

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: P436768

Luminaire Tested: **TT-D2-740-U-CQ-HSS**

Issue Date: 12/2/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P436768  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2010-017-3)  
Test Lab: INNOVATION CENTER  
Issue Date: 12/2/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: MCGRAW-EDISON  
Catalog Number: TT-D2-740-U-CQ-HSS  
Description: TOPTIER LED PARKING GARAGE LUMINAIRE  
4000K, 70 CRI LEDS AND CONCENTRATED DISTRIBUTION WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 4409.9 lumens  
Efficiency: N/A  
Efficacy: 112.5 lumens/watt  
Luminous Opening: Circular (Dia: 1.12' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B2 - U1 - G1

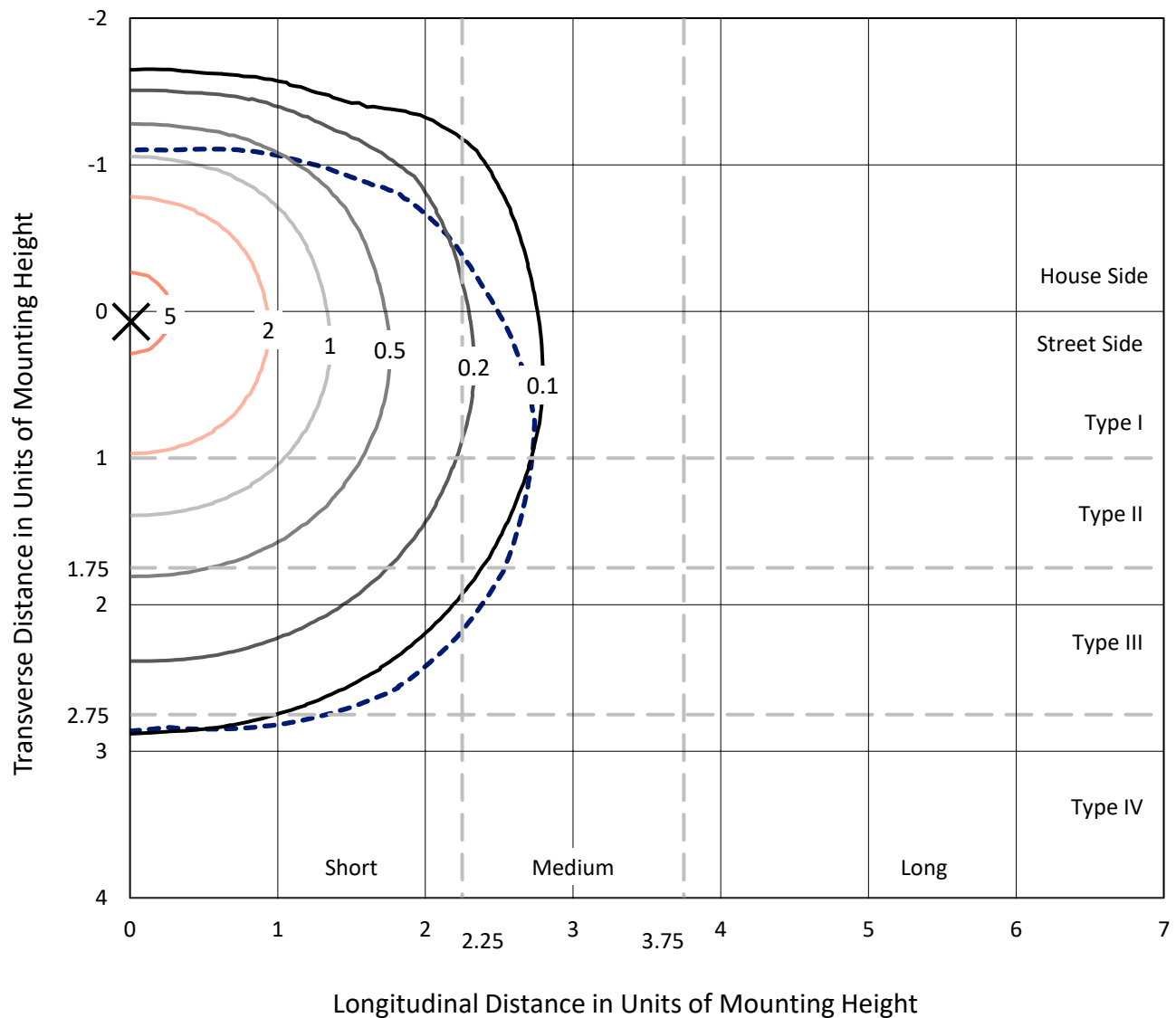
Input Watts (W): 39.2  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT

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## Iso-Footcandle Lines of Horizontal Illumination

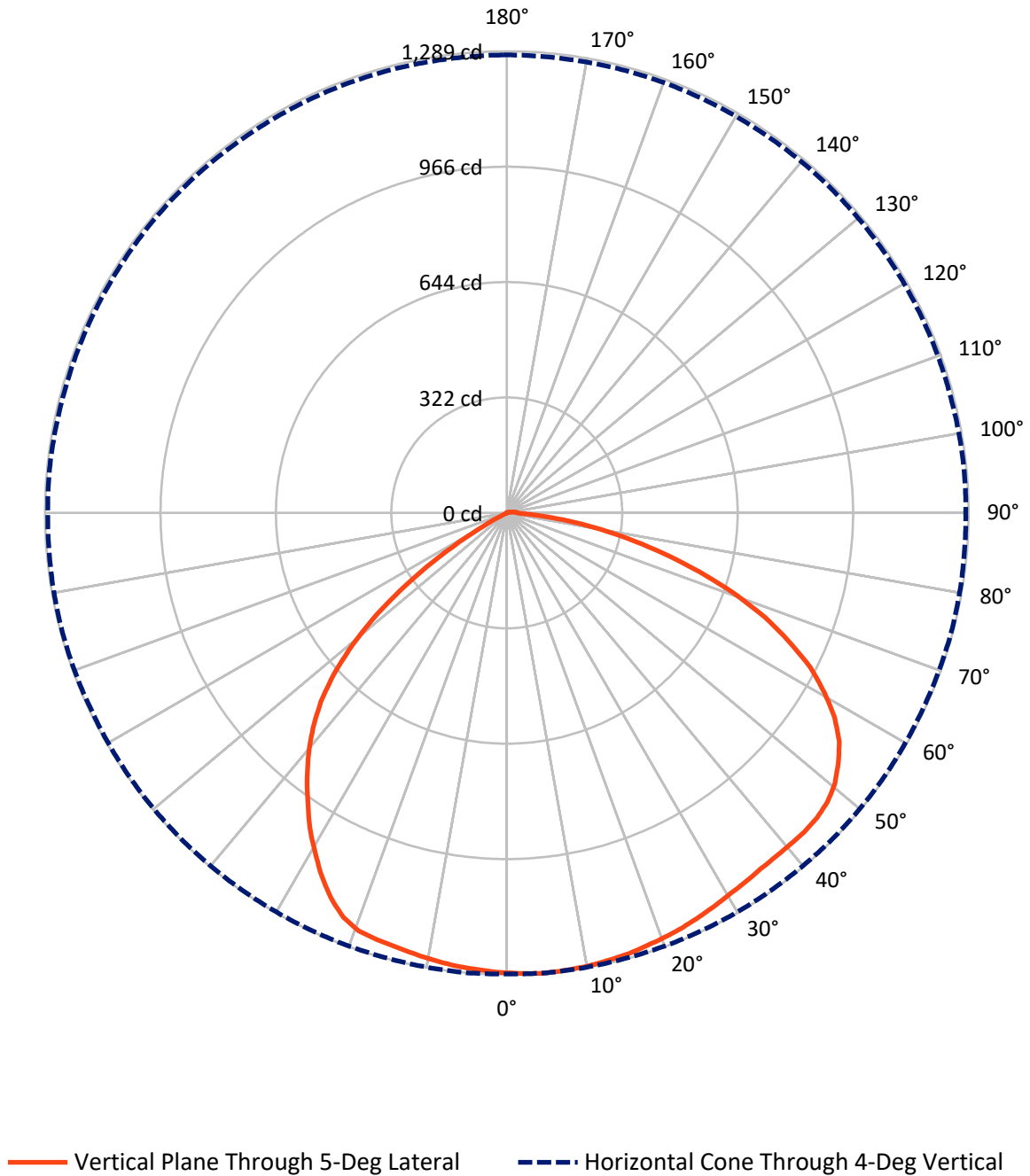
× Max cd  
 - - - 1/2 Max cd



Based on 15 foot mounting height. Maximum calculated value = 5.7 fc  
 Type IV - Short - N/A

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## Luminous Intensity Polar Plot



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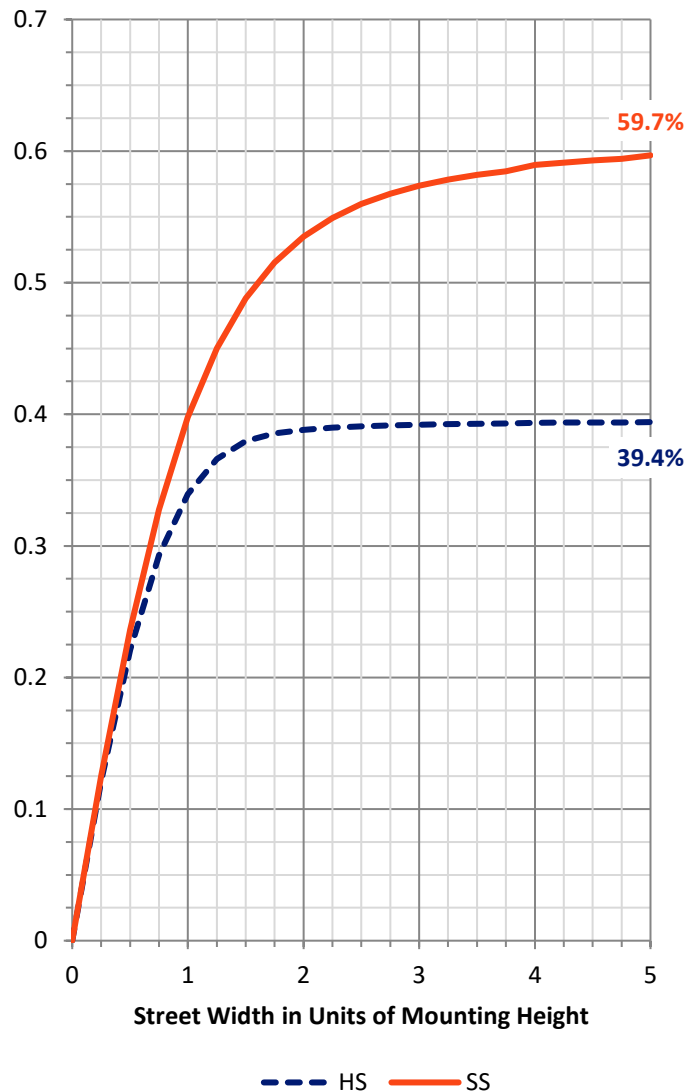
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 1747.6   | 2.2    | 1749.8 |
|                    | % Fixture | 39.6     | 0.0    | 39.7   |
| <b>Street Side</b> | Lumens    | 2647.8   | 12.3   | 2660.1 |
|                    | % Fixture | 60.0     | 0.3    | 60.3   |
| <b>Total</b>       | Lumens    | 4395.4   | 14.4   | 4409.9 |
|                    | % Fixture | 99.7     | 0.3    | 100.0  |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 122.1  | 2.8       |
| 10°-20°   | 357.5  | 8.1       |
| 20°-30°   | 563.3  | 12.8      |
| 30°-40°   | 716.9  | 16.3      |
| 40°-50°   | 828.0  | 18.8      |
| 50°-60°   | 810.7  | 18.4      |
| 60°-70°   | 603.8  | 13.7      |
| 70°-80°   | 327.0  | 7.4       |
| 80°-90°   | 66.3   | 1.5       |
| 90°-100°  | 8.4    | 0.2       |
| 100°-110° | 3.3    | 0.1       |
| 110°-120° | 0.9    | 0.0       |
| 120°-130° | 0.6    | 0.0       |
| 130°-140° | 0.5    | 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°    | 4395.4 | 99.7      |
| 0°-180°   | 4409.9 | 100.0     |



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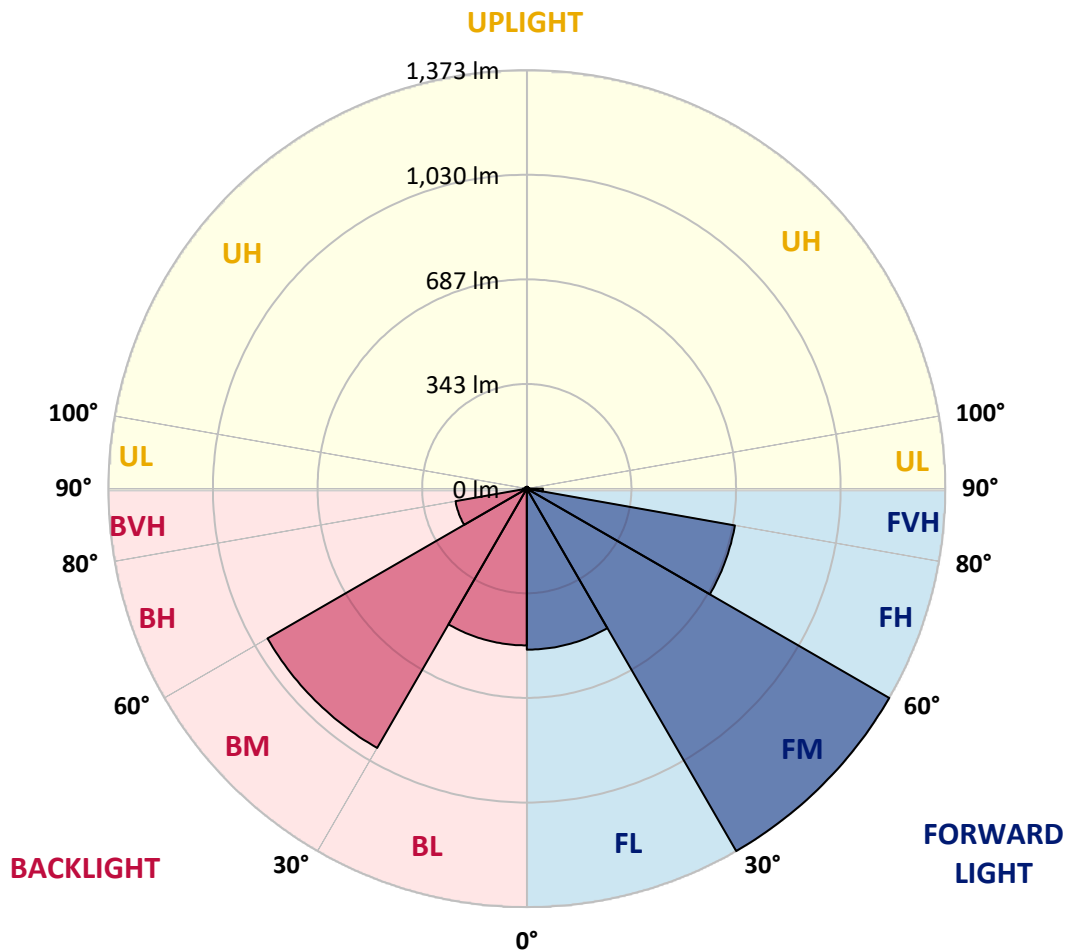
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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |       |         |
|------|-------------|--------|-----------|-------------------------|-------|---------|
|      |             |        |           | B                       | U     | G       |
| FL   | (0°-30°)    | 528.4  | 12.0      |                         |       |         |
| FM   | (30°-60°)   | 1373.1 | 31.1      |                         |       |         |
| FH   | (60°-80°)   | 693.4  | 15.7      |                         |       | G1/1800 |
| FVH  | (80°-90°)   | 52.9   | 1.2       |                         |       | G1/100  |
| BL   | (0°-30°)    | 514.4  | 11.7      | B2/1000                 |       |         |
| BM   | (30°-60°)   | 982.4  | 22.3      | B1/1000                 |       |         |
| BH   | (60°-80°)   | 237.5  | 5.4       | B1/500                  |       | G1/500  |
| BVH  | (80°-90°)   | 13.4   | 0.3       |                         |       | G1/100  |
| UL   | (90°-100°)  | 8.4    | 0.2       |                         | U1/10 |         |
| UH   | (100°-180°) | 6.0    | 0.1       |                         | U1/10 |         |

**BUG Rating: B2-U1-G1**

Type IV Short



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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°    | 75°    | 85°    | 90°    |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°     | 1284.4 | 1284.4 | 1284.4 | 1284.4 | 1284.4 | 1284.4 | 1284.4 | 1284.4 | 1284.4 | 1284.4 | 1284.4 |
| 2.5°   | 1286.1 | 1287.8 | 1286.9 | 1286.9 | 1285.3 | 1286.1 | 1285.3 | 1285.3 | 1284.4 | 1283.6 | 1283.6 |
| 4°     | 1286.9 | 1288.6 | 1286.9 | 1286.9 | 1286.1 | 1286.1 | 1285.3 | 1283.6 | 1284.4 | 1282.0 | 1281.1 |
| 5°     | 1287.8 | 1288.6 | 1287.8 | 1287.8 | 1286.1 | 1285.3 | 1283.6 | 1283.6 | 1282.8 | 1281.1 | 1281.1 |
| 7.5°   | 1286.1 | 1286.9 | 1286.9 | 1286.1 | 1284.4 | 1282.8 | 1282.0 | 1281.1 | 1280.3 | 1277.8 | 1277.8 |
| 10°    | 1282.8 | 1284.4 | 1282.8 | 1282.8 | 1282.0 | 1280.3 | 1277.8 | 1277.0 | 1274.5 | 1272.8 | 1272.0 |
| 12.5°  | 1279.5 | 1280.3 | 1279.5 | 1279.5 | 1277.8 | 1275.3 | 1274.5 | 1272.8 | 1269.5 | 1267.0 | 1267.0 |
| 15°    | 1274.5 | 1276.2 | 1275.3 | 1274.5 | 1273.7 | 1271.2 | 1268.7 | 1266.2 | 1263.7 | 1261.2 | 1261.2 |
| 17.5°  | 1268.7 | 1269.5 | 1270.3 | 1269.5 | 1267.9 | 1266.2 | 1263.7 | 1260.4 | 1257.9 | 1255.4 | 1254.6 |
| 20°    | 1262.1 | 1263.7 | 1263.7 | 1263.7 | 1262.1 | 1260.4 | 1257.1 | 1253.8 | 1252.1 | 1248.8 | 1248.0 |
| 22.5°  | 1255.4 | 1257.1 | 1256.3 | 1257.1 | 1256.3 | 1253.8 | 1250.4 | 1247.1 | 1243.8 | 1241.3 | 1239.7 |
| 25°    | 1248.8 | 1248.8 | 1248.8 | 1248.8 | 1248.8 | 1245.5 | 1242.2 | 1238.0 | 1234.7 | 1230.5 | 1230.5 |
| 27.5°  | 1240.5 | 1240.5 | 1241.3 | 1241.3 | 1240.5 | 1238.0 | 1233.9 | 1228.9 | 1223.9 | 1219.8 | 1218.1 |
| 30°    | 1233.0 | 1232.2 | 1233.9 | 1235.5 | 1234.7 | 1232.2 | 1227.2 | 1221.4 | 1214.0 | 1208.2 | 1203.2 |
| 32.5°  | 1223.9 | 1226.4 | 1228.1 | 1231.4 | 1232.2 | 1228.9 | 1223.1 | 1215.6 | 1208.2 | 1197.4 | 1188.3 |
| 35°    | 1220.6 | 1220.6 | 1224.7 | 1229.7 | 1231.4 | 1229.7 | 1221.4 | 1213.1 | 1202.4 | 1186.6 | 1175.8 |
| 37.5°  | 1217.3 | 1218.1 | 1224.7 | 1232.2 | 1234.7 | 1234.7 | 1225.6 | 1214.8 | 1199.9 | 1177.5 | 1164.2 |
| 40°    | 1215.6 | 1217.3 | 1225.6 | 1236.3 | 1243.0 | 1242.2 | 1231.4 | 1218.1 | 1199.9 | 1170.8 | 1154.3 |
| 42.5°  | 1214.0 | 1217.3 | 1226.4 | 1241.3 | 1251.3 | 1250.4 | 1238.8 | 1221.4 | 1198.2 | 1162.6 | 1143.5 |
| 45°    | 1211.5 | 1214.0 | 1226.4 | 1245.5 | 1258.7 | 1261.2 | 1248.0 | 1225.6 | 1198.2 | 1155.1 | 1130.2 |
| 47.5°  | 1204.0 | 1204.8 | 1221.4 | 1243.8 | 1263.7 | 1267.0 | 1253.8 | 1227.2 | 1194.9 | 1142.6 | 1113.6 |
| 50°    | 1184.1 | 1186.6 | 1205.7 | 1235.5 | 1258.7 | 1263.7 | 1252.1 | 1223.1 | 1186.6 | 1121.9 | 1087.1 |
| 52.5°  | 1158.4 | 1158.4 | 1181.6 | 1214.8 | 1243.0 | 1251.3 | 1240.5 | 1208.2 | 1165.9 | 1091.2 | 1051.4 |
| 55°    | 1120.3 | 1126.1 | 1150.1 | 1184.9 | 1215.6 | 1227.2 | 1212.3 | 1180.8 | 1131.9 | 1052.3 | 1008.3 |
| 57.5°  | 1077.1 | 1078.8 | 1103.7 | 1145.1 | 1176.6 | 1184.1 | 1171.7 | 1134.4 | 1087.1 | 1005.8 | 953.6  |
| 60°    | 1015.0 | 1018.3 | 1049.8 | 1086.3 | 1120.3 | 1130.2 | 1114.5 | 1077.1 | 1027.4 | 946.1  | 893.1  |
| 62.5°  | 946.1  | 951.1  | 979.3  | 1016.6 | 1048.9 | 1064.7 | 1045.6 | 1006.7 | 957.7  | 874.8  | 828.4  |
| 65°    | 863.2  | 864.9  | 895.5  | 937.8  | 970.2  | 976.0  | 959.4  | 921.3  | 872.3  | 792.7  | 751.3  |
| 67.5°  | 767.8  | 776.1  | 806.0  | 837.5  | 865.7  | 872.3  | 860.7  | 816.8  | 777.8  | 707.3  | 666.7  |
| 70°    | 675.8  | 671.7  | 696.5  | 728.0  | 753.8  | 759.6  | 746.3  | 705.7  | 669.2  | 602.8  | 571.3  |
| 72.5°  | 564.7  | 561.4  | 587.9  | 612.0  | 636.8  | 633.5  | 620.2  | 587.9  | 556.4  | 500.0  | 471.0  |
| 75°    | 452.7  | 449.4  | 470.2  | 490.9  | 503.3  | 505.0  | 495.9  | 471.8  | 437.8  | 393.9  | 371.5  |
| 77.5°  | 343.3  | 346.6  | 355.7  | 373.1  | 384.8  | 389.7  | 374.0  | 349.9  | 328.4  | 294.4  | 277.8  |
| 80°    | 244.6  | 245.4  | 248.8  | 261.2  | 269.5  | 269.5  | 262.0  | 243.0  | 218.9  | 194.9  | 186.6  |
| 82.5°  | 154.2  | 157.5  | 157.5  | 170.0  | 170.0  | 163.4  | 160.0  | 147.6  | 135.2  | 116.1  | 104.5  |
| 85°    | 84.6   | 82.9   | 87.9   | 88.7   | 87.9   | 82.9   | 77.9   | 70.5   | 62.2   | 48.9   | 43.9   |
| 87.5°  | 37.3   | 36.5   | 36.5   | 36.5   | 35.7   | 32.3   | 27.4   | 21.6   | 14.9   | 9.1    | 6.6    |
| 90°    | 29.0   | 29.0   | 28.2   | 26.5   | 24.0   | 21.6   | 17.4   | 13.3   | 8.3    | 3.3    | 1.7    |
| 92.5°  | 26.5   | 26.5   | 25.7   | 24.9   | 22.4   | 19.9   | 15.8   | 11.6   | 7.5    | 3.3    | 1.7    |
| 95°    | 23.2   | 22.4   | 22.4   | 20.7   | 19.1   | 16.6   | 14.1   | 10.0   | 6.6    | 2.5    | 1.7    |
| 97.5°  | 19.1   | 18.2   | 18.2   | 17.4   | 15.8   | 13.3   | 11.6   | 8.3    | 5.8    | 2.5    | 1.7    |
| 100°   | 14.1   | 14.9   | 14.1   | 13.3   | 12.4   | 10.8   | 9.1    | 6.6    | 4.1    | 1.7    | 1.7    |
| 102.5° | 10.8   | 10.8   | 10.0   | 10.0   | 9.1    | 8.3    | 6.6    | 5.0    | 3.3    | 1.7    | 0.8    |
| 105°   | 7.5    | 7.5    | 7.5    | 6.6    | 6.6    | 5.8    | 5.0    | 3.3    | 2.5    | 1.7    | 0.8    |
| 107.5° | 4.1    | 4.1    | 4.1    | 4.1    | 4.1    | 4.1    | 3.3    | 2.5    | 1.7    | 0.8    | 0.8    |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°  | 5°  | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 85° | 90° |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 110°   | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 1.7 | 1.7 | 0.8 | 0.8 | 0.8 |
| 112.5° | 0.8 | 0.8 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 0.8 | 0.8 | 0.8 | 0.8 |
| 115°   | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| 117.5° | 0.0 | 0.0 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| 120°   | 0.0 | 0.0 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| 122.5° | 0.0 | 0.0 | 0.0 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| 125°   | 0.0 | 0.0 | 0.0 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| 127.5° | 0.0 | 0.0 | 0.0 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| 130°   | 0.0 | 0.0 | 0.0 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| 132.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| 135°   | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| 137.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| 140°   | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| 142.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| 145°   | 0.8 | 0.8 | 0.0 | 0.0 | 0.0 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| 147.5° | 0.8 | 0.8 | 0.0 | 0.0 | 0.0 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| 150°   | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| 152.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| 155°   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| 157.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| 160°   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| 162.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| 165°   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| 167.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| 170°   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| 172.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| 175°   | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| 177.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| 180°   | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |



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**CANDELA DISTRIBUTION (continued):**

|        | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°     | 1284.4 | 1284.4 | 1284.4 | 1284.4 | 1284.4 | 1284.4 | 1284.4 | 1284.4 | 1284.4 | 1284.4 |
| 2.5°   | 1282.8 | 1280.3 | 1282.0 | 1281.1 | 1282.0 | 1280.3 | 1280.3 | 1280.3 | 1281.1 | 1279.5 |
| 4°     | 1282.0 | 1280.3 | 1280.3 | 1280.3 | 1280.3 | 1278.6 | 1278.6 | 1278.6 | 1277.8 | 1278.6 |
| 5°     | 1280.3 | 1279.5 | 1278.6 | 1277.8 | 1278.6 | 1277.0 | 1276.2 | 1276.2 | 1276.2 | 1277.0 |
| 7.5°   | 1277.0 | 1274.5 | 1274.5 | 1272.0 | 1272.8 | 1272.0 | 1271.2 | 1272.0 | 1271.2 | 1271.2 |
| 10°    | 1271.2 | 1269.5 | 1268.7 | 1267.0 | 1267.0 | 1265.4 | 1264.5 | 1264.5 | 1264.5 | 1263.7 |
| 12.5°  | 1265.4 | 1263.7 | 1262.9 | 1261.2 | 1260.4 | 1258.7 | 1257.9 | 1258.7 | 1257.1 | 1257.1 |
| 15°    | 1258.7 | 1257.1 | 1256.3 | 1256.3 | 1254.6 | 1252.9 | 1252.1 | 1250.4 | 1250.4 | 1250.4 |
| 17.5°  | 1252.9 | 1251.3 | 1252.1 | 1250.4 | 1249.6 | 1248.0 | 1248.0 | 1244.6 | 1244.6 | 1243.8 |
| 20°    | 1247.1 | 1245.5 | 1245.5 | 1244.6 | 1244.6 | 1243.0 | 1240.5 | 1238.8 | 1238.0 | 1238.0 |
| 22.5°  | 1239.7 | 1237.2 | 1233.0 | 1227.2 | 1223.9 | 1221.4 | 1220.6 | 1218.1 | 1217.3 | 1215.6 |
| 25°    | 1228.1 | 1221.4 | 1212.3 | 1202.4 | 1192.4 | 1187.4 | 1185.8 | 1182.5 | 1182.5 | 1182.5 |
| 27.5°  | 1214.0 | 1201.5 | 1189.1 | 1174.2 | 1159.2 | 1149.3 | 1142.6 | 1139.3 | 1137.7 | 1137.7 |
| 30°    | 1195.7 | 1180.0 | 1162.6 | 1143.5 | 1126.9 | 1108.7 | 1097.0 | 1090.4 | 1087.1 | 1087.9 |
| 32.5°  | 1179.1 | 1159.2 | 1139.3 | 1115.3 | 1092.9 | 1071.3 | 1051.4 | 1041.5 | 1037.3 | 1035.7 |
| 35°    | 1162.6 | 1140.2 | 1116.1 | 1090.4 | 1061.4 | 1029.9 | 1003.3 | 988.4  | 980.1  | 981.0  |
| 37.5°  | 1150.1 | 1123.6 | 1097.0 | 1065.5 | 1032.4 | 994.2  | 960.2  | 936.2  | 926.2  | 927.9  |
| 40°    | 1136.8 | 1107.0 | 1078.0 | 1041.5 | 1002.5 | 956.9  | 913.0  | 880.6  | 869.0  | 866.5  |
| 42.5°  | 1124.4 | 1089.6 | 1056.4 | 1017.4 | 968.5  | 917.1  | 863.2  | 825.1  | 807.6  | 805.2  |
| 45°    | 1108.7 | 1069.7 | 1034.0 | 989.2  | 935.3  | 871.5  | 808.5  | 758.7  | 740.5  | 733.0  |
| 47.5°  | 1087.9 | 1044.8 | 1005.0 | 953.6  | 894.7  | 822.6  | 743.8  | 682.4  | 659.2  | 653.4  |
| 50°    | 1057.2 | 1007.5 | 966.9  | 908.8  | 837.5  | 757.9  | 670.0  | 594.5  | 563.9  | 559.7  |
| 52.5°  | 1016.6 | 966.0  | 920.4  | 854.1  | 767.0  | 673.3  | 573.8  | 495.9  | 460.2  | 457.7  |
| 55°    | 967.7  | 913.0  | 863.2  | 788.6  | 686.6  | 578.0  | 474.3  | 375.6  | 340.8  | 336.7  |
| 57.5°  | 910.5  | 854.1  | 800.2  | 708.1  | 590.4  | 469.3  | 349.1  | 254.6  | 221.4  | 213.1  |
| 60°    | 847.5  | 789.4  | 728.9  | 616.9  | 461.0  | 332.5  | 211.4  | 135.2  | 110.3  | 102.0  |
| 62.5°  | 786.1  | 723.1  | 659.2  | 508.3  | 315.9  | 189.9  | 96.2   | 39.0   | 24.9   | 24.0   |
| 65°    | 713.9  | 654.2  | 588.7  | 409.6  | 199.8  | 85.4   | 28.2   | 0.8    | 0.0    | 0.0    |
| 67.5°  | 630.2  | 579.6  | 521.6  | 366.5  | 176.6  | 74.6   | 24.0   | 0.8    | 0.0    | 0.0    |
| 70°    | 540.6  | 500.8  | 449.4  | 315.1  | 151.7  | 63.0   | 20.7   | 0.0    | 0.0    | 0.0    |
| 72.5°  | 446.1  | 412.1  | 374.0  | 262.0  | 126.0  | 52.2   | 16.6   | 0.0    | 0.0    | 0.0    |
| 75°    | 349.9  | 328.4  | 294.4  | 207.3  | 97.8   | 39.8   | 12.4   | 0.0    | 0.0    | 0.0    |
| 77.5°  | 259.5  | 242.1  | 217.3  | 152.6  | 73.8   | 29.0   | 9.1    | 0.0    | 0.0    | 0.0    |
| 80°    | 175.0  | 161.7  | 147.6  | 103.7  | 49.8   | 19.1   | 5.8    | 0.0    | 0.0    | 0.0    |
| 82.5°  | 102.0  | 92.0   | 82.9   | 58.9   | 27.4   | 10.8   | 2.5    | 0.0    | 0.0    | 0.0    |
| 85°    | 41.5   | 38.1   | 36.5   | 24.9   | 10.8   | 3.3    | 0.8    | 0.0    | 0.0    | 0.0    |
| 87.5°  | 5.0    | 4.1    | 4.1    | 2.5    | 0.8    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 90°    | 0.8    | 0.8    | 0.8    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 92.5°  | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 95°    | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    | 0.0    | 0.0    | 0.0    | 0.0    |
| 97.5°  | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    | 0.0    |
| 100°   | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    |
| 102.5° | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    |
| 105°   | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    |
| 107.5° | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    |



REPORT NUMBER: P436768

CATALOG NUMBER: TT-D2-740-U-CQ-HSS

**CANDELA DISTRIBUTION (continued):**

|        | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|--------|-----|------|------|------|------|------|------|------|------|------|
| 110°   | 0.8 | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  |
| 112.5° | 0.8 | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  |
| 115°   | 0.8 | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  |
| 117.5° | 0.8 | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  |
| 120°   | 0.8 | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  |
| 122.5° | 0.8 | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  |
| 125°   | 0.8 | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  |
| 127.5° | 0.8 | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  |
| 130°   | 0.8 | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  |
| 132.5° | 0.8 | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  |
| 135°   | 0.8 | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  |
| 137.5° | 0.8 | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.0  | 0.0  |
| 140°   | 0.8 | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.0  | 0.0  |
| 142.5° | 0.8 | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.0  | 0.0  | 0.0  |
| 145°   | 0.8 | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  |
| 147.5° | 0.8 | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.0  | 0.0  | 0.0  | 0.8  |
| 150°   | 0.8 | 0.8  | 0.8  | 0.8  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 152.5° | 0.8 | 0.8  | 0.8  | 0.8  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 155°   | 0.8 | 0.8  | 0.8  | 0.8  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 157.5° | 0.8 | 0.8  | 0.8  | 0.8  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 160°   | 0.8 | 0.8  | 0.8  | 0.8  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 162.5° | 0.8 | 0.8  | 0.8  | 0.8  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 165°   | 0.8 | 0.8  | 0.8  | 0.8  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 167.5° | 0.8 | 0.8  | 0.8  | 0.8  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 170°   | 0.8 | 0.8  | 0.8  | 0.8  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 172.5° | 0.8 | 0.8  | 0.8  | 0.8  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 175°   | 0.8 | 0.8  | 0.8  | 0.8  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 177.5° | 0.8 | 0.8  | 0.8  | 0.8  | 0.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 180°   | 0.8 | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  | 0.8  |

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

Report Prepared for

Cooper Lighting Solutions

Streetworks

Report Number: SP1-2407-176-5

Test Date: 09/24/2024

Luminaire Tested: MEM2-HTN-VA-30-740-U-WQ

Data in this report applies to families of products including MEM2-HTN-VA-30-740-U-WQ

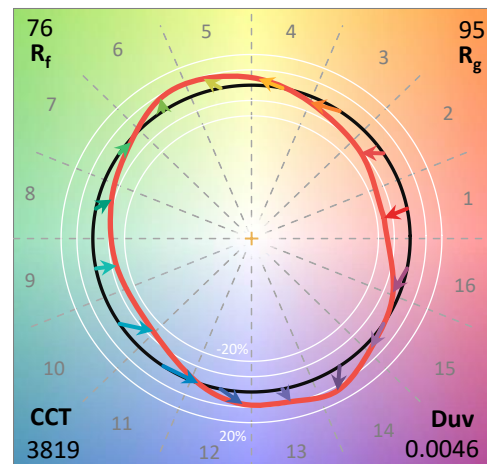
### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-176-5  
 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-30-740-U-WQ**  
 Description: EPIC MODERN VISUAL COMFORT 30W WAVESTREAM WIDE

### Spectral Parameters

CCT (K): 3819  
 CIE  $u'$ : 0.2261  
 CIE  $v'$ : 0.5108  
 Duv: 0.0046  
 CIE x: 0.3926  
 CIE y: 0.3942  
 CIE z: 0.2132  
 Peak Wavelength (nm): 450  
 Dominant Wavelength (nm): 577  
 Purity: 36.15483  
 R<sub>f</sub>: 75.6  
 R<sub>g</sub>: 94.8

CRI (Ra): 72.9  
 R1: 70.1  
 R2: 78.4  
 R3: 85.0  
 R4: 72.9  
 R5: 69.1  
 R6: 69.2  
 R7: 82.8  
 R8: 55.4  
 R9: -21.5  
 R10: 48.5  
 R11: 68.4  
 R12: 39.0  
 R13: 71.1  
 R14: 91.3  
 R15: 63.2



### Test Conditions

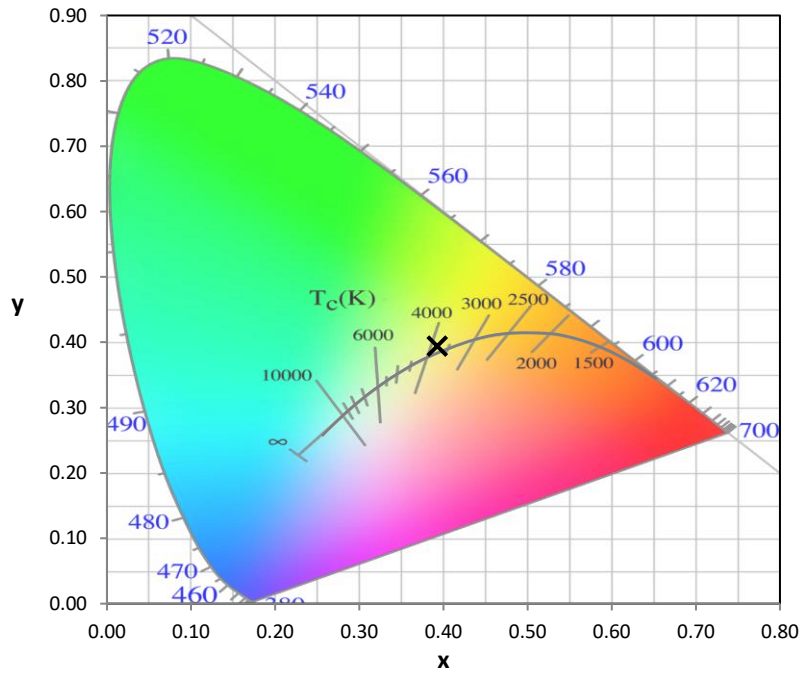
Stabilization Time: 30M  
 Operation Time: 1H 30M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-176-5

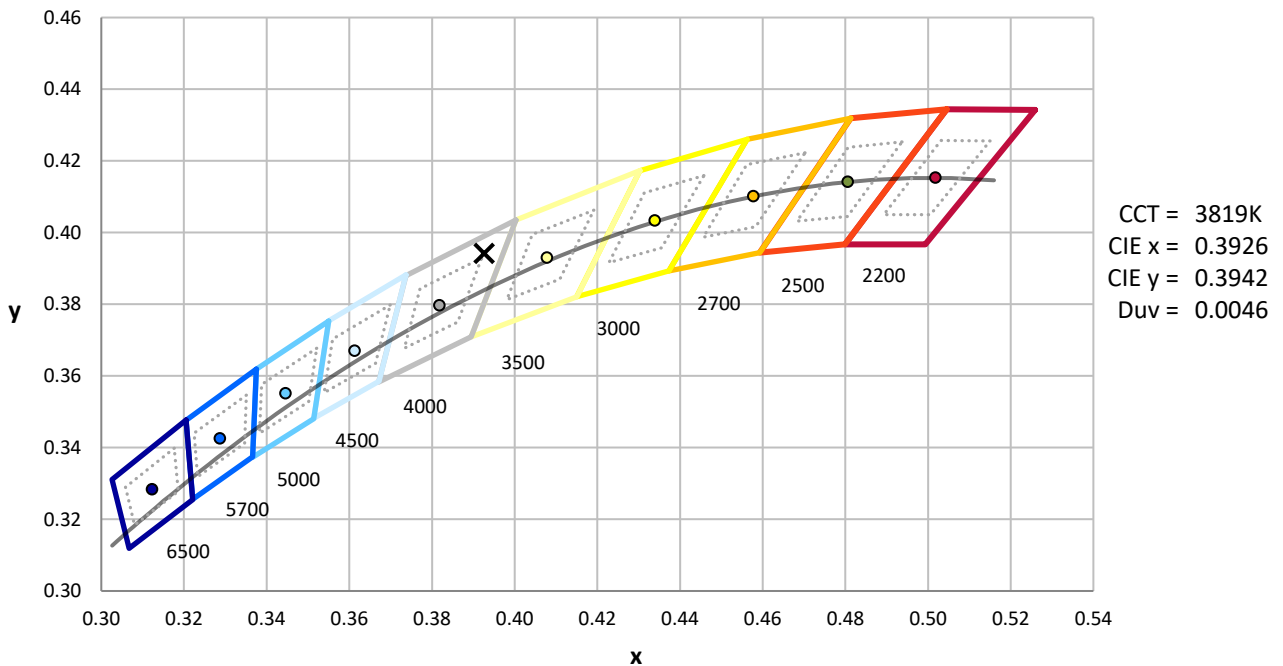
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date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

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**CIE 1931 Chromaticity Diagram**



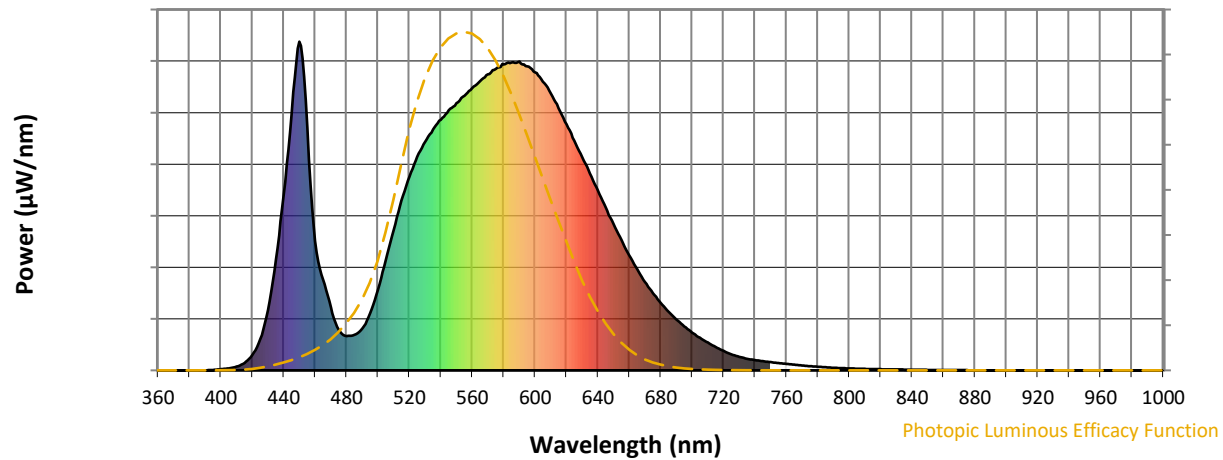
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 4000K 7-step quadrangle

REPORT NUMBER: SP1-2407-176-5

### Photopic Flux vs. Wavelength

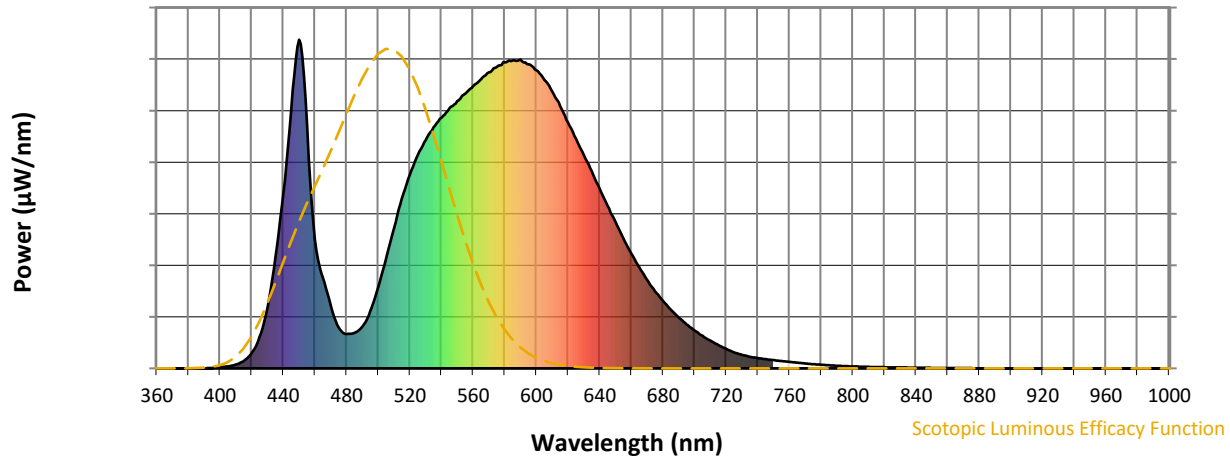


### Photopic Lumens: NR

| $\lambda$<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               | 127                                    | NR                             | 620               | 748                                    | NR                             | 750               | 25                                     | NR                             | 880               | 0                                      | NR                             |
| 365               | 0                                      | NR                             | 495               | 173                                    | NR                             | 625               | 699                                    | NR                             | 755               | 22                                     | NR                             | 885               | 0                                      | NR                             |
| 370               | 0                                      | NR                             | 500               | 246                                    | NR                             | 630               | 648                                    | NR                             | 760               | 20                                     | NR                             | 890               | 0                                      | NR                             |
| 375               | 0                                      | NR                             | 505               | 335                                    | NR                             | 635               | 599                                    | NR                             | 765               | 17                                     | NR                             | 895               | 0                                      | NR                             |
| 380               | 0                                      | NR                             | 510               | 427                                    | NR                             | 640               | 547                                    | NR                             | 770               | 15                                     | NR                             | 900               | 0                                      | NR                             |
| 385               | 0                                      | NR                             | 515               | 517                                    | NR                             | 645               | 495                                    | NR                             | 775               | 13                                     | NR                             | 905               | 0                                      | NR                             |
| 390               | 0                                      | NR                             | 520               | 589                                    | NR                             | 650               | 445                                    | NR                             | 780               | 11                                     | NR                             | 910               | 0                                      | NR                             |
| 395               | 1                                      | NR                             | 525               | 649                                    | NR                             | 655               | 396                                    | NR                             | 785               | 9                                      | NR                             | 915               | 0                                      | NR                             |
| 400               | 4                                      | NR                             | 530               | 695                                    | NR                             | 660               | 349                                    | NR                             | 790               | 8                                      | NR                             | 920               | 0                                      | NR                             |
| 405               | 6                                      | NR                             | 535               | 733                                    | NR                             | 665               | 308                                    | NR                             | 795               | 7                                      | NR                             | 925               | 0                                      | NR                             |
| 410               | 11                                     | NR                             | 540               | 763                                    | NR                             | 670               | 269                                    | NR                             | 800               | 6                                      | NR                             | 930               | 0                                      | NR                             |
| 415               | 23                                     | NR                             | 545               | 792                                    | NR                             | 675               | 235                                    | NR                             | 805               | 5                                      | NR                             | 935               | 0                                      | NR                             |
| 420               | 46                                     | NR                             | 550               | 813                                    | NR                             | 680               | 205                                    | NR                             | 810               | 5                                      | NR                             | 940               | 0                                      | NR                             |
| 425               | 95                                     | NR                             | 555               | 835                                    | NR                             | 685               | 178                                    | NR                             | 815               | 4                                      | NR                             | 945               | 0                                      | NR                             |
| 430               | 183                                    | NR                             | 560               | 859                                    | NR                             | 690               | 155                                    | NR                             | 820               | 3                                      | NR                             | 950               | 0                                      | NR                             |
| 435               | 338                                    | NR                             | 565               | 880                                    | NR                             | 695               | 134                                    | NR                             | 825               | 3                                      | NR                             | 955               | 0                                      | NR                             |
| 440               | 534                                    | NR                             | 570               | 900                                    | NR                             | 700               | 115                                    | NR                             | 830               | 3                                      | NR                             | 960               | 0                                      | NR                             |
| 445               | 782                                    | NR                             | 575               | 918                                    | NR                             | 705               | 99                                     | NR                             | 835               | 2                                      | NR                             | 965               | 0                                      | NR                             |
| 450               | 1000                                   | NR                             | 580               | 931                                    | NR                             | 710               | 84                                     | NR                             | 840               | 2                                      | NR                             | 970               | 0                                      | NR                             |
| 455               | 739                                    | NR                             | 585               | 937                                    | NR                             | 715               | 71                                     | NR                             | 845               | 2                                      | NR                             | 975               | 0                                      | NR                             |
| 460               | 393                                    | NR                             | 590               | 939                                    | NR                             | 720               | 59                                     | NR                             | 850               | 1                                      | NR                             | 980               | 0                                      | NR                             |
| 465               | 276                                    | NR                             | 595               | 925                                    | NR                             | 725               | 49                                     | NR                             | 855               | 1                                      | NR                             | 985               | 0                                      | NR                             |
| 470               | 190                                    | NR                             | 600               | 907                                    | NR                             | 730               | 41                                     | NR                             | 860               | 1                                      | NR                             | 990               | 0                                      | NR                             |
| 475               | 123                                    | NR                             | 605               | 878                                    | NR                             | 735               | 35                                     | NR                             | 865               | 1                                      | NR                             | 995               | 0                                      | NR                             |
| 480               | 105                                    | NR                             | 610               | 842                                    | NR                             | 740               | 31                                     | NR                             | 870               | 1                                      | NR                             | 1000              | 0                                      | NR                             |
| 485               | 108                                    | NR                             | 615               | 797                                    | NR                             | 745               | 28                                     | NR                             | 875               | 1                                      | NR                             |                   |                                        |                                |

REPORT NUMBER: SP1-2407-176-5

### Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

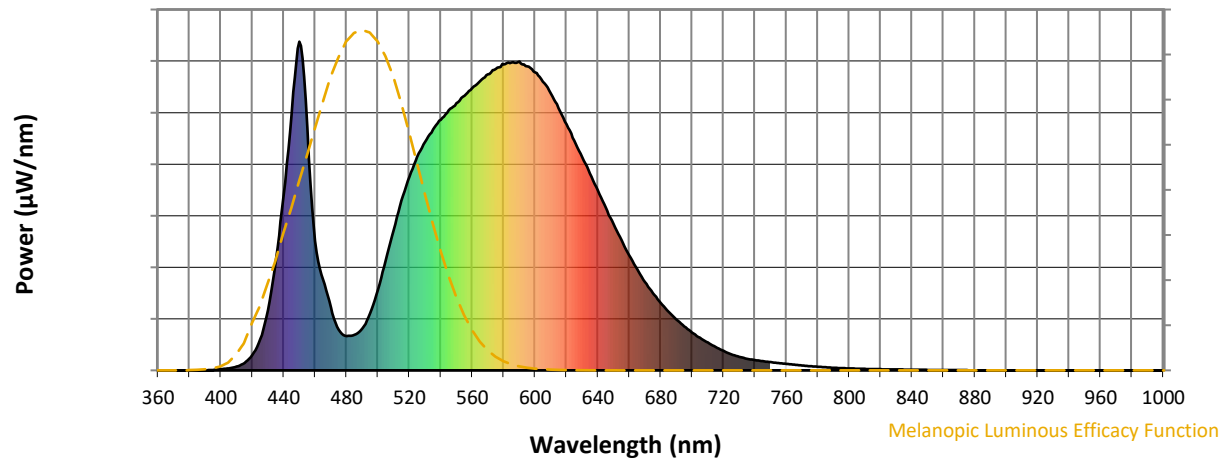
S/P: 1.45

| 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    | 127                      | NR            | 620    | 748                      | NR            | 750    | 25                       | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 173                      | NR            | 625    | 699                      | NR            | 755    | 22                       | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 246                      | NR            | 630    | 648                      | NR            | 760    | 20                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 335                      | NR            | 635    | 599                      | NR            | 765    | 17                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 427                      | NR            | 640    | 547                      | NR            | 770    | 15                       | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 517                      | NR            | 645    | 495                      | NR            | 775    | 13                       | NR            | 905    | 0                        | NR            |
| 390    | 0                        | NR            | 520    | 589                      | NR            | 650    | 445                      | NR            | 780    | 11                       | NR            | 910    | 0                        | NR            |
| 395    | 1                        | NR            | 525    | 649                      | NR            | 655    | 396                      | NR            | 785    | 9                        | NR            | 915    | 0                        | NR            |
| 400    | 4                        | NR            | 530    | 695                      | NR            | 660    | 349                      | NR            | 790    | 8                        | NR            | 920    | 0                        | NR            |
| 405    | 6                        | NR            | 535    | 733                      | NR            | 665    | 308                      | NR            | 795    | 7                        | NR            | 925    | 0                        | NR            |
| 410    | 11                       | NR            | 540    | 763                      | NR            | 670    | 269                      | NR            | 800    | 6                        | NR            | 930    | 0                        | NR            |
| 415    | 23                       | NR            | 545    | 792                      | NR            | 675    | 235                      | NR            | 805    | 5                        | NR            | 935    | 0                        | NR            |
| 420    | 46                       | NR            | 550    | 813                      | NR            | 680    | 205                      | NR            | 810    | 5                        | NR            | 940    | 0                        | NR            |
| 425    | 95                       | NR            | 555    | 835                      | NR            | 685    | 178                      | NR            | 815    | 4                        | NR            | 945    | 0                        | NR            |
| 430    | 183                      | NR            | 560    | 859                      | NR            | 690    | 155                      | NR            | 820    | 3                        | NR            | 950    | 0                        | NR            |
| 435    | 338                      | NR            | 565    | 880                      | NR            | 695    | 134                      | NR            | 825    | 3                        | NR            | 955    | 0                        | NR            |
| 440    | 534                      | NR            | 570    | 900                      | NR            | 700    | 115                      | NR            | 830    | 3                        | NR            | 960    | 0                        | NR            |
| 445    | 782                      | NR            | 575    | 918                      | NR            | 705    | 99                       | NR            | 835    | 2                        | NR            | 965    | 0                        | NR            |
| 450    | 1000                     | NR            | 580    | 931                      | NR            | 710    | 84                       | NR            | 840    | 2                        | NR            | 970    | 0                        | NR            |
| 455    | 739                      | NR            | 585    | 937                      | NR            | 715    | 71                       | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 393                      | NR            | 590    | 939                      | NR            | 720    | 59                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 276                      | NR            | 595    | 925                      | NR            | 725    | 49                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 190                      | NR            | 600    | 907                      | NR            | 730    | 41                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 123                      | NR            | 605    | 878                      | NR            | 735    | 35                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 105                      | NR            | 610    | 842                      | NR            | 740    | 31                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 108                      | NR            | 615    | 797                      | NR            | 745    | 28                       | NR            | 875    | 1                        | NR            |        |                          |               |



REPORT NUMBER: SP1-2407-176-5

### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.76

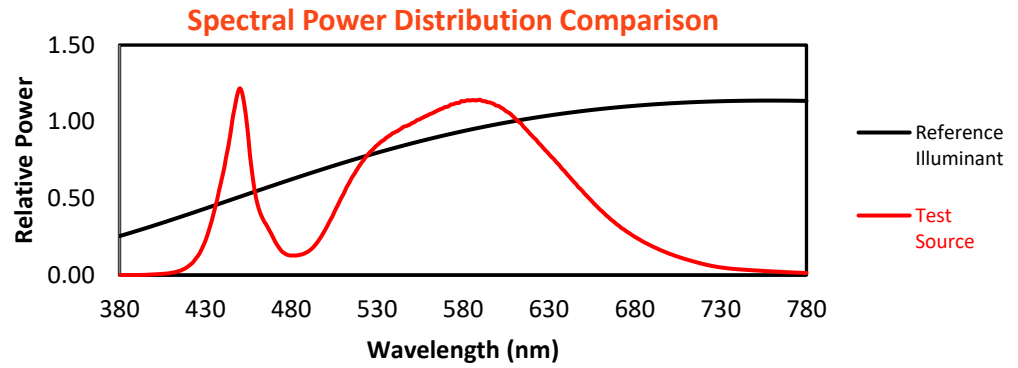
| $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | 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               | 127                                    | NR                             | 620               | 748                                    | NR                             | 750               | 25                                     | NR                             | 880               | 0                                      | NR                             |
| 365               | 0                                      | NR                             | 495               | 173                                    | NR                             | 625               | 699                                    | NR                             | 755               | 22                                     | NR                             | 885               | 0                                      | NR                             |
| 370               | 0                                      | NR                             | 500               | 246                                    | NR                             | 630               | 648                                    | NR                             | 760               | 20                                     | NR                             | 890               | 0                                      | NR                             |
| 375               | 0                                      | NR                             | 505               | 335                                    | NR                             | 635               | 599                                    | NR                             | 765               | 17                                     | NR                             | 895               | 0                                      | NR                             |
| 380               | 0                                      | NR                             | 510               | 427                                    | NR                             | 640               | 547                                    | NR                             | 770               | 15                                     | NR                             | 900               | 0                                      | NR                             |
| 385               | 0                                      | NR                             | 515               | 517                                    | NR                             | 645               | 495                                    | NR                             | 775               | 13                                     | NR                             | 905               | 0                                      | NR                             |
| 390               | 0                                      | NR                             | 520               | 589                                    | NR                             | 650               | 445                                    | NR                             | 780               | 11                                     | NR                             | 910               | 0                                      | NR                             |
| 395               | 1                                      | NR                             | 525               | 649                                    | NR                             | 655               | 396                                    | NR                             | 785               | 9                                      | NR                             | 915               | 0                                      | NR                             |
| 400               | 4                                      | NR                             | 530               | 695                                    | NR                             | 660               | 349                                    | NR                             | 790               | 8                                      | NR                             | 920               | 0                                      | NR                             |
| 405               | 6                                      | NR                             | 535               | 733                                    | NR                             | 665               | 308                                    | NR                             | 795               | 7                                      | NR                             | 925               | 0                                      | NR                             |
| 410               | 11                                     | NR                             | 540               | 763                                    | NR                             | 670               | 269                                    | NR                             | 800               | 6                                      | NR                             | 930               | 0                                      | NR                             |
| 415               | 23                                     | NR                             | 545               | 792                                    | NR                             | 675               | 235                                    | NR                             | 805               | 5                                      | NR                             | 935               | 0                                      | NR                             |
| 420               | 46                                     | NR                             | 550               | 813                                    | NR                             | 680               | 205                                    | NR                             | 810               | 5                                      | NR                             | 940               | 0                                      | NR                             |
| 425               | 95                                     | NR                             | 555               | 835                                    | NR                             | 685               | 178                                    | NR                             | 815               | 4                                      | NR                             | 945               | 0                                      | NR                             |
| 430               | 183                                    | NR                             | 560               | 859                                    | NR                             | 690               | 155                                    | NR                             | 820               | 3                                      | NR                             | 950               | 0                                      | NR                             |
| 435               | 338                                    | NR                             | 565               | 880                                    | NR                             | 695               | 134                                    | NR                             | 825               | 3                                      | NR                             | 955               | 0                                      | NR                             |
| 440               | 534                                    | NR                             | 570               | 900                                    | NR                             | 700               | 115                                    | NR                             | 830               | 3                                      | NR                             | 960               | 0                                      | NR                             |
| 445               | 782                                    | NR                             | 575               | 918                                    | NR                             | 705               | 99                                     | NR                             | 835               | 2                                      | NR                             | 965               | 0                                      | NR                             |
| 450               | 1000                                   | NR                             | 580               | 931                                    | NR                             | 710               | 84                                     | NR                             | 840               | 2                                      | NR                             | 970               | 0                                      | NR                             |
| 455               | 739                                    | NR                             | 585               | 937                                    | NR                             | 715               | 71                                     | NR                             | 845               | 2                                      | NR                             | 975               | 0                                      | NR                             |
| 460               | 393                                    | NR                             | 590               | 939                                    | NR                             | 720               | 59                                     | NR                             | 850               | 1                                      | NR                             | 980               | 0                                      | NR                             |
| 465               | 276                                    | NR                             | 595               | 925                                    | NR                             | 725               | 49                                     | NR                             | 855               | 1                                      | NR                             | 985               | 0                                      | NR                             |
| 470               | 190                                    | NR                             | 600               | 907                                    | NR                             | 730               | 41                                     | NR                             | 860               | 1                                      | NR                             | 990               | 0                                      | NR                             |
| 475               | 123                                    | NR                             | 605               | 878                                    | NR                             | 735               | 35                                     | NR                             | 865               | 1                                      | NR                             | 995               | 0                                      | NR                             |
| 480               | 105                                    | NR                             | 610               | 842                                    | NR                             | 740               | 31                                     | NR                             | 870               | 1                                      | NR                             | 1000              | 0                                      | NR                             |
| 485               | 108                                    | NR                             | 615               | 797                                    | NR                             | 745               | 28                                     | NR                             | 875               | 1                                      | NR                             |                   |                                        |                                |

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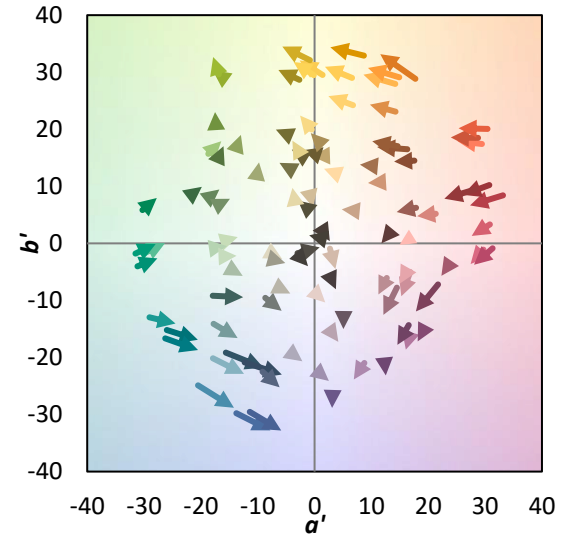
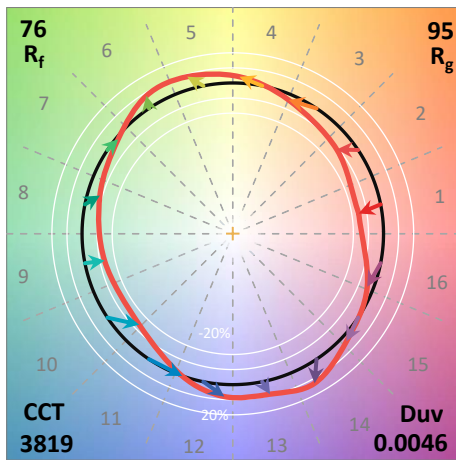
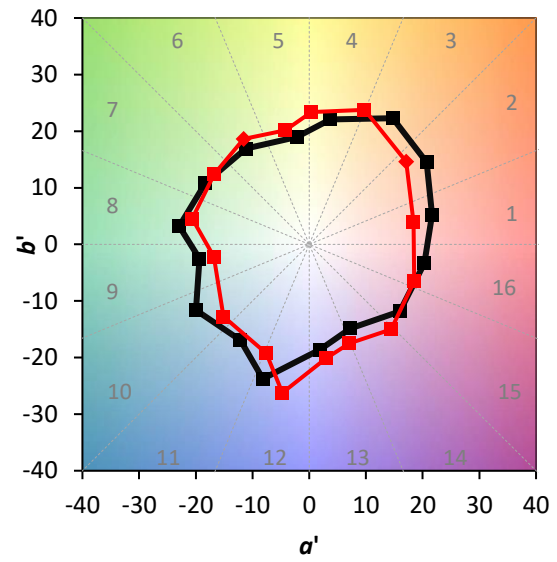
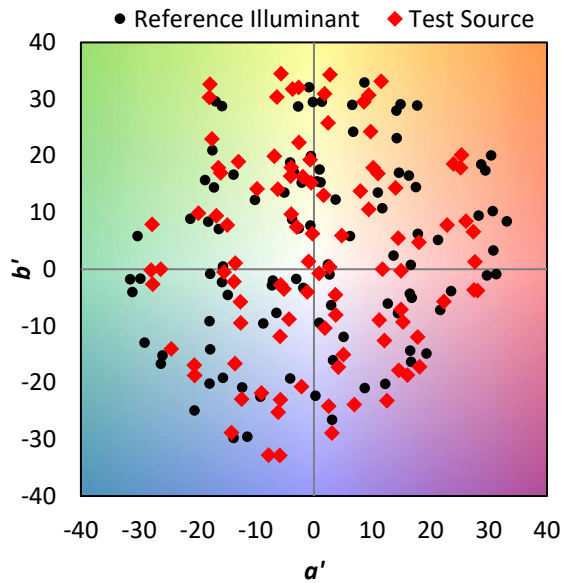
TM-30-18

### Summary

$R_f = 75.6$   
 $R_g = 94.8$   
 $CIE R_a = 72.9$   
 $R_g = -21.5$

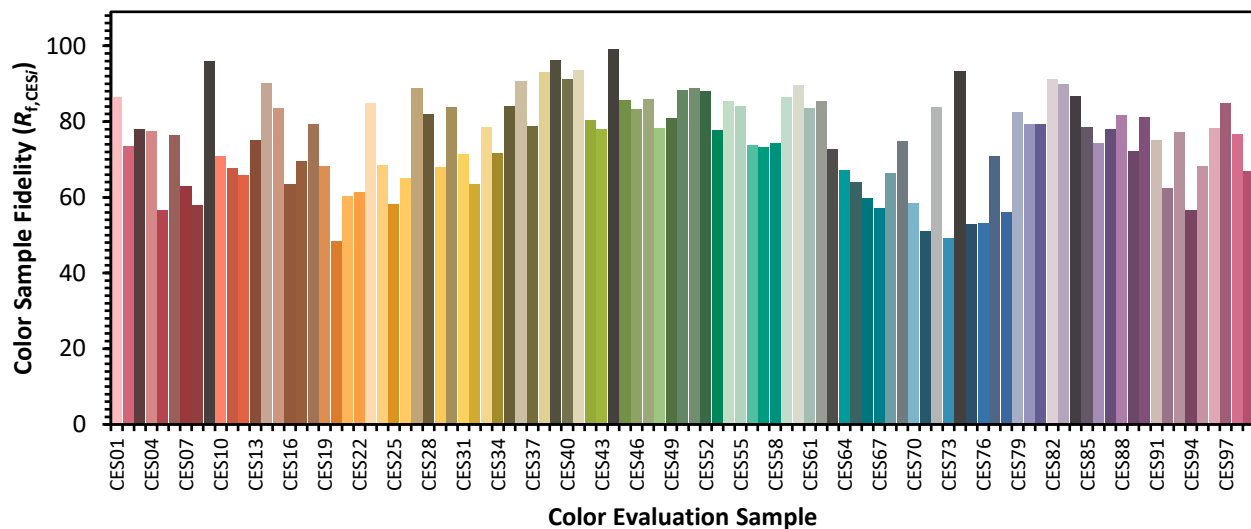


### Color Vector Graphics

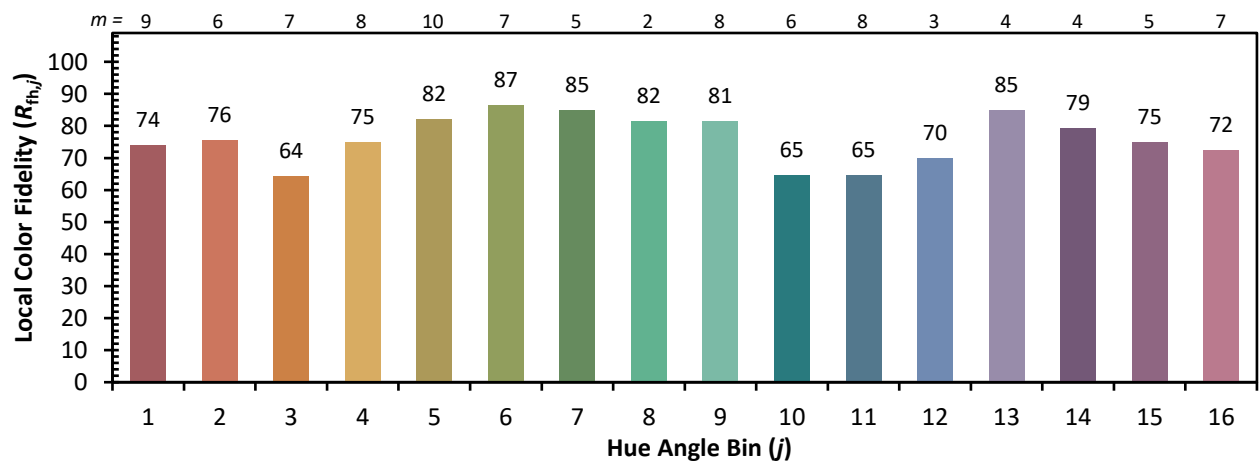
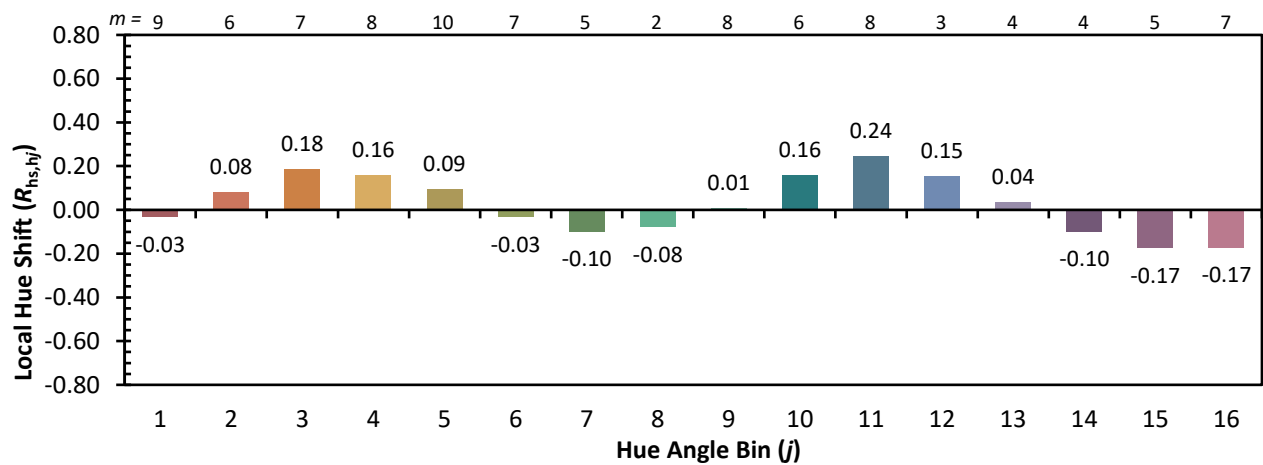
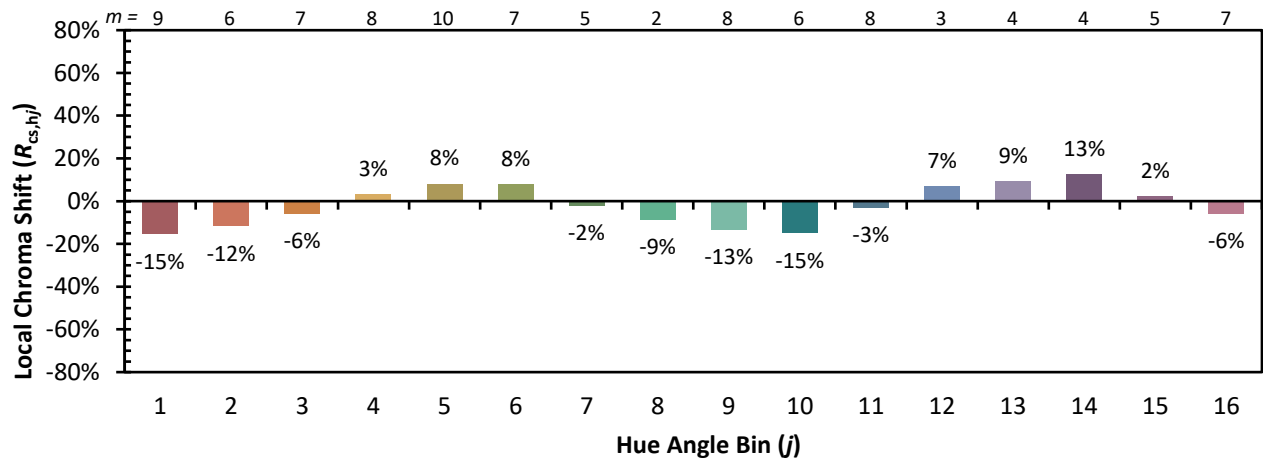


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

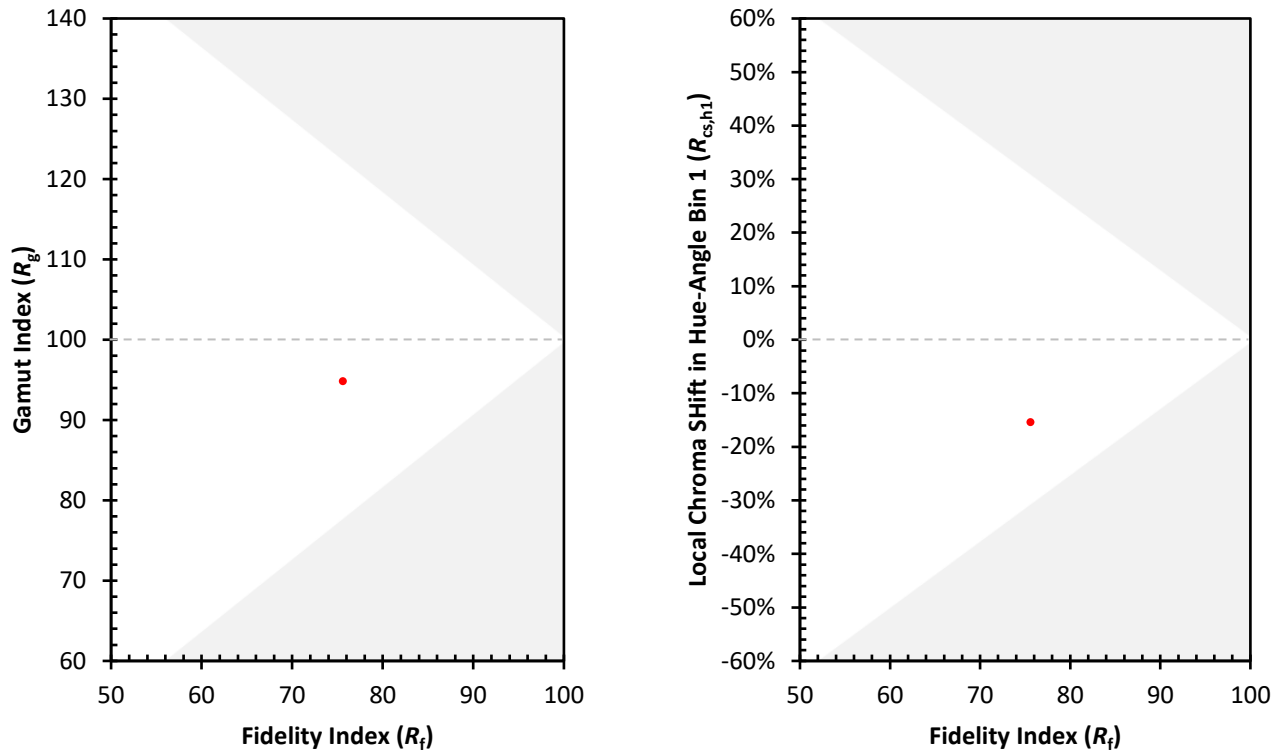
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 65 | CES51 = 89 | CES76 = 53 |
| CES02 = 61 | CES27 = 89 | CES52 = 88 | CES77 = 71 |
| CES03 = 30 | CES28 = 82 | CES53 = 78 | CES78 = 56 |
| CES04 = 70 | CES29 = 68 | CES54 = 85 | CES79 = 83 |
| CES05 = 48 | CES30 = 84 | CES55 = 84 | CES80 = 79 |
| CES06 = 50 | CES31 = 71 | CES56 = 74 | CES81 = 79 |
| CES07 = 40 | CES32 = 63 | CES57 = 73 | CES82 = 91 |
| CES08 = 39 | CES33 = 79 | CES58 = 74 | CES83 = 90 |
| CES09 = 29 | CES34 = 72 | CES59 = 86 | CES84 = 87 |
| CES10 = 74 | CES35 = 84 | CES60 = 90 | CES85 = 78 |
| CES11 = 57 | CES36 = 91 | CES61 = 84 | CES86 = 74 |
| CES12 = 63 | CES37 = 79 | CES62 = 85 | CES87 = 78 |
| CES13 = 42 | CES38 = 93 | CES63 = 73 | CES88 = 82 |
| CES14 = 74 | CES39 = 96 | CES64 = 67 | CES89 = 72 |
| CES15 = 71 | CES40 = 91 | CES65 = 64 | CES90 = 81 |
| CES16 = 47 | CES41 = 93 | CES66 = 60 | CES91 = 75 |
| CES17 = 49 | CES42 = 80 | CES67 = 57 | CES92 = 62 |
| CES18 = 56 | CES43 = 78 | CES68 = 66 | CES93 = 77 |
| CES19 = 72 | CES44 = 99 | CES69 = 75 | CES94 = 57 |
| CES20 = 65 | CES45 = 86 | CES70 = 58 | CES95 = 68 |
| CES21 = 86 | CES46 = 83 | CES71 = 51 | CES96 = 78 |
| CES22 = 78 | CES47 = 86 | CES72 = 84 | CES97 = 85 |
| CES23 = 92 | CES48 = 78 | CES73 = 49 | CES98 = 77 |
| CES24 = 91 | CES49 = 81 | CES74 = 93 | CES99 = 67 |
| CES25 = 72 | CES50 = 88 | CES75 = 53 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)