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: P821596

Luminaire Tested: **TT-D5-750-12VDC-RW-HSS**

Issue Date: 12/2/2020

Report Generated By 670245763

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Scaled Data Report

**Test Information**

| | |
|---|---|
| Test Method: | LM-79-08 |
| Report Number: | P821596 |
| | TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2010-017-5) |
| Test Lab: | INNOVATION CENTER |
| Issue Date: | 12/2/2020 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS (FORMERLY EATON) |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | TT-D5-750-12VDC-RW-HSS |
| Description: | TOPTIER LED PARKING GARAGE LUMINAIRE |
| | 5000K, 70 CRI LEDS AND RECTANGULAR DISTRIBUTION WITH HOUSE SIDE SHIELD |
| Light Source: | - |
| Ballast/Driver: | ELECTRONIC DRIVER |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 6012 lumens |
| Efficiency: | N/A |
| Efficacy: | 82.4 lumens/watt |
| Luminous Opening: | Circular (Dia: 1.12' x H: 0') |
| IES Classification: | Type IV - Short |
| BUG Rating: | B2 - U2 - G3 |

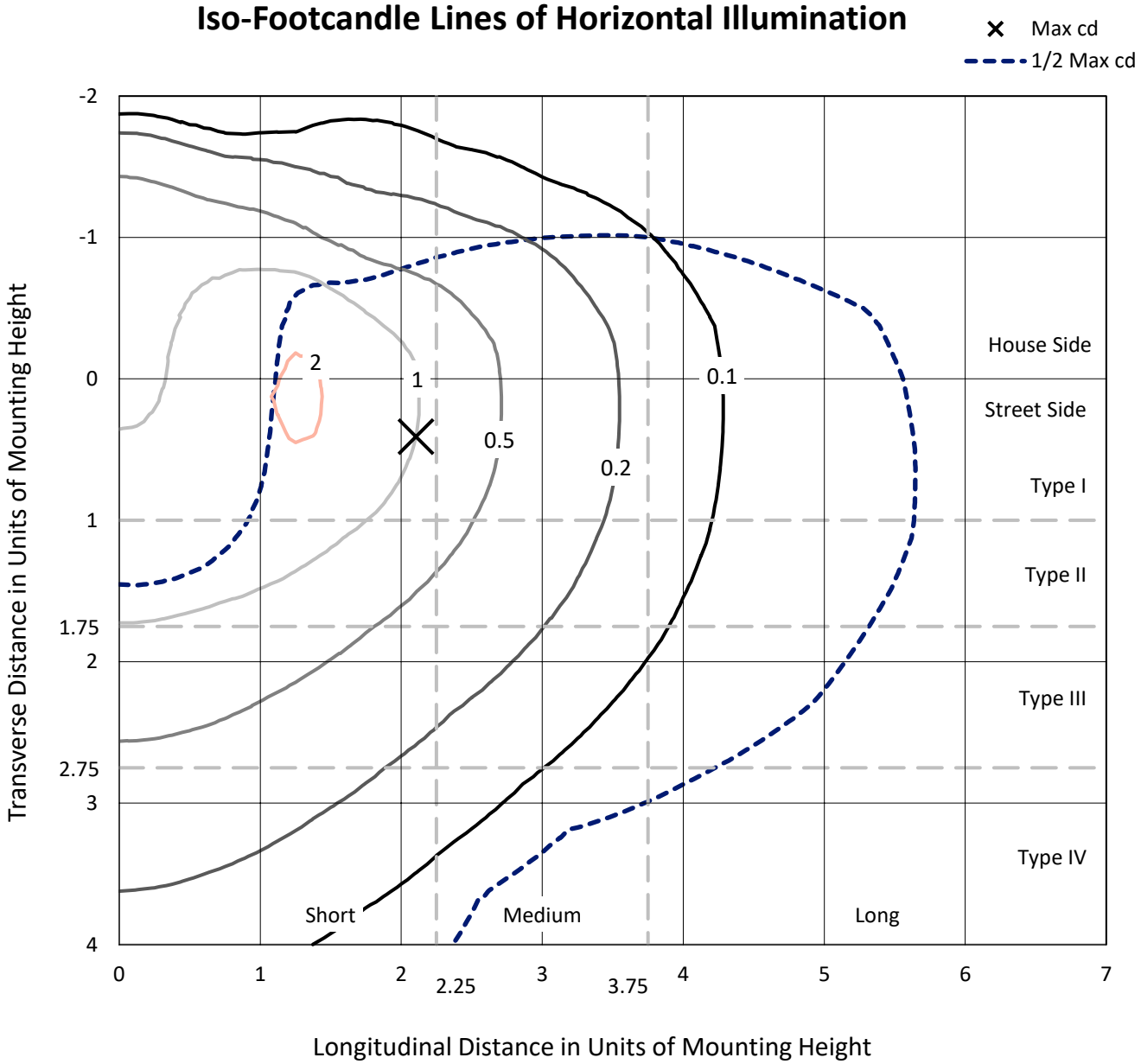
| | |
|---|---|
| Input Watts (W): | 73 |
| Input Voltage (V): | NR |
| Input Current (Ain): | NR |
| Voltage Rise (V): | NR |
| Power Factor: | NR |
| Total Harmonic Distortion (THDi): | NR |
| Frequency (hertz): | 60 |
| Stabilization Time: | NR |
| Operation Time: | NR |
| Ambient Temperature (°C): | NR |
| Test Distance: | 25 FT |

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## Iso-Footcandle Lines of Horizontal Illumination



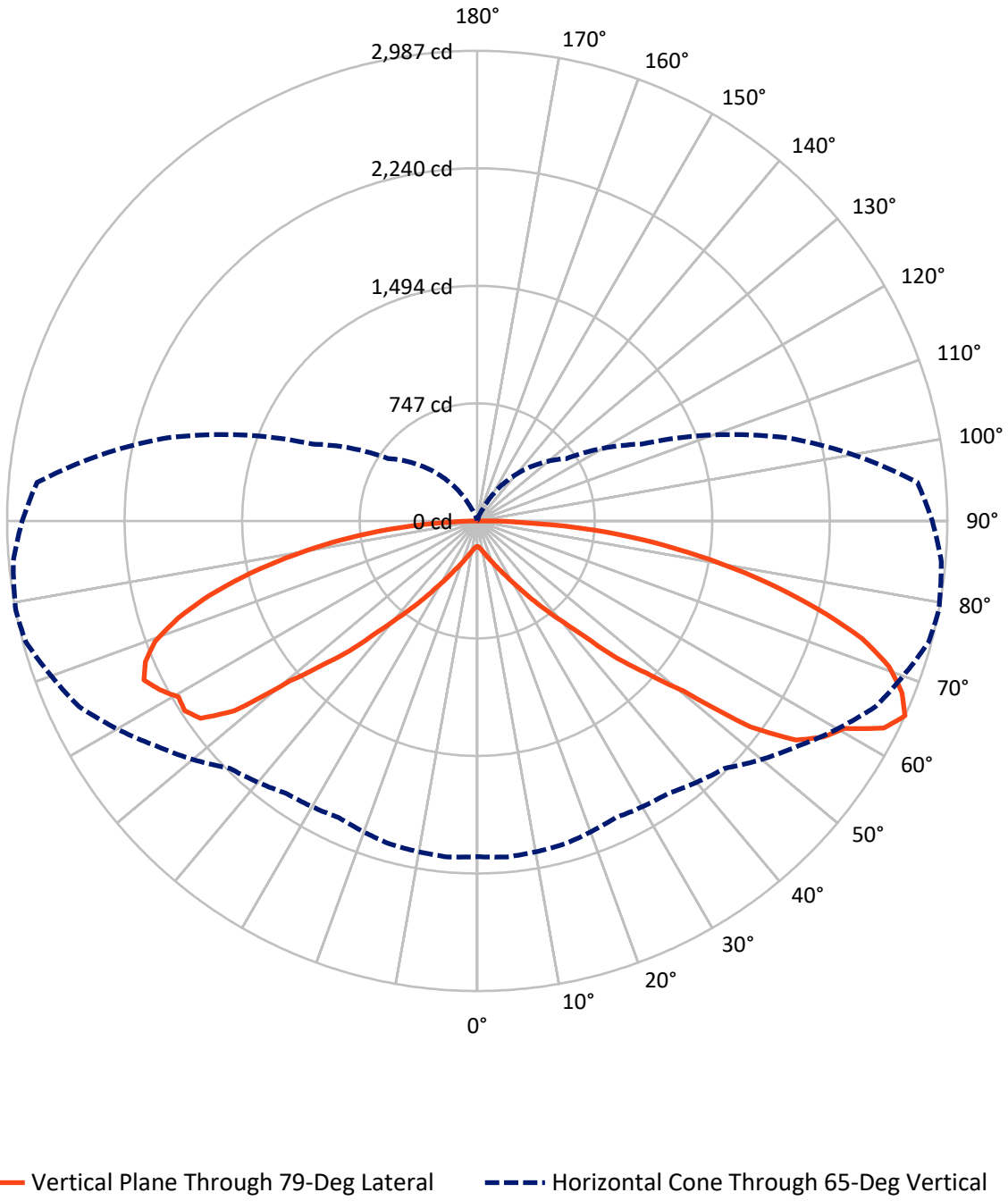

Based on 15 foot mounting height. Maximum calculated value = 2.1 fc
Type IV - Short - N/A

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## Luminous Intensity Polar Plot



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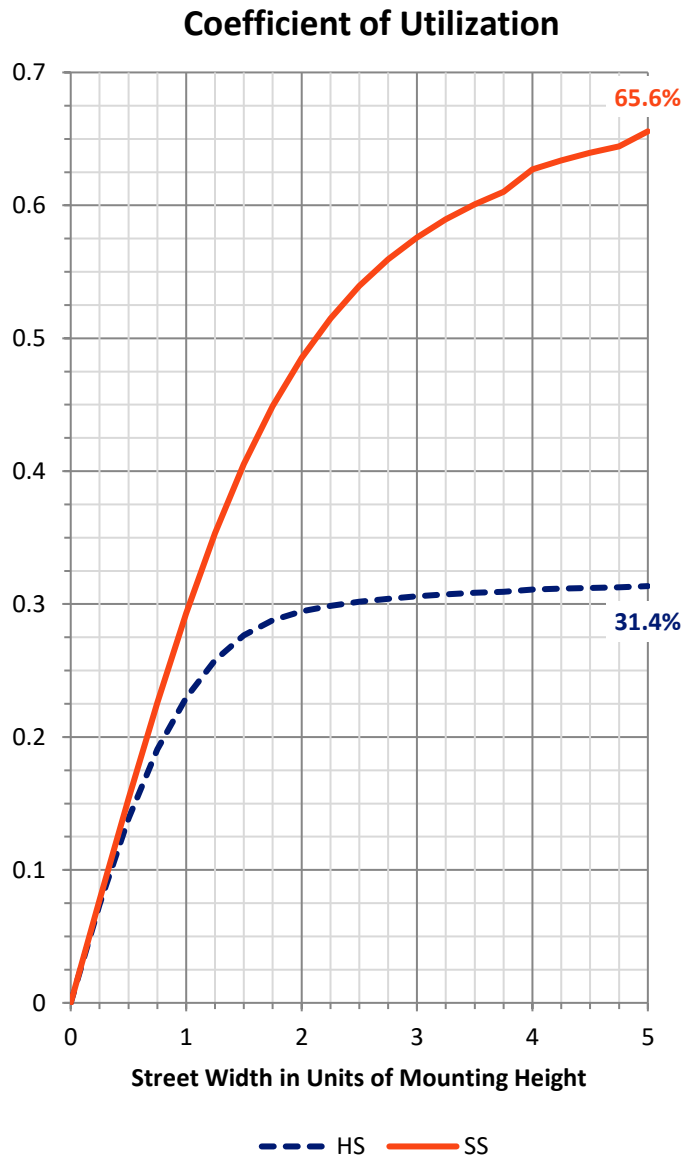
REPORT NUMBER: P821596
CATALOG NUMBER: TT-D5-750-12VDC-RW-HSS

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 1898.5 | 2.4 | 1900.9 |
| | % Fixture | 31.6 | 0.0 | 31.6 |
| **Street Side** | Lumens | 4084.6 | 26.5 | 4111.1 |
| | % Fixture | 67.9 | 0.4 | 68.4 |
| **Total** | Lumens | 5983.1 | 28.9 | 6012.0 |
| | % Fixture | 99.5 | 0.5 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 17.1 | 0.3 |
| 10°-20° | 64.8 | 1.1 |
| 20°-30° | 149.4 | 2.5 |
| 30°-40° | 320.0 | 5.3 |
| 40°-50° | 685.4 | 11.4 |
| 50°-60° | 1294.5 | 21.5 |
| 60°-70° | 1608.8 | 26.8 |
| 70°-80° | 1377.2 | 22.9 |
| 80°-90° | 465.9 | 7.7 |
| 90°-100° | 20.1 | 0.3 |
| 100°-110° | 5.8 | 0.1 |
| 110°-120° | 1.3 | 0.0 |
| 120°-130° | 0.7 | 0.0 |
| 130°-140° | 0.4 | 0.0 |
| 140°-150° | 0.3 | 0.0 |
| 150°-160° | 0.1 | 0.0 |
| 160°-170° | 0.1 | 0.0 |
| 170°-180° | 0.0 | 0.0 |
| 0°-90° | 5983.1 | 99.5 |
| 0°-180° | 6012.0 | 100.0 |



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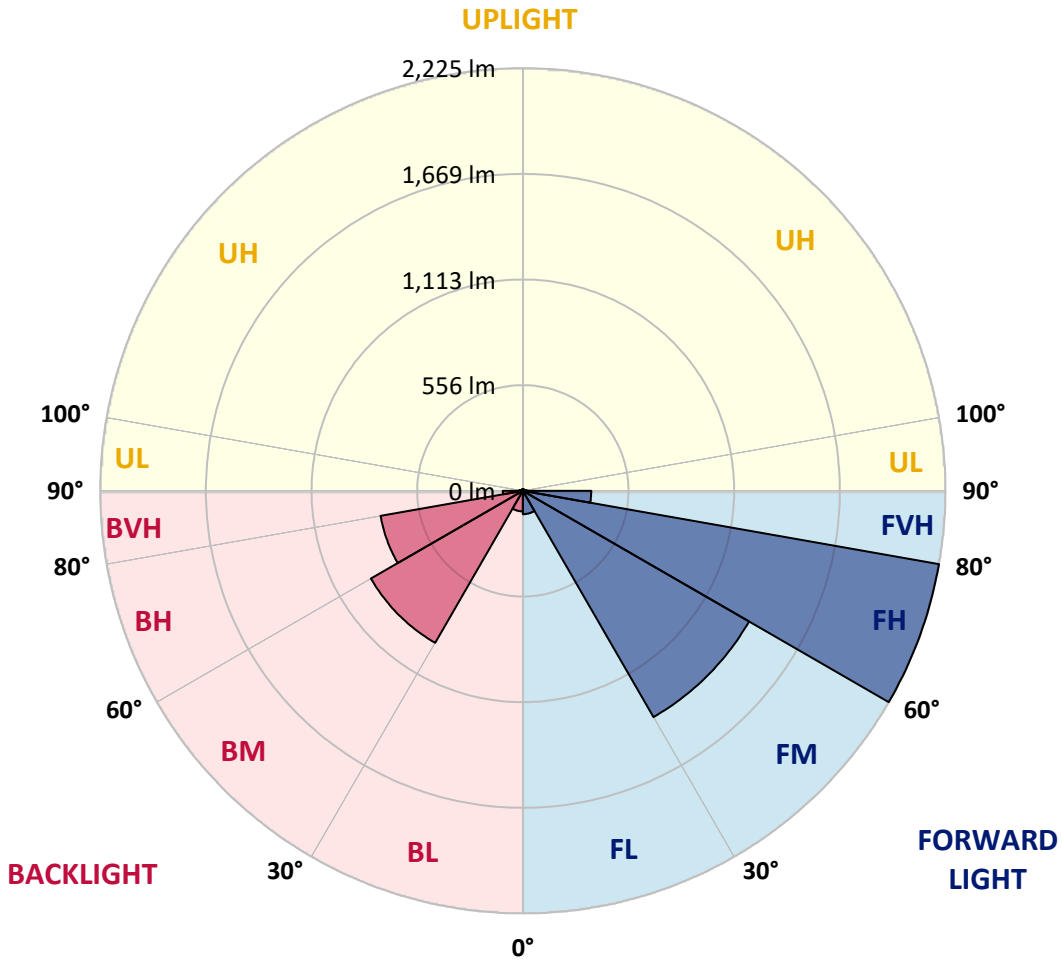
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## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 122.9 | 2.0 | | | |
| FM | (30°-60°) | 1375.8 | 22.9 | | | |
| FH | (60°-80°) | 2225.4 | 37.0 | | | G2/5000 |
| FVH | (80°-90°) | 360.4 | 6.0 | | | G3/500 |
| BL | (0°-30°) | 108.3 | 1.8 | B0/110 | | |
| BM | (30°-60°) | 924.1 | 15.4 | B1/1000 | | |
| BH | (60°-80°) | 760.6 | 12.7 | B2/1000 | | G2/1000 |
| BVH | (80°-90°) | 105.5 | 1.8 | | | G2/225 |
| UL | (90°-100°) | 20.1 | 0.3 | | U2/50 | |
| UH | (100°-180°) | 8.8 | 0.1 | | U1/10 | |

**BUG Rating: B2-U2-G3**
Type IV Short



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**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 79° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 163.3 | 163.3 | 163.3 | 163.3 | 163.3 | 163.3 | 163.3 | 163.3 | 163.3 | *163.3* | 163.3 |
| 2.5° | 172.3 | 172.3 | 172.3 | 170.8 | 170.8 | 170.8 | 169.3 | 167.8 | 166.3 | *166.3* | 166.3 |
| 5° | 181.3 | 181.3 | 181.3 | 181.3 | 179.8 | 178.3 | 176.8 | 175.3 | 173.8 | *173.8* | 172.3 |
| 7.5° | 193.3 | 191.8 | 193.3 | 191.8 | 191.8 | 190.3 | 188.8 | 187.3 | 184.3 | *184.3* | 182.8 |
| 10° | 205.2 | 205.2 | 205.2 | 205.2 | 205.2 | 203.7 | 202.2 | 200.7 | 199.2 | *197.7* | 196.2 |
| 12.5° | 220.2 | 220.2 | 220.2 | 218.7 | 220.2 | 218.7 | 217.2 | 217.2 | 215.7 | *212.7* | 212.7 |
| 15° | 235.2 | 235.2 | 235.2 | 235.2 | 236.7 | 236.7 | 236.7 | 235.2 | 235.2 | *233.7* | 232.2 |
| 17.5° | 253.2 | 251.7 | 253.2 | 253.2 | 254.7 | 256.2 | 257.7 | 259.2 | 259.2 | *257.7* | 257.7 |
| 20° | 272.7 | 271.2 | 272.7 | 272.7 | 275.6 | 278.6 | 283.1 | 286.1 | 287.6 | *284.6* | 284.6 |
| 22.5° | 293.6 | 292.1 | 295.1 | 295.1 | 299.6 | 304.1 | 311.6 | 314.6 | 319.1 | *317.6* | 317.6 |
| 25° | 319.1 | 317.6 | 319.1 | 320.6 | 326.6 | 334.1 | 343.1 | 350.6 | 355.0 | *355.0* | 356.5 |
| 27.5° | 347.6 | 347.6 | 349.1 | 350.6 | 356.5 | 368.5 | 382.0 | 395.5 | 406.0 | *404.5* | 406.0 |
| 30° | 386.5 | 386.5 | 389.5 | 391.0 | 398.5 | 412.0 | 429.9 | 447.9 | 462.9 | *462.9* | 465.9 |
| 32.5° | 429.9 | 428.5 | 432.9 | 434.4 | 441.9 | 459.9 | 485.4 | 513.8 | 533.3 | *533.3* | 536.3 |
| 35° | 482.4 | 480.9 | 485.4 | 485.4 | 494.4 | 519.8 | 552.8 | 591.7 | 624.7 | *626.2* | 630.7 |
| 37.5° | 548.3 | 545.3 | 545.3 | 549.8 | 560.3 | 593.2 | 638.2 | 692.1 | 726.6 | *729.6* | 737.1 |
| 40° | 626.2 | 624.7 | 627.7 | 626.2 | 639.7 | 680.1 | 737.1 | 800.0 | 840.4 | *847.9* | 856.9 |
| 42.5° | 722.1 | 725.1 | 720.6 | 720.6 | 737.1 | 783.5 | 850.9 | 924.3 | 997.7 | *1006.7* | 1011.2 |
| 45° | 838.9 | 844.9 | 838.9 | 837.4 | 852.4 | 906.3 | 999.2 | 1128.1 | 1213.4 | *1243.4* | 1252.4 |
| 47.5° | 979.7 | 982.7 | 975.2 | 972.3 | 988.7 | 1057.6 | 1177.5 | 1321.3 | 1421.7 | *1444.1* | 1468.1 |
| 50° | 1137.0 | 1132.5 | 1126.6 | 1122.1 | 1153.5 | 1238.9 | 1378.2 | 1526.5 | 1698.8 | *1701.8* | 1710.8 |
| 52.5° | 1298.8 | 1285.4 | 1286.8 | 1285.4 | 1328.8 | 1421.7 | 1607.4 | 1859.1 | 2121.3 | *2175.2* | 2181.2 |
| 55° | 1460.6 | 1444.1 | 1442.6 | 1457.6 | 1519.1 | 1652.4 | 1886.1 | 2212.7 | 2425.4 | *2458.3* | 2453.9 |
| 57.5° | 1622.4 | 1614.9 | 1611.9 | 1625.4 | 1715.3 | 1874.1 | 2137.8 | 2413.4 | 2594.7 | *2591.7* | 2560.2 |
| 60° | 1790.2 | 1796.2 | 1785.7 | 1811.2 | 1904.1 | 2062.9 | 2254.6 | 2522.8 | 2690.5 | *2677.1* | 2645.6 |
| 62.5° | 1962.5 | 1977.5 | 1967.0 | 1970.0 | 2029.9 | 2146.7 | 2335.5 | 2647.1 | 2879.3 | *2898.8* | 2862.8 |
| 65° | *2133.3* | *2143.8* | *2127.3* | *2080.8* | *2113.8* | *2223.1* | *2492.8* | *2792.4* | *2969.2* | *2987.2* | *2960.2* |
| 67.5° | 2277.1 | 2287.6 | 2230.6 | 2157.2 | 2161.7 | 2241.1 | 2477.8 | 2764.0 | 2921.3 | *2909.3* | 2865.8 |
| 70° | 2399.9 | 2380.4 | 2287.6 | 2161.7 | 2109.3 | 2146.7 | 2370.0 | 2623.1 | 2783.4 | *2777.4* | 2726.5 |
| 72.5° | 2440.4 | 2414.9 | 2257.6 | 2062.9 | 1959.5 | 1973.0 | 2190.2 | 2416.4 | 2546.7 | *2557.2* | 2495.8 |
| 75° | 2376.0 | 2332.5 | 2116.8 | 1872.6 | 1739.3 | 1748.3 | 1934.0 | 2142.3 | 2247.1 | *2235.1* | 2187.2 |
| 77.5° | 2143.8 | 2100.3 | 1866.6 | 1605.9 | 1475.6 | 1489.1 | 1635.9 | 1799.2 | 1886.1 | *1881.6* | 1848.6 |
| 80° | 1779.7 | 1740.8 | 1535.5 | 1292.8 | 1174.5 | 1182.0 | 1294.3 | 1423.2 | 1490.6 | *1505.6* | 1487.6 |
| 82.5° | 1315.3 | 1288.3 | 1143.0 | 946.8 | 850.9 | 849.4 | 934.8 | 1033.7 | 1099.6 | *1131.0* | 1119.1 |
| 85° | 813.5 | 800.0 | 719.1 | 591.7 | 524.3 | 522.8 | 573.8 | 647.2 | 707.1 | *749.0* | 722.1 |
| 87.5° | 323.6 | 319.1 | 295.1 | 238.2 | 208.2 | 197.7 | 185.8 | 232.2 | 236.7 | *280.1* | 278.6 |
| 90° | 79.4 | 77.9 | 76.4 | 71.9 | 64.4 | 55.4 | 44.9 | 33.0 | 21.0 | *16.5* | 9.0 |
| 92.5° | 70.4 | 70.4 | 68.9 | 64.4 | 58.4 | 49.4 | 40.4 | 30.0 | 19.5 | *15.0* | 7.5 |
| 95° | 56.9 | 56.9 | 55.4 | 52.4 | 46.4 | 40.4 | 31.5 | 24.0 | 15.0 | *12.0* | 6.0 |
| 97.5° | 43.4 | 41.9 | 41.9 | 39.0 | 36.0 | 30.0 | 24.0 | 18.0 | 12.0 | *9.0* | 4.5 |
| 100° | 31.5 | 31.5 | 30.0 | 28.5 | 25.5 | 22.5 | 18.0 | 13.5 | 7.5 | *6.0* | 3.0 |
| 102.5° | 22.5 | 21.0 | 21.0 | 21.0 | 18.0 | 15.0 | 12.0 | 9.0 | 6.0 | *4.5* | 1.5 |
| 105° | 15.0 | 13.5 | 13.5 | 13.5 | 12.0 | 10.5 | 7.5 | 6.0 | 3.0 | *3.0* | 1.5 |
| 107.5° | 9.0 | 9.0 | 9.0 | 9.0 | 7.5 | 6.0 | 4.5 | 3.0 | 1.5 | *1.5* | 1.5 |
| 110° | 4.5 | 4.5 | 4.5 | 6.0 | 4.5 | 4.5 | 3.0 | 1.5 | 1.5 | *1.5* | 1.5 |

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**CANDELA DISTRIBUTION (continued):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 79° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 112.5° | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 1.5 | 1.5 | 1.5 | *1.5* | 1.5 |
| 115° | 1.5 | 1.5 | 1.5 | 3.0 | 3.0 | 1.5 | 1.5 | 0.0 | 0.0 | *1.5* | 1.5 |
| 117.5° | 0.0 | 0.0 | 1.5 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | *0.0* | 1.5 |
| 120° | 0.0 | 0.0 | 1.5 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | *0.0* | 1.5 |
| 122.5° | 0.0 | 0.0 | 1.5 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | *0.0* | 1.5 |
| 125° | 0.0 | 0.0 | 0.0 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | *0.0* | 1.5 |
| 127.5° | 0.0 | 0.0 | 0.0 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | *0.0* | 1.5 |
| 130° | 0.0 | 0.0 | 0.0 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | *0.0* | 1.5 |
| 132.5° | 0.0 | 0.0 | 0.0 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | *0.0* | 1.5 |
| 135° | 0.0 | 0.0 | 0.0 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | *0.0* | 0.0 |
| 137.5° | 0.0 | 0.0 | 0.0 | 0.0 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | *0.0* | 0.0 |
| 140° | 0.0 | 0.0 | 0.0 | 0.0 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | *0.0* | 0.0 |
| 142.5° | 0.0 | 0.0 | 0.0 | 0.0 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | *0.0* | 0.0 |
| 145° | 0.0 | 0.0 | 0.0 | 1.5 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | *0.0* | 0.0 |
| 147.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.5 | 0.0 | 0.0 | 0.0 | *0.0* | 0.0 |
| 150° | 0.0 | 0.0 | 0.0 | 0.0 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | *0.0* | 0.0 |
| 152.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | *0.0* | 0.0 |
| 155° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | *0.0* | 0.0 |
| 157.5° | 0.0 | 0.0 | 0.0 | 0.0 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | *0.0* | 0.0 |
| 160° | 0.0 | 0.0 | 0.0 | 0.0 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | *0.0* | 0.0 |
| 162.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | *0.0* | 0.0 |
| 165° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | *0.0* | 0.0 |
| 167.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | *0.0* | 0.0 |
| 170° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | *0.0* | 0.0 |
| 172.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | *0.0* | 0.0 |
| 175° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | *0.0* | 0.0 |
| 177.5° | 0.0 | 0.0 | 0.0 | 1.5 | 0.0 | 1.5 | 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 |

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**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 163.3 | 163.3 | 163.3 | 163.3 | 163.3 | 163.3 | 163.3 | 163.3 | 163.3 | 163.3 | 163.3 |
| 2.5° | 164.8 | 164.8 | 164.8 | 163.3 | 163.3 | 163.3 | 161.8 | 161.8 | 160.3 | 160.3 | 160.3 |
| 5° | 170.8 | 170.8 | 169.3 | 169.3 | 167.8 | 166.3 | 166.3 | 164.8 | 164.8 | 163.3 | 163.3 |
| 7.5° | 181.3 | 181.3 | 179.8 | 178.3 | 175.3 | 173.8 | 172.3 | 170.8 | 170.8 | 169.3 | 169.3 |
| 10° | 194.8 | 194.8 | 191.8 | 188.8 | 185.8 | 182.8 | 181.3 | 178.3 | 176.8 | 176.8 | 176.8 |
| 12.5° | 211.2 | 209.7 | 206.7 | 202.2 | 199.2 | 194.8 | 191.8 | 188.8 | 185.8 | 185.8 | 185.8 |
| 15° | 230.7 | 230.7 | 224.7 | 220.2 | 214.2 | 208.2 | 203.7 | 199.2 | 196.2 | 194.8 | 194.8 |
| 17.5° | 254.7 | 254.7 | 247.2 | 239.7 | 232.2 | 224.7 | 218.7 | 212.7 | 209.7 | 208.2 | 208.2 |
| 20° | 281.6 | 281.6 | 274.1 | 265.2 | 254.7 | 244.2 | 235.2 | 227.7 | 223.2 | 221.7 | 221.7 |
| 22.5° | 314.6 | 314.6 | 304.1 | 292.1 | 278.6 | 263.7 | 251.7 | 242.7 | 238.2 | 235.2 | 235.2 |
| 25° | 352.0 | 349.1 | 338.6 | 323.6 | 304.1 | 286.1 | 269.7 | 260.7 | 254.7 | 250.2 | 251.7 |
| 27.5° | 403.0 | 398.5 | 385.0 | 359.5 | 335.6 | 311.6 | 292.1 | 280.1 | 272.7 | 269.7 | 271.2 |
| 30° | 461.4 | 456.9 | 437.4 | 409.0 | 373.0 | 341.6 | 317.6 | 304.1 | 296.6 | 292.1 | 293.6 |
| 32.5° | 531.8 | 525.8 | 501.9 | 462.9 | 421.0 | 376.0 | 346.1 | 329.6 | 322.1 | 317.6 | 316.1 |
| 35° | 624.7 | 617.2 | 587.2 | 533.3 | 474.9 | 421.0 | 379.0 | 358.0 | 350.6 | 346.1 | 347.6 |
| 37.5° | 729.6 | 719.1 | 678.6 | 612.7 | 539.3 | 470.4 | 422.5 | 395.5 | 386.5 | 379.0 | 379.0 |
| 40° | 849.4 | 837.4 | 785.0 | 698.1 | 609.7 | 524.3 | 462.9 | 432.9 | 422.5 | 422.5 | 422.5 |
| 42.5° | 999.2 | 987.2 | 927.3 | 800.0 | 683.1 | 582.8 | 509.3 | 474.9 | 464.4 | 467.4 | 467.4 |
| 45° | 1231.4 | 1214.9 | 1119.1 | 951.3 | 779.0 | 642.7 | 557.3 | 518.3 | 510.8 | 518.3 | 518.3 |
| 47.5° | 1444.1 | 1423.2 | 1282.4 | 1092.1 | 873.4 | 702.6 | 605.2 | 560.3 | 557.3 | 573.8 | 573.8 |
| 50° | 1682.3 | 1655.4 | 1507.1 | 1206.0 | 949.8 | 768.5 | 648.7 | 594.7 | 596.2 | 620.2 | 627.7 |
| 52.5° | 2143.8 | 2115.3 | 1859.1 | 1412.7 | 1032.2 | 792.5 | 666.6 | 602.2 | 602.2 | 629.2 | 639.7 |
| 55° | 2417.9 | 2359.5 | 2025.4 | 1547.5 | 1066.6 | 820.9 | 659.2 | 572.3 | 569.3 | 599.2 | 608.2 |
| 57.5° | 2507.8 | 2447.9 | 2059.9 | 1508.6 | 1044.2 | 785.0 | 615.7 | 491.4 | 485.4 | 524.3 | 521.3 |
| 60° | 2581.2 | 2501.8 | 2004.4 | 1378.2 | 916.8 | 708.6 | 531.8 | 365.5 | 340.1 | 374.5 | 373.0 |
| 62.5° | 2787.9 | 2702.5 | 2007.4 | 1225.4 | 767.0 | 591.7 | 400.0 | 205.2 | 152.8 | 179.8 | 167.8 |
| 65° | *2891.3* | *2807.4* | *2038.9* | *1153.5* | *690.6* | *489.9* | *286.1* | *83.9* | *6.0* | *6.0* | *3.0* |
| 67.5° | 2802.9 | 2728.0 | 1998.4 | 1135.5 | 680.1 | 486.9 | 290.6 | 82.4 | 0.0 | 0.0 | 0.0 |
| 70° | 2674.1 | 2602.2 | 1905.6 | 1072.6 | 645.7 | 468.9 | 284.6 | 82.4 | 0.0 | 0.0 | 0.0 |
| 72.5° | 2447.9 | 2374.5 | 1745.3 | 982.7 | 593.2 | 429.9 | 263.7 | 77.9 | 0.0 | 0.0 | 0.0 |
| 75° | 2149.7 | 2094.3 | 1541.5 | 865.9 | 522.8 | 379.0 | 233.7 | 68.9 | 0.0 | 0.0 | 0.0 |
| 77.5° | 1820.2 | 1754.3 | 1292.8 | 720.6 | 437.4 | 314.6 | 197.7 | 56.9 | 0.0 | 0.0 | 0.0 |
| 80° | 1460.6 | 1412.7 | 1018.7 | 564.8 | 338.6 | 245.7 | 154.3 | 43.4 | 0.0 | 0.0 | 0.0 |
| 82.5° | 1086.1 | 1045.7 | 753.5 | 404.5 | 241.2 | 170.8 | 106.4 | 28.5 | 0.0 | 0.0 | 0.0 |
| 85° | 713.1 | 702.6 | 483.9 | 245.7 | 143.8 | 94.4 | 56.9 | 13.5 | 0.0 | 0.0 | 0.0 |
| 87.5° | 257.7 | 266.7 | 176.8 | 70.4 | 39.0 | 16.5 | 7.5 | 1.5 | 0.0 | 0.0 | 0.0 |
| 90° | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 92.5° | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 95° | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 97.5° | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 100° | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 102.5° | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 105° | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 107.5° | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 110° | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report

REPORT NUMBER: P821596
CATALOG NUMBER: TT-D5-750-12VDC-RW-HSS

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 112.5° | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 115° | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 117.5° | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 120° | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 122.5° | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 125° | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 127.5° | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 130° | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 132.5° | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 135° | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 137.5° | 0.0 | 1.5 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 140° | 0.0 | 1.5 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 142.5° | 0.0 | 0.0 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 145° | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 147.5° | 0.0 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 150° | 0.0 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 152.5° | 0.0 | 0.0 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 155° | 0.0 | 0.0 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 157.5° | 0.0 | 0.0 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 160° | 0.0 | 0.0 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 162.5° | 0.0 | 0.0 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 165° | 0.0 | 0.0 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 167.5° | 0.0 | 0.0 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 170° | 0.0 | 0.0 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 172.5° | 0.0 | 0.0 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 175° | 0.0 | 0.0 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 177.5° | 0.0 | 0.0 | 1.5 | 1.5 | 1.5 | 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 |

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

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

Report Prepared for

Cooper Lighting Solutions

Streetworks

Report Number: SP1-2407-176-6

Test Date: 09/26/2024

Luminaire Tested: MEM2-HTN-VA-30-750-U-WQ

Data in this report applies to families of products including MEM2-HTN-VA-30-750-U-WQ

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

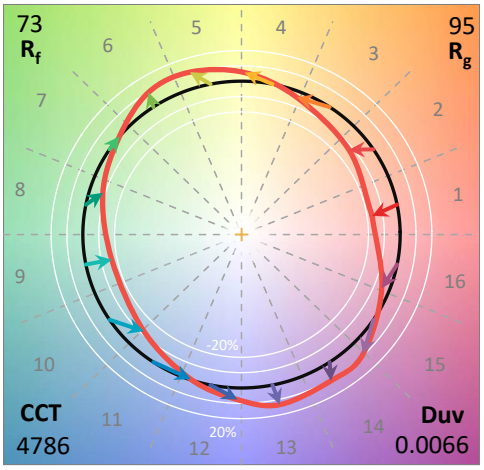
## Test Information

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | SP1-2407-176-6 |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Photometer: | SP1 - 76IN SPHERE |
| Measurement Geometry: | 4π |
| Issue Date: | 09/27/2024 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | Streetworks |
| Catalog Number: | **MEM2-HTN-VA-30-750-U-WQ** |
| Description: | EPIC MODERN VISUAL COMFORT 30W WAVESTREAM WIDE |

## Spectral Parameters

| | |
|---|---|
| CCT (K): | 4786 |
| CIE u': | 0.2093 |
| CIE v': | 0.4953 |
| Duv: | 0.0066 |
| CIE x: | 0.3533 |
| CIE y: | 0.3716 |
| CIE z: | 0.2751 |
| Peak Wavelength (nm): | 449 |
| Dominant Wavelength (nm): | 570 |
| Purity: | 17.53512 |
| Rf: | 73 |
| Rg: | 94.6 |

| | | | | | |
|---|---|---|---|---|---|
| CRI (Ra): | 70.9 | | | | |
| R1: | 67.8 | R9: | -29.8 | | |
| R2: | 75.1 | R10: | 40.9 | | |
| R3: | 80.6 | R11: | 67.4 | | |
| R4: | 71.6 | R12: | 35.3 | | |
| R5: | 67.8 | R13: | 68.5 | | |
| R6: | 65.4 | R14: | 89.0 | | |
| R7: | 82.0 | R15: | 60.9 | | |
| R8: | 57.0 | | | | |




## Test Conditions

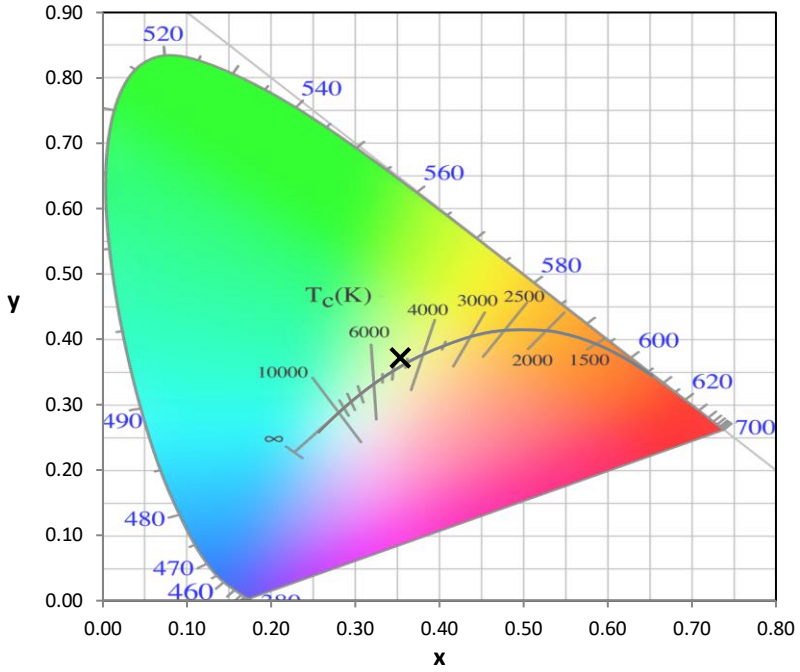
| | |
|---|---|
| Stabilization Time: | 45M |
| Operation Time: | 1H 45M |
| Sphere Temperature (°C): | 25.2 |

REPORT NUMBER: SP1-2407-176-6

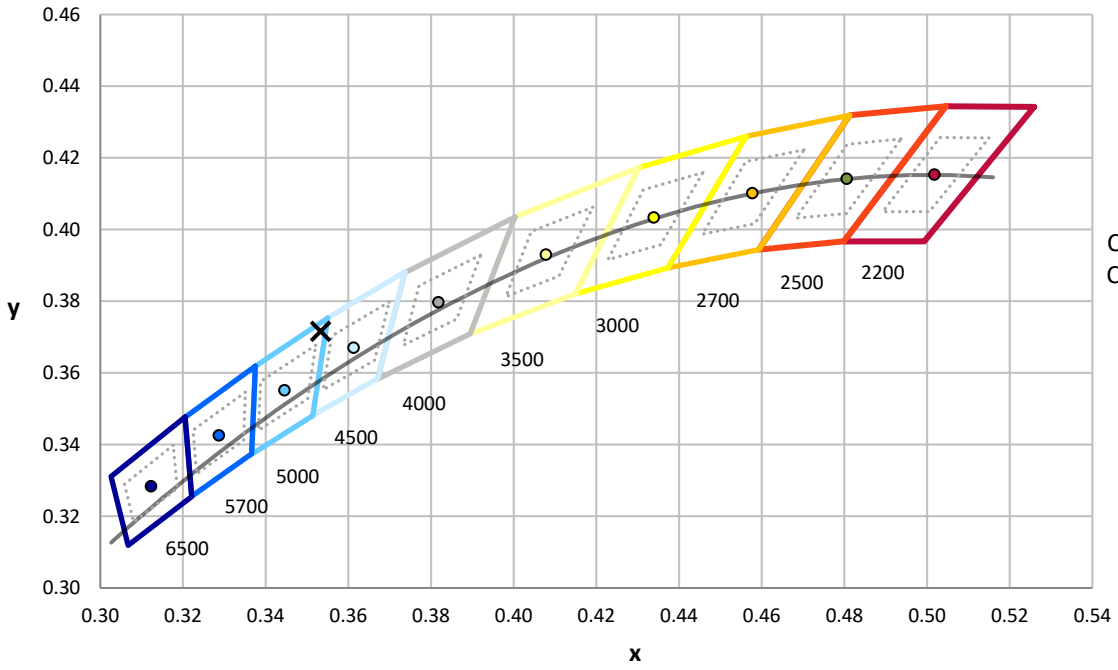
| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 | 2/8/2024 | 2/8/2025 |
| AC Power Source | IN0063 | 10/24/2023 | 10/24/2024 |
| DC 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: SP1-2407-176-6

## CIE 1931 Chromaticity Diagram




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

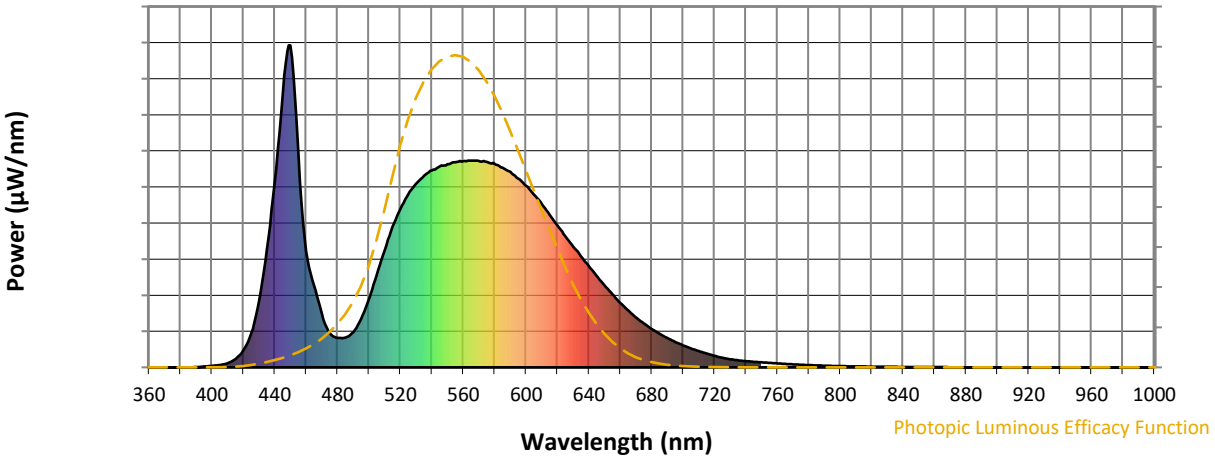



CCT = 4786K
CIE x = 0.3533
CIE y = 0.3716
Duv = 0.0066

Point lies inside the ANSI 5000K 7-step quadrangle

REPORT NUMBER: SP1-2407-176-6

## Photopic Flux vs. Wavelength

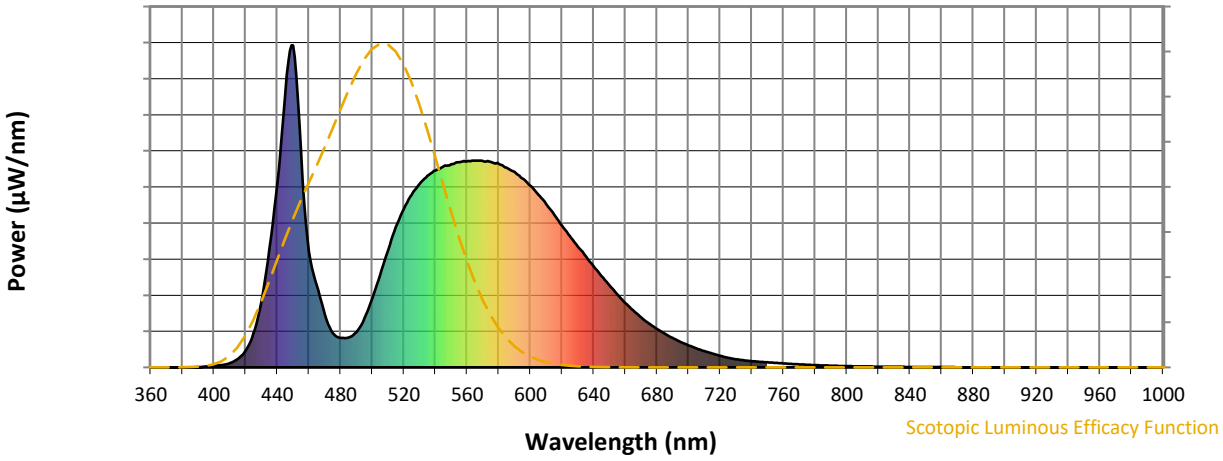



## Photopic Lumens: NR

| λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 360 | 0 | NR | 490 | 110 | NR | 620 | 440 | NR | 750 | 16 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 150 | NR | 625 | 407 | NR | 755 | 14 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 213 | NR | 630 | 375 | NR | 760 | 12 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 288 | NR | 635 | 345 | NR | 765 | 11 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 364 | NR | 640 | 314 | NR | 770 | 9 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 436 | NR | 645 | 283 | NR | 775 | 8 | NR | 905 | 0 | NR |
| 390 | 1 | NR | 520 | 492 | NR | 650 | 254 | NR | 780 | 7 | NR | 910 | 0 | NR |
| 395 | 3 | NR | 525 | 537 | NR | 655 | 227 | NR | 785 | 6 | NR | 915 | 0 | NR |
| 400 | 5 | NR | 530 | 570 | NR | 660 | 200 | NR | 790 | 5 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 595 | NR | 665 | 177 | NR | 795 | 4 | NR | 925 | 0 | NR |
| 410 | 13 | NR | 540 | 611 | NR | 670 | 155 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 25 | NR | 545 | 624 | NR | 675 | 136 | NR | 805 | 3 | NR | 935 | 0 | NR |
| 420 | 52 | NR | 550 | 631 | NR | 680 | 119 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 106 | NR | 555 | 637 | NR | 685 | 104 | NR | 815 | 3 | NR | 945 | 0 | NR |
| 430 | 204 | NR | 560 | 640 | NR | 690 | 91 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 369 | NR | 565 | 642 | NR | 695 | 79 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 573 | NR | 570 | 641 | NR | 700 | 68 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 844 | NR | 575 | 638 | NR | 705 | 59 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 999 | NR | 580 | 632 | NR | 710 | 50 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 668 | NR | 585 | 620 | NR | 715 | 43 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 361 | NR | 590 | 607 | NR | 720 | 36 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 255 | NR | 595 | 586 | NR | 725 | 30 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 165 | NR | 600 | 564 | NR | 730 | 25 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 106 | NR | 605 | 537 | NR | 735 | 22 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 91 | NR | 610 | 507 | NR | 740 | 19 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 93 | NR | 615 | 474 | NR | 745 | 17 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2407-176-6

## Scotopic Flux vs. Wavelength

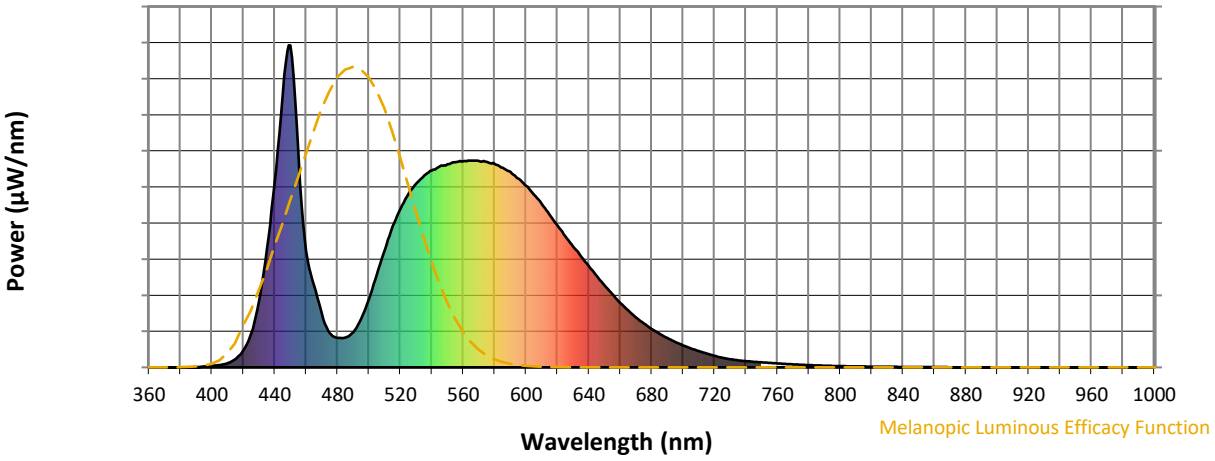



**Scotopic Lumens: NR** **S/P: 1.69**

| λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 360 | 0 | NR | 490 | 110 | NR | 620 | 440 | NR | 750 | 16 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 150 | NR | 625 | 407 | NR | 755 | 14 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 213 | NR | 630 | 375 | NR | 760 | 12 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 288 | NR | 635 | 345 | NR | 765 | 11 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 364 | NR | 640 | 314 | NR | 770 | 9 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 436 | NR | 645 | 283 | NR | 775 | 8 | NR | 905 | 0 | NR |
| 390 | 1 | NR | 520 | 492 | NR | 650 | 254 | NR | 780 | 7 | NR | 910 | 0 | NR |
| 395 | 3 | NR | 525 | 537 | NR | 655 | 227 | NR | 785 | 6 | NR | 915 | 0 | NR |
| 400 | 5 | NR | 530 | 570 | NR | 660 | 200 | NR | 790 | 5 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 595 | NR | 665 | 177 | NR | 795 | 4 | NR | 925 | 0 | NR |
| 410 | 13 | NR | 540 | 611 | NR | 670 | 155 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 25 | NR | 545 | 624 | NR | 675 | 136 | NR | 805 | 3 | NR | 935 | 0 | NR |
| 420 | 52 | NR | 550 | 631 | NR | 680 | 119 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 106 | NR | 555 | 637 | NR | 685 | 104 | NR | 815 | 3 | NR | 945 | 0 | NR |
| 430 | 204 | NR | 560 | 640 | NR | 690 | 91 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 369 | NR | 565 | 642 | NR | 695 | 79 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 573 | NR | 570 | 641 | NR | 700 | 68 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 844 | NR | 575 | 638 | NR | 705 | 59 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 999 | NR | 580 | 632 | NR | 710 | 50 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 668 | NR | 585 | 620 | NR | 715 | 43 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 361 | NR | 590 | 607 | NR | 720 | 36 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 255 | NR | 595 | 586 | NR | 725 | 30 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 165 | NR | 600 | 564 | NR | 730 | 25 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 106 | NR | 605 | 537 | NR | 735 | 22 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 91 | NR | 610 | 507 | NR | 740 | 19 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 93 | NR | 615 | 474 | NR | 745 | 17 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2407-176-6

## Melanopic Flux vs. Wavelength




**Melanopic Lumens: NR** **M/P: 3.36**

| λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 360 | 0 | NR | 490 | 110 | NR | 620 | 440 | NR | 750 | 16 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 150 | NR | 625 | 407 | NR | 755 | 14 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 213 | NR | 630 | 375 | NR | 760 | 12 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 288 | NR | 635 | 345 | NR | 765 | 11 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 364 | NR | 640 | 314 | NR | 770 | 9 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 436 | NR | 645 | 283 | NR | 775 | 8 | NR | 905 | 0 | NR |
| 390 | 1 | NR | 520 | 492 | NR | 650 | 254 | NR | 780 | 7 | NR | 910 | 0 | NR |
| 395 | 3 | NR | 525 | 537 | NR | 655 | 227 | NR | 785 | 6 | NR | 915 | 0 | NR |
| 400 | 5 | NR | 530 | 570 | NR | 660 | 200 | NR | 790 | 5 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 595 | NR | 665 | 177 | NR | 795 | 4 | NR | 925 | 0 | NR |
| 410 | 13 | NR | 540 | 611 | NR | 670 | 155 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 25 | NR | 545 | 624 | NR | 675 | 136 | NR | 805 | 3 | NR | 935 | 0 | NR |
| 420 | 52 | NR | 550 | 631 | NR | 680 | 119 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 106 | NR | 555 | 637 | NR | 685 | 104 | NR | 815 | 3 | NR | 945 | 0 | NR |
| 430 | 204 | NR | 560 | 640 | NR | 690 | 91 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 369 | NR | 565 | 642 | NR | 695 | 79 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 573 | NR | 570 | 641 | NR | 700 | 68 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 844 | NR | 575 | 638 | NR | 705 | 59 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 999 | NR | 580 | 632 | NR | 710 | 50 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 668 | NR | 585 | 620 | NR | 715 | 43 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 361 | NR | 590 | 607 | NR | 720 | 36 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 255 | NR | 595 | 586 | NR | 725 | 30 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 165 | NR | 600 | 564 | NR | 730 | 25 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 106 | NR | 605 | 537 | NR | 735 | 22 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 91 | NR | 610 | 507 | NR | 740 | 19 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 93 | NR | 615 | 474 | NR | 745 | 17 | NR | 875 | 0 | NR | | | |

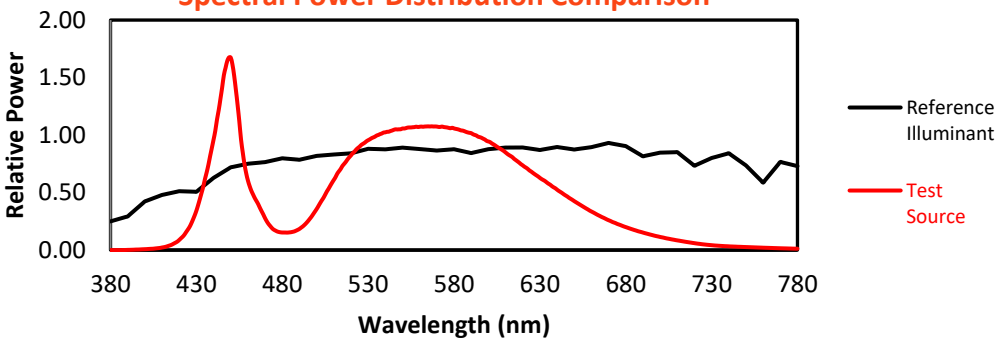
REPORT NUMBER: SP1-2407-176-6

# TM-30-18

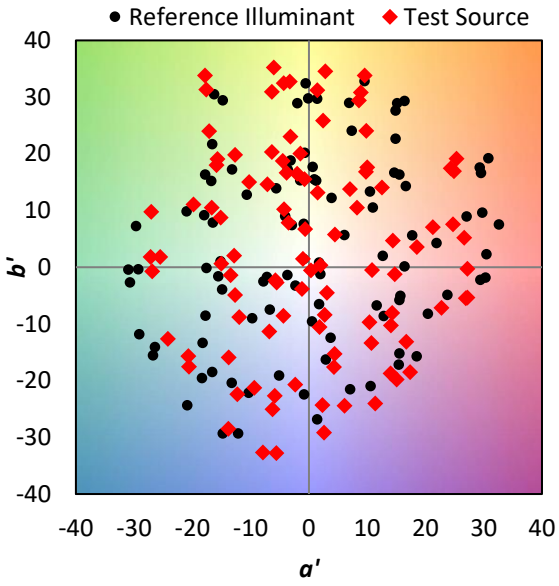
## Summary

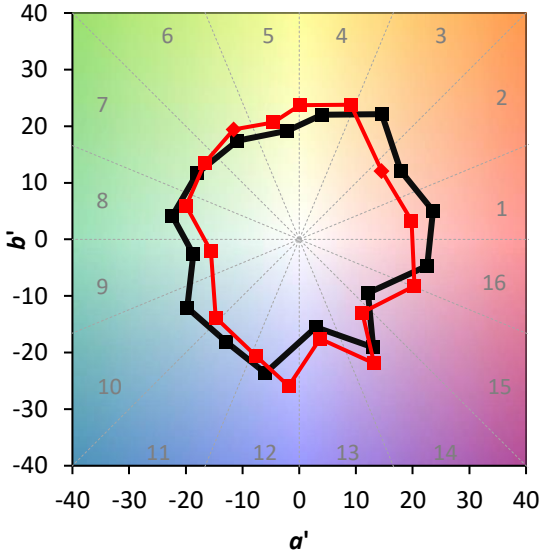
$R_f$ = 73
$R_g$ = 94.6
CIE $R_a$ = 70.9
$R_9$ = -29.8

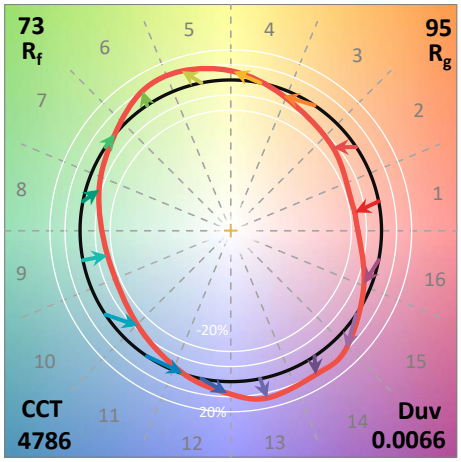
## Spectral Power Distribution Comparison

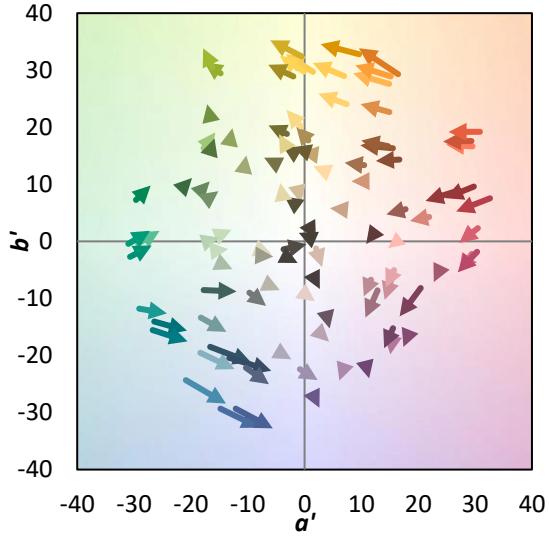



## Color Vector Graphics



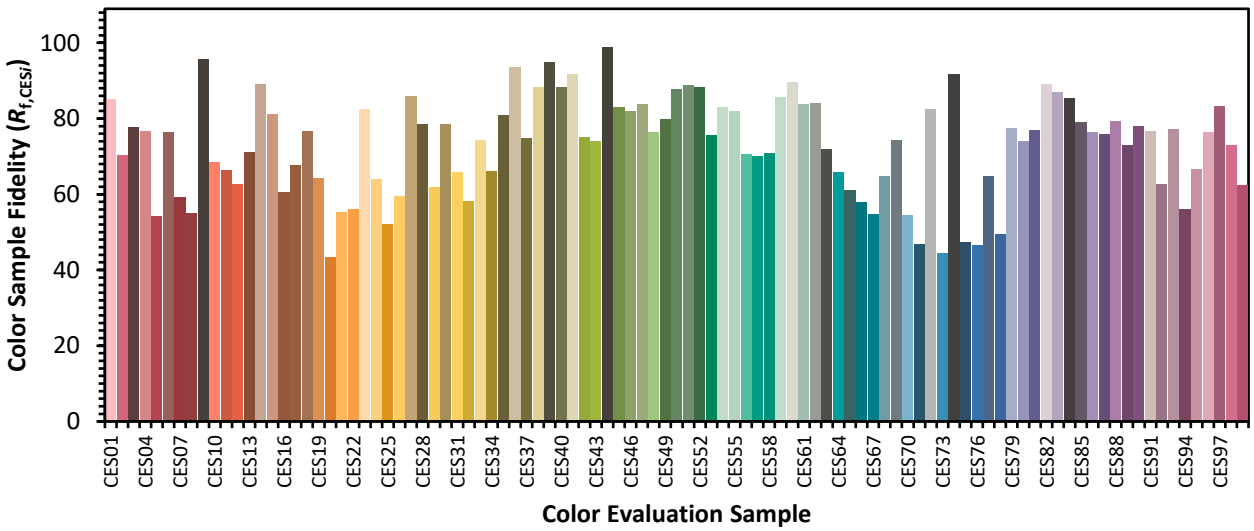



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## Individual Sample Fidelity Index ($R_{f,i}$)

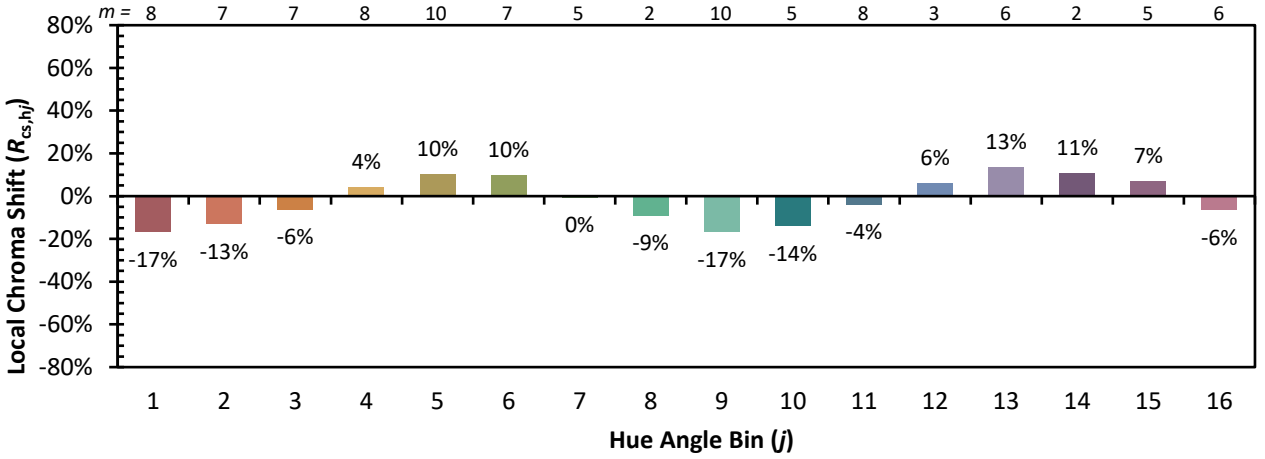
| | | | |
|---|---|---|---|
| CES01 = 85 | CES26 = 60 | CES51 = 89 | CES76 = 46 |
| CES02 = 59 | CES27 = 86 | CES52 = 88 | CES77 = 65 |
| CES03 = 30 | CES28 = 78 | CES53 = 76 | CES78 = 49 |
| CES04 = 69 | CES29 = 62 | CES54 = 83 | CES79 = 78 |
| CES05 = 46 | CES30 = 79 | CES55 = 82 | CES80 = 74 |
| CES06 = 50 | CES31 = 66 | CES56 = 71 | CES81 = 77 |
| CES07 = 39 | CES32 = 58 | CES57 = 70 | CES82 = 89 |
| CES08 = 38 | CES33 = 74 | CES58 = 71 | CES83 = 87 |
| CES09 = 29 | CES34 = 66 | CES59 = 86 | CES84 = 86 |
| CES10 = 72 | CES35 = 81 | CES60 = 90 | CES85 = 79 |
| CES11 = 56 | CES36 = 94 | CES61 = 84 | CES86 = 76 |
| CES12 = 61 | CES37 = 75 | CES62 = 84 | CES87 = 76 |
| CES13 = 41 | CES38 = 88 | CES63 = 72 | CES88 = 79 |
| CES14 = 74 | CES39 = 95 | CES64 = 66 | CES89 = 73 |
| CES15 = 70 | CES40 = 88 | CES65 = 61 | CES90 = 78 |
| CES16 = 46 | CES41 = 92 | CES66 = 58 | CES91 = 77 |
| CES17 = 49 | CES42 = 75 | CES67 = 55 | CES92 = 63 |
| CES18 = 55 | CES43 = 74 | CES68 = 65 | CES93 = 77 |
| CES19 = 71 | CES44 = 99 | CES69 = 74 | CES94 = 56 |
| CES20 = 64 | CES45 = 83 | CES70 = 55 | CES95 = 67 |
| CES21 = 85 | CES46 = 82 | CES71 = 47 | CES96 = 76 |
| CES22 = 77 | CES47 = 84 | CES72 = 82 | CES97 = 83 |
| CES23 = 91 | CES48 = 76 | CES73 = 44 | CES98 = 73 |
| CES24 = 90 | CES49 = 80 | CES74 = 92 | CES99 = 62 |
| CES25 = 71 | CES50 = 88 | CES75 = 47 | |

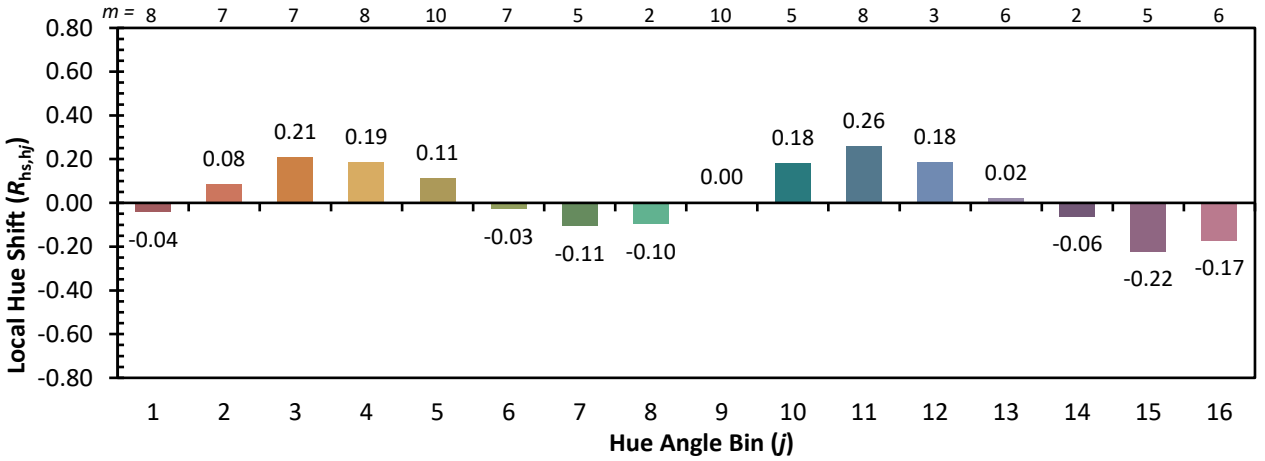


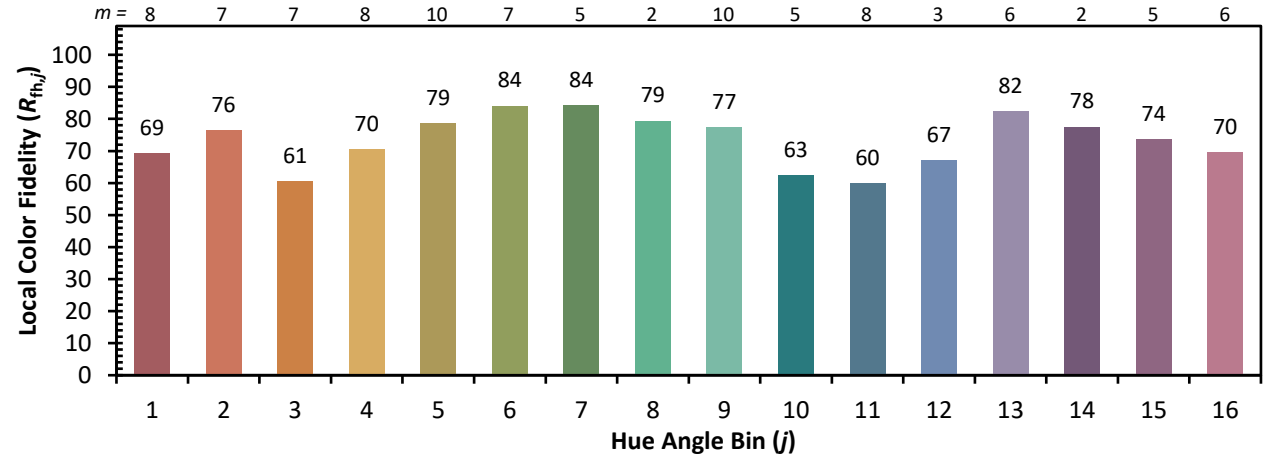
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## Color Rendition by Hue-Angle Bin



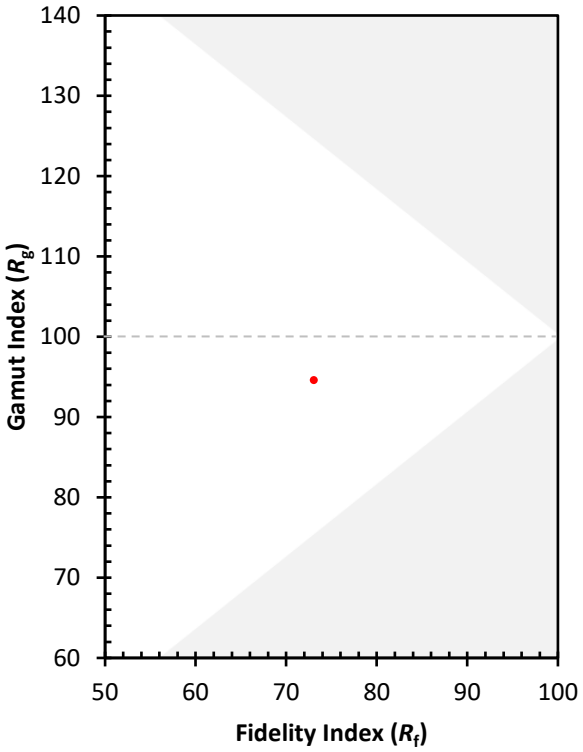



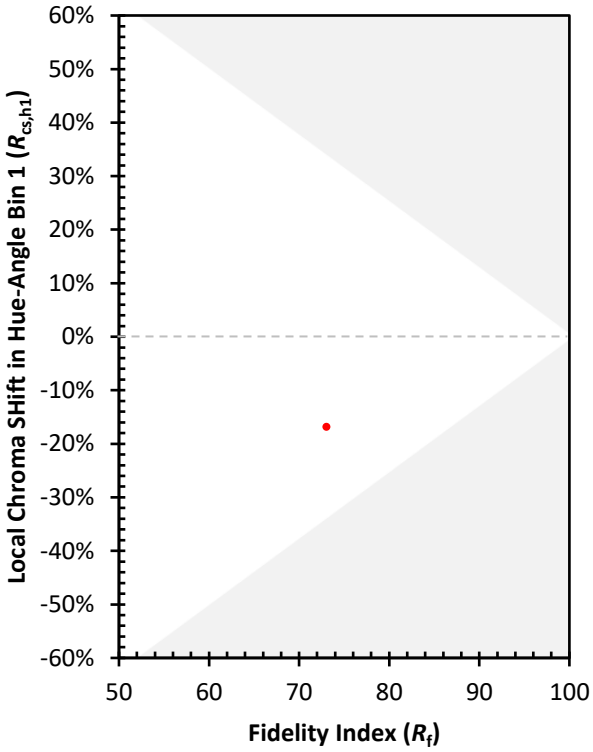



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## Measure Comparisons




(END OF REPORT)