Lines of Horizontal Illumination

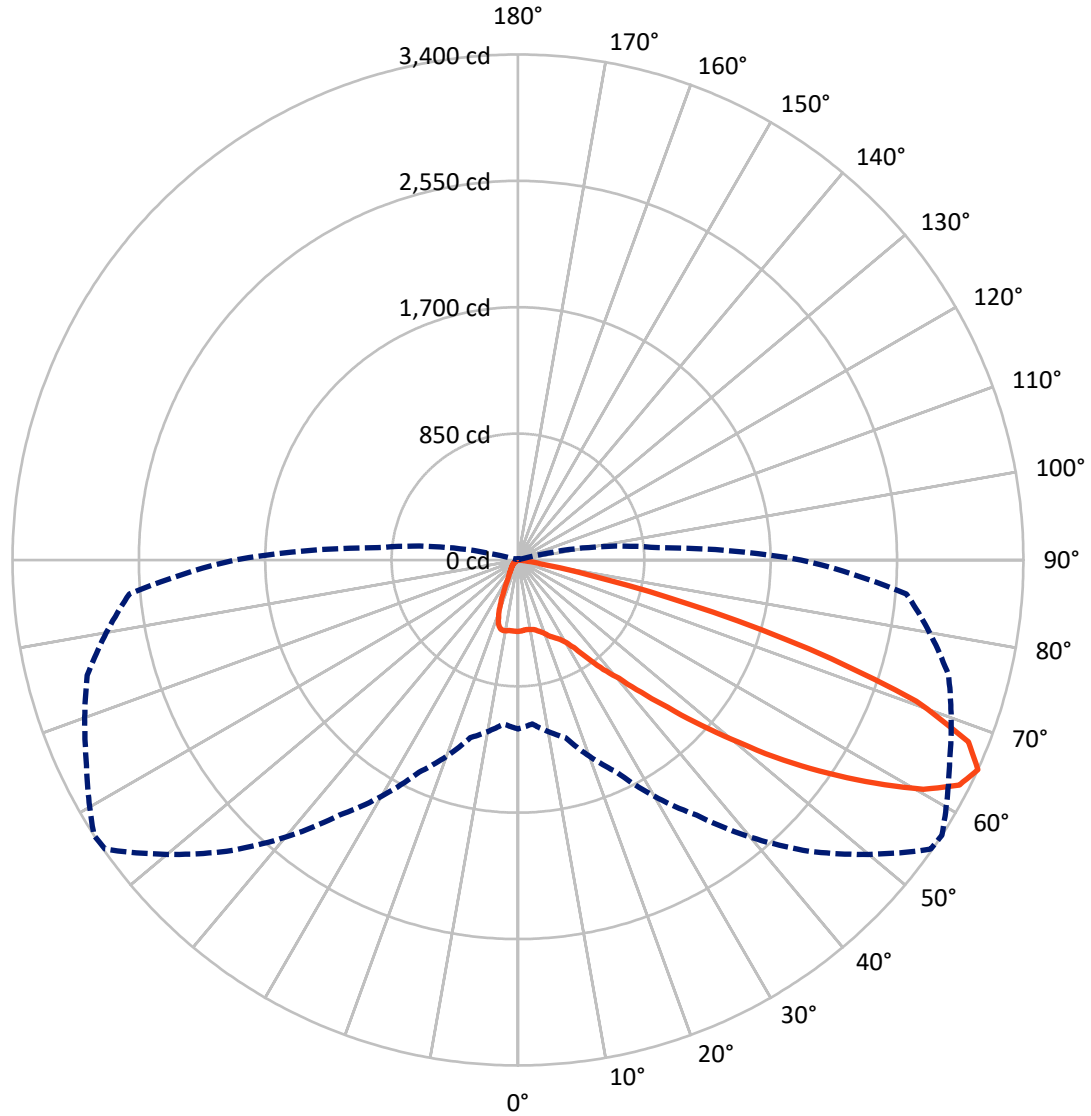
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 1 fc  
 Type III - Short - N/A

REPORT NUMBER: P438590  
CATALOG NUMBER: IST-SA1D-760-U-T3-HSS

### Luminous Intensity Polar Plot



— Vertical Plane Through 57-Deg Lateral      - - - Horizontal Cone Through 65-Deg Vertical

REPORT NUMBER: P438590

CATALOG NUMBER: IST-SA1D-760-U-T3-HSS

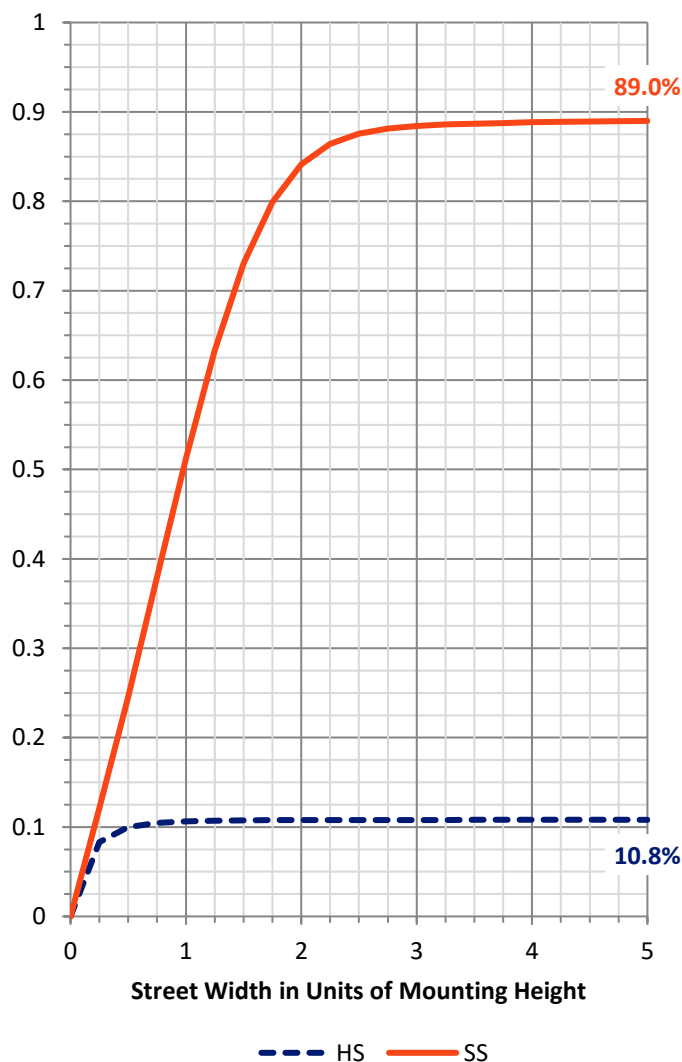
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 439.9    | 0.0    | 439.9  |
|                    | % Fixture | 10.9     | 0.0    | 10.9   |
| <b>Street Side</b> | Lumens    | 3593.1   | 0.0    | 3593.1 |
|                    | % Fixture | 89.1     | 0.0    | 89.1   |
| <b>Total</b>       | Lumens    | 4033.0   | 0.0    | 4033.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 44.6   | 1.1       |
| 10°-20°   | 120.7  | 3.0       |
| 20°-30°   | 208.4  | 5.2       |
| 30°-40°   | 369.2  | 9.2       |
| 40°-50°   | 669.6  | 16.6      |
| 50°-60°   | 1127.9 | 28.0      |
| 60°-70°   | 1159.8 | 28.8      |
| 70°-80°   | 321.4  | 8.0       |
| 80°-90°   | 11.4   | 0.3       |
| 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°    | 4033.0 | 100.0     |
| 0°-180°   | 4033.0 | 100.0     |

**Coefficient of Utilization**



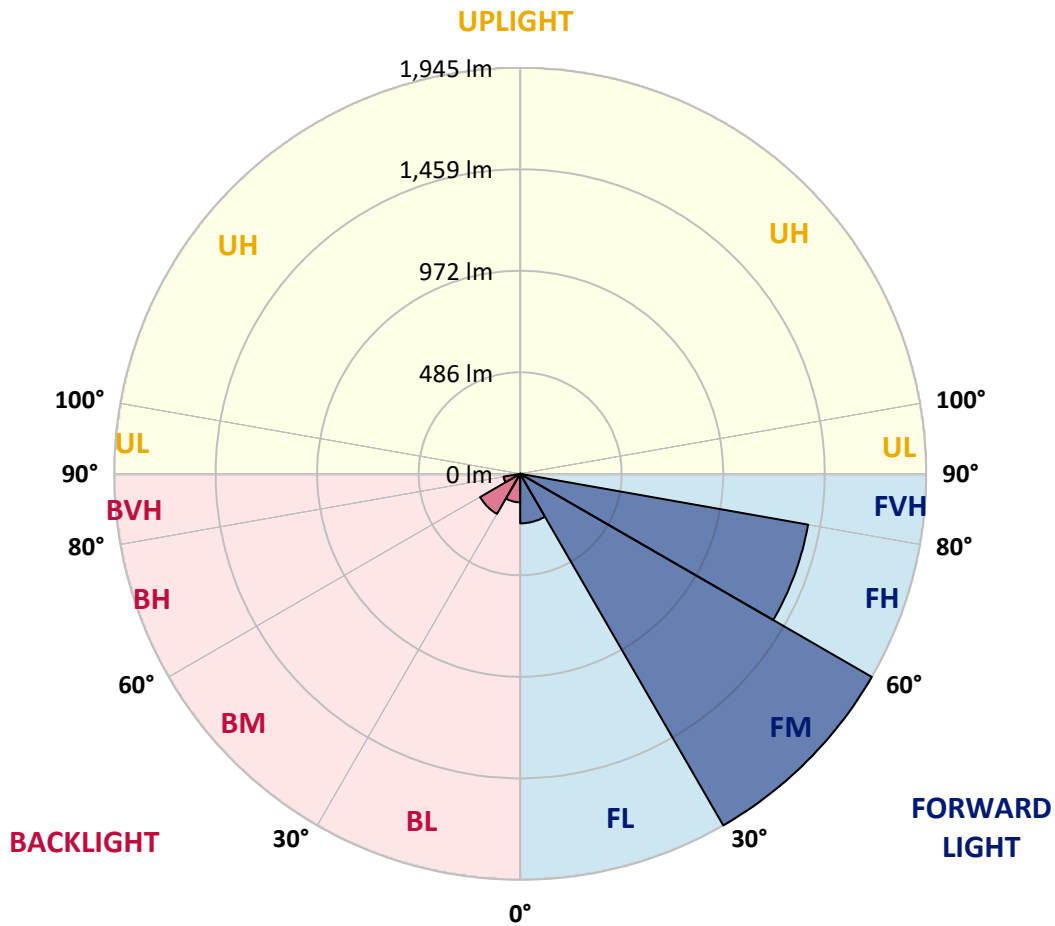
REPORT NUMBER: P438590  
 CATALOG NUMBER: IST-SA1D-760-U-T3-HSS

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

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 237.1  | 5.9       |                         |      |         |
| FM (30°-60°)   | 1944.9 | 48.2      |                         |      |         |
| FH (60°-80°)   | 1400.5 | 34.7      |                         |      | G1/1800 |
| FVH (80°-90°)  | 10.6   | 0.3       |                         |      | G1/100  |
| BL (0°-30°)    | 136.6  | 3.4       | B1/500                  |      |         |
| BM (30°-60°)   | 221.8  | 5.5       | B1/1000                 |      |         |
| BH (60°-80°)   | 80.7   | 2.0       | B0/110                  |      | G0/110  |
| BVH (80°-90°)  | 0.8    | 0.0       |                         |      | G0/10   |
| UL (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

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

Type III Short





REPORT NUMBER: P438590  
 CATALOG NUMBER: IST-SA1D-760-U-T3-HSS

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 57°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 479.9  | 479.9  | 479.9  | 479.9  | 479.9  | 479.9  | 479.9  | 479.9  | 479.9  | 479.9  | 479.9  |
| 2.5°  | 466.1  | 466.1  | 470.0  | 472.0  | 472.0  | 474.0  | 475.9  | 477.9  | 477.9  | 477.9  | 481.8  |
| 5°    | 442.5  | 440.5  | 444.5  | 448.4  | 454.3  | 462.2  | 468.1  | 472.0  | 477.9  | 483.8  | 485.8  |
| 7.5°  | 420.9  | 420.9  | 424.8  | 430.7  | 442.5  | 454.3  | 466.1  | 472.0  | 481.8  | 493.6  | 497.6  |
| 10°   | 415.0  | 413.0  | 418.9  | 424.8  | 436.6  | 450.4  | 468.1  | 475.9  | 489.7  | 505.4  | 511.3  |
| 12.5° | 411.0  | 411.0  | 413.0  | 422.8  | 434.6  | 452.3  | 474.0  | 479.9  | 501.5  | 519.2  | 533.0  |
| 15°   | 409.1  | 409.1  | 413.0  | 420.9  | 434.6  | 454.3  | 483.8  | 493.6  | 519.2  | 544.8  | 556.6  |
| 17.5° | 424.8  | 422.8  | 420.9  | 424.8  | 438.6  | 460.2  | 499.5  | 509.4  | 540.8  | 572.3  | 586.1  |
| 20°   | 472.0  | 470.0  | 464.1  | 450.4  | 450.4  | 475.9  | 519.2  | 531.0  | 572.3  | 603.8  | 611.6  |
| 22.5° | 560.5  | 566.4  | 544.8  | 509.4  | 483.8  | 495.6  | 544.8  | 558.5  | 605.7  | 639.2  | 639.2  |
| 25°   | 688.3  | 680.5  | 660.8  | 601.8  | 550.7  | 527.1  | 566.4  | 580.2  | 637.2  | 676.5  | 668.7  |
| 27.5° | 822.1  | 824.0  | 796.5  | 729.6  | 647.0  | 584.1  | 590.0  | 605.7  | 670.6  | 715.9  | 698.2  |
| 30°   | 928.3  | 920.4  | 906.6  | 851.6  | 761.1  | 674.6  | 635.2  | 645.1  | 708.0  | 759.1  | 743.4  |
| 32.5° | 1022.7 | 1018.7 | 1001.0 | 953.8  | 873.2  | 780.8  | 710.0  | 711.9  | 761.1  | 824.0  | 804.4  |
| 35°   | 1107.2 | 1111.2 | 1103.3 | 1050.2 | 977.4  | 890.9  | 810.3  | 816.2  | 853.5  | 918.4  | 879.1  |
| 37.5° | 1213.4 | 1213.4 | 1199.7 | 1150.5 | 1095.4 | 1008.9 | 932.2  | 934.2  | 953.8  | 1006.9 | 957.8  |
| 40°   | 1305.9 | 1309.8 | 1307.8 | 1270.5 | 1217.4 | 1138.7 | 1046.3 | 1046.3 | 1052.2 | 1115.1 | 1089.5 |
| 42.5° | 1431.7 | 1437.6 | 1435.7 | 1400.3 | 1359.0 | 1301.9 | 1223.3 | 1217.4 | 1213.4 | 1292.1 | 1264.6 |
| 45°   | 1593.0 | 1606.8 | 1612.7 | 1569.4 | 1532.0 | 1498.6 | 1437.6 | 1414.0 | 1423.9 | 1496.6 | 1475.0 |
| 47.5° | 1746.4 | 1762.1 | 1789.7 | 1768.0 | 1750.3 | 1750.3 | 1667.7 | 1663.8 | 1648.1 | 1732.6 | 1673.6 |
| 50°   | 1891.9 | 1893.9 | 1933.2 | 1966.7 | 2019.8 | 2009.9 | 1954.9 | 1931.3 | 1907.7 | 1964.7 | 1858.5 |
| 52.5° | 1974.5 | 1998.1 | 2049.3 | 2145.6 | 2261.7 | 2308.9 | 2251.8 | 2238.1 | 2190.9 | 2183.0 | 2037.5 |
| 55°   | 2051.2 | 2051.2 | 2131.9 | 2299.0 | 2495.7 | 2596.0 | 2548.8 | 2533.1 | 2438.7 | 2411.2 | 2222.3 |
| 57.5° | 2076.8 | 2068.9 | 2177.1 | 2389.5 | 2684.5 | 2859.6 | 2869.4 | 2834.0 | 2702.2 | 2617.7 | 2411.2 |
| 60°   | 1949.0 | 1935.2 | 2049.3 | 2330.5 | 2735.7 | 3050.3 | 3156.5 | 3132.9 | 2930.4 | 2818.3 | 2609.8 |
| 62.5° | 1581.2 | 1598.9 | 1744.4 | 2049.3 | 2554.7 | 3030.7 | 3347.3 | 3333.5 | 3099.5 | 2954.0 | 2688.5 |
| 65°   | 1136.7 | 1107.2 | 1237.0 | 1575.3 | 2096.5 | 2771.1 | 3390.6 | 3400.4 | 3203.7 | 2999.2 | 2623.6 |
| 67.5° | 637.2  | 609.7  | 717.8  | 975.5  | 1490.7 | 2273.5 | 3213.6 | 3268.6 | 3129.0 | 2887.1 | 2344.3 |
| 70°   | 243.9  | 259.6  | 334.3  | 481.8  | 879.1  | 1569.4 | 2765.2 | 2843.8 | 2743.5 | 2409.2 | 1746.4 |
| 72.5° | 86.5   | 98.3   | 137.7  | 214.4  | 407.1  | 845.7  | 1933.2 | 2051.2 | 2021.7 | 1673.6 | 999.1  |
| 75°   | 51.1   | 53.1   | 70.8   | 104.2  | 179.0  | 330.4  | 1091.5 | 1189.8 | 1142.6 | 828.0  | 413.0  |
| 77.5° | 35.4   | 35.4   | 45.2   | 62.9   | 102.3  | 131.8  | 426.8  | 483.8  | 497.6  | 298.9  | 121.9  |
| 80°   | 21.6   | 23.6   | 31.5   | 41.3   | 59.0   | 61.0   | 131.8  | 155.4  | 145.5  | 106.2  | 43.3   |
| 82.5° | 9.8    | 9.8    | 17.7   | 27.5   | 29.5   | 25.6   | 41.3   | 45.2   | 53.1   | 47.2   | 19.7   |
| 85°   | 0.0    | 0.0    | 5.9    | 9.8    | 7.9    | 5.9    | 13.8   | 13.8   | 17.7   | 21.6   | 9.8    |
| 87.5° | 0.0    | 0.0    | 0.0    | 0.0    | 2.0    | 2.0    | 2.0    | 2.0    | 2.0    | 3.9    | 2.0    |
| 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: P438590  
 CATALOG NUMBER: IST-SA1D-760-U-T3-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 479.9  | 479.9  | 479.9 | 479.9 | 479.9 | 479.9 | 479.9 | 479.9 | 479.9 | 479.9 | 479.9 |
| 2.5°  | 481.8  | 483.8  | 481.8 | 479.9 | 479.9 | 477.9 | 477.9 | 477.9 | 477.9 | 477.9 | 477.9 |
| 5°    | 485.8  | 487.7  | 485.8 | 481.8 | 477.9 | 474.0 | 470.0 | 470.0 | 470.0 | 470.0 | 474.0 |
| 7.5°  | 497.6  | 497.6  | 493.6 | 485.8 | 475.9 | 472.0 | 464.1 | 462.2 | 458.2 | 456.3 | 458.2 |
| 10°   | 515.3  | 515.3  | 507.4 | 495.6 | 479.9 | 464.1 | 450.4 | 430.7 | 418.9 | 411.0 | 409.1 |
| 12.5° | 533.0  | 531.0  | 521.2 | 505.4 | 479.9 | 444.5 | 399.2 | 350.1 | 320.6 | 298.9 | 295.0 |
| 15°   | 556.6  | 554.6  | 538.9 | 511.3 | 468.1 | 393.3 | 304.8 | 238.0 | 202.6 | 186.8 | 184.9 |
| 17.5° | 582.1  | 578.2  | 556.6 | 515.3 | 430.7 | 297.0 | 200.6 | 155.4 | 141.6 | 137.7 | 137.7 |
| 20°   | 609.7  | 603.8  | 570.3 | 509.4 | 356.0 | 202.6 | 139.6 | 129.8 | 127.8 | 125.9 | 125.9 |
| 22.5° | 631.3  | 621.5  | 580.2 | 479.9 | 265.5 | 139.6 | 123.9 | 121.9 | 120.0 | 118.0 | 118.0 |
| 25°   | 654.9  | 639.2  | 588.0 | 415.0 | 175.0 | 120.0 | 116.0 | 114.1 | 110.1 | 108.2 | 108.2 |
| 27.5° | 682.4  | 658.8  | 599.8 | 326.5 | 121.9 | 108.2 | 104.2 | 102.3 | 96.4  | 92.4  | 92.4  |
| 30°   | 717.8  | 688.3  | 605.7 | 238.0 | 102.3 | 94.4  | 90.5  | 86.5  | 78.7  | 74.7  | 74.7  |
| 32.5° | 774.9  | 749.3  | 593.9 | 159.3 | 92.4  | 84.6  | 78.7  | 70.8  | 62.9  | 59.0  | 57.0  |
| 35°   | 847.6  | 812.2  | 552.6 | 112.1 | 82.6  | 74.7  | 64.9  | 55.1  | 49.2  | 47.2  | 47.2  |
| 37.5° | 928.3  | 881.1  | 489.7 | 90.5  | 74.7  | 64.9  | 55.1  | 45.2  | 39.3  | 37.4  | 37.4  |
| 40°   | 1042.3 | 969.6  | 403.2 | 78.7  | 64.9  | 55.1  | 45.2  | 37.4  | 33.4  | 31.5  | 31.5  |
| 42.5° | 1191.8 | 1081.7 | 304.8 | 72.8  | 59.0  | 47.2  | 37.4  | 31.5  | 27.5  | 25.6  | 25.6  |
| 45°   | 1359.0 | 1199.7 | 222.2 | 64.9  | 51.1  | 39.3  | 29.5  | 25.6  | 21.6  | 19.7  | 19.7  |
| 47.5° | 1526.1 | 1284.2 | 153.4 | 59.0  | 43.3  | 33.4  | 25.6  | 19.7  | 15.7  | 15.7  | 13.8  |
| 50°   | 1671.7 | 1329.5 | 110.1 | 51.1  | 39.3  | 27.5  | 19.7  | 15.7  | 13.8  | 11.8  | 11.8  |
| 52.5° | 1799.5 | 1349.1 | 84.6  | 45.2  | 33.4  | 23.6  | 15.7  | 13.8  | 11.8  | 11.8  | 11.8  |
| 55°   | 1907.7 | 1333.4 | 66.9  | 39.3  | 29.5  | 19.7  | 13.8  | 11.8  | 9.8   | 9.8   | 9.8   |
| 57.5° | 2013.9 | 1286.2 | 53.1  | 33.4  | 23.6  | 13.8  | 11.8  | 9.8   | 7.9   | 7.9   | 7.9   |
| 60°   | 2068.9 | 1225.2 | 43.3  | 27.5  | 19.7  | 11.8  | 9.8   | 7.9   | 7.9   | 5.9   | 5.9   |
| 62.5° | 2031.6 | 1101.3 | 35.4  | 23.6  | 13.8  | 9.8   | 7.9   | 5.9   | 5.9   | 3.9   | 3.9   |
| 65°   | 1905.7 | 944.0  | 27.5  | 17.7  | 9.8   | 7.9   | 5.9   | 5.9   | 3.9   | 2.0   | 2.0   |
| 67.5° | 1606.8 | 739.5  | 21.6  | 13.8  | 7.9   | 5.9   | 3.9   | 3.9   | 2.0   | 0.0   | 0.0   |
| 70°   | 1148.5 | 487.7  | 17.7  | 9.8   | 5.9   | 5.9   | 3.9   | 2.0   | 0.0   | 0.0   | 0.0   |
| 72.5° | 662.8  | 236.0  | 13.8  | 5.9   | 3.9   | 3.9   | 2.0   | 2.0   | 0.0   | 0.0   | 0.0   |
| 75°   | 247.8  | 82.6   | 11.8  | 5.9   | 3.9   | 2.0   | 2.0   | 2.0   | 0.0   | 0.0   | 0.0   |
| 77.5° | 82.6   | 33.4   | 9.8   | 7.9   | 5.9   | 2.0   | 2.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 80°   | 25.6   | 15.7   | 3.9   | 3.9   | 3.9   | 3.9   | 2.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 82.5° | 13.8   | 7.9    | 2.0   | 2.0   | 2.0   | 2.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 85°   | 5.9    | 3.9    | 2.0   | 2.0   | 2.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 87.5° | 2.0    | 2.0    | 2.0   | 2.0   | 2.0   | 2.0   | 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   |



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



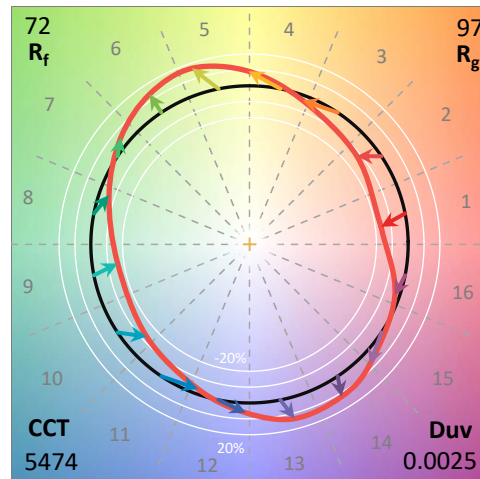
**Test Information**

Test Method: LM-79-2008  
 Report Number: SP1-1908-441-9-R4  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 10/28/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: MCGRAW-EDISON  
 Catalog Number: **SA1C-760-U-5WQ**  
 Description: MCGRAW EDISON ROADWAY AND AREA LUMINAIRE

\*\*\*THIS IS A REVISION OF SP1-1908-441-4-R3. TO UPDATE THE CATALOG INFORMATION.\*\*\*TESTED IN SITU. ROADWAY AND AREA LUMINAIRE. (1) 70 CRI, 5000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

**Spectral Parameters**

|                           |        |           |      |      |       |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K):                  | 5474   | CRI (Ra): | 71.7 | R9:  | -27.1 |
| CIE u':                   | 0.2052 | R1:       | 70.6 | R10: | 40.8  |
| CIE v':                   | 0.4804 | R2:       | 74.6 | R11: | 74.6  |
| Duv:                      | 0.0025 | R3:       | 78.3 | R12: | 50.4  |
| CIE x:                    | 0.3330 | R4:       | 73.8 | R13: | 70.0  |
| CIE y:                    | 0.3466 | R5:       | 72.4 | R14: | 87.8  |
| CIE z:                    | 0.3204 | R6:       | 67.5 |      |       |
| Peak Wavelength (nm):     | 442    | R7:       | 77.5 |      |       |
| Dominant Wavelength (nm): | 554    | R8:       | 58.9 |      |       |
| Purity:                   | 4.1    |           |      |      |       |
| Rf:                       | 72.1   |           |      |      |       |
| Rg:                       | 97.2   |           |      |      |       |



**Test Conditions**

Stabilization Time: 240M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 24.6/31%  
 Sphere Temperature (°C): 25.9

REPORT NUMBER: SP1-1908-441-9-R4

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 6/28/2019        | 12/28/2019           |
| Power Meter                    | IN0071                | 12/5/2018        | 12/5/2019            |
| AC Power Source                | IN0063                | 12/5/2018        | 12/5/2019            |
| DC Power Source                | IN0208                | 12/5/2018        | 12/5/2019            |
| Sphere Thermometer             | IN0085                | 12/5/2018        | 12/5/2019            |
| Room Thermometer               | IN0046                | 12/5/2018        | 12/5/2019            |

REPORT NUMBER: SP1-1908-441-9-R4

CIE 1931 Chromaticity Diagram



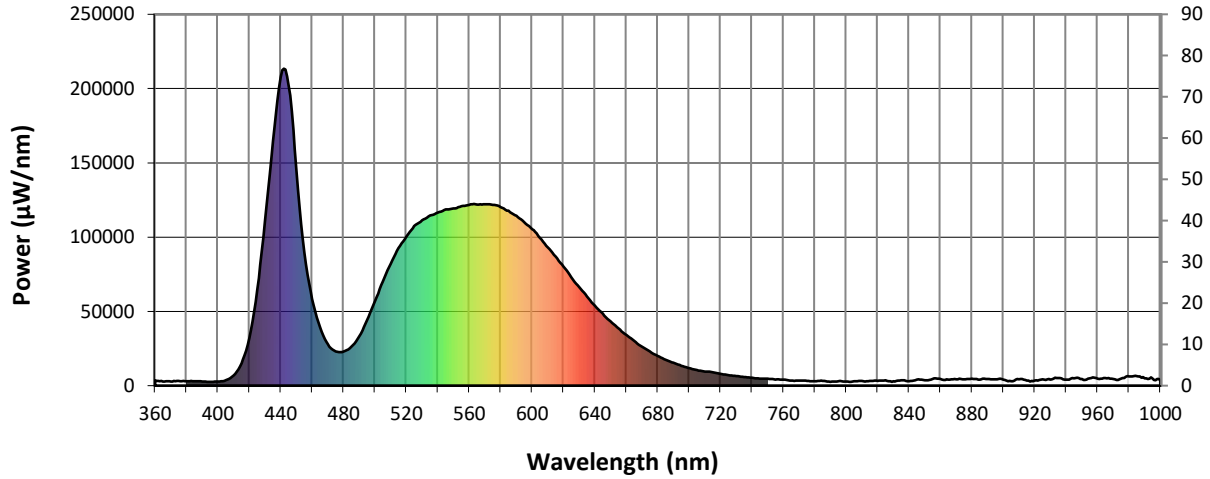
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 5700K 4-step quadrangle

REPORT NUMBER: SP1-1908-441-9-R4

**Photopic Flux vs. Wavelength**



#####

| $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360               | 3540                                 | NR                             | 490               | 33363                                | NR                             | 620               | 80193                                | NR                             | 750               | 4663                                 | NR                             | 880               | 4678                                 | NR                             |
| 365               | 2862                                 | NR                             | 495               | 44177                                | NR                             | 625               | 73091                                | NR                             | 755               | 4147                                 | NR                             | 885               | 4128                                 | NR                             |
| 370               | 2865                                 | NR                             | 500               | 57019                                | NR                             | 630               | 66269                                | NR                             | 760               | 4040                                 | NR                             | 890               | 4504                                 | NR                             |
| 375               | 3254                                 | NR                             | 505               | 70030                                | NR                             | 635               | 60012                                | NR                             | 765               | 3474                                 | NR                             | 895               | 4371                                 | NR                             |
| 380               | 3076                                 | NR                             | 510               | 81972                                | NR                             | 640               | 53914                                | NR                             | 770               | 3469                                 | NR                             | 900               | 4082                                 | NR                             |
| 385               | 2904                                 | NR                             | 515               | 92590                                | NR                             | 645               | 48385                                | NR                             | 775               | 3181                                 | NR                             | 905               | 2982                                 | NR                             |
| 390               | 2689                                 | NR                             | 520               | 100305                               | NR                             | 650               | 43219                                | NR                             | 780               | 2969                                 | NR                             | 910               | 4351                                 | NR                             |
| 395               | 2619                                 | NR                             | 525               | 107452                               | NR                             | 655               | 38562                                | NR                             | 785               | 3132                                 | NR                             | 915               | 3365                                 | NR                             |
| 400               | 2679                                 | NR                             | 530               | 111373                               | NR                             | 660               | 34110                                | NR                             | 790               | 2507                                 | NR                             | 920               | 3430                                 | NR                             |
| 405               | 3515                                 | NR                             | 535               | 114505                               | NR                             | 665               | 30085                                | NR                             | 795               | 2968                                 | NR                             | 925               | 4264                                 | NR                             |
| 410               | 6934                                 | NR                             | 540               | 116408                               | NR                             | 670               | 26205                                | NR                             | 800               | 2758                                 | NR                             | 930               | 4095                                 | NR                             |
| 415               | 14943                                | NR                             | 545               | 118700                               | NR                             | 675               | 22906                                | NR                             | 805               | 2872                                 | NR                             | 935               | 5048                                 | NR                             |
| 420               | 31939                                | NR                             | 550               | 119209                               | NR                             | 680               | 20058                                | NR                             | 810               | 3094                                 | NR                             | 940               | 4074                                 | NR                             |
| 425               | 64701                                | NR                             | 555               | 120742                               | NR                             | 685               | 17413                                | NR                             | 815               | 3222                                 | NR                             | 945               | 4949                                 | NR                             |
| 430               | 110939                               | NR                             | 560               | 121594                               | NR                             | 690               | 15447                                | NR                             | 820               | 3238                                 | NR                             | 950               | 4387                                 | NR                             |
| 435               | 164597                               | NR                             | 565               | 121913                               | NR                             | 695               | 13398                                | NR                             | 825               | 3524                                 | NR                             | 955               | 4978                                 | NR                             |
| 440               | 207696                               | NR                             | 570               | 122147                               | NR                             | 700               | 11777                                | NR                             | 830               | 2921                                 | NR                             | 960               | 4706                                 | NR                             |
| 445               | 201830                               | NR                             | 575               | 121605                               | NR                             | 705               | 10412                                | NR                             | 835               | 3595                                 | NR                             | 965               | 5083                                 | NR                             |
| 450               | 145410                               | NR                             | 580               | 120248                               | NR                             | 710               | 9544                                 | NR                             | 840               | 3016                                 | NR                             | 970               | 4522                                 | NR                             |
| 455               | 89594                                | NR                             | 585               | 117717                               | NR                             | 715               | 8940                                 | NR                             | 845               | 4032                                 | NR                             | 975               | 4740                                 | NR                             |
| 460               | 58321                                | NR                             | 590               | 114359                               | NR                             | 720               | 7897                                 | NR                             | 850               | 3579                                 | NR                             | 980               | 6122                                 | NR                             |
| 465               | 39318                                | NR                             | 595               | 109974                               | NR                             | 725               | 7045                                 | NR                             | 855               | 4571                                 | NR                             | 985               | 6450                                 | NR                             |
| 470               | 27693                                | NR                             | 600               | 105269                               | NR                             | 730               | 6483                                 | NR                             | 860               | 4485                                 | NR                             | 990               | 4875                                 | NR                             |
| 475               | 23081                                | NR                             | 605               | 99453                                | NR                             | 735               | 5838                                 | NR                             | 865               | 3978                                 | NR                             | 995               | 4764                                 | NR                             |
| 480               | 23002                                | NR                             | 610               | 92921                                | NR                             | 740               | 5261                                 | NR                             | 870               | 4298                                 | NR                             | 1000              | 3640                                 | NR                             |
| 485               | 26201                                | NR                             | 615               | 86989                                | NR                             | 745               | 4760                                 | NR                             | 875               | 4356                                 | NR                             |                   |                                      |                                |

REPORT NUMBER: SP1-1908-441-9-R4

Scotopic Flux vs. Wavelength



Scotopic Lumens: 13759.3 S/P: 1.85

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360    | 3540          | NR            | 490    | 33363         | NR            | 620    | 80193         | NR            | 750    | 4663          | NR            | 880    | 4678          | NR            |
| 365    | 2862          | NR            | 495    | 44177         | NR            | 625    | 73091         | NR            | 755    | 4147          | NR            | 885    | 4128          | NR            |
| 370    | 2865          | NR            | 500    | 57019         | NR            | 630    | 66269         | NR            | 760    | 4040          | NR            | 890    | 4504          | NR            |
| 375    | 3254          | NR            | 505    | 70030         | NR            | 635    | 60012         | NR            | 765    | 3474          | NR            | 895    | 4371          | NR            |
| 380    | 3076          | NR            | 510    | 81972         | NR            | 640    | 53914         | NR            | 770    | 3469          | NR            | 900    | 4082          | NR            |
| 385    | 2904          | NR            | 515    | 92590         | NR            | 645    | 48385         | NR            | 775    | 3181          | NR            | 905    | 2982          | NR            |
| 390    | 2689          | NR            | 520    | 100305        | NR            | 650    | 43219         | NR            | 780    | 2969          | NR            | 910    | 4351          | NR            |
| 395    | 2619          | NR            | 525    | 107452        | NR            | 655    | 38562         | NR            | 785    | 3132          | NR            | 915    | 3365          | NR            |
| 400    | 2679          | NR            | 530    | 111373        | NR            | 660    | 34110         | NR            | 790    | 2507          | NR            | 920    | 3430          | NR            |
| 405    | 3515          | NR            | 535    | 114505        | NR            | 665    | 30085         | NR            | 795    | 2968          | NR            | 925    | 4264          | NR            |
| 410    | 6934          | NR            | 540    | 116408        | NR            | 670    | 26205         | NR            | 800    | 2758          | NR            | 930    | 4095          | NR            |
| 415    | 14943         | NR            | 545    | 118700        | NR            | 675    | 22906         | NR            | 805    | 2872          | NR            | 935    | 5048          | NR            |
| 420    | 31939         | NR            | 550    | 119209        | NR            | 680    | 20058         | NR            | 810    | 3094          | NR            | 940    | 4074          | NR            |
| 425    | 64701         | NR            | 555    | 120742        | NR            | 685    | 17413         | NR            | 815    | 3222          | NR            | 945    | 4949          | NR            |
| 430    | 110939        | NR            | 560    | 121594        | NR            | 690    | 15447         | NR            | 820    | 3238          | NR            | 950    | 4387          | NR            |
| 435    | 164597        | NR            | 565    | 121913        | NR            | 695    | 13398         | NR            | 825    | 3524          | NR            | 955    | 4978          | NR            |
| 440    | 207696        | NR            | 570    | 122147        | NR            | 700    | 11777         | NR            | 830    | 2921          | NR            | 960    | 4706          | NR            |
| 445    | 201830        | NR            | 575    | 121605        | NR            | 705    | 10412         | NR            | 835    | 3595          | NR            | 965    | 5083          | NR            |
| 450    | 145410        | NR            | 580    | 120248        | NR            | 710    | 9544          | NR            | 840    | 3016          | NR            | 970    | 4522          | NR            |
| 455    | 89594         | NR            | 585    | 117717        | NR            | 715    | 8940          | NR            | 845    | 4032          | NR            | 975    | 4740          | NR            |
| 460    | 58321         | NR            | 590    | 114359        | NR            | 720    | 7897          | NR            | 850    | 3579          | NR            | 980    | 6122          | NR            |
| 465    | 39318         | NR            | 595    | 109974        | NR            | 725    | 7045          | NR            | 855    | 4571          | NR            | 985    | 6450          | NR            |
| 470    | 27693         | NR            | 600    | 105269        | NR            | 730    | 6483          | NR            | 860    | 4485          | NR            | 990    | 4875          | NR            |
| 475    | 23081         | NR            | 605    | 99453         | NR            | 735    | 5838          | NR            | 865    | 3978          | NR            | 995    | 4764          | NR            |
| 480    | 23002         | NR            | 610    | 92921         | NR            | 740    | 5261          | NR            | 870    | 4298          | NR            | 1000   | 3640          | NR            |
| 485    | 26201         | NR            | 615    | 86989         | NR            | 745    | 4760          | NR            | 875    | 4356          | NR            |        |               |               |

REPORT NUMBER: SP1-1908-441-9-R4

**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 5527.6 M/P: 0.74**

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360    | 3540          | NR            | 490    | 33363         | NR            | 620    | 80193         | NR            | 750    | 4663          | NR            | 880    | 4678          | NR            |
| 365    | 2862          | NR            | 495    | 44177         | NR            | 625    | 73091         | NR            | 755    | 4147          | NR            | 885    | 4128          | NR            |
| 370    | 2865          | NR            | 500    | 57019         | NR            | 630    | 66269         | NR            | 760    | 4040          | NR            | 890    | 4504          | NR            |
| 375    | 3254          | NR            | 505    | 70030         | NR            | 635    | 60012         | NR            | 765    | 3474          | NR            | 895    | 4371          | NR            |
| 380    | 3076          | NR            | 510    | 81972         | NR            | 640    | 53914         | NR            | 770    | 3469          | NR            | 900    | 4082          | NR            |
| 385    | 2904          | NR            | 515    | 92590         | NR            | 645    | 48385         | NR            | 775    | 3181          | NR            | 905    | 2982          | NR            |
| 390    | 2689          | NR            | 520    | 100305        | NR            | 650    | 43219         | NR            | 780    | 2969          | NR            | 910    | 4351          | NR            |
| 395    | 2619          | NR            | 525    | 107452        | NR            | 655    | 38562         | NR            | 785    | 3132          | NR            | 915    | 3365          | NR            |
| 400    | 2679          | NR            | 530    | 111373        | NR            | 660    | 34110         | NR            | 790    | 2507          | NR            | 920    | 3430          | NR            |
| 405    | 3515          | NR            | 535    | 114505        | NR            | 665    | 30085         | NR            | 795    | 2968          | NR            | 925    | 4264          | NR            |
| 410    | 6934          | NR            | 540    | 116408        | NR            | 670    | 26205         | NR            | 800    | 2758          | NR            | 930    | 4095          | NR            |
| 415    | 14943         | NR            | 545    | 118700        | NR            | 675    | 22906         | NR            | 805    | 2872          | NR            | 935    | 5048          | NR            |
| 420    | 31939         | NR            | 550    | 119209        | NR            | 680    | 20058         | NR            | 810    | 3094          | NR            | 940    | 4074          | NR            |
| 425    | 64701         | NR            | 555    | 120742        | NR            | 685    | 17413         | NR            | 815    | 3222          | NR            | 945    | 4949          | NR            |
| 430    | 110939        | NR            | 560    | 121594        | NR            | 690    | 15447         | NR            | 820    | 3238          | NR            | 950    | 4387          | NR            |
| 435    | 164597        | NR            | 565    | 121913        | NR            | 695    | 13398         | NR            | 825    | 3524          | NR            | 955    | 4978          | NR            |
| 440    | 207696        | NR            | 570    | 122147        | NR            | 700    | 11777         | NR            | 830    | 2921          | NR            | 960    | 4706          | NR            |
| 445    | 201830        | NR            | 575    | 121605        | NR            | 705    | 10412         | NR            | 835    | 3595          | NR            | 965    | 5083          | NR            |
| 450    | 145410        | NR            | 580    | 120248        | NR            | 710    | 9544          | NR            | 840    | 3016          | NR            | 970    | 4522          | NR            |
| 455    | 89594         | NR            | 585    | 117717        | NR            | 715    | 8940          | NR            | 845    | 4032          | NR            | 975    | 4740          | NR            |
| 460    | 58321         | NR            | 590    | 114359        | NR            | 720    | 7897          | NR            | 850    | 3579          | NR            | 980    | 6122          | NR            |
| 465    | 39318         | NR            | 595    | 109974        | NR            | 725    | 7045          | NR            | 855    | 4571          | NR            | 985    | 6450          | NR            |
| 470    | 27693         | NR            | 600    | 105269        | NR            | 730    | 6483          | NR            | 860    | 4485          | NR            | 990    | 4875          | NR            |
| 475    | 23081         | NR            | 605    | 99453         | NR            | 735    | 5838          | NR            | 865    | 3978          | NR            | 995    | 4764          | NR            |
| 480    | 23002         | NR            | 610    | 92921         | NR            | 740    | 5261          | NR            | 870    | 4298          | NR            | 1000   | 3640          | NR            |
| 485    | 26201         | NR            | 615    | 86989         | NR            | 745    | 4760          | NR            | 875    | 4356          | NR            |        |               |               |





REPORT NUMBER: SP1-1908-441-9-R4

TM-30-18

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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 54 | CES51 = 88 | CES76 = 43 |
| CES02 = 59 | CES27 = 79 | CES52 = 90 | CES77 = 64 |
| CES03 = 30 | CES28 = 77 | CES53 = 77 | CES78 = 46 |
| CES04 = 69 | CES29 = 50 | CES54 = 81 | CES79 = 74 |
| CES05 = 46 | CES30 = 59 | CES55 = 80 | CES80 = 70 |
| CES06 = 50 | CES31 = 55 | CES56 = 70 | CES81 = 71 |
| CES07 = 38 | CES32 = 52 | CES57 = 68 | CES82 = 88 |
| CES08 = 38 | CES33 = 63 | CES58 = 70 | CES83 = 82 |
| CES09 = 29 | CES34 = 63 | CES59 = 88 | CES84 = 87 |
| CES10 = 72 | CES35 = 79 | CES60 = 92 | CES85 = 84 |
| CES11 = 55 | CES36 = 90 | CES61 = 88 | CES86 = 76 |
| CES12 = 61 | CES37 = 72 | CES62 = 81 | CES87 = 75 |
| CES13 = 41 | CES38 = 68 | CES63 = 75 | CES88 = 77 |
| CES14 = 74 | CES39 = 91 | CES64 = 72 | CES89 = 76 |
| CES15 = 70 | CES40 = 83 | CES65 = 65 | CES90 = 76 |
| CES16 = 46 | CES41 = 84 | CES66 = 66 | CES91 = 92 |
| CES17 = 48 | CES42 = 70 | CES67 = 64 | CES92 = 70 |
| CES18 = 55 | CES43 = 69 | CES68 = 71 | CES93 = 83 |
| CES19 = 70 | CES44 = 98 | CES69 = 80 | CES94 = 60 |
| CES20 = 64 | CES45 = 79 | CES70 = 58 | CES95 = 73 |
| CES21 = 85 | CES46 = 78 | CES71 = 55 | CES96 = 79 |
| CES22 = 77 | CES47 = 76 | CES72 = 84 | CES97 = 84 |
| CES23 = 91 | CES48 = 68 | CES73 = 47 | CES98 = 73 |
| CES24 = 90 | CES49 = 78 | CES74 = 94 | CES99 = 62 |
| CES25 = 71 | CES50 = 87 | CES75 = 51 |            |



REPORT NUMBER: SP1-1908-441-9-R4

TM-30-18

Color Rendition by Hue-Angle Bin



REPORT NUMBER: SP1-1908-441-9-R4

TM-30-18

Measure Comparisons



(END OF REPORT)