

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: P438523

Luminaire Tested: **IST-SA1D-735-U-SL3-HSS**

Issue Date: 12/10/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P438523  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2011-074-17)  
Test Lab: INNOVATION CENTER  
Issue Date: 12/10/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: IST-SA1D-735-U-SL3-HSS  
Description: IMPACT ELITE LED TRAPEZOID LUMINAIRE  
(1) 70 CRI, 3500K, 800mA LIGHTSQUARE WITH 16 LEDS AND TYPE III SPILL  
LIGHT ELIMINATOR OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

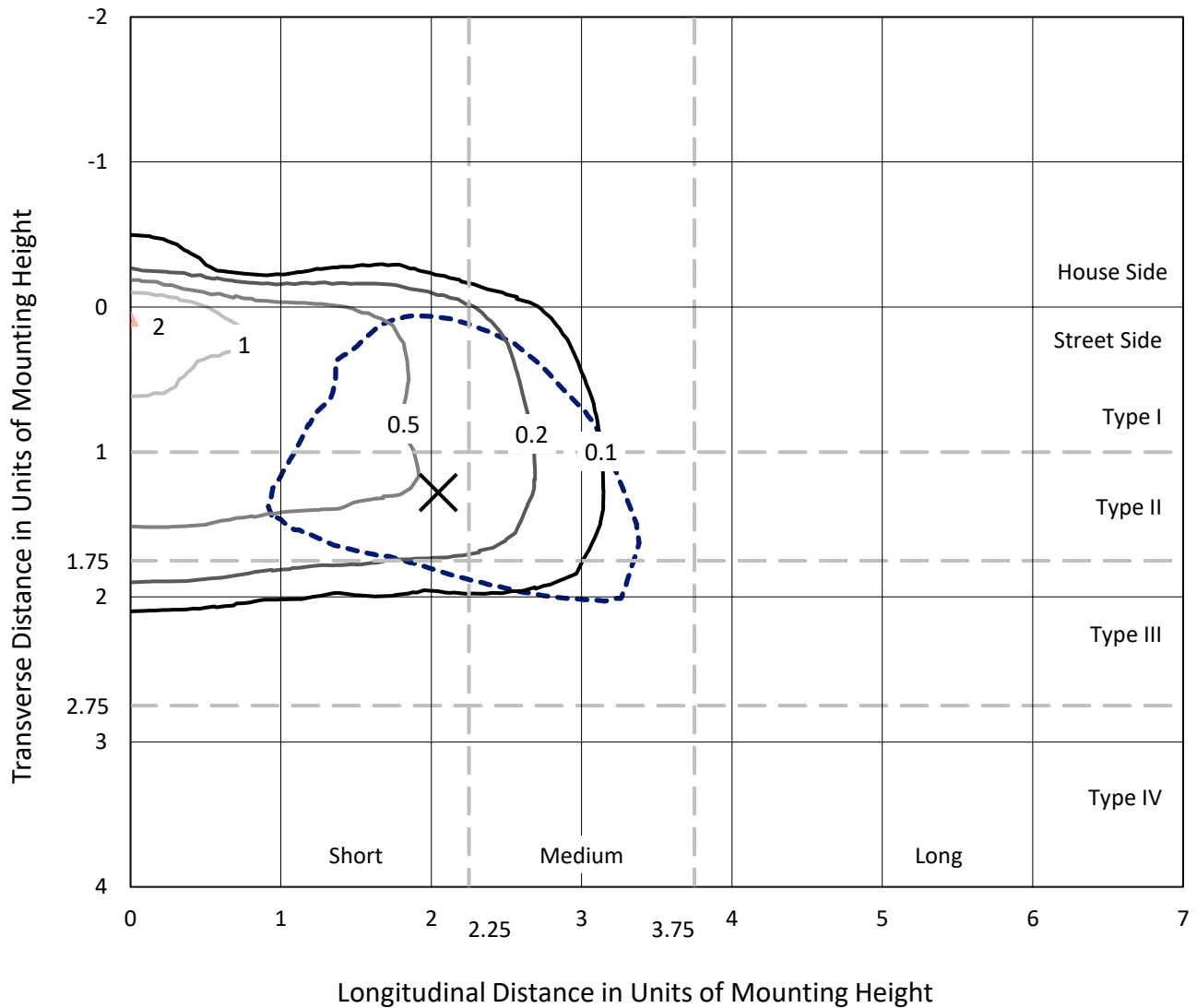
Lumens per Lamp: N/A  
Luminaire Lumens: 4406 lumens  
Efficiency: N/A  
Efficacy: 97.5 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
IES Classification: Type III - Short  
BUG Rating: B1 - U0 - G1  
  
Input Watts (W): 45.2  
Input Voltage (V): NR  
Input Current (Ain): NR  
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



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 CATALOG NUMBER: IST-SA1D-735-U-SL3-HSS

### Iso-Footcandle Lines of Horizontal Illumination

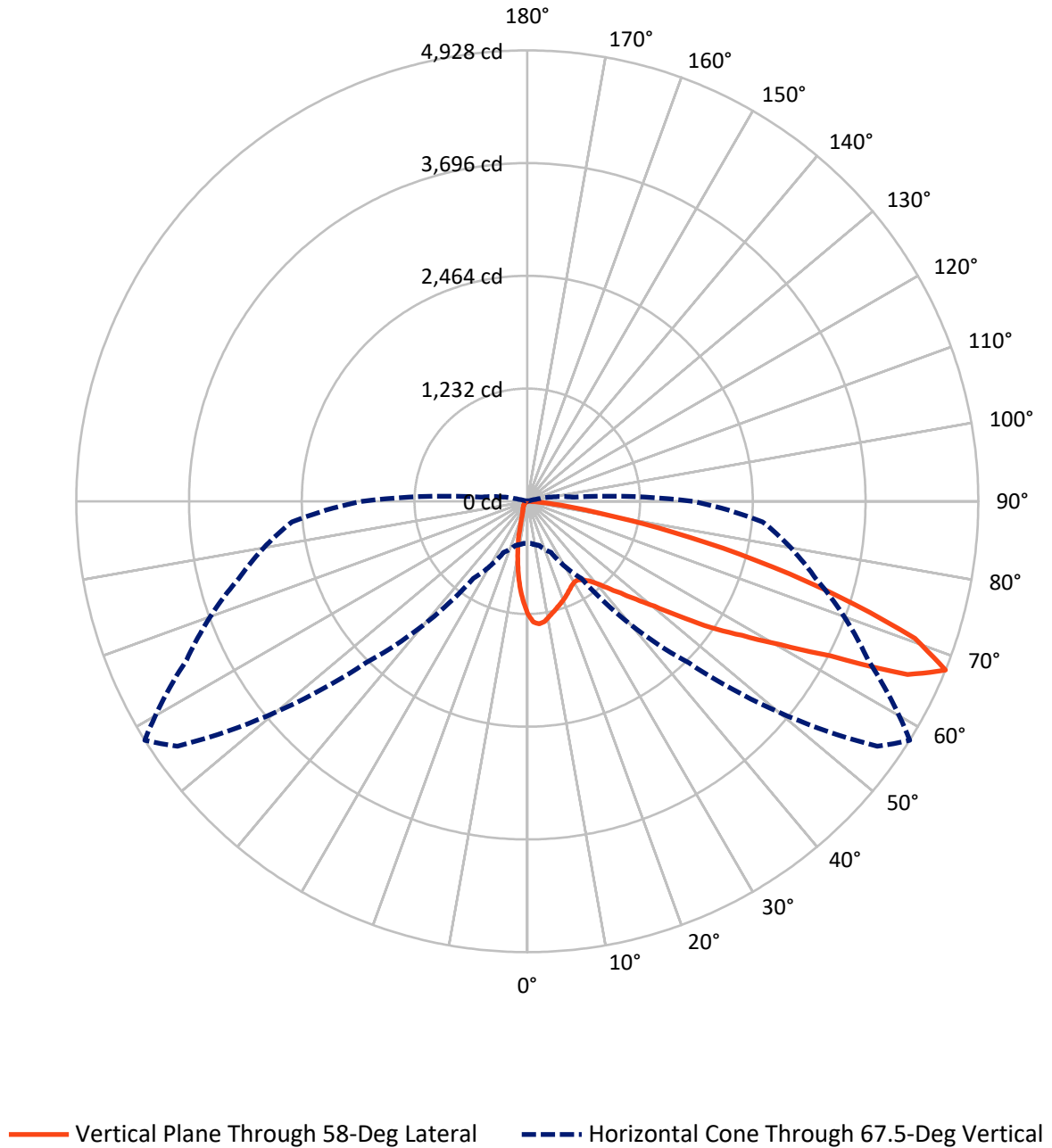
× Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 2 fc  
 Type III - Short - N/A

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### Luminous Intensity Polar Plot



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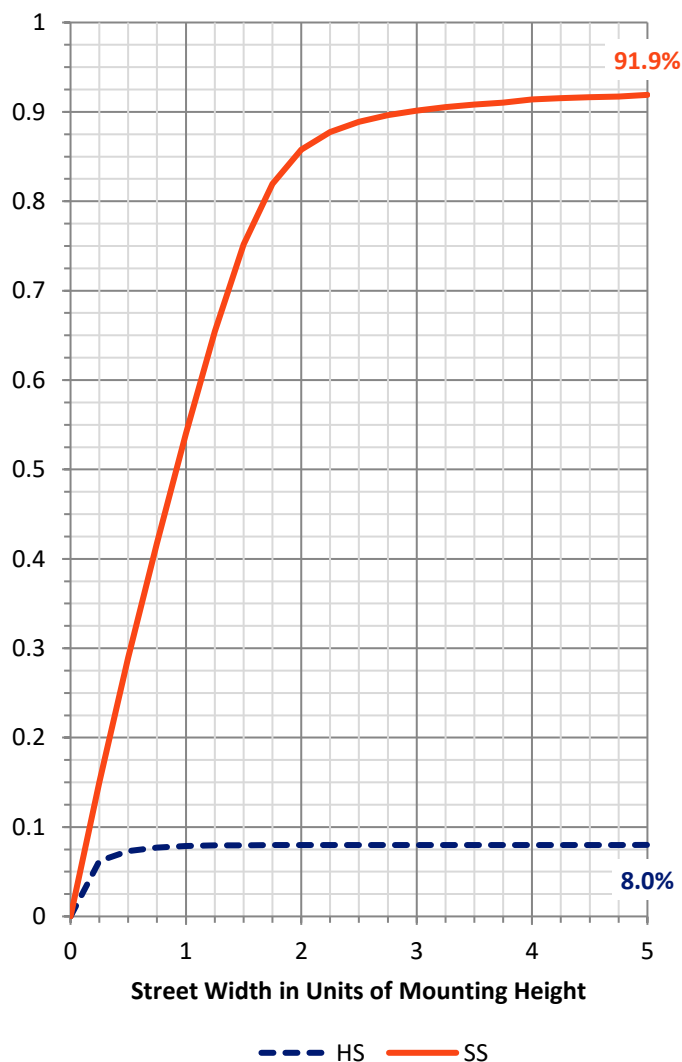
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 355.2    | 0.0    | 355.2  |
|                    | % Fixture | 8.1      | 0.0    | 8.1    |
| <b>Street Side</b> | Lumens    | 4050.8   | 0.0    | 4050.8 |
|                    | % Fixture | 91.9     | 0.0    | 91.9   |
| <b>Total</b>       | Lumens    | 4406.0   | 0.0    | 4406.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 99.3   | 2.3       |
| 10°-20°   | 209.3  | 4.8       |
| 20°-30°   | 283.2  | 6.4       |
| 30°-40°   | 389.5  | 8.8       |
| 40°-50°   | 609.8  | 13.8      |
| 50°-60°   | 1027.3 | 23.3      |
| 60°-70°   | 1219.2 | 27.7      |
| 70°-80°   | 529.4  | 12.0      |
| 80°-90°   | 38.9   | 0.9       |
| 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°    | 4406.0 | 100.0     |
| 0°-180°   | 4406.0 | 100.0     |

**Coefficient of Utilization**



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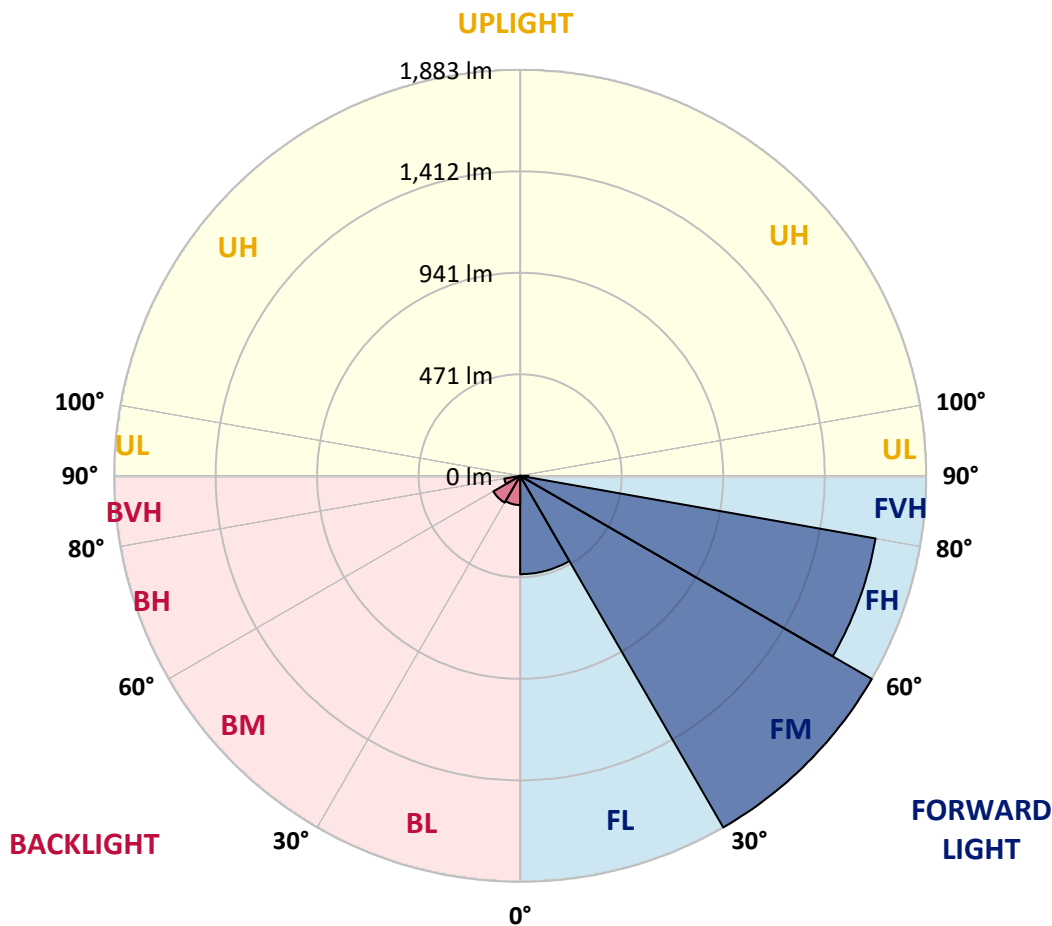
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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 456.3  | 10.4      |                         |      |         |
| FM (30°-60°)   | 1883.0 | 42.7      |                         |      |         |
| FH (60°-80°)   | 1673.8 | 38.0      |                         |      | G1/1800 |
| FVH (80°-90°)  | 37.7   | 0.9       |                         |      | G1/100  |
| BL (0°-30°)    | 135.6  | 3.1       | B1/500                  |      |         |
| BM (30°-60°)   | 143.7  | 3.3       | B0/220                  |      |         |
| BH (60°-80°)   | 74.8   | 1.7       | B0/110                  |      | G0/110  |
| BVH (80°-90°)  | 1.2    | 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





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 58°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1240.5 | 1240.5 | 1240.5 | 1240.5 | 1240.5 | 1240.5 | 1240.5 | 1240.5 | 1240.5 | 1240.5 | 1240.5 |
| 2.5°  | 1384.7 | 1377.1 | 1373.3 | 1371.4 | 1358.1 | 1346.7 | 1324.0 | 1322.1 | 1306.9 | 1278.4 | 1250.0 |
| 5°    | 1354.3 | 1360.0 | 1361.9 | 1367.6 | 1365.7 | 1365.7 | 1350.5 | 1346.7 | 1325.9 | 1286.0 | 1231.0 |
| 7.5°  | 1287.9 | 1286.0 | 1289.8 | 1305.0 | 1312.6 | 1327.8 | 1325.9 | 1329.7 | 1320.2 | 1276.5 | 1198.8 |
| 10°   | 1191.2 | 1195.0 | 1206.4 | 1219.6 | 1240.5 | 1267.1 | 1284.1 | 1287.9 | 1295.5 | 1259.5 | 1168.4 |
| 12.5° | 1102.0 | 1107.7 | 1115.3 | 1141.9 | 1164.6 | 1206.4 | 1238.6 | 1246.2 | 1261.4 | 1242.4 | 1141.9 |
| 15°   | 1028.1 | 1030.0 | 1035.7 | 1060.3 | 1098.2 | 1151.4 | 1198.8 | 1210.2 | 1234.8 | 1227.2 | 1121.0 |
| 17.5° | 969.3  | 971.2  | 978.7  | 999.6  | 1030.0 | 1092.6 | 1157.0 | 1176.0 | 1212.1 | 1217.7 | 1098.2 |
| 20°   | 937.0  | 937.0  | 937.0  | 950.3  | 980.6  | 1039.4 | 1115.3 | 1141.9 | 1193.1 | 1202.6 | 1079.3 |
| 22.5° | 927.5  | 927.5  | 923.7  | 927.5  | 946.5  | 995.8  | 1073.6 | 1105.8 | 1170.3 | 1196.9 | 1056.5 |
| 25°   | 940.8  | 935.1  | 935.1  | 925.6  | 927.5  | 959.8  | 1035.7 | 1071.7 | 1157.0 | 1193.1 | 1045.1 |
| 27.5° | 965.5  | 963.6  | 956.0  | 948.4  | 937.0  | 944.6  | 1003.4 | 1039.4 | 1143.8 | 1198.8 | 1035.7 |
| 30°   | 993.9  | 993.9  | 990.1  | 986.3  | 967.4  | 952.2  | 988.2  | 1020.5 | 1138.1 | 1208.3 | 1030.0 |
| 32.5° | 1026.2 | 1024.3 | 1033.8 | 1037.5 | 1014.8 | 986.3  | 992.0  | 1022.4 | 1141.9 | 1236.7 | 1033.8 |
| 35°   | 1064.1 | 1064.1 | 1081.2 | 1103.9 | 1085.0 | 1041.3 | 1028.1 | 1054.6 | 1160.8 | 1267.1 | 1048.9 |
| 37.5° | 1105.8 | 1107.7 | 1138.1 | 1170.3 | 1157.0 | 1119.1 | 1096.3 | 1105.8 | 1200.7 | 1324.0 | 1083.1 |
| 40°   | 1155.1 | 1155.1 | 1200.7 | 1253.8 | 1253.8 | 1210.2 | 1179.8 | 1187.4 | 1257.6 | 1405.5 | 1143.8 |
| 42.5° | 1208.3 | 1214.0 | 1278.4 | 1342.9 | 1361.9 | 1322.1 | 1289.8 | 1299.3 | 1348.6 | 1511.7 | 1232.9 |
| 45°   | 1284.1 | 1301.2 | 1384.7 | 1447.3 | 1485.2 | 1466.2 | 1424.5 | 1432.1 | 1468.1 | 1665.4 | 1367.6 |
| 47.5° | 1418.8 | 1434.0 | 1506.1 | 1568.7 | 1616.1 | 1625.6 | 1606.6 | 1602.8 | 1618.0 | 1845.6 | 1538.3 |
| 50°   | 1580.0 | 1593.3 | 1642.6 | 1695.7 | 1762.1 | 1819.0 | 1807.6 | 1802.0 | 1807.6 | 2042.9 | 1747.0 |
| 52.5° | 1739.4 | 1733.7 | 1792.5 | 1820.9 | 1913.9 | 2039.1 | 2088.4 | 2088.4 | 2058.0 | 2249.6 | 1951.8 |
| 55°   | 1881.6 | 1906.3 | 1968.9 | 2020.1 | 2097.9 | 2247.7 | 2414.6 | 2435.5 | 2331.2 | 2454.5 | 2122.5 |
| 57.5° | 1864.6 | 1889.2 | 2004.9 | 2166.1 | 2395.7 | 2598.6 | 2761.7 | 2765.5 | 2613.8 | 2611.9 | 2333.1 |
| 60°   | 1665.4 | 1667.3 | 1822.8 | 2067.5 | 2526.5 | 3105.1 | 3199.9 | 3180.9 | 2860.4 | 2831.9 | 2623.3 |
| 62.5° | 1172.2 | 1164.6 | 1365.7 | 1676.8 | 2331.2 | 3382.0 | 3863.8 | 3719.6 | 3270.1 | 3177.1 | 2894.5 |
| 65°   | 682.8  | 679.1  | 756.8  | 1001.5 | 1765.9 | 3186.6 | 4542.8 | 4565.6 | 3808.8 | 3353.5 | 2837.6 |
| 67.5° | 459.0  | 462.8  | 498.9  | 618.4  | 1030.0 | 2500.0 | 4668.0 | 4927.9 | 4108.5 | 3262.5 | 2581.5 |
| 70°   | 337.6  | 337.6  | 366.1  | 455.2  | 610.8  | 1566.8 | 4078.1 | 4493.5 | 4167.3 | 3034.9 | 2160.5 |
| 72.5° | 240.9  | 240.9  | 280.7  | 368.0  | 498.9  | 808.0  | 3031.1 | 3562.2 | 3518.6 | 2518.9 | 1494.7 |
| 75°   | 153.6  | 157.4  | 201.1  | 301.6  | 455.2  | 517.8  | 2056.1 | 2581.5 | 2454.5 | 1409.3 | 637.3  |
| 77.5° | 58.8   | 66.4   | 108.1  | 221.9  | 398.3  | 430.6  | 1172.2 | 1627.5 | 1295.5 | 493.2  | 170.7  |
| 80°   | 20.9   | 20.9   | 36.0   | 113.8  | 280.7  | 354.7  | 612.7  | 808.0  | 421.1  | 119.5  | 64.5   |
| 82.5° | 3.8    | 3.8    | 13.3   | 47.4   | 138.5  | 246.6  | 356.6  | 398.3  | 165.0  | 39.8   | 37.9   |
| 85°   | 0.0    | 0.0    | 1.9    | 9.5    | 32.2   | 24.7   | 142.3  | 134.7  | 51.2   | 17.1   | 24.7   |
| 87.5° | 0.0    | 0.0    | 0.0    | 0.0    | 1.9    | 1.9    | 3.8    | 3.8    | 3.8    | 3.8    | 3.8    |
| 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: IST-SA1D-735-U-SL3-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1240.5 | 1240.5 | 1240.5 | 1240.5 | 1240.5 | 1240.5 | 1240.5 | 1240.5 | 1240.5 | 1240.5 | 1240.5 |
| 2.5°  | 1227.2 | 1212.1 | 1168.4 | 1138.1 | 1096.3 | 1054.6 | 1028.1 | 1007.2 | 997.7  | 984.4  | 990.1  |
| 5°    | 1196.9 | 1162.7 | 1083.1 | 1011.0 | 942.7  | 870.6  | 817.5  | 770.1  | 754.9  | 728.4  | 724.6  |
| 7.5°  | 1151.4 | 1103.9 | 986.3  | 872.5  | 762.5  | 671.5  | 589.9  | 527.3  | 470.4  | 445.7  | 460.9  |
| 10°   | 1107.7 | 1043.2 | 889.6  | 737.9  | 591.8  | 464.7  | 368.0  | 292.1  | 248.5  | 229.5  | 233.3  |
| 12.5° | 1066.0 | 984.4  | 789.1  | 608.9  | 430.6  | 286.4  | 208.6  | 168.8  | 155.5  | 153.6  | 149.8  |
| 15°   | 1030.0 | 929.4  | 699.9  | 472.3  | 286.4  | 180.2  | 148.0  | 138.5  | 136.6  | 136.6  | 136.6  |
| 17.5° | 990.1  | 872.5  | 603.2  | 347.1  | 187.8  | 140.4  | 130.9  | 129.0  | 127.1  | 127.1  | 127.1  |
| 20°   | 959.8  | 823.2  | 514.0  | 242.8  | 144.2  | 125.2  | 121.4  | 121.4  | 119.5  | 119.5  | 119.5  |
| 22.5° | 927.5  | 772.0  | 426.8  | 178.3  | 123.3  | 115.7  | 111.9  | 110.0  | 110.0  | 108.1  | 108.1  |
| 25°   | 897.2  | 724.6  | 343.3  | 136.6  | 110.0  | 104.3  | 100.5  | 98.6   | 98.6   | 96.7   | 94.8   |
| 27.5° | 878.2  | 686.6  | 269.3  | 115.7  | 98.6   | 94.8   | 91.0   | 87.3   | 83.5   | 81.6   | 81.6   |
| 30°   | 864.9  | 641.1  | 204.9  | 100.5  | 91.0   | 85.4   | 79.7   | 74.0   | 68.3   | 66.4   | 66.4   |
| 32.5° | 846.0  | 605.1  | 157.4  | 91.0   | 81.6   | 75.9   | 68.3   | 62.6   | 56.9   | 53.1   | 53.1   |
| 35°   | 846.0  | 574.7  | 121.4  | 81.6   | 74.0   | 66.4   | 60.7   | 51.2   | 45.5   | 43.6   | 41.7   |
| 37.5° | 859.2  | 540.6  | 100.5  | 75.9   | 68.3   | 60.7   | 53.1   | 43.6   | 37.9   | 36.0   | 36.0   |
| 40°   | 889.6  | 529.2  | 85.4   | 68.3   | 60.7   | 53.1   | 45.5   | 36.0   | 32.2   | 28.5   | 28.5   |
| 42.5° | 952.2  | 533.0  | 75.9   | 64.5   | 55.0   | 47.4   | 37.9   | 30.3   | 26.6   | 24.7   | 24.7   |
| 45°   | 1043.2 | 544.4  | 70.2   | 58.8   | 49.3   | 39.8   | 32.2   | 26.6   | 20.9   | 19.0   | 19.0   |
| 47.5° | 1170.3 | 580.4  | 62.6   | 53.1   | 43.6   | 34.1   | 26.6   | 20.9   | 17.1   | 15.2   | 15.2   |
| 50°   | 1322.1 | 643.0  | 58.8   | 47.4   | 39.8   | 28.5   | 20.9   | 15.2   | 11.4   | 11.4   | 11.4   |
| 52.5° | 1500.4 | 705.6  | 53.1   | 43.6   | 34.1   | 24.7   | 17.1   | 11.4   | 9.5    | 7.6    | 7.6    |
| 55°   | 1650.2 | 760.6  | 47.4   | 39.8   | 28.5   | 19.0   | 13.3   | 9.5    | 7.6    | 5.7    | 5.7    |
| 57.5° | 1845.6 | 840.3  | 39.8   | 34.1   | 22.8   | 15.2   | 9.5    | 7.6    | 3.8    | 3.8    | 3.8    |
| 60°   | 2107.3 | 935.1  | 34.1   | 28.5   | 17.1   | 11.4   | 7.6    | 3.8    | 3.8    | 1.9    | 1.9    |
| 62.5° | 2219.3 | 859.2  | 30.3   | 22.8   | 13.3   | 7.6    | 5.7    | 3.8    | 1.9    | 1.9    | 1.9    |
| 65°   | 2096.0 | 701.8  | 24.7   | 17.1   | 9.5    | 5.7    | 3.8    | 1.9    | 1.9    | 0.0    | 0.0    |
| 67.5° | 1807.6 | 517.8  | 20.9   | 11.4   | 7.6    | 3.8    | 1.9    | 0.0    | 0.0    | 0.0    | 0.0    |
| 70°   | 1473.8 | 383.2  | 15.2   | 7.6    | 3.8    | 3.8    | 1.9    | 0.0    | 0.0    | 0.0    | 0.0    |
| 72.5° | 1020.5 | 231.4  | 11.4   | 5.7    | 3.8    | 1.9    | 1.9    | 0.0    | 0.0    | 0.0    | 0.0    |
| 75°   | 396.4  | 91.0   | 9.5    | 5.7    | 3.8    | 1.9    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 77.5° | 111.9  | 32.2   | 7.6    | 3.8    | 3.8    | 1.9    | 1.9    | 0.0    | 0.0    | 0.0    | 0.0    |
| 80°   | 45.5   | 17.1   | 5.7    | 3.8    | 3.8    | 1.9    | 1.9    | 0.0    | 0.0    | 0.0    | 0.0    |
| 82.5° | 28.5   | 9.5    | 3.8    | 1.9    | 1.9    | 1.9    | 1.9    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 19.0   | 5.7    | 3.8    | 1.9    | 1.9    | 0.0    | 0.0    | 0.0    | 0.0    | 1.9    | 1.9    |
| 87.5° | 3.8    | 3.8    | 1.9    | 1.9    | 1.9    | 1.9    | 0.0    | 0.0    | 0.0    | 0.0    | 1.9    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |



LM-79-08: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

All Brands

Data applicable to all product families using SA light engines

Report Number: SP1-2101-121-7

Luminaire Tested: IFLD-S-SA2A-735-U-T2

Test Date: 03/04/2021

**Test Information**

Test Method: LM-79-08  
 Report Number: SP1-2101-121-7  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1  
 Measurement Geometry: 4π  
 Issue Date: 03/04/2021  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: STREETWORKS  
 Catalog Number: **IFLD-S-SA2A-735-U-T2**  
 Description: STREETWORKS INF FLOOD

PROGRAMMED @ 615mA.

**Spectral Parameters**

CCT (K): 3388  
 CIE u': 0.2371  
 CIE v': 0.5177  
 Duv: 0.0032  
 CIE x: 0.4153  
 CIE y: 0.4030  
 CIE z: 0.1817  
 Peak Wavelength (nm): 590  
 Dominant Wavelength (nm): 580  
 Purity: 45.7  
  
 Rf: 76.9  
 Rg: 94.4

|           |      |      |       |
|-----------|------|------|-------|
| CRI (Ra): | 73.1 |      |       |
| R1:       | 68.9 | R9:  | -34.6 |
| R2:       | 81.1 | R10: | 57.8  |
| R3:       | 93.1 | R11: | 68.6  |
| R4:       | 71.6 | R12: | 53.9  |
| R5:       | 69.4 | R13: | 70.9  |
| R6:       | 75.0 | R14: | 96.2  |
| R7:       | 79.5 |      |       |
| R8:       | 46.4 |      |       |

**Test Conditions**

Stabilization Time: 81M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.0/30%  
 Sphere Temperature (°C): 24.1



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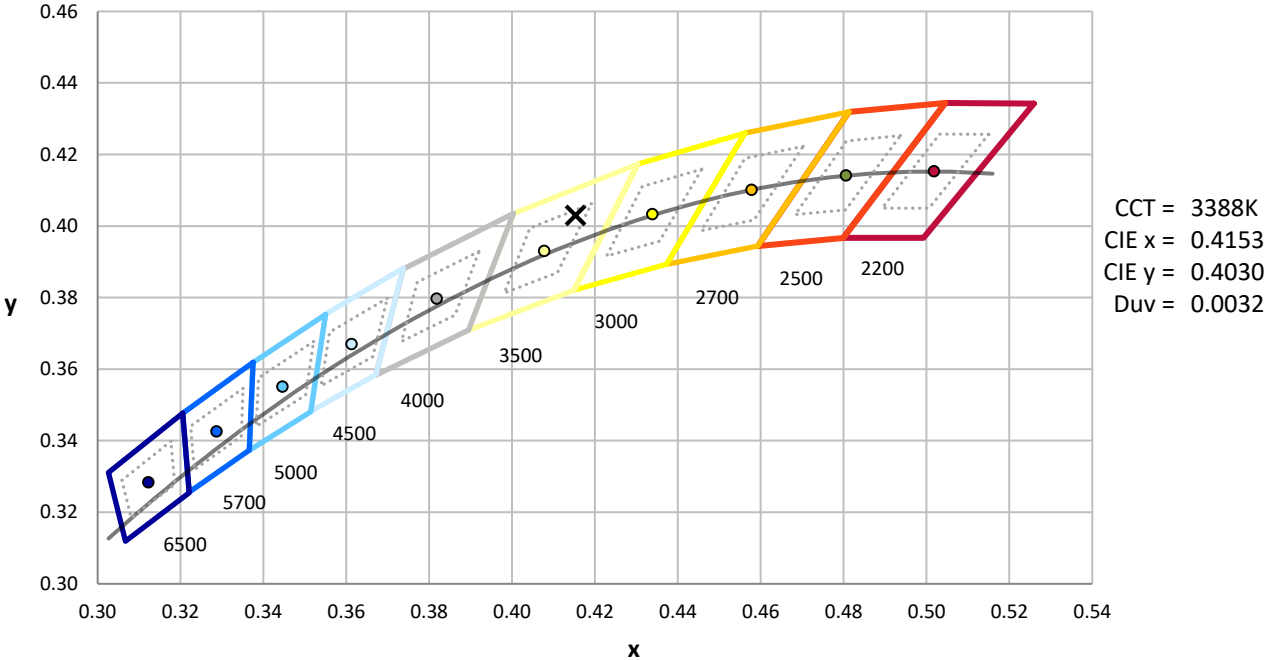
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| 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            |

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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 3500K 4-step quadrangle

REPORT NUMBER: SP1-2101-121-7

**Photopic Flux vs. Wavelength**



#####

| 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    | 2672          | 0.0           | 490    | 34553         | 4.9           | 620    | 136720        | 35.6          | 750    | 5870          | 0.0           | 880    | 4216          | 0.0           |
| 365    | 2252          | 0.0           | 495    | 44336         | 8.0           | 625    | 126308        | 27.9          | 755    | 5421          | 0.0           | 885    | 4132          | 0.0           |
| 370    | 2217          | 0.0           | 500    | 54643         | 12.1          | 630    | 114625        | 20.7          | 760    | 5097          | 0.0           | 890    | 3992          | 0.0           |
| 375    | 2697          | 0.0           | 505    | 64676         | 18.1          | 635    | 103216        | 15.5          | 765    | 4626          | 0.0           | 895    | 3214          | 0.0           |
| 380    | 3039          | 0.0           | 510    | 73825         | 25.4          | 640    | 92605         | 11.1          | 770    | 3782          | 0.0           | 900    | 2580          | 0.0           |
| 385    | 2655          | 0.0           | 515    | 81872         | 33.9          | 645    | 83234         | 8.0           | 775    | 3506          | 0.0           | 905    | 1776          | 0.0           |
| 390    | 2357          | 0.0           | 520    | 88574         | 43.0          | 650    | 73263         | 5.4           | 780    | 3507          | 0.0           | 910    | 3995          | 0.0           |
| 395    | 2186          | 0.0           | 525    | 93289         | 50.1          | 655    | 64627         | 3.7           | 785    | 3267          | 0.0           | 915    | 4288          | 0.0           |
| 400    | 2015          | 0.0           | 530    | 98393         | 57.9          | 660    | 56614         | 2.4           | 790    | 2849          | 0.0           | 920    | 2446          | 0.0           |
| 405    | 2234          | 0.0           | 535    | 103269        | 64.0          | 665    | 49537         | 1.6           | 795    | 3037          | 0.0           | 925    | 3009          | 0.0           |
| 410    | 3412          | 0.0           | 540    | 107316        | 69.9          | 670    | 42866         | 0.9           | 800    | 2716          | 0.0           | 930    | 3026          | 0.0           |
| 415    | 6135          | 0.0           | 545    | 113101        | 75.3          | 675    | 36708         | 0.6           | 805    | 2648          | 0.0           | 935    | 4734          | 0.0           |
| 420    | 12146         | 0.0           | 550    | 120690        | 82.0          | 680    | 31814         | 0.4           | 810    | 3187          | 0.0           | 940    | 3719          | 0.0           |
| 425    | 23983         | 0.1           | 555    | 128583        | 87.8          | 685    | 27485         | 0.2           | 815    | 2931          | 0.0           | 945    | 1480          | 0.0           |
| 430    | 42142         | 0.3           | 560    | 137796        | 93.6          | 690    | 23698         | 0.1           | 820    | 2717          | 0.0           | 950    | 3450          | 0.0           |
| 435    | 68228         | 0.8           | 565    | 146577        | 97.5          | 695    | 20309         | 0.1           | 825    | 2236          | 0.0           | 955    | 5051          | 0.0           |
| 440    | 99323         | 1.6           | 570    | 154581        | 100.5         | 700    | 17890         | 0.1           | 830    | 2628          | 0.0           | 960    | 3176          | 0.0           |
| 445    | 115584        | 2.4           | 575    | 162633        | 101.2         | 705    | 15500         | 0.0           | 835    | 3140          | 0.0           | 965    | 5178          | 0.0           |
| 450    | 94997         | 2.5           | 580    | 168101        | 99.9          | 710    | 13699         | 0.0           | 840    | 3675          | 0.0           | 970    | 6385          | 0.0           |
| 455    | 61433         | 2.1           | 585    | 173145        | 96.2          | 715    | 12398         | 0.0           | 845    | 3283          | 0.0           | 975    | 3810          | 0.0           |
| 460    | 43373         | 1.8           | 590    | 174675        | 90.3          | 720    | 11147         | 0.0           | 850    | 3055          | 0.0           | 980    | 4322          | 0.0           |
| 465    | 32472         | 1.7           | 595    | 173724        | 82.3          | 725    | 9761          | 0.0           | 855    | 2932          | 0.0           | 985    | 4200          | 0.0           |
| 470    | 24257         | 1.5           | 600    | 171241        | 73.8          | 730    | 8651          | 0.0           | 860    | 3382          | 0.0           | 990    | 4661          | 0.0           |
| 475    | 21690         | 1.7           | 605    | 165134        | 64.0          | 735    | 7730          | 0.0           | 865    | 2605          | 0.0           | 995    | 6746          | 0.0           |
| 480    | 23173         | 2.2           | 610    | 156652        | 53.8          | 740    | 6847          | 0.0           | 870    | 3325          | 0.0           | 1000   | 4150          | 0.0           |
| 485    | 27564         | 3.3           | 615    | 147879        | 44.6          | 745    | 6124          | 0.0           | 875    | 3325          | 0.0           |        |               |               |

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**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: 12126**

**S/P: 1.36**

| 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    | 2672          | 0.0           | 490    | 34553         | 53.2          | 620    | 136720        | 1.7           | 750    | 5870          | 0.0           | 880    | 4216          | 0.0           |
| 365    | 2252          | 0.0           | 495    | 44336         | 71.7          | 625    | 126308        | 1.1           | 755    | 5421          | 0.0           | 885    | 4132          | 0.0           |
| 370    | 2217          | 0.0           | 500    | 54643         | 91.4          | 630    | 114625        | 0.6           | 760    | 5097          | 0.0           | 890    | 3992          | 0.0           |
| 375    | 2697          | 0.0           | 505    | 64676         | 110.0         | 635    | 103216        | 0.4           | 765    | 4626          | 0.0           | 895    | 3214          | 0.0           |
| 380    | 3039          | 0.0           | 510    | 73825         | 125.1         | 640    | 92605         | 0.2           | 770    | 3782          | 0.0           | 900    | 2580          | 0.0           |
| 385    | 2655          | 0.0           | 515    | 81872         | 135.7         | 645    | 83234         | 0.1           | 775    | 3506          | 0.0           | 905    | 1776          | 0.0           |
| 390    | 2357          | 0.0           | 520    | 88574         | 140.8         | 650    | 73263         | 0.1           | 780    | 3507          | 0.0           | 910    | 3995          | 0.0           |
| 395    | 2186          | 0.0           | 525    | 93289         | 139.6         | 655    | 64627         | 0.1           | 785    | 3267          | 0.0           | 915    | 4288          | 0.0           |
| 400    | 2015          | 0.0           | 530    | 98393         | 135.7         | 660    | 56614         | 0.0           | 790    | 2849          | 0.0           | 920    | 2446          | 0.0           |
| 405    | 2234          | 0.1           | 535    | 103269        | 128.7         | 665    | 49537         | 0.0           | 795    | 3037          | 0.0           | 925    | 3009          | 0.0           |
| 410    | 3412          | 0.2           | 540    | 107316        | 118.6         | 670    | 42866         | 0.0           | 800    | 2716          | 0.0           | 930    | 3026          | 0.0           |
| 415    | 6135          | 0.6           | 545    | 113101        | 108.4         | 675    | 36708         | 0.0           | 805    | 2648          | 0.0           | 935    | 4734          | 0.0           |
| 420    | 12146         | 2.0           | 550    | 120690        | 98.7          | 680    | 31814         | 0.0           | 810    | 3187          | 0.0           | 940    | 3719          | 0.0           |
| 425    | 23983         | 5.9           | 555    | 128583        | 87.9          | 685    | 27485         | 0.0           | 815    | 2931          | 0.0           | 945    | 1480          | 0.0           |
| 430    | 42142         | 14.3          | 560    | 137796        | 77.0          | 690    | 23698         | 0.0           | 820    | 2717          | 0.0           | 950    | 3450          | 0.0           |
| 435    | 68228         | 30.5          | 565    | 146577        | 65.8          | 695    | 20309         | 0.0           | 825    | 2236          | 0.0           | 955    | 5051          | 0.0           |
| 440    | 99323         | 55.5          | 570    | 154581        | 54.6          | 700    | 17890         | 0.0           | 830    | 2628          | 0.0           | 960    | 3176          | 0.0           |
| 445    | 115584        | 77.4          | 575    | 162633        | 44.3          | 705    | 15500         | 0.0           | 835    | 3140          | 0.0           | 965    | 5178          | 0.0           |
| 450    | 94997         | 73.6          | 580    | 168101        | 34.6          | 710    | 13699         | 0.0           | 840    | 3675          | 0.0           | 970    | 6385          | 0.0           |
| 455    | 61433         | 53.7          | 585    | 173145        | 26.5          | 715    | 12398         | 0.0           | 845    | 3283          | 0.0           | 975    | 3810          | 0.0           |
| 460    | 43373         | 41.9          | 590    | 174675        | 19.5          | 720    | 11147         | 0.0           | 850    | 3055          | 0.0           | 980    | 4322          | 0.0           |
| 465    | 32472         | 34.3          | 595    | 173724        | 13.9          | 725    | 9761          | 0.0           | 855    | 2932          | 0.0           | 985    | 4200          | 0.0           |
| 470    | 24257         | 27.9          | 600    | 171241        | 9.7           | 730    | 8651          | 0.0           | 860    | 3382          | 0.0           | 990    | 4661          | 0.0           |
| 475    | 21690         | 27.1          | 605    | 165134        | 6.5           | 735    | 7730          | 0.0           | 865    | 2605          | 0.0           | 995    | 6746          | 0.0           |
| 480    | 23173         | 31.3          | 610    | 156652        | 4.2           | 740    | 6847          | 0.0           | 870    | 3325          | 0.0           | 1000   | 4150          | 0.0           |
| 485    | 27564         | 40.0          | 615    | 147879        | 2.7           | 745    | 6124          | 0.0           | 875    | 3325          | 0.0           |        |               |               |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 4490.7 M/P: 0.5**

| 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    | 2672          | 0.0           | 490    | 34553         | 28.8          | 620    | 136720        | 0.1           | 750    | 5870          | 0.0           | 880    | 4216          | 0.0           |
| 365    | 2252          | 0.0           | 495    | 44336         | 36.6          | 625    | 126308        | 0.1           | 755    | 5421          | 0.0           | 885    | 4132          | 0.0           |
| 370    | 2217          | 0.0           | 500    | 54643         | 43.9          | 630    | 114625        | 0.0           | 760    | 5097          | 0.0           | 890    | 3992          | 0.0           |
| 375    | 2697          | 0.0           | 505    | 64676         | 49.6          | 635    | 103216        | 0.0           | 765    | 4626          | 0.0           | 895    | 3214          | 0.0           |
| 380    | 3039          | 0.0           | 510    | 73825         | 53.0          | 640    | 92605         | 0.0           | 770    | 3782          | 0.0           | 900    | 2580          | 0.0           |
| 385    | 2655          | 0.0           | 515    | 81872         | 53.5          | 645    | 83234         | 0.0           | 775    | 3506          | 0.0           | 905    | 1776          | 0.0           |
| 390    | 2357          | 0.0           | 520    | 88574         | 51.6          | 650    | 73263         | 0.0           | 780    | 3507          | 0.0           | 910    | 3995          | 0.0           |
| 395    | 2186          | 0.0           | 525    | 93289         | 47.3          | 655    | 64627         | 0.0           | 785    | 3267          | 0.0           | 915    | 4288          | 0.0           |
| 400    | 2015          | 0.0           | 530    | 98393         | 42.5          | 660    | 56614         | 0.0           | 790    | 2849          | 0.0           | 920    | 2446          | 0.0           |
| 405    | 2234          | 0.0           | 535    | 103269        | 37.2          | 665    | 49537         | 0.0           | 795    | 3037          | 0.0           | 925    | 3009          | 0.0           |
| 410    | 3412          | 0.1           | 540    | 107316        | 31.4          | 670    | 42866         | 0.0           | 800    | 2716          | 0.0           | 930    | 3026          | 0.0           |
| 415    | 6135          | 0.4           | 545    | 113101        | 26.3          | 675    | 36708         | 0.0           | 805    | 2648          | 0.0           | 935    | 4734          | 0.0           |
| 420    | 12146         | 1.4           | 550    | 120690        | 21.7          | 680    | 31814         | 0.0           | 810    | 3187          | 0.0           | 940    | 3719          | 0.0           |
| 425    | 23983         | 3.7           | 555    | 128583        | 17.3          | 685    | 27485         | 0.0           | 815    | 2931          | 0.0           | 945    | 1480          | 0.0           |
| 430    | 42142         | 8.9           | 560    | 137796        | 13.6          | 690    | 23698         | 0.0           | 820    | 2717          | 0.0           | 950    | 3450          | 0.0           |
| 435    | 68228         | 18.2          | 565    | 146577        | 10.3          | 695    | 20309         | 0.0           | 825    | 2236          | 0.0           | 955    | 5051          | 0.0           |
| 440    | 99323         | 33.2          | 570    | 154581        | 7.6           | 700    | 17890         | 0.0           | 830    | 2628          | 0.0           | 960    | 3176          | 0.0           |
| 445    | 115584        | 45.6          | 575    | 162633        | 5.4           | 705    | 15500         | 0.0           | 835    | 3140          | 0.0           | 965    | 5178          | 0.0           |
| 450    | 94997         | 43.8          | 580    | 168101        | 3.8           | 710    | 13699         | 0.0           | 840    | 3675          | 0.0           | 970    | 6385          | 0.0           |
| 455    | 61433         | 32.2          | 585    | 173145        | 2.6           | 715    | 12398         | 0.0           | 845    | 3283          | 0.0           | 975    | 3810          | 0.0           |
| 460    | 43373         | 25.6          | 590    | 174675        | 1.7           | 720    | 11147         | 0.0           | 850    | 3055          | 0.0           | 980    | 4322          | 0.0           |
| 465    | 32472         | 21.2          | 595    | 173724        | 1.1           | 725    | 9761          | 0.0           | 855    | 2932          | 0.0           | 985    | 4200          | 0.0           |
| 470    | 24257         | 17.4          | 600    | 171241        | 0.7           | 730    | 8651          | 0.0           | 860    | 3382          | 0.0           | 990    | 4661          | 0.0           |
| 475    | 21690         | 16.6          | 605    | 165134        | 0.5           | 735    | 7730          | 0.0           | 865    | 2605          | 0.0           | 995    | 6746          | 0.0           |
| 480    | 23173         | 18.6          | 610    | 156652        | 0.3           | 740    | 6847          | 0.0           | 870    | 3325          | 0.0           | 1000   | 4150          | 0.0           |
| 485    | 27564         | 22.7          | 615    | 147879        | 0.2           | 745    | 6124          | 0.0           | 875    | 3325          | 0.0           |        |               |               |

**Summary**

$R_f = 76.9$   
 $R_g = 94.4$   
 CIE  $R_a = 73.1$   
 $R_g = -34.6$



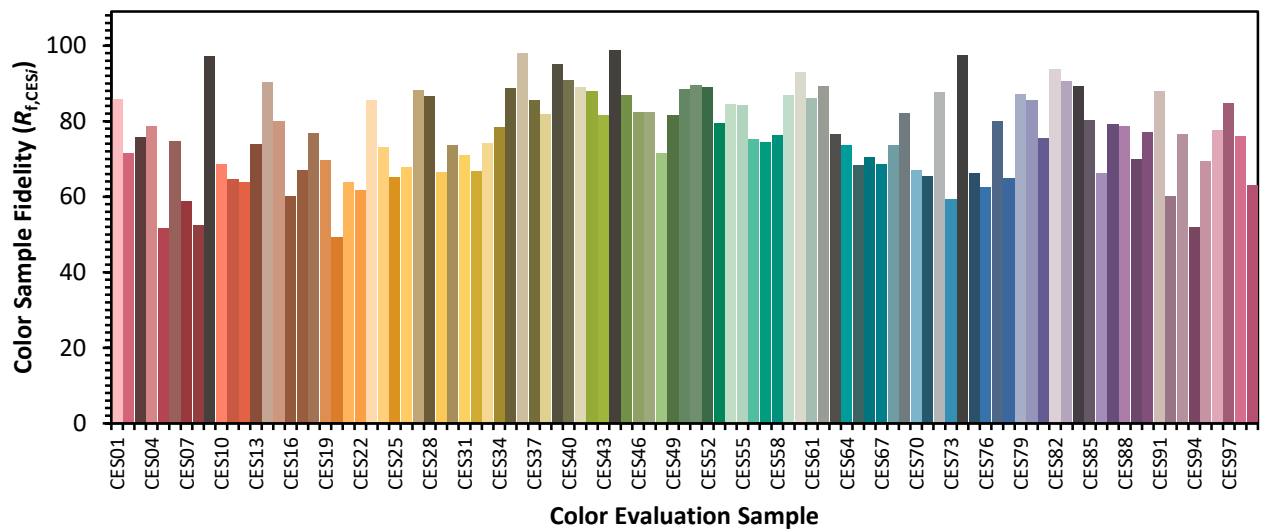
**Color Vector Graphics**





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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 68 | CES51 = 90 | CES76 = 63 |
| CES02 = 62 | CES27 = 88 | CES52 = 89 | CES77 = 80 |
| CES03 = 31 | CES28 = 87 | CES53 = 80 | CES78 = 65 |
| CES04 = 70 | CES29 = 67 | CES54 = 84 | CES79 = 87 |
| CES05 = 48 | CES30 = 74 | CES55 = 84 | CES80 = 86 |
| CES06 = 51 | CES31 = 71 | CES56 = 75 | CES81 = 75 |
| CES07 = 40 | CES32 = 67 | CES57 = 74 | CES82 = 94 |
| CES08 = 39 | CES33 = 74 | CES58 = 76 | CES83 = 91 |
| CES09 = 29 | CES34 = 78 | CES59 = 87 | CES84 = 89 |
| CES10 = 75 | CES35 = 89 | CES60 = 93 | CES85 = 80 |
| CES11 = 58 | CES36 = 98 | CES61 = 86 | CES86 = 66 |
| CES12 = 64 | CES37 = 86 | CES62 = 89 | CES87 = 79 |
| CES13 = 43 | CES38 = 82 | CES63 = 77 | CES88 = 79 |
| CES14 = 74 | CES39 = 95 | CES64 = 74 | CES89 = 70 |
| CES15 = 71 | CES40 = 91 | CES65 = 68 | CES90 = 77 |
| CES16 = 47 | CES41 = 89 | CES66 = 71 | CES91 = 88 |
| CES17 = 50 | CES42 = 88 | CES67 = 69 | CES92 = 60 |
| CES18 = 56 | CES43 = 82 | CES68 = 74 | CES93 = 77 |
| CES19 = 72 | CES44 = 99 | CES69 = 82 | CES94 = 52 |
| CES20 = 65 | CES45 = 87 | CES70 = 67 | CES95 = 69 |
| CES21 = 86 | CES46 = 82 | CES71 = 66 | CES96 = 78 |
| CES22 = 79 | CES47 = 82 | CES72 = 88 | CES97 = 85 |
| CES23 = 92 | CES48 = 72 | CES73 = 59 | CES98 = 76 |
| CES24 = 91 | CES49 = 82 | CES74 = 97 | CES99 = 63 |
| CES25 = 72 | CES50 = 88 | CES75 = 66 |            |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)