

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: P436837

Luminaire Tested: **TT-D4-735-U-WQ-HSS**

Issue Date: 12/2/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P436837  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2010-017-2)  
Test Lab: INNOVATION CENTER  
Issue Date: 12/2/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: MCGRAW-EDISON  
Catalog Number: TT-D4-735-U-WQ-HSS  
Description: TOPTIER LED PARKING GARAGE LUMINAIRE  
3500K, 70 CRI LEDS AND WIDE DISTRIBUTION WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 5762.9 lumens  
Efficiency: N/A  
Efficacy: 100.1 lumens/watt  
Luminous Opening: Circular (Dia: 1.12' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B2 - U2 - G3

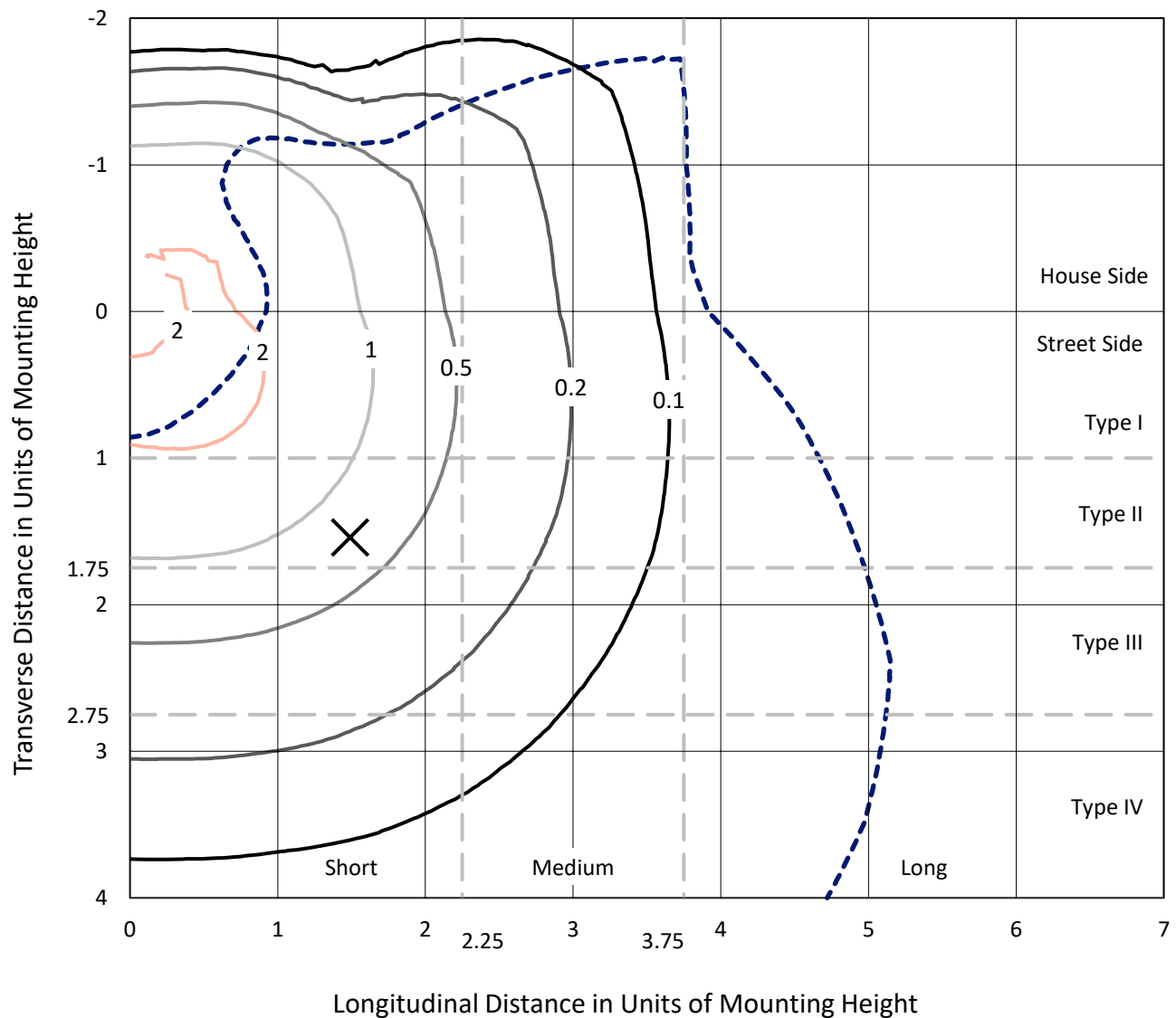
Input Watts (W): 57.6  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT

REPORT NUMBER: P436837

CATALOG NUMBER: TT-D4-735-U-WQ-HSS

## Iso-Footcandle Lines of Horizontal Illumination

× Max cd  
 --- 1/2 Max cd

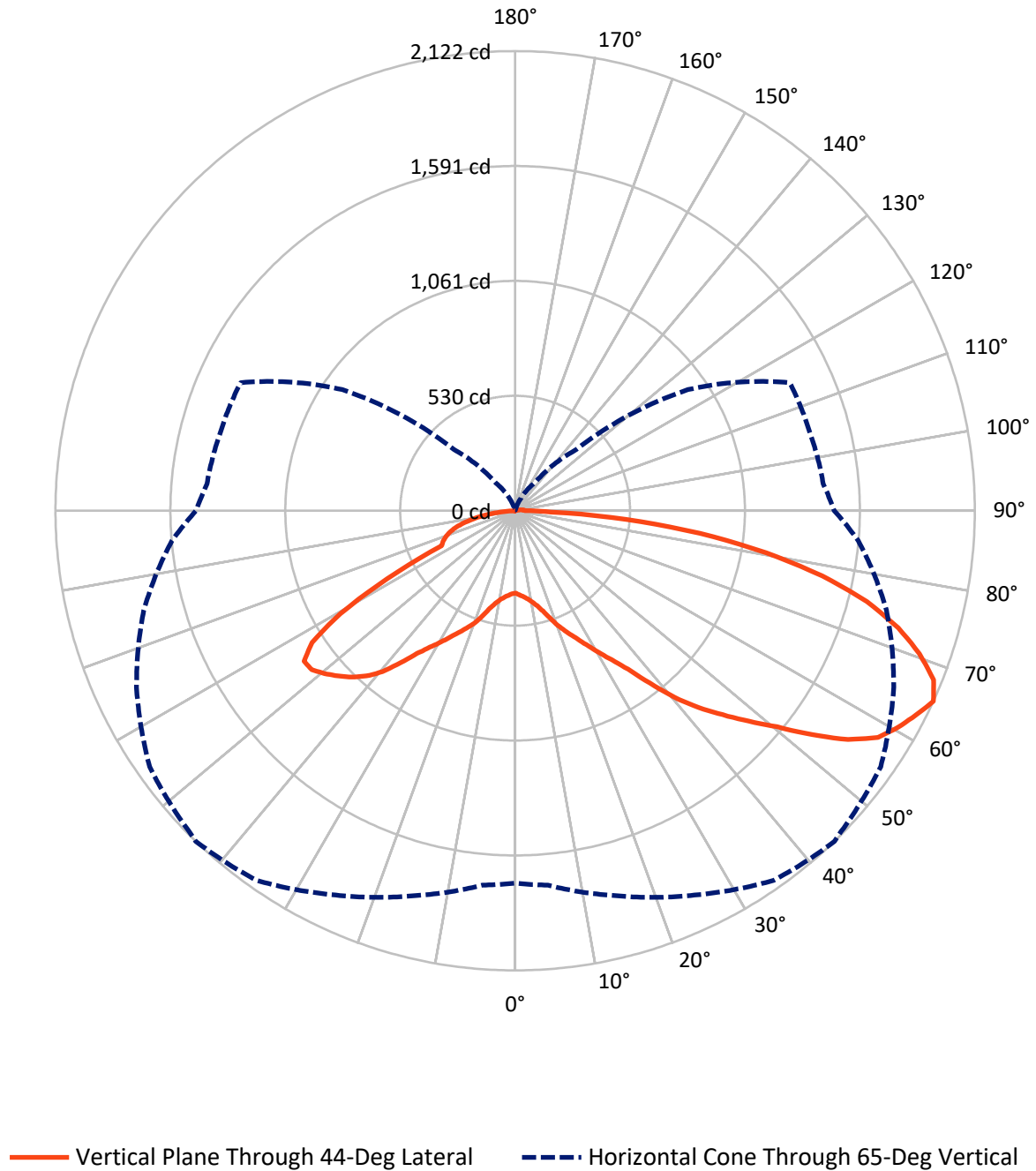


Based on 15 foot mounting height. Maximum calculated value = 2.3 fc  
 Type IV - Short - N/A

REPORT NUMBER: P436837

CATALOG NUMBER: TT-D4-735-U-WQ-HSS

## Luminous Intensity Polar Plot



REPORT NUMBER: P436837

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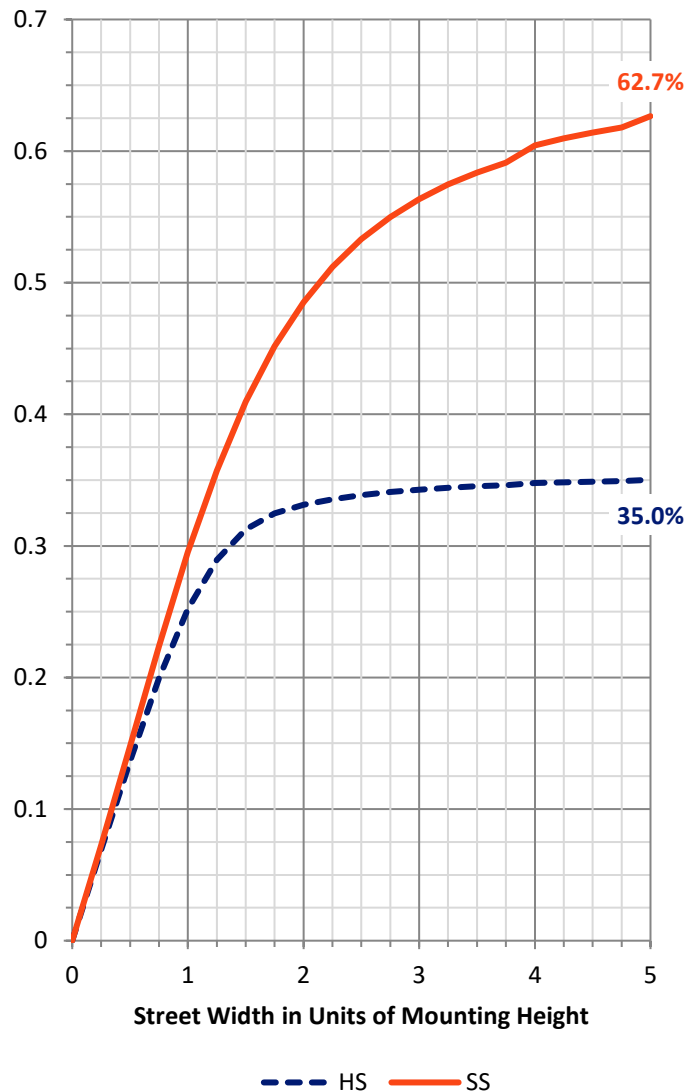
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 2029.8   | 1.3    | 2031.2 |
|                    | % Fixture | 35.2     | 0.0    | 35.2   |
| <b>Street Side</b> | Lumens    | 3708.5   | 23.3   | 3731.8 |
|                    | % Fixture | 64.4     | 0.4    | 64.8   |
| <b>Total</b>       | Lumens    | 5738.3   | 24.6   | 5762.9 |
|                    | % Fixture | 99.6     | 0.4    | 100.0  |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 38.5   | 0.7       |
| 10°-20°   | 136.9  | 2.4       |
| 20°-30°   | 293.3  | 5.1       |
| 30°-40°   | 531.2  | 9.2       |
| 40°-50°   | 886.4  | 15.4      |
| 50°-60°   | 1227.8 | 21.3      |
| 60°-70°   | 1272.4 | 22.1      |
| 70°-80°   | 1024.1 | 17.8      |
| 80°-90°   | 327.6  | 5.7       |
| 90°-100°  | 16.6   | 0.3       |
| 100°-110° | 5.3    | 0.1       |
| 110°-120° | 1.0    | 0.0       |
| 120°-130° | 0.6    | 0.0       |
| 130°-140° | 0.4    | 0.0       |
| 140°-150° | 0.3    | 0.0       |
| 150°-160° | 0.2    | 0.0       |
| 160°-170° | 0.1    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| 0°-90°    | 5738.3 | 99.6      |
| 0°-180°   | 5762.9 | 100.0     |



REPORT NUMBER: P436837

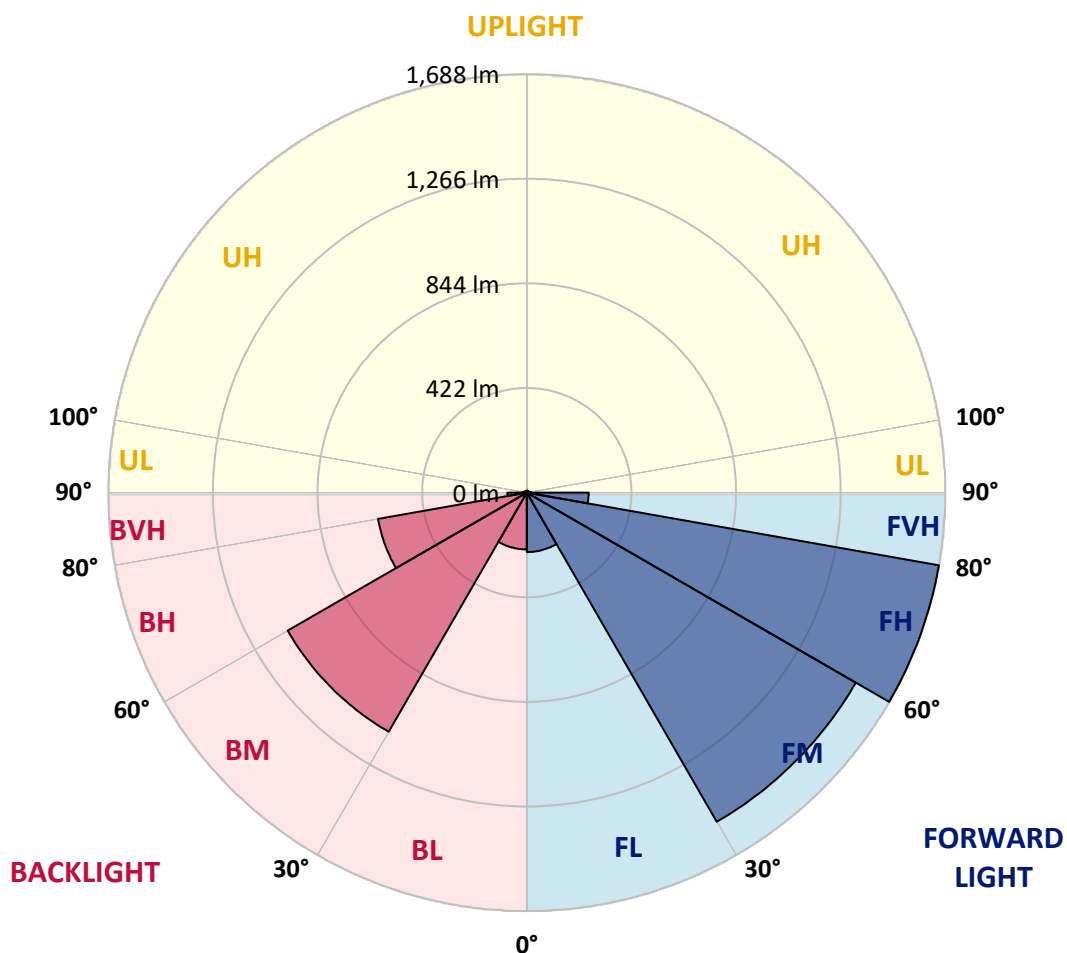
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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |       |         |
|------|-------------|--------|-----------|-------------------------|-------|---------|
|      |             |        |           | B                       | U     | G       |
| FL   | (0°-30°)    | 239.6  | 4.2       |                         |       |         |
| FM   | (30°-60°)   | 1532.1 | 26.6      |                         |       |         |
| FH   | (60°-80°)   | 1687.5 | 29.3      |                         |       | G1/1800 |
| FVH  | (80°-90°)   | 249.2  | 4.3       |                         |       | G3/500  |
| BL   | (0°-30°)    | 229.1  | 4.0       | B1/500                  |       |         |
| BM   | (30°-60°)   | 1113.4 | 19.3      | B2/2500                 |       |         |
| BH   | (60°-80°)   | 609.0  | 10.6      | B2/1000                 |       | G2/1000 |
| BVH  | (80°-90°)   | 78.3   | 1.4       |                         |       | G1/100  |
| UL   | (90°-100°)  | 16.6   | 0.3       |                         | U2/50 |         |
| UH   | (100°-180°) | 8.0    | 0.1       |                         | U1/10 |         |

**BUG Rating: B2-U2-G3**

Type IV Short





REPORT NUMBER: P436837

CATALOG NUMBER: TT-D4-735-U-WQ-HSS

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 5°     | 15°    | 25°    | 35°    | 44°    | 45°    | 55°    | 65°    | 75°    | 85°    |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°     | 380.3  | 380.3  | 380.3  | 380.3  | 380.3  | 380.3  | 380.3  | 380.3  | 380.3  | 380.3  | 380.3  |
| 2.5°   | 391.5  | 390.4  | 390.4  | 389.3  | 389.3  | 389.3  | 389.3  | 389.3  | 388.2  | 387.0  | 385.9  |
| 5°     | 401.7  | 401.7  | 400.5  | 400.5  | 399.4  | 398.3  | 399.4  | 398.3  | 397.2  | 396.0  | 394.9  |
| 7.5°   | 415.2  | 414.0  | 414.0  | 411.8  | 411.8  | 410.7  | 410.7  | 410.7  | 409.5  | 407.3  | 406.2  |
| 10°    | 434.3  | 432.0  | 432.0  | 429.8  | 428.7  | 427.5  | 427.5  | 425.3  | 425.3  | 424.2  | 423.0  |
| 12.5°  | 455.7  | 453.4  | 455.7  | 454.5  | 452.3  | 450.0  | 450.0  | 447.8  | 446.7  | 445.5  | 441.0  |
| 15°    | 483.8  | 480.4  | 482.7  | 482.7  | 481.5  | 480.4  | 480.4  | 475.9  | 473.7  | 471.4  | 466.9  |
| 17.5°  | 517.5  | 515.3  | 516.4  | 517.5  | 520.9  | 520.9  | 522.0  | 516.4  | 511.9  | 504.0  | 500.7  |
| 20°    | 560.3  | 559.2  | 562.5  | 562.5  | 565.9  | 565.9  | 567.0  | 561.4  | 553.5  | 547.9  | 541.2  |
| 22.5°  | 601.9  | 601.9  | 606.4  | 606.4  | 609.8  | 607.5  | 607.5  | 605.3  | 596.3  | 589.5  | 582.8  |
| 25°    | 644.7  | 643.6  | 648.1  | 651.4  | 655.9  | 650.3  | 652.6  | 649.2  | 640.2  | 631.2  | 622.2  |
| 27.5°  | 691.9  | 689.7  | 691.9  | 696.4  | 704.3  | 699.8  | 702.1  | 696.4  | 687.4  | 675.1  | 667.2  |
| 30°    | 743.7  | 740.3  | 743.7  | 750.4  | 756.1  | 758.3  | 757.2  | 749.3  | 741.4  | 723.4  | 717.8  |
| 32.5°  | 794.3  | 794.3  | 802.2  | 814.6  | 821.3  | 820.2  | 821.3  | 814.6  | 803.3  | 780.8  | 767.3  |
| 35°    | 856.2  | 860.7  | 870.8  | 888.8  | 903.4  | 897.8  | 897.8  | 895.6  | 876.4  | 849.4  | 831.4  |
| 37.5°  | 938.3  | 942.8  | 963.1  | 984.5  | 1011.5 | 1009.2 | 1010.3 | 1003.6 | 966.5  | 938.3  | 912.4  |
| 40°    | 1034.0 | 1038.5 | 1068.8 | 1099.2 | 1125.1 | 1133.0 | 1134.1 | 1119.5 | 1079.0 | 1038.5 | 998.0  |
| 42.5°  | 1121.7 | 1127.3 | 1158.8 | 1201.6 | 1229.7 | 1242.1 | 1244.3 | 1220.7 | 1178.0 | 1131.8 | 1081.2 |
| 45°    | 1209.5 | 1216.2 | 1252.2 | 1297.2 | 1337.7 | 1343.4 | 1344.5 | 1324.2 | 1277.0 | 1224.1 | 1158.8 |
| 47.5°  | 1299.5 | 1305.1 | 1342.2 | 1396.2 | 1440.1 | 1451.4 | 1452.5 | 1433.4 | 1376.0 | 1311.9 | 1235.3 |
| 50°    | 1381.6 | 1392.9 | 1443.5 | 1500.9 | 1559.4 | 1568.4 | 1569.5 | 1548.1 | 1480.6 | 1408.6 | 1307.4 |
| 52.5°  | 1478.4 | 1484.0 | 1538.0 | 1633.6 | 1683.1 | 1718.0 | 1719.1 | 1677.5 | 1605.5 | 1508.7 | 1378.2 |
| 55°    | 1590.9 | 1601.0 | 1656.1 | 1751.8 | 1840.6 | 1864.3 | 1871.0 | 1821.5 | 1725.9 | 1621.3 | 1468.2 |
| 57.5°  | 1656.1 | 1675.3 | 1756.3 | 1847.4 | 1958.8 | 1974.5 | 1977.9 | 1926.2 | 1820.4 | 1705.6 | 1535.7 |
| 60°    | 1691.0 | 1702.3 | 1787.8 | 1929.5 | 2016.2 | 2030.8 | 2029.7 | 1990.3 | 1884.5 | 1745.0 | 1567.2 |
| 62.5°  | 1730.4 | 1749.5 | 1821.5 | 1965.5 | 2040.9 | 2076.9 | 2071.3 | 2030.8 | 1922.8 | 1769.8 | 1597.6 |
| 65°    | 1719.1 | 1734.9 | 1840.6 | 1957.7 | 2082.5 | 2121.9 | 2114.0 | 2060.0 | 1928.4 | 1774.3 | 1589.8 |
| 67.5°  | 1674.1 | 1686.5 | 1791.1 | 1936.3 | 2055.5 | 2083.7 | 2097.2 | 2044.3 | 1896.9 | 1725.9 | 1540.2 |
| 70°    | 1581.9 | 1601.0 | 1702.3 | 1850.8 | 1959.9 | 1980.2 | 1982.4 | 1949.8 | 1817.0 | 1637.0 | 1458.1 |
| 72.5°  | 1454.7 | 1470.5 | 1580.7 | 1731.5 | 1826.0 | 1849.6 | 1851.9 | 1802.4 | 1702.3 | 1515.5 | 1340.0 |
| 75°    | 1302.9 | 1317.5 | 1403.0 | 1560.5 | 1653.9 | 1677.5 | 1675.3 | 1629.1 | 1523.4 | 1346.7 | 1183.6 |
| 77.5°  | 1115.0 | 1142.0 | 1217.3 | 1346.7 | 1437.9 | 1450.2 | 1452.5 | 1401.9 | 1316.4 | 1163.3 | 1004.7 |
| 80°    | 879.8  | 905.7  | 991.2  | 1088.0 | 1164.5 | 1174.6 | 1178.0 | 1135.2 | 1057.6 | 922.6  | 787.6  |
| 82.5°  | 625.5  | 648.1  | 715.6  | 794.3  | 858.4  | 858.4  | 860.7  | 825.8  | 766.2  | 650.3  | 544.5  |
| 85°    | 356.7  | 373.5  | 418.5  | 474.8  | 520.9  | 515.3  | 516.4  | 484.9  | 445.5  | 355.5  | 288.0  |
| 87.5°  | 117.0  | 124.9  | 135.0  | 156.4  | 177.8  | 164.3  | 171.0  | 141.8  | 128.3  | 95.6   | 74.3   |
| 90°    | 61.9   | 61.9   | 59.6   | 57.4   | 52.9   | 46.1   | 46.1   | 37.1   | 28.1   | 18.0   | 6.8    |
| 92.5°  | 56.3   | 56.3   | 54.0   | 51.8   | 47.3   | 41.6   | 41.6   | 33.8   | 24.8   | 15.8   | 5.6    |
| 95°    | 46.1   | 46.1   | 45.0   | 42.8   | 39.4   | 34.9   | 33.8   | 28.1   | 21.4   | 12.4   | 4.5    |
| 97.5°  | 36.0   | 36.0   | 34.9   | 33.8   | 30.4   | 27.0   | 27.0   | 21.4   | 15.8   | 10.1   | 3.4    |
| 100°   | 27.0   | 27.0   | 27.0   | 24.8   | 23.6   | 20.3   | 20.3   | 16.9   | 12.4   | 7.9    | 2.3    |
| 102.5° | 19.1   | 20.3   | 19.1   | 18.0   | 16.9   | 14.6   | 14.6   | 12.4   | 9.0    | 5.6    | 2.3    |
| 105°   | 13.5   | 13.5   | 12.4   | 12.4   | 11.3   | 10.1   | 10.1   | 7.9    | 5.6    | 3.4    | 1.1    |
| 107.5° | 7.9    | 7.9    | 7.9    | 7.9    | 6.8    | 6.8    | 6.8    | 5.6    | 3.4    | 2.3    | 1.1    |
| 110°   | 4.5    | 4.5    | 4.5    | 4.5    | 3.4    | 3.4    | 3.4    | 2.3    | 2.3    | 1.1    | 1.1    |



REPORT NUMBER: P436837

CATALOG NUMBER: TT-D4-735-U-WQ-HSS

**CANDELA DISTRIBUTION (continued):**

|        | 0°  | 5°  | 15° | 25° | 35° | 44° | 45° | 55° | 65° | 75° | 85° |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 112.5° | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 1.1 | 1.1 | 1.1 | 1.1 |
| 115°   | 1.1 | 1.1 | 1.1 | 2.3 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| 117.5° | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| 120°   | 0.0 | 0.0 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| 122.5° | 0.0 | 0.0 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| 125°   | 0.0 | 0.0 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| 127.5° | 0.0 | 0.0 | 0.0 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| 130°   | 0.0 | 0.0 | 0.0 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| 132.5° | 0.0 | 0.0 | 0.0 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| 135°   | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| 137.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| 140°   | 1.1 | 1.1 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| 142.5° | 1.1 | 1.1 | 1.1 | 0.0 | 0.0 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| 145°   | 1.1 | 1.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 | 1.1 | 1.1 | 1.1 |
| 147.5° | 1.1 | 1.1 | 1.1 | 0.0 | 0.0 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| 150°   | 1.1 | 1.1 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| 152.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 | 1.1 | 1.1 | 1.1 |
| 155°   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 | 1.1 | 1.1 |
| 157.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 | 1.1 | 1.1 | 1.1 |
| 160°   | 1.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 | 1.1 | 1.1 | 1.1 |
| 162.5° | 1.1 | 1.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 | 1.1 | 1.1 | 1.1 |
| 165°   | 1.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| 167.5° | 1.1 | 1.1 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| 170°   | 1.1 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 | 0.0 | 1.1 | 1.1 | 1.1 | 1.1 |
| 172.5° | 1.1 | 1.1 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| 175°   | 1.1 | 1.1 | 1.1 | 0.0 | 0.0 | 0.0 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| 177.5° | 0.0 | 1.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 | 1.1 | 1.1 | 1.1 |
| 180°   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |





REPORT NUMBER: P436837

CATALOG NUMBER: TT-D4-735-U-WQ-HSS

**CANDELA DISTRIBUTION (continued):**

|        | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°  | 165°  | 175°  | 180°  |
|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|
| 0°     | 380.3  | 380.3  | 380.3  | 380.3  | 380.3  | 380.3  | 380.3  | 380.3 | 380.3 | 380.3 | 380.3 |
| 2.5°   | 385.9  | 385.9  | 384.8  | 383.7  | 383.7  | 383.7  | 382.5  | 382.5 | 382.5 | 381.4 | 381.4 |
| 5°     | 394.9  | 393.8  | 393.8  | 392.7  | 392.7  | 391.5  | 391.5  | 390.4 | 389.3 | 389.3 | 388.2 |
| 7.5°   | 407.3  | 406.2  | 403.9  | 405.0  | 402.8  | 401.7  | 400.5  | 400.5 | 400.5 | 399.4 | 399.4 |
| 10°    | 421.9  | 421.9  | 419.7  | 419.7  | 417.4  | 416.3  | 415.2  | 415.2 | 416.3 | 416.3 | 415.2 |
| 12.5°  | 441.0  | 439.9  | 439.9  | 438.8  | 437.7  | 436.5  | 437.7  | 437.7 | 436.5 | 435.4 | 434.3 |
| 15°    | 464.7  | 464.7  | 464.7  | 465.8  | 464.7  | 464.7  | 464.7  | 463.5 | 461.3 | 459.0 | 459.0 |
| 17.5°  | 500.7  | 499.5  | 497.3  | 498.4  | 500.7  | 504.0  | 500.7  | 497.3 | 493.9 | 493.9 | 492.8 |
| 20°    | 537.8  | 538.9  | 538.9  | 540.0  | 543.4  | 546.8  | 542.3  | 540.0 | 537.8 | 535.5 | 533.3 |
| 22.5°  | 578.3  | 579.4  | 579.4  | 578.3  | 580.5  | 579.4  | 577.2  | 574.9 | 572.7 | 569.3 | 567.0 |
| 25°    | 617.7  | 618.8  | 617.7  | 616.5  | 617.7  | 614.3  | 610.9  | 607.5 | 601.9 | 596.3 | 596.3 |
| 27.5°  | 661.6  | 660.4  | 655.9  | 657.1  | 654.8  | 652.6  | 645.8  | 637.9 | 630.0 | 624.4 | 624.4 |
| 30°    | 707.7  | 707.7  | 698.7  | 703.2  | 698.7  | 697.6  | 682.9  | 672.8 | 661.6 | 653.7 | 652.6 |
| 32.5°  | 758.3  | 756.1  | 749.3  | 753.8  | 749.3  | 744.8  | 726.8  | 713.3 | 694.2 | 682.9 | 681.8 |
| 35°    | 819.1  | 813.4  | 807.8  | 812.3  | 812.3  | 799.9  | 781.9  | 757.2 | 730.2 | 716.7 | 715.6 |
| 37.5°  | 893.3  | 889.9  | 883.2  | 888.8  | 893.3  | 880.9  | 853.9  | 817.9 | 779.7 | 759.4 | 758.3 |
| 40°    | 975.5  | 971.0  | 967.6  | 975.5  | 978.8  | 966.5  | 930.4  | 879.8 | 828.1 | 798.8 | 794.3 |
| 42.5°  | 1053.1 | 1043.0 | 1037.3 | 1048.6 | 1045.2 | 1031.7 | 982.2  | 923.7 | 852.8 | 819.1 | 813.4 |
| 45°    | 1122.8 | 1111.6 | 1103.7 | 1113.8 | 1109.3 | 1082.3 | 1027.2 | 948.4 | 862.9 | 821.3 | 814.6 |
| 47.5°  | 1191.5 | 1174.6 | 1162.2 | 1175.7 | 1166.7 | 1125.1 | 1057.6 | 960.8 | 851.7 | 802.2 | 790.9 |
| 50°    | 1250.0 | 1229.7 | 1221.8 | 1237.6 | 1224.1 | 1165.6 | 1079.0 | 955.2 | 823.6 | 751.6 | 733.6 |
| 52.5°  | 1319.7 | 1289.4 | 1281.5 | 1311.9 | 1281.5 | 1203.8 | 1083.5 | 941.7 | 759.4 | 672.8 | 655.9 |
| 55°    | 1390.6 | 1356.9 | 1344.5 | 1372.6 | 1326.5 | 1211.7 | 1061.0 | 864.1 | 662.7 | 570.4 | 545.7 |
| 57.5°  | 1427.7 | 1396.2 | 1385.0 | 1405.2 | 1319.7 | 1135.2 | 960.8  | 720.1 | 517.5 | 414.0 | 387.0 |
| 60°    | 1461.5 | 1406.4 | 1391.7 | 1418.7 | 1250.0 | 957.5  | 743.7  | 516.4 | 312.8 | 235.1 | 214.9 |
| 62.5°  | 1485.1 | 1432.2 | 1401.9 | 1414.2 | 1121.7 | 696.4  | 427.5  | 248.6 | 118.1 | 82.1  | 81.0  |
| 65°    | 1472.7 | 1427.7 | 1407.5 | 1398.5 | 974.3  | 400.5  | 157.5  | 63.0  | 3.4   | 3.4   | 2.3   |
| 67.5°  | 1434.5 | 1385.0 | 1379.4 | 1387.2 | 964.2  | 384.8  | 146.3  | 57.4  | 0.0   | 0.0   | 0.0   |
| 70°    | 1350.1 | 1315.2 | 1315.2 | 1342.2 | 920.3  | 364.5  | 136.1  | 52.9  | 0.0   | 0.0   | 0.0   |
| 72.5°  | 1236.5 | 1209.5 | 1225.2 | 1265.7 | 855.1  | 336.4  | 122.6  | 47.3  | 0.0   | 0.0   | 0.0   |
| 75°    | 1100.3 | 1072.2 | 1092.5 | 1137.5 | 774.1  | 300.4  | 106.9  | 40.5  | 0.0   | 0.0   | 0.0   |
| 77.5°  | 927.1  | 907.9  | 939.4  | 981.1  | 666.1  | 253.1  | 87.8   | 32.6  | 0.0   | 0.0   | 0.0   |
| 80°    | 722.3  | 712.2  | 753.8  | 790.9  | 537.8  | 199.1  | 66.4   | 23.6  | 0.0   | 0.0   | 0.0   |
| 82.5°  | 498.4  | 493.9  | 534.4  | 572.7  | 384.8  | 139.5  | 45.0   | 15.8  | 0.0   | 0.0   | 0.0   |
| 85°    | 261.0  | 261.0  | 292.5  | 327.4  | 214.9  | 75.4   | 22.5   | 6.8   | 0.0   | 0.0   | 0.0   |
| 87.5°  | 57.4   | 55.1   | 59.6   | 76.5   | 42.8   | 14.6   | 3.4    | 1.1   | 0.0   | 0.0   | 0.0   |
| 90°    | 1.1    | 1.1    | 1.1    | 1.1    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   |
| 92.5°  | 1.1    | 1.1    | 1.1    | 1.1    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   |
| 95°    | 1.1    | 1.1    | 1.1    | 1.1    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   |
| 97.5°  | 1.1    | 1.1    | 1.1    | 1.1    | 1.1    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   |
| 100°   | 1.1    | 1.1    | 1.1    | 1.1    | 1.1    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   |
| 102.5° | 1.1    | 1.1    | 1.1    | 1.1    | 1.1    | 1.1    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   |
| 105°   | 1.1    | 1.1    | 1.1    | 1.1    | 1.1    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   |
| 107.5° | 1.1    | 1.1    | 1.1    | 1.1    | 1.1    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   |
| 110°   | 1.1    | 1.1    | 1.1    | 1.1    | 1.1    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   |



REPORT NUMBER: P436837

CATALOG NUMBER: TT-D4-735-U-WQ-HSS

**CANDELA DISTRIBUTION (continued):**

|        | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|--------|-----|-----|------|------|------|------|------|------|------|------|------|
| 112.5° | 1.1 | 1.1 | 1.1  | 1.1  | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 115°   | 1.1 | 1.1 | 1.1  | 1.1  | 1.1  | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 117.5° | 1.1 | 1.1 | 1.1  | 1.1  | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 120°   | 1.1 | 1.1 | 1.1  | 1.1  | 1.1  | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 122.5° | 1.1 | 1.1 | 1.1  | 1.1  | 1.1  | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 125°   | 1.1 | 1.1 | 1.1  | 1.1  | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 127.5° | 1.1 | 1.1 | 1.1  | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 130°   | 1.1 | 1.1 | 1.1  | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 132.5° | 1.1 | 1.1 | 1.1  | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 135°   | 1.1 | 1.1 | 1.1  | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 137.5° | 1.1 | 1.1 | 1.1  | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 140°   | 1.1 | 1.1 | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 142.5° | 1.1 | 1.1 | 1.1  | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 145°   | 1.1 | 1.1 | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 147.5° | 1.1 | 1.1 | 1.1  | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 150°   | 1.1 | 1.1 | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 152.5° | 1.1 | 1.1 | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 155°   | 1.1 | 1.1 | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 157.5° | 1.1 | 1.1 | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 160°   | 1.1 | 1.1 | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 162.5° | 1.1 | 1.1 | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 165°   | 1.1 | 1.1 | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 167.5° | 1.1 | 1.1 | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 170°   | 1.1 | 1.1 | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 172.5° | 1.1 | 1.1 | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 175°   | 1.1 | 1.1 | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 177.5° | 1.1 | 1.1 | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 180°   | 0.0 | 0.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

Streetworks

Report Number: SP1-2407-176-4

Test Date: 09/24/2024

Luminaire Tested: MEM2-HTN-VA-30-735-U-WQ

Data in this report applies to families of products including MEM2-HTN-VA-30-735-U-WQ

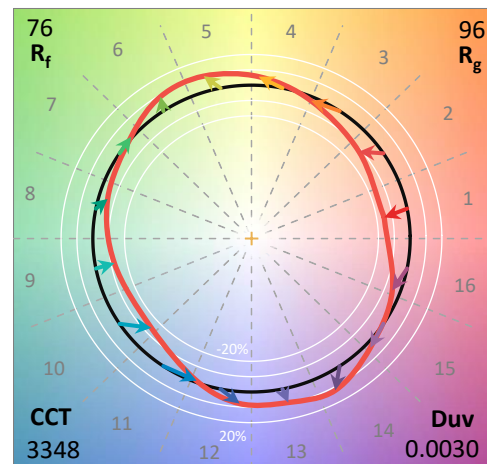
### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-176-4  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 09/27/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: Streetworks  
 Catalog Number: **MEM2-HTN-VA-30-735-U-WQ**  
 Description: EPIC MODERN VISUAL COMFORT 30W WAVESTREAM WIDE

### Spectral Parameters

CCT (K): 3348  
 CIE  $u'$ : 0.2384  
 CIE  $v'$ : 0.5184  
 Duv: 0.0030  
 CIE x: 0.4177  
 CIE y: 0.4036  
 CIE z: 0.1787  
 Peak Wavelength (nm): 593  
 Dominant Wavelength (nm): 580  
 Purity: 46.5223  
 R<sub>f</sub>: 75.8  
 R<sub>g</sub>: 95.8

CRI (Ra): 73.4  
 R1: 70.8  
 R2: 79.9  
 R3: 87.6  
 R4: 72.6  
 R5: 69.3  
 R6: 71.3  
 R7: 82.1  
 R8: 53.3  
 R9: -19.2  
 R10: 52.5  
 R11: 68.0  
 R12: 42.6  
 R13: 72.0  
 R14: 92.6  
 R15: 63.8



### Test Conditions

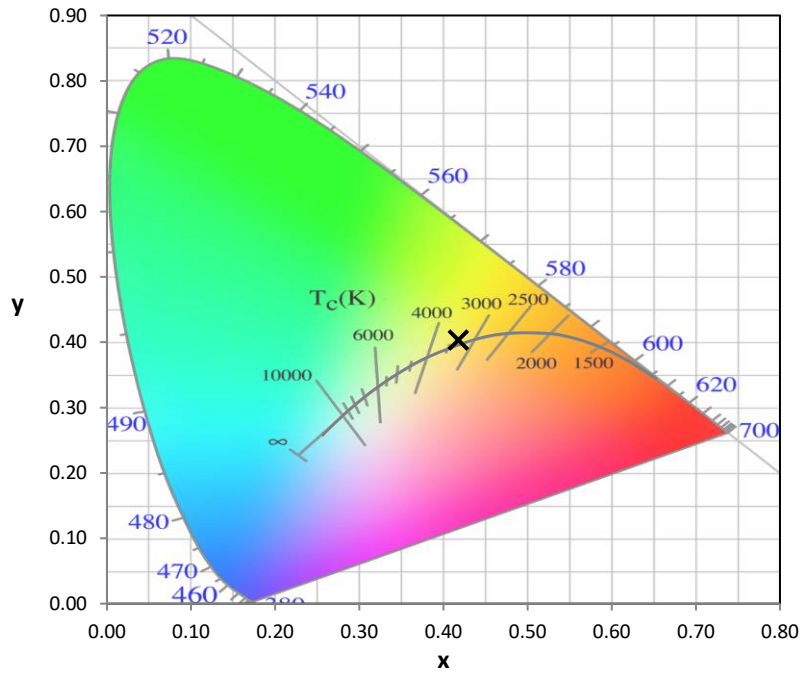
Stabilization Time: 30M  
 Operation Time: 1H 30M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-176-4

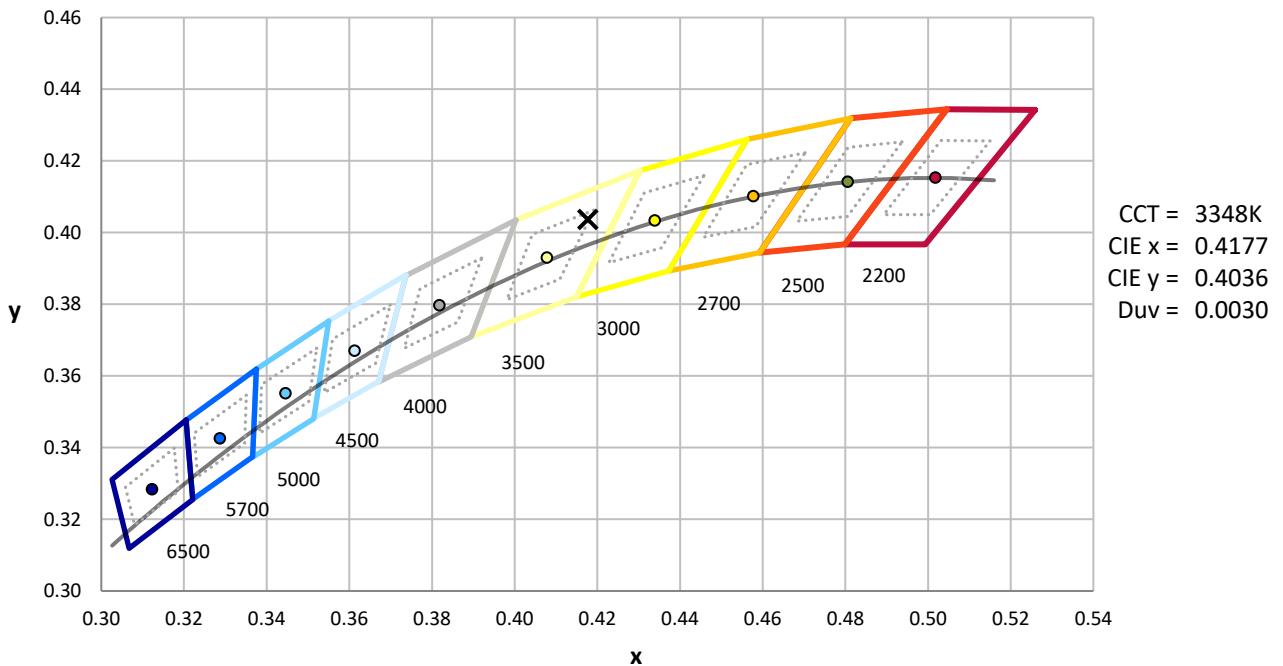
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 6/18/2024        | 12/18/2024           |
| Power Meter                    | INXT2011004           | 2/8/2024         | 2/8/2025             |
| AC Power Source                | IN0063                | 10/24/2023       | 10/24/2024           |
| DC Power Source                | IN0208                | 10/24/2023       | 10/24/2024           |
| Sphere Thermometer             | IN0085                | 10/24/2023       | 10/24/2024           |
| Room Thermometer               | IN0046                | 10/24/2023       | 10/24/2024           |

REPORT NUMBER: SP1-2407-176-4

**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: SP1-2407-176-4

### Photopic Flux vs. Wavelength

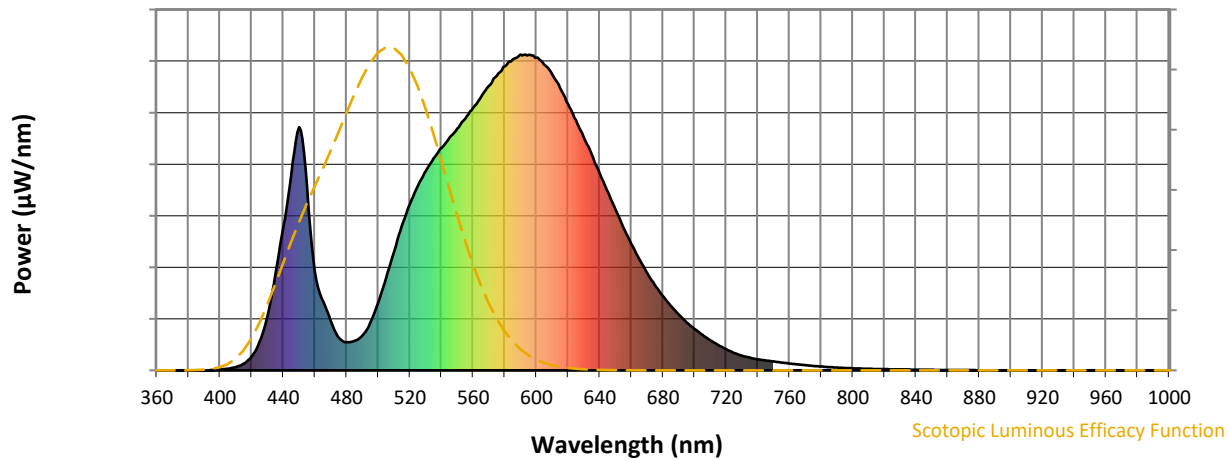


### Photopic Lumens: NR

| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 110                      | NR            | 620    | 844                      | NR            | 750    | 28                       | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 150                      | NR            | 625    | 792                      | NR            | 755    | 25                       | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 214                      | NR            | 630    | 737                      | NR            | 760    | 22                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 293                      | NR            | 635    | 683                      | NR            | 765    | 19                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 376                      | NR            | 640    | 625                      | NR            | 770    | 16                       | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 458                      | NR            | 645    | 566                      | NR            | 775    | 14                       | NR            | 905    | 0                        | NR            |
| 390    | 0                        | NR            | 520    | 526                      | NR            | 650    | 509                      | NR            | 780    | 12                       | NR            | 910    | 0                        | NR            |
| 395    | 1                        | NR            | 525    | 584                      | NR            | 655    | 453                      | NR            | 785    | 10                       | NR            | 915    | 0                        | NR            |
| 400    | 3                        | NR            | 530    | 631                      | NR            | 660    | 401                      | NR            | 790    | 9                        | NR            | 920    | 0                        | NR            |
| 405    | 5                        | NR            | 535    | 671                      | NR            | 665    | 353                      | NR            | 795    | 8                        | NR            | 925    | 0                        | NR            |
| 410    | 10                       | NR            | 540    | 704                      | NR            | 670    | 308                      | NR            | 800    | 7                        | NR            | 930    | 0                        | NR            |
| 415    | 21                       | NR            | 545    | 737                      | NR            | 675    | 269                      | NR            | 805    | 6                        | NR            | 935    | 0                        | NR            |
| 420    | 44                       | NR            | 550    | 766                      | NR            | 680    | 235                      | NR            | 810    | 5                        | NR            | 940    | 0                        | NR            |
| 425    | 90                       | NR            | 555    | 797                      | NR            | 685    | 204                      | NR            | 815    | 4                        | NR            | 945    | 0                        | NR            |
| 430    | 171                      | NR            | 560    | 832                      | NR            | 690    | 177                      | NR            | 820    | 4                        | NR            | 950    | 0                        | NR            |
| 435    | 305                      | NR            | 565    | 866                      | NR            | 695    | 152                      | NR            | 825    | 3                        | NR            | 955    | 0                        | NR            |
| 440    | 455                      | NR            | 570    | 901                      | NR            | 700    | 131                      | NR            | 830    | 3                        | NR            | 960    | 0                        | NR            |
| 445    | 615                      | NR            | 575    | 933                      | NR            | 705    | 112                      | NR            | 835    | 3                        | NR            | 965    | 0                        | NR            |
| 450    | 771                      | NR            | 580    | 963                      | NR            | 710    | 96                       | NR            | 840    | 2                        | NR            | 970    | 0                        | NR            |
| 455    | 579                      | NR            | 585    | 984                      | NR            | 715    | 80                       | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 313                      | NR            | 590    | 1000                     | NR            | 720    | 67                       | NR            | 850    | 2                        | NR            | 980    | 0                        | NR            |
| 465    | 221                      | NR            | 595    | 999                      | NR            | 725    | 55                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 156                      | NR            | 600    | 990                      | NR            | 730    | 46                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 103                      | NR            | 605    | 968                      | NR            | 735    | 40                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 89                       | NR            | 610    | 937                      | NR            | 740    | 35                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 93                       | NR            | 615    | 893                      | NR            | 745    | 31                       | NR            | 875    | 1                        | NR            |        |                          |               |

REPORT NUMBER: SP1-2407-176-4

### Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

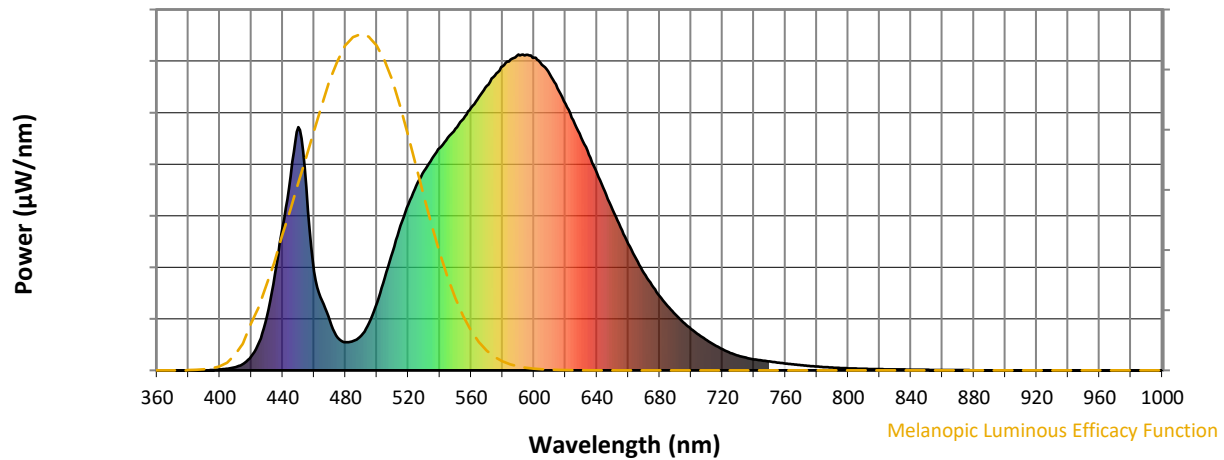
S/P: 1.31

| λ (nm) | Power W <sup>^</sup> /nm | Lumens (Φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (Φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (Φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (Φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (Φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 110                      | NR            | 620    | 844                      | NR            | 750    | 28                       | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 150                      | NR            | 625    | 792                      | NR            | 755    | 25                       | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 214                      | NR            | 630    | 737                      | NR            | 760    | 22                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 293                      | NR            | 635    | 683                      | NR            | 765    | 19                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 376                      | NR            | 640    | 625                      | NR            | 770    | 16                       | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 458                      | NR            | 645    | 566                      | NR            | 775    | 14                       | NR            | 905    | 0                        | NR            |
| 390    | 0                        | NR            | 520    | 526                      | NR            | 650    | 509                      | NR            | 780    | 12                       | NR            | 910    | 0                        | NR            |
| 395    | 1                        | NR            | 525    | 584                      | NR            | 655    | 453                      | NR            | 785    | 10                       | NR            | 915    | 0                        | NR            |
| 400    | 3                        | NR            | 530    | 631                      | NR            | 660    | 401                      | NR            | 790    | 9                        | NR            | 920    | 0                        | NR            |
| 405    | 5                        | NR            | 535    | 671                      | NR            | 665    | 353                      | NR            | 795    | 8                        | NR            | 925    | 0                        | NR            |
| 410    | 10                       | NR            | 540    | 704                      | NR            | 670    | 308                      | NR            | 800    | 7                        | NR            | 930    | 0                        | NR            |
| 415    | 21                       | NR            | 545    | 737                      | NR            | 675    | 269                      | NR            | 805    | 6                        | NR            | 935    | 0                        | NR            |
| 420    | 44                       | NR            | 550    | 766                      | NR            | 680    | 235                      | NR            | 810    | 5                        | NR            | 940    | 0                        | NR            |
| 425    | 90                       | NR            | 555    | 797                      | NR            | 685    | 204                      | NR            | 815    | 4                        | NR            | 945    | 0                        | NR            |
| 430    | 171                      | NR            | 560    | 832                      | NR            | 690    | 177                      | NR            | 820    | 4                        | NR            | 950    | 0                        | NR            |
| 435    | 305                      | NR            | 565    | 866                      | NR            | 695    | 152                      | NR            | 825    | 3                        | NR            | 955    | 0                        | NR            |
| 440    | 455                      | NR            | 570    | 901                      | NR            | 700    | 131                      | NR            | 830    | 3                        | NR            | 960    | 0                        | NR            |
| 445    | 615                      | NR            | 575    | 933                      | NR            | 705    | 112                      | NR            | 835    | 3                        | NR            | 965    | 0                        | NR            |
| 450    | 771                      | NR            | 580    | 963                      | NR            | 710    | 96                       | NR            | 840    | 2                        | NR            | 970    | 0                        | NR            |
| 455    | 579                      | NR            | 585    | 984                      | NR            | 715    | 80                       | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 313                      | NR            | 590    | 1000                     | NR            | 720    | 67                       | NR            | 850    | 2                        | NR            | 980    | 0                        | NR            |
| 465    | 221                      | NR            | 595    | 999                      | NR            | 725    | 55                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 156                      | NR            | 600    | 990                      | NR            | 730    | 46                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 103                      | NR            | 605    | 968                      | NR            | 735    | 40                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 89                       | NR            | 610    | 937                      | NR            | 740    | 35                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 93                       | NR            | 615    | 893                      | NR            | 745    | 31                       | NR            | 875    | 1                        | NR            |        |                          |               |



REPORT NUMBER: SP1-2407-176-4

### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.4

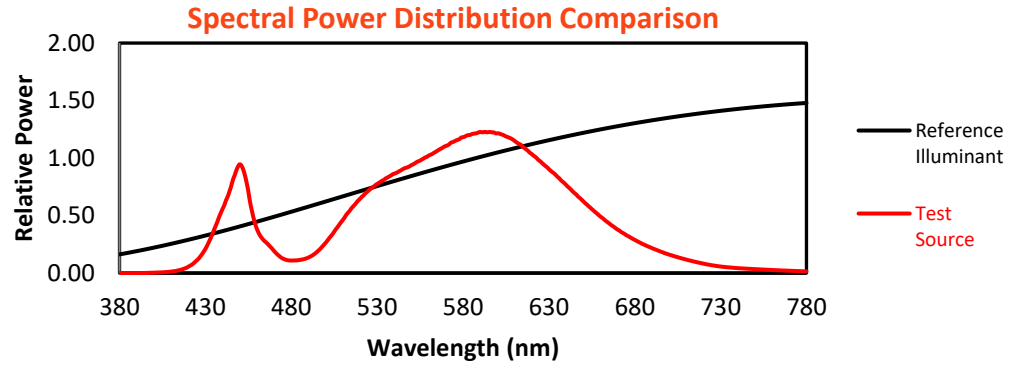
| $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360               | 0                                    | NR                             | 490               | 110                                  | NR                             | 620               | 844                                  | NR                             | 750               | 28                                   | NR                             | 880               | 0                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 150                                  | NR                             | 625               | 792                                  | NR                             | 755               | 25                                   | NR                             | 885               | 0                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 214                                  | NR                             | 630               | 737                                  | NR                             | 760               | 22                                   | NR                             | 890               | 0                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 293                                  | NR                             | 635               | 683                                  | NR                             | 765               | 19                                   | NR                             | 895               | 0                                    | NR                             |
| 380               | 0                                    | NR                             | 510               | 376                                  | NR                             | 640               | 625                                  | NR                             | 770               | 16                                   | NR                             | 900               | 0                                    | NR                             |
| 385               | 0                                    | NR                             | 515               | 458                                  | NR                             | 645               | 566                                  | NR                             | 775               | 14                                   | NR                             | 905               | 0                                    | NR                             |
| 390               | 0                                    | NR                             | 520               | 526                                  | NR                             | 650               | 509                                  | NR                             | 780               | 12                                   | NR                             | 910               | 0                                    | NR                             |
| 395               | 1                                    | NR                             | 525               | 584                                  | NR                             | 655               | 453                                  | NR                             | 785               | 10                                   | NR                             | 915               | 0                                    | NR                             |
| 400               | 3                                    | NR                             | 530               | 631                                  | NR                             | 660               | 401                                  | NR                             | 790               | 9                                    | NR                             | 920               | 0                                    | NR                             |
| 405               | 5                                    | NR                             | 535               | 671                                  | NR                             | 665               | 353                                  | NR                             | 795               | 8                                    | NR                             | 925               | 0                                    | NR                             |
| 410               | 10                                   | NR                             | 540               | 704                                  | NR                             | 670               | 308                                  | NR                             | 800               | 7                                    | NR                             | 930               | 0                                    | NR                             |
| 415               | 21                                   | NR                             | 545               | 737                                  | NR                             | 675               | 269                                  | NR                             | 805               | 6                                    | NR                             | 935               | 0                                    | NR                             |
| 420               | 44                                   | NR                             | 550               | 766                                  | NR                             | 680               | 235                                  | NR                             | 810               | 5                                    | NR                             | 940               | 0                                    | NR                             |
| 425               | 90                                   | NR                             | 555               | 797                                  | NR                             | 685               | 204                                  | NR                             | 815               | 4                                    | NR                             | 945               | 0                                    | NR                             |
| 430               | 171                                  | NR                             | 560               | 832                                  | NR                             | 690               | 177                                  | NR                             | 820               | 4                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 305                                  | NR                             | 565               | 866                                  | NR                             | 695               | 152                                  | NR                             | 825               | 3                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 455                                  | NR                             | 570               | 901                                  | NR                             | 700               | 131                                  | NR                             | 830               | 3                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 615                                  | NR                             | 575               | 933                                  | NR                             | 705               | 112                                  | NR                             | 835               | 3                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 771                                  | NR                             | 580               | 963                                  | NR                             | 710               | 96                                   | NR                             | 840               | 2                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 579                                  | NR                             | 585               | 984                                  | NR                             | 715               | 80                                   | NR                             | 845               | 2                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 313                                  | NR                             | 590               | 1000                                 | NR                             | 720               | 67                                   | NR                             | 850               | 2                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 221                                  | NR                             | 595               | 999                                  | NR                             | 725               | 55                                   | NR                             | 855               | 1                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 156                                  | NR                             | 600               | 990                                  | NR                             | 730               | 46                                   | NR                             | 860               | 1                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 103                                  | NR                             | 605               | 968                                  | NR                             | 735               | 40                                   | NR                             | 865               | 1                                    | NR                             | 995               | 0                                    | NR                             |
| 480               | 89                                   | NR                             | 610               | 937                                  | NR                             | 740               | 35                                   | NR                             | 870               | 1                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 93                                   | NR                             | 615               | 893                                  | NR                             | 745               | 31                                   | NR                             | 875               | 1                                    | NR                             |                   |                                      |                                |

REPORT NUMBER: SP1-2407-176-4

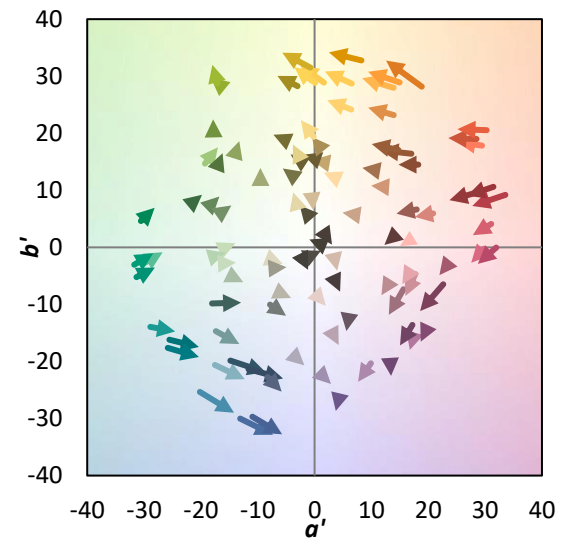
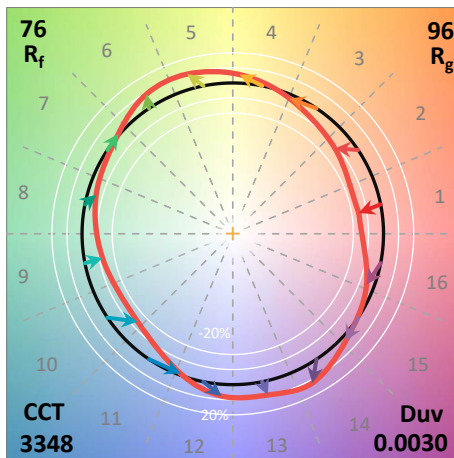
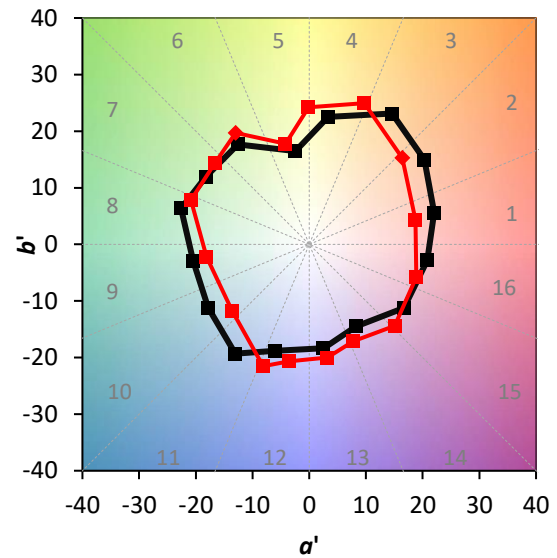
TM-30-18

### Summary

$R_f = 75.8$   
 $R_g = 95.8$   
 $CIE R_a = 73.4$   
 $R_g = -19.2$

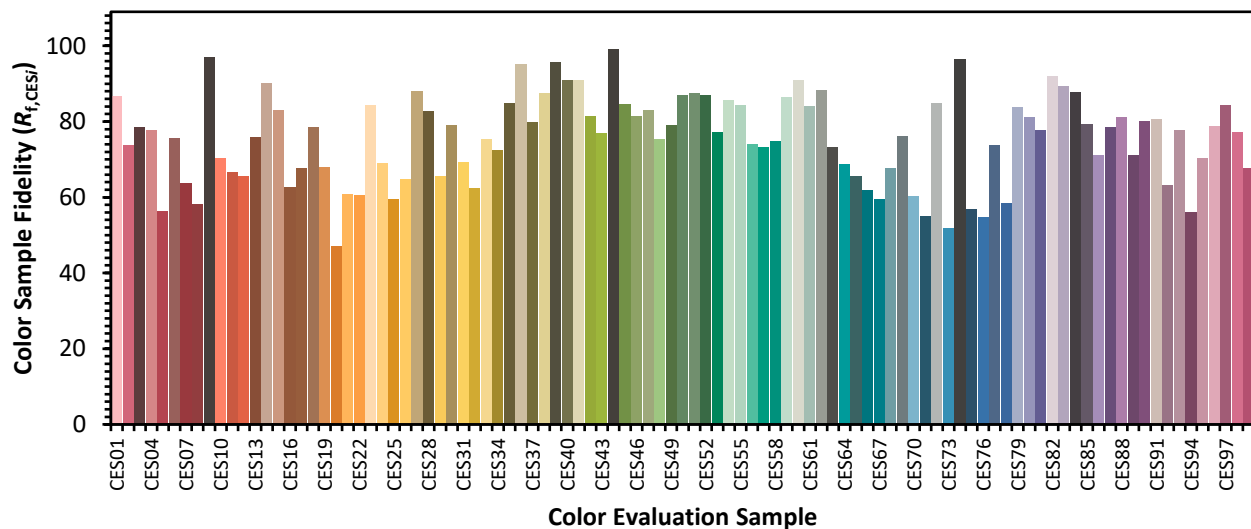


### Color Vector Graphics

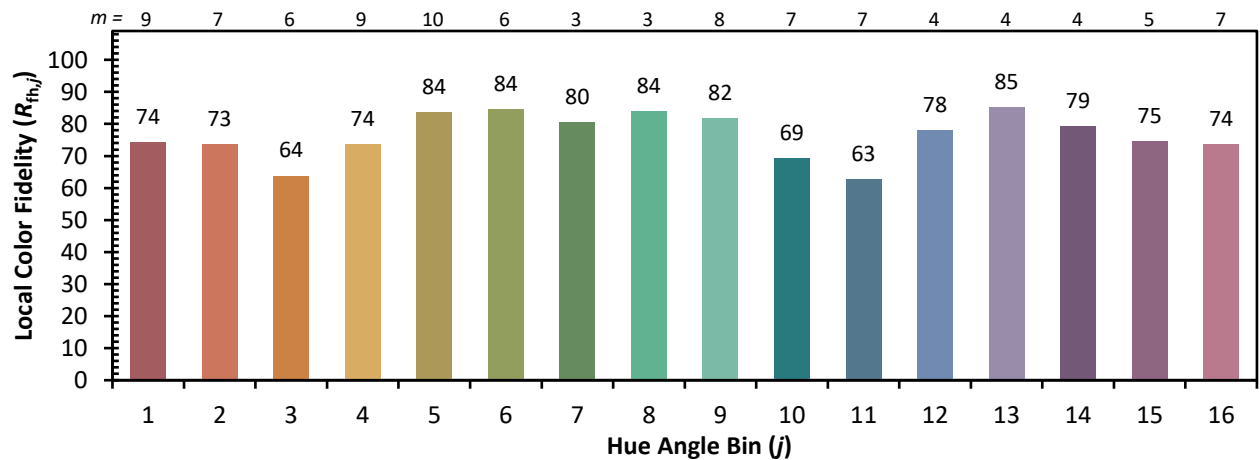


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 65 | CES51 = 88 | CES76 = 55 |
| CES02 = 62 | CES27 = 88 | CES52 = 87 | CES77 = 74 |
| CES03 = 31 | CES28 = 83 | CES53 = 77 | CES78 = 58 |
| CES04 = 70 | CES29 = 66 | CES54 = 86 | CES79 = 84 |
| CES05 = 48 | CES30 = 79 | CES55 = 84 | CES80 = 81 |
| CES06 = 51 | CES31 = 69 | CES56 = 74 | CES81 = 78 |
| CES07 = 41 | CES32 = 62 | CES57 = 73 | CES82 = 92 |
| CES08 = 40 | CES33 = 75 | CES58 = 75 | CES83 = 89 |
| CES09 = 29 | CES34 = 73 | CES59 = 87 | CES84 = 88 |
| CES10 = 75 | CES35 = 85 | CES60 = 91 | CES85 = 79 |
| CES11 = 58 | CES36 = 95 | CES61 = 84 | CES86 = 71 |
| CES12 = 64 | CES37 = 80 | CES62 = 88 | CES87 = 79 |
| CES13 = 43 | CES38 = 88 | CES63 = 73 | CES88 = 81 |
| CES14 = 74 | CES39 = 96 | CES64 = 69 | CES89 = 71 |
| CES15 = 71 | CES40 = 91 | CES65 = 66 | CES90 = 80 |
| CES16 = 47 | CES41 = 91 | CES66 = 62 | CES91 = 81 |
| CES17 = 50 | CES42 = 81 | CES67 = 60 | CES92 = 63 |
| CES18 = 56 | CES43 = 77 | CES68 = 68 | CES93 = 78 |
| CES19 = 72 | CES44 = 99 | CES69 = 76 | CES94 = 56 |
| CES20 = 65 | CES45 = 85 | CES70 = 60 | CES95 = 70 |
| CES21 = 87 | CES46 = 82 | CES71 = 55 | CES96 = 79 |
| CES22 = 79 | CES47 = 83 | CES72 = 85 | CES97 = 84 |
| CES23 = 92 | CES48 = 75 | CES73 = 52 | CES98 = 77 |
| CES24 = 91 | CES49 = 79 | CES74 = 96 | CES99 = 68 |
| CES25 = 72 | CES50 = 87 | CES75 = 57 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)