

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: P413361

Luminaire Tested: **TT-D6-735-U-RW-UPL**

Issue Date: 10/29/2020

Test Information

Test Method: LM-79-08
Report Number: P413361
REPORT IS FROM IESNA LM-79-08 TEST DATA - UPLIGHT (G2-2002-677-2) AND
Test Lab: INNOVATION CENTER
Issue Date: 10/29/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: MCGRAW-EDISON
Catalog Number: TT-D6-735-U-RW-UPL
Description: TOPTIER LED PARKING GARAGE LUMINAIRE WITH UPLIGHT
3500K, 70 CRI LEDS AND RECTANGULAR DISTRIBUTION
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 10306.7 lumens
Efficiency: N/A
Efficacy: 91.0 lumens/watt
Luminous Opening: Vertical Cylinder (Dia: 1.12' x H: 0.1')
IES Classification: Type V - Short - Non-Cutoff
BUG Rating: B4 - U4 - G3

Input Watts (W): 113.2
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

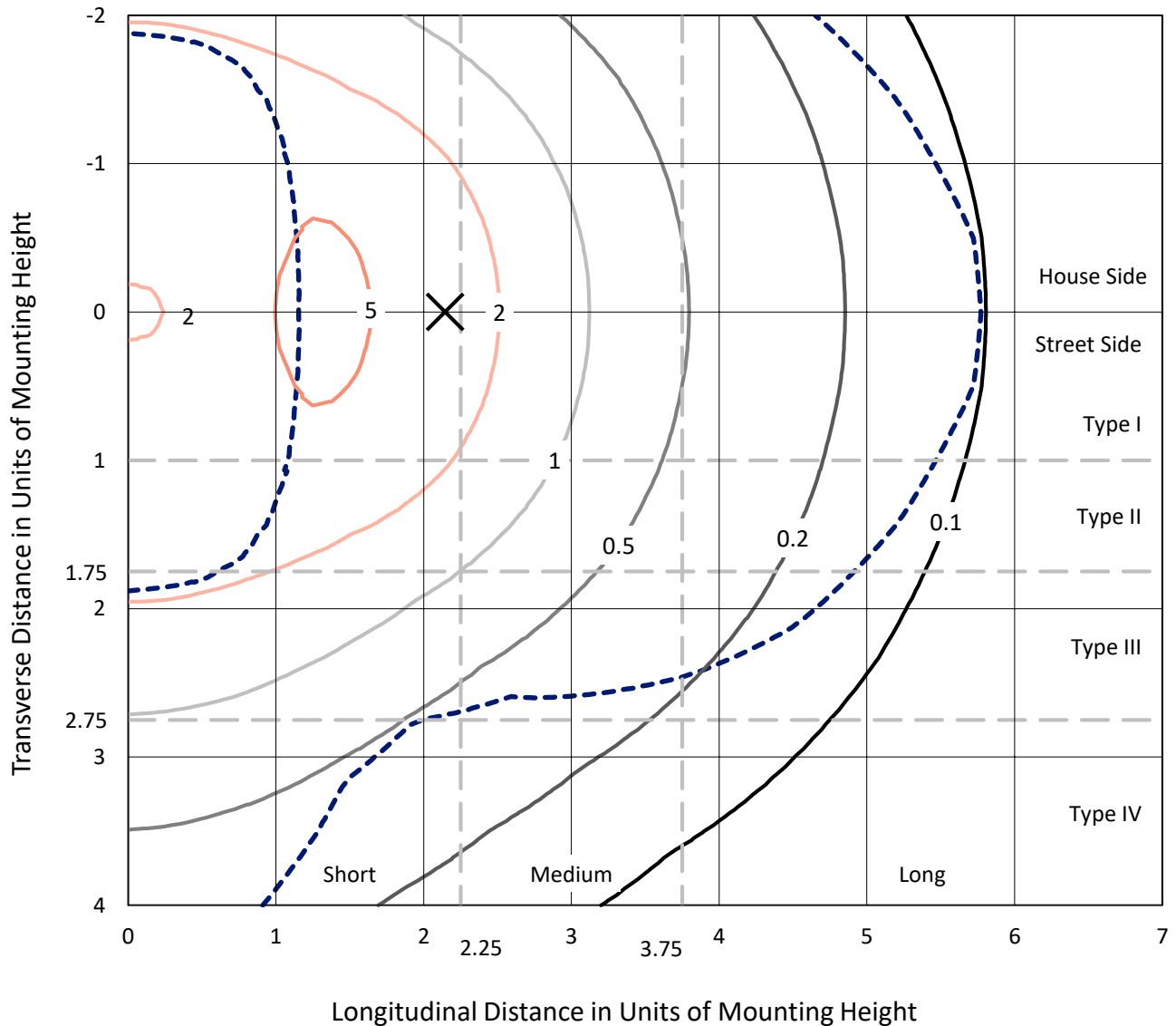


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Iso-Footcandle Lines of Horizontal Illumination

× Max cd
 - - - 1/2 Max cd

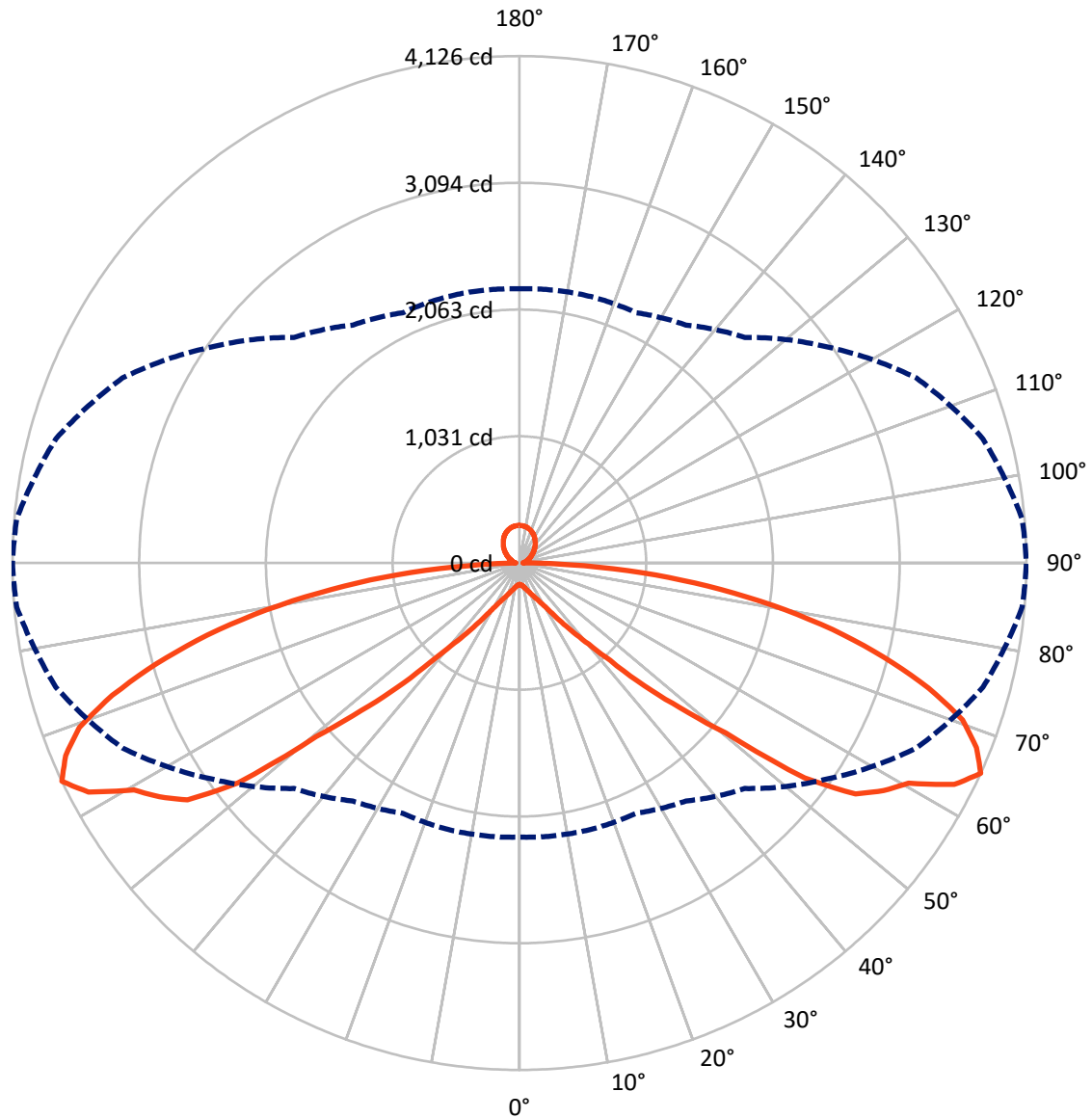


Based on 10 foot mounting height. Maximum calculated value = 6.4 fc
 Type V - Short - Non-Cutoff

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CATALOG NUMBER: TT-D6-735-U-RW-UPL

Luminous Intensity Polar Plot



— Vertical Plane Through 90-Deg Lateral - - - Horizontal Cone Through 65-Deg Vertical

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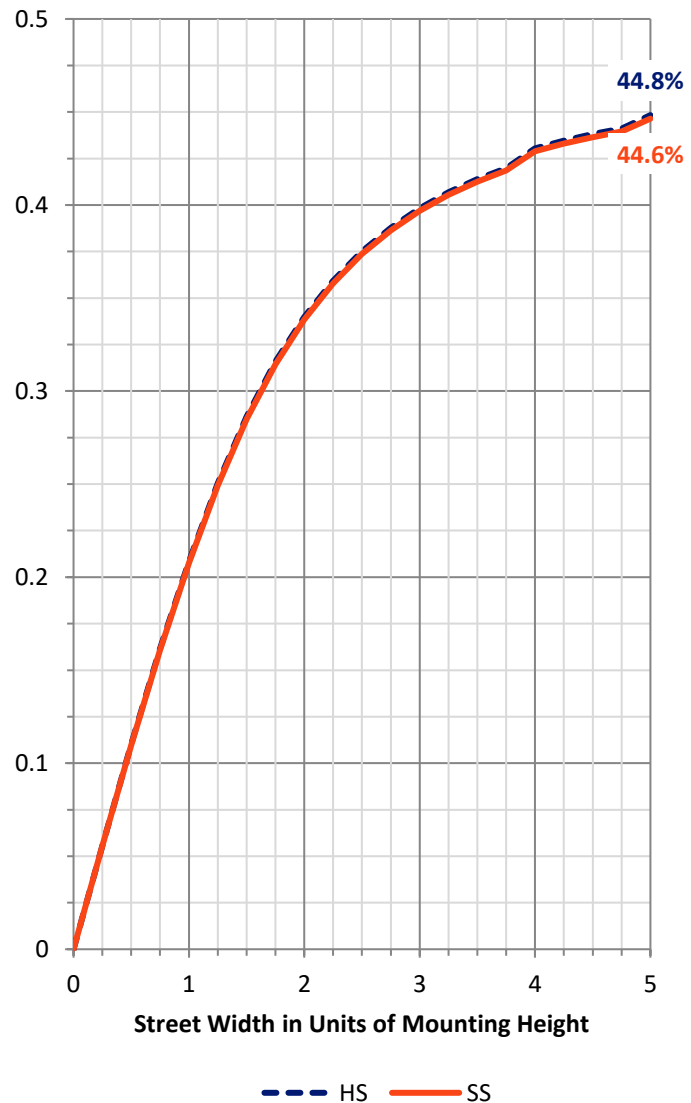
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 4737.5 | 415.9 | 5153.4 |
| | % Fixture | 46.0 | 4.0 | 50.0 |
| Street Side | Lumens | 4737.5 | 415.9 | 5153.4 |
| | % Fixture | 46.0 | 4.0 | 50.0 |
| Total | Lumens | 9475.0 | 831.7 | 10306.7 |
| | % Fixture | 91.9 | 8.1 | 100.0 |

Coefficient of Utilization

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 18.1 | 0.2 |
| 10°-20° | 67.5 | 0.7 |
| 20°-30° | 156.1 | 1.5 |
| 30°-40° | 352.9 | 3.4 |
| 40°-50° | 859.6 | 8.3 |
| 50°-60° | 1933.0 | 18.8 |
| 60°-70° | 2825.0 | 27.4 |
| 70°-80° | 2461.6 | 23.9 |
| 80°-90° | 801.3 | 7.8 |
| 90°-100° | 42.6 | 0.4 |
| 100°-110° | 66.0 | 0.6 |
| 110°-120° | 91.9 | 0.9 |
| 120°-130° | 119.0 | 1.2 |
| 130°-140° | 138.7 | 1.3 |
| 140°-150° | 140.5 | 1.4 |
| 150°-160° | 121.9 | 1.2 |
| 160°-170° | 82.2 | 0.8 |
| 170°-180° | 28.9 | 0.3 |
| 0°-90° | 9475.0 | 91.9 |
| 0°-180° | 10306.7 | 100.0 |



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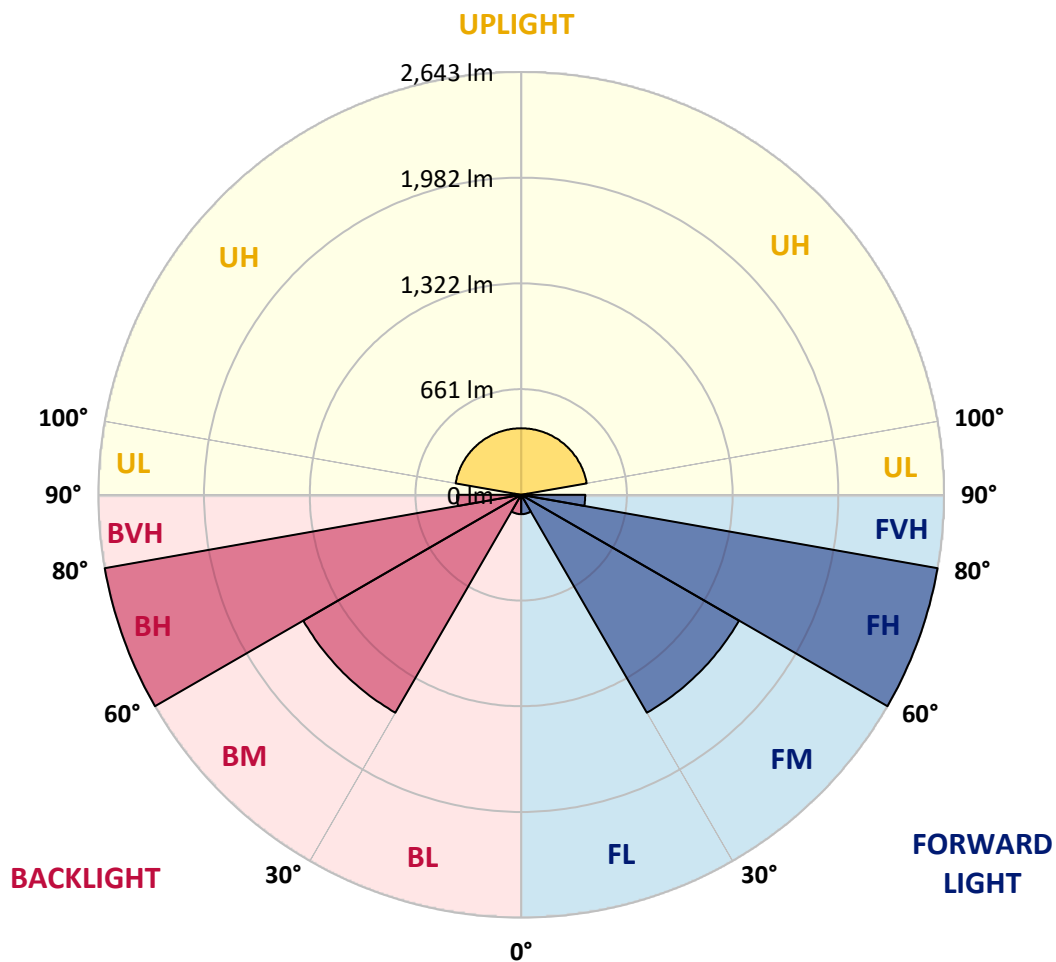
CATALOG NUMBER: TT-D6-735-U-RW-UPL

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|--------|---------|
| | | | B | U | G |
| FL (0°-30°) | 120.8 | 1.2 | | | |
| FM (30°-60°) | 1572.7 | 15.3 | | | |
| FH (60°-80°) | 2643.3 | 25.6 | | | G2/5000 |
| FVH (80°-90°) | 400.7 | 3.9 | | | G3/500 |
| BL (0°-30°) | 120.8 | 1.2 | B1/500 | | |
| BM (30°-60°) | 1572.7 | 15.3 | B2/2500 | | |
| BH (60°-80°) | 2643.3 | 25.6 | B4/5000 | | G2/5000 |
| BVH (80°-90°) | 400.7 | 3.9 | | | G3/500 |
| UL (90°-100°) | 42.6 | 0.4 | | U2/50 | |
| UH (100°-180°) | 415.9 | 4.0 | | U3/500 | |

BUG Rating: B4-U4-G3

Type V Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 85° | 90° |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 173.0 | 173.0 | 173.0 | 173.0 | 173.0 | 173.0 | 173.0 | 173.0 | 173.0 | 173.0 | 173.0 |
| 2.5° | 175.3 | 175.3 | 177.5 | 177.5 | 177.5 | 177.5 | 177.5 | 177.5 | 177.5 | 177.5 | 177.5 |
| 5° | 182.0 | 182.0 | 182.0 | 182.0 | 184.3 | 184.3 | 182.0 | 182.0 | 182.0 | 182.0 | 182.0 |
| 7.5° | 193.3 | 191.0 | 193.3 | 193.3 | 193.3 | 191.0 | 191.0 | 191.0 | 188.8 | 188.8 | 188.8 |
| 10° | 204.5 | 204.5 | 206.7 | 204.5 | 204.5 | 202.3 | 202.3 | 202.3 | 200.0 | 200.0 | 200.0 |
| 12.5° | 220.2 | 220.2 | 220.2 | 220.2 | 218.0 | 218.0 | 215.7 | 213.5 | 211.2 | 211.2 | 211.2 |
| 15° | 240.5 | 238.2 | 238.2 | 236.0 | 233.7 | 231.5 | 229.2 | 229.2 | 227.0 | 227.0 | 227.0 |
| 17.5° | 260.7 | 260.7 | 258.4 | 256.2 | 251.7 | 249.4 | 249.4 | 247.2 | 244.9 | 244.9 | 244.9 |
| 20° | 285.4 | 285.4 | 283.2 | 278.7 | 274.2 | 271.9 | 269.7 | 269.7 | 267.4 | 267.4 | 267.4 |
| 22.5° | 314.6 | 312.4 | 307.9 | 303.4 | 298.9 | 296.6 | 294.4 | 292.1 | 292.1 | 292.1 | 292.1 |
| 25° | 346.1 | 343.8 | 341.6 | 334.8 | 328.1 | 325.8 | 321.4 | 321.4 | 319.1 | 321.4 | 321.4 |
| 27.5° | 384.3 | 382.0 | 377.5 | 370.8 | 361.8 | 357.3 | 355.1 | 355.1 | 357.3 | 357.3 | 359.6 |
| 30° | 431.5 | 427.0 | 422.5 | 413.5 | 404.5 | 397.8 | 397.8 | 400.0 | 406.7 | 411.2 | 411.2 |
| 32.5° | 487.6 | 485.4 | 478.7 | 469.7 | 453.9 | 449.4 | 453.9 | 467.4 | 476.4 | 483.2 | 487.6 |
| 35° | 552.8 | 550.6 | 541.6 | 525.9 | 514.6 | 512.4 | 525.9 | 548.3 | 577.5 | 586.5 | 591.0 |
| 37.5° | 624.7 | 627.0 | 615.7 | 597.8 | 586.5 | 591.0 | 618.0 | 660.7 | 689.9 | 710.1 | 714.6 |
| 40° | 714.6 | 719.1 | 705.6 | 685.4 | 674.2 | 692.1 | 734.8 | 784.3 | 836.0 | 860.7 | 867.4 |
| 42.5° | 820.2 | 827.0 | 809.0 | 788.8 | 782.0 | 811.2 | 871.9 | 952.8 | 1045.0 | 1074.2 | 1085.4 |
| 45° | 950.6 | 955.1 | 932.6 | 914.6 | 910.1 | 961.8 | 1065.2 | 1200.0 | 1346.1 | 1413.5 | 1424.7 |
| 47.5° | 1105.6 | 1103.4 | 1083.2 | 1060.7 | 1065.2 | 1139.3 | 1294.4 | 1476.4 | 1631.5 | 1734.9 | 1757.3 |
| 50° | 1283.2 | 1271.9 | 1256.2 | 1229.2 | 1258.4 | 1366.3 | 1561.8 | 1782.1 | 2042.7 | 2134.9 | 2175.3 |
| 52.5° | 1460.7 | 1440.5 | 1427.0 | 1409.0 | 1460.7 | 1600.0 | 1874.2 | 2258.5 | 2651.7 | 2863.0 | 2905.7 |
| 55° | 1620.3 | 1604.5 | 1597.8 | 1600.0 | 1680.9 | 1880.9 | 2240.5 | 2732.6 | 3112.4 | 3287.7 | 3319.2 |
| 57.5° | 1777.6 | 1768.6 | 1761.8 | 1775.3 | 1903.4 | 2164.1 | 2568.6 | 3029.3 | 3341.6 | 3472.0 | 3494.4 |
| 60° | 1925.9 | 1934.9 | 1930.4 | 1970.8 | 2125.9 | 2388.8 | 2739.4 | 3193.3 | 3494.4 | 3613.5 | 3638.3 |
| 62.5° | 2089.9 | 2096.7 | 2096.7 | 2141.6 | 2267.5 | 2498.9 | 2856.2 | 3386.6 | 3768.6 | 3943.9 | 3970.9 |
| 65° | 2231.5 | 2236.0 | 2245.0 | 2247.2 | 2364.1 | 2595.5 | 3063.0 | 3564.1 | 3905.7 | 4107.9 | 4125.9 |
| 67.5° | 2337.1 | 2341.6 | 2330.4 | 2319.1 | 2409.0 | 2618.0 | 3047.2 | 3541.6 | 3845.0 | 3997.8 | 4011.3 |
| 70° | 2422.5 | 2402.3 | 2370.8 | 2314.6 | 2343.9 | 2501.2 | 2916.9 | 3361.9 | 3667.5 | 3804.6 | 3824.8 |
| 72.5° | 2433.7 | 2415.8 | 2316.9 | 2191.0 | 2155.1 | 2292.2 | 2687.7 | 3087.7 | 3350.6 | 3481.0 | 3483.2 |
| 75° | 2366.3 | 2319.1 | 2155.1 | 1966.3 | 1898.9 | 2029.2 | 2368.6 | 2732.6 | 2943.9 | 3054.0 | 3065.2 |
| 77.5° | 2139.4 | 2094.4 | 1887.7 | 1671.9 | 1595.5 | 1707.9 | 1995.5 | 2289.9 | 2492.2 | 2600.0 | 2606.8 |
| 80° | 1737.1 | 1721.4 | 1532.6 | 1334.9 | 1242.7 | 1307.9 | 1559.6 | 1791.0 | 1955.1 | 2083.2 | 2094.4 |
| 82.5° | 1280.9 | 1267.4 | 1123.6 | 950.6 | 876.4 | 930.4 | 1110.1 | 1280.9 | 1433.7 | 1537.1 | 1543.8 |
| 85° | 800.0 | 773.0 | 683.2 | 561.8 | 512.4 | 548.3 | 667.4 | 782.0 | 919.1 | 1000.0 | 1004.5 |
| 87.5° | 267.4 | 256.2 | 220.2 | 182.0 | 152.8 | 159.6 | 195.5 | 238.2 | 348.3 | 384.3 | 406.7 |
| 90° | 30.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 | 29.1 |
| 92.5° | 34.8 | 34.2 | 34.2 | 33.8 | 33.8 | 33.8 | 33.8 | 33.8 | 33.8 | 33.8 | 33.8 |
| 95° | 39.4 | 39.4 | 39.4 | 38.5 | 38.5 | 38.5 | 38.5 | 38.5 | 38.5 | 38.5 | 38.5 |
| 97.5° | 44.6 | 44.6 | 44.6 | 44.2 | 44.2 | 44.2 | 44.2 | 44.2 | 44.2 | 44.2 | 44.2 |
| 100° | 49.8 | 49.8 | 49.8 | 49.8 | 49.8 | 49.8 | 49.8 | 49.8 | 49.8 | 49.8 | 49.8 |
| 102.5° | 55.9 | 55.9 | 55.9 | 55.9 | 55.9 | 55.9 | 55.9 | 56.4 | 55.9 | 55.9 | 55.9 |
| 105° | 62.0 | 62.0 | 62.0 | 62.0 | 62.0 | 62.0 | 62.0 | 62.9 | 62.0 | 62.0 | 62.0 |
| 107.5° | 68.6 | 68.6 | 69.0 | 69.0 | 69.0 | 69.0 | 69.0 | 69.5 | 69.0 | 69.0 | 69.0 |
| 110° | 75.1 | 75.1 | 76.1 | 76.1 | 76.1 | 76.1 | 76.1 | 76.1 | 76.1 | 76.1 | 76.1 |



REPORT NUMBER: P413361

CATALOG NUMBER: TT-D6-735-U-RW-UPL

CANDELA DISTRIBUTION (continued):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 85° | 90° |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 112.5° | 83.1 | 83.1 | 84.0 | 84.0 | 84.0 | 84.0 | 84.6 | 84.6 | 84.0 | 84.0 | 84.0 |
| 115° | 91.1 | 91.1 | 92.0 | 92.0 | 92.0 | 92.0 | 93.0 | 93.0 | 92.0 | 92.0 | 92.0 |
| 117.5° | 100.5 | 100.5 | 101.0 | 101.4 | 101.4 | 101.4 | 102.4 | 102.4 | 101.4 | 101.4 | 101.4 |
| 120° | 109.9 | 109.9 | 109.9 | 110.8 | 110.8 | 110.8 | 111.8 | 111.8 | 110.8 | 110.8 | 110.8 |
| 122.5° | 120.7 | 120.7 | 121.2 | 121.6 | 121.6 | 121.6 | 122.6 | 122.6 | 122.1 | 122.1 | 121.6 |
| 125° | 131.5 | 131.5 | 132.4 | 132.4 | 132.4 | 132.4 | 133.4 | 133.4 | 133.4 | 133.4 | 132.4 |
| 127.5° | 143.2 | 143.2 | 144.2 | 144.2 | 144.2 | 144.2 | 145.1 | 145.1 | 145.1 | 145.1 | 144.2 |
| 130° | 155.0 | 155.0 | 155.9 | 155.9 | 155.9 | 155.9 | 156.8 | 156.8 | 156.8 | 156.8 | 155.9 |
| 132.5° | 167.2 | 167.2 | 167.6 | 167.6 | 167.6 | 168.1 | 168.6 | 168.6 | 168.6 | 168.6 | 168.1 |
| 135° | 179.4 | 179.4 | 179.4 | 179.4 | 179.4 | 180.3 | 180.3 | 180.3 | 180.3 | 180.3 | 180.3 |
| 137.5° | 191.2 | 190.6 | 191.2 | 190.6 | 191.2 | 191.6 | 191.6 | 191.6 | 191.6 | 191.6 | 191.6 |
| 140° | 202.9 | 201.9 | 202.9 | 201.9 | 202.9 | 202.9 | 202.9 | 202.9 | 202.9 | 202.9 | 202.9 |
| 142.5° | 213.7 | 213.2 | 213.7 | 212.7 | 213.7 | 213.7 | 213.7 | 213.7 | 213.7 | 213.7 | 213.7 |
| 145° | 224.5 | 224.5 | 224.5 | 223.5 | 224.5 | 224.5 | 224.5 | 224.5 | 224.5 | 224.5 | 224.5 |
| 147.5° | 235.8 | 235.3 | 235.8 | 234.8 | 235.8 | 235.8 | 235.8 | 235.8 | 235.8 | 235.8 | 235.8 |
| 150° | 247.0 | 246.1 | 247.0 | 246.1 | 247.0 | 247.0 | 247.0 | 247.0 | 247.0 | 247.0 | 247.0 |
| 152.5° | 256.0 | 255.5 | 256.4 | 255.5 | 256.0 | 256.0 | 256.4 | 256.0 | 256.0 | 256.0 | 256.0 |
| 155° | 264.9 | 264.9 | 265.8 | 264.9 | 264.9 | 264.9 | 265.8 | 264.9 | 264.9 | 264.9 | 264.9 |
| 157.5° | 272.4 | 272.4 | 273.3 | 272.4 | 272.4 | 272.4 | 273.3 | 272.4 | 272.4 | 272.4 | 272.4 |
| 160° | 279.9 | 279.9 | 280.8 | 279.9 | 279.9 | 279.9 | 280.8 | 279.9 | 279.9 | 279.9 | 279.9 |
| 162.5° | 286.0 | 286.0 | 286.9 | 286.0 | 286.0 | 286.0 | 286.9 | 286.0 | 286.0 | 286.0 | 286.0 |
| 165° | 292.1 | 292.1 | 293.0 | 292.1 | 292.1 | 292.1 | 293.0 | 292.1 | 292.1 | 292.1 | 292.1 |
| 167.5° | 295.8 | 295.8 | 296.8 | 295.8 | 295.8 | 295.8 | 296.8 | 295.8 | 295.8 | 295.8 | 295.8 |
| 170° | 299.6 | 299.6 | 300.5 | 299.6 | 299.6 | 299.6 | 300.5 | 299.6 | 299.6 | 299.6 | 299.6 |
| 172.5° | 302.0 | 302.0 | 302.8 | 302.0 | 302.4 | 302.0 | 302.8 | 302.0 | 302.0 | 302.0 | 302.0 |
| 175° | 304.3 | 304.3 | 305.2 | 304.3 | 305.2 | 304.3 | 305.2 | 304.3 | 304.3 | 304.3 | 304.3 |
| 177.5° | 305.2 | 305.2 | 305.7 | 305.2 | 305.7 | 305.2 | 305.7 | 305.2 | 305.2 | 305.2 | 305.2 |
| 180° | 306.2 | 306.2 | 306.2 | 306.2 | 306.2 | 306.2 | 306.2 | 306.2 | 306.2 | 306.2 | 306.2 |

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

Report Prepared for

Cooper Lighting Solutions

MCGRAW EDISON

Report Number: SP1-2411-284-1

Test Date: 11/15/2024

Luminaire Tested: TTN-D0-735-U-WQ

Data in this report applies to families of products including TT-xx-735 and TTN-xx-735

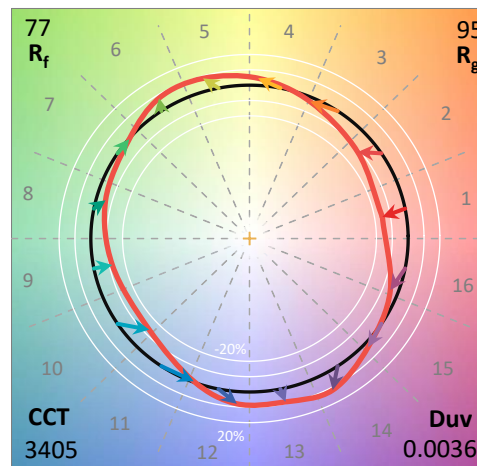
Test Information

Test Method: LM-79-2019
 Report Number: SP1-2411-284-1
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 11/15/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: MCGRAW EDISON
 Catalog Number: **TTN-D0-735-U-WQ**
 Description: TOPTIER NANO LED PARKING GARAGE LUMINAIRE. 3500K, 70 CRI LEDS AND WIDE DISTRIBUTION

Spectral Parameters

CCT (K): 3405
 CIE u': 0.2365
 CIE v': 0.5180
 Duv: 0.0036
 CIE x: 0.4148
 CIE y: 0.4038
 CIE z: 0.1814
 Peak Wavelength (nm): 596
 Dominant Wavelength (nm): 579
 Purity: 45.70672
 Rf: 76.6
 Rg: 95.4

| | | | |
|-----------|------|------|-------|
| CRI (Ra): | 73.9 | | |
| R1: | 71.3 | R9: | -18.0 |
| R2: | 80.3 | R10: | 53.1 |
| R3: | 87.8 | R11: | 68.6 |
| R4: | 73.2 | R12: | 42.6 |
| R5: | 69.8 | R13: | 72.5 |
| R6: | 71.8 | R14: | 92.7 |
| R7: | 82.8 | R15: | 64.3 |
| R8: | 54.1 | | |



Test Conditions

Stabilization Time: 38M
 Operation Time: 1H 38M
 Sphere Temperature (°C): 24.9

REPORT NUMBER: SP1-2411-284-1

| 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 | 10/22/2024 | 10/22/2025 |
| DC Power Source | IN0208 | 10/22/2024 | 10/22/2025 |
| Sphere Thermometer | IN0085 | 10/22/2024 | 10/22/2025 |
| Room Thermometer | IN0046 | 10/22/2024 | 10/22/2025 |

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CIE 1931 Chromaticity Diagram



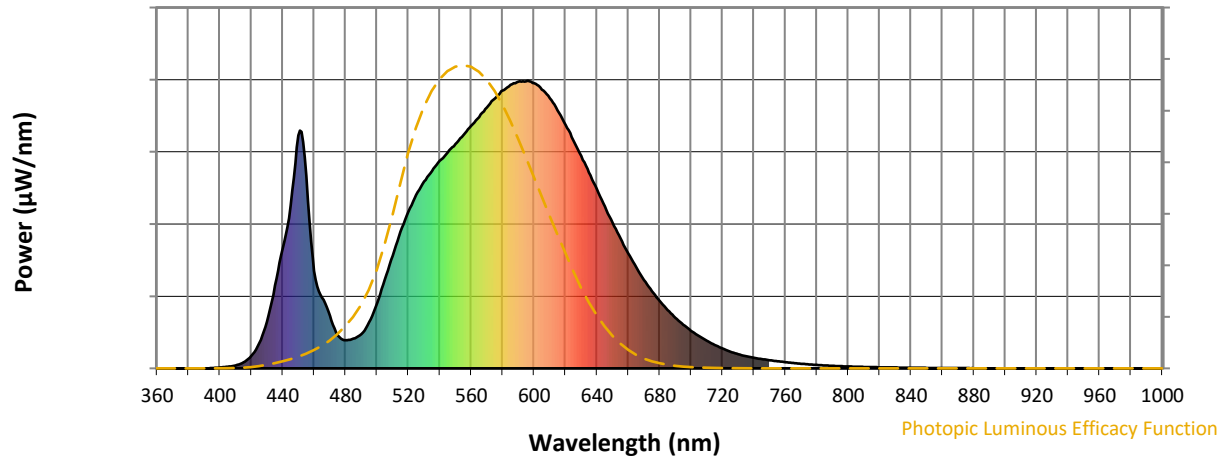
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 3500K 4-step quadrangle

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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 | 119 | NR | 620 | 846 | NR | 750 | 28 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 160 | NR | 625 | 793 | NR | 755 | 25 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 225 | NR | 630 | 739 | NR | 760 | 22 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 308 | NR | 635 | 681 | NR | 765 | 19 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 392 | NR | 640 | 623 | NR | 770 | 16 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 474 | NR | 645 | 563 | NR | 775 | 14 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 545 | NR | 650 | 506 | NR | 780 | 12 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 603 | NR | 655 | 451 | NR | 785 | 10 | NR | 915 | 0 | NR |
| 400 | 3 | NR | 530 | 649 | NR | 660 | 399 | NR | 790 | 9 | NR | 920 | 0 | NR |
| 405 | 5 | NR | 535 | 687 | NR | 665 | 352 | NR | 795 | 8 | NR | 925 | 0 | NR |
| 410 | 11 | NR | 540 | 721 | NR | 670 | 307 | NR | 800 | 6 | NR | 930 | 0 | NR |
| 415 | 21 | NR | 545 | 751 | NR | 675 | 268 | NR | 805 | 6 | NR | 935 | 0 | NR |
| 420 | 43 | NR | 550 | 779 | NR | 680 | 234 | NR | 810 | 5 | NR | 940 | 0 | NR |
| 425 | 88 | NR | 555 | 811 | NR | 685 | 203 | NR | 815 | 4 | NR | 945 | 0 | NR |
| 430 | 163 | NR | 560 | 843 | NR | 690 | 176 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 288 | NR | 565 | 873 | NR | 695 | 152 | NR | 825 | 3 | NR | 955 | 0 | NR |
| 440 | 416 | NR | 570 | 907 | NR | 700 | 131 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 566 | NR | 575 | 938 | NR | 705 | 112 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 810 | NR | 580 | 965 | NR | 710 | 96 | NR | 840 | 2 | NR | 970 | 0 | NR |
| 455 | 669 | NR | 585 | 986 | NR | 715 | 81 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 338 | NR | 590 | 997 | NR | 720 | 69 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 246 | NR | 595 | 997 | NR | 725 | 58 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 182 | NR | 600 | 991 | NR | 730 | 49 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 115 | NR | 605 | 968 | NR | 735 | 42 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 97 | NR | 610 | 939 | NR | 740 | 37 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 103 | NR | 615 | 896 | NR | 745 | 32 | NR | 875 | 1 | NR | | | |

REPORT NUMBER: SP1-2411-284-1

Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.33

| 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 | 119 | NR | 620 | 846 | NR | 750 | 28 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 160 | NR | 625 | 793 | NR | 755 | 25 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 225 | NR | 630 | 739 | NR | 760 | 22 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 308 | NR | 635 | 681 | NR | 765 | 19 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 392 | NR | 640 | 623 | NR | 770 | 16 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 474 | NR | 645 | 563 | NR | 775 | 14 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 545 | NR | 650 | 506 | NR | 780 | 12 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 603 | NR | 655 | 451 | NR | 785 | 10 | NR | 915 | 0 | NR |
| 400 | 3 | NR | 530 | 649 | NR | 660 | 399 | NR | 790 | 9 | NR | 920 | 0 | NR |
| 405 | 5 | NR | 535 | 687 | NR | 665 | 352 | NR | 795 | 8 | NR | 925 | 0 | NR |
| 410 | 11 | NR | 540 | 721 | NR | 670 | 307 | NR | 800 | 6 | NR | 930 | 0 | NR |
| 415 | 21 | NR | 545 | 751 | NR | 675 | 268 | NR | 805 | 6 | NR | 935 | 0 | NR |
| 420 | 43 | NR | 550 | 779 | NR | 680 | 234 | NR | 810 | 5 | NR | 940 | 0 | NR |
| 425 | 88 | NR | 555 | 811 | NR | 685 | 203 | NR | 815 | 4 | NR | 945 | 0 | NR |
| 430 | 163 | NR | 560 | 843 | NR | 690 | 176 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 288 | NR | 565 | 873 | NR | 695 | 152 | NR | 825 | 3 | NR | 955 | 0 | NR |
| 440 | 416 | NR | 570 | 907 | NR | 700 | 131 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 566 | NR | 575 | 938 | NR | 705 | 112 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 810 | NR | 580 | 965 | NR | 710 | 96 | NR | 840 | 2 | NR | 970 | 0 | NR |
| 455 | 669 | NR | 585 | 986 | NR | 715 | 81 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 338 | NR | 590 | 997 | NR | 720 | 69 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 246 | NR | 595 | 997 | NR | 725 | 58 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 182 | NR | 600 | 991 | NR | 730 | 49 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 115 | NR | 605 | 968 | NR | 735 | 42 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 97 | NR | 610 | 939 | NR | 740 | 37 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 103 | NR | 615 | 896 | NR | 745 | 32 | NR | 875 | 1 | NR | | | |

REPORT NUMBER: SP1-2411-284-1

Melanopic Flux vs. Wavelength



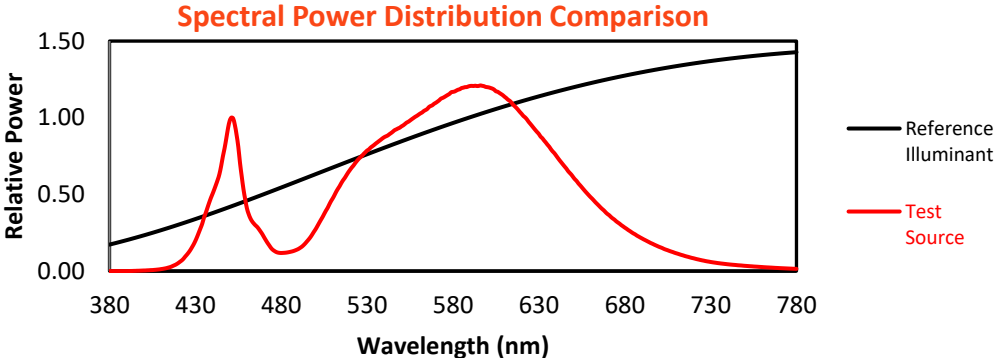
Melanopic Lumens: NR

M/P: 2.47

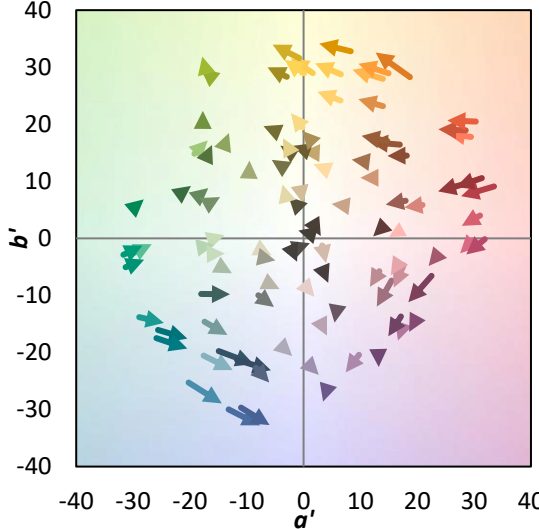
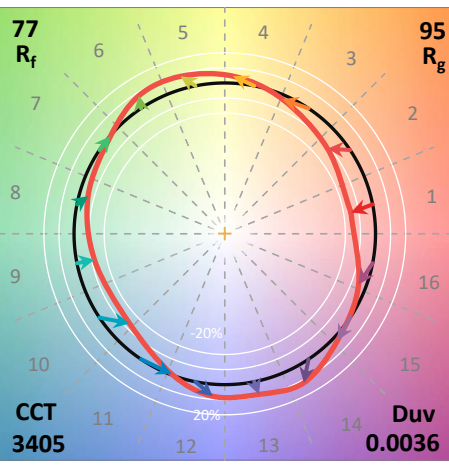
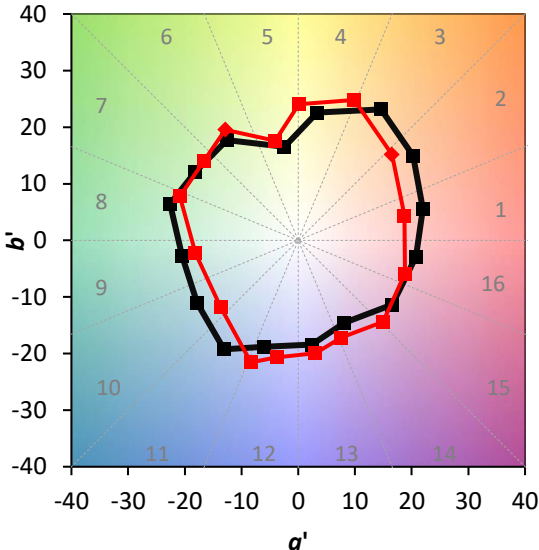
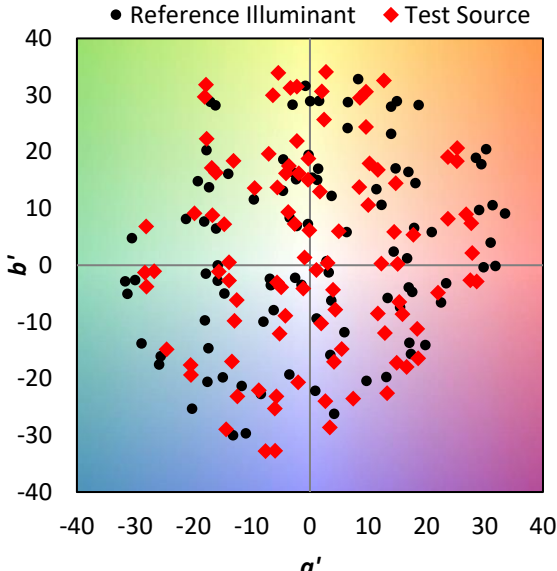
| λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360 | 0 | NR | 490 | 119 | NR | 620 | 846 | NR | 750 | 28 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 160 | NR | 625 | 793 | NR | 755 | 25 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 225 | NR | 630 | 739 | NR | 760 | 22 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 308 | NR | 635 | 681 | NR | 765 | 19 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 392 | NR | 640 | 623 | NR | 770 | 16 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 474 | NR | 645 | 563 | NR | 775 | 14 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 545 | NR | 650 | 506 | NR | 780 | 12 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 603 | NR | 655 | 451 | NR | 785 | 10 | NR | 915 | 0 | NR |
| 400 | 3 | NR | 530 | 649 | NR | 660 | 399 | NR | 790 | 9 | NR | 920 | 0 | NR |
| 405 | 5 | NR | 535 | 687 | NR | 665 | 352 | NR | 795 | 8 | NR | 925 | 0 | NR |
| 410 | 11 | NR | 540 | 721 | NR | 670 | 307 | NR | 800 | 6 | NR | 930 | 0 | NR |
| 415 | 21 | NR | 545 | 751 | NR | 675 | 268 | NR | 805 | 6 | NR | 935 | 0 | NR |
| 420 | 43 | NR | 550 | 779 | NR | 680 | 234 | NR | 810 | 5 | NR | 940 | 0 | NR |
| 425 | 88 | NR | 555 | 811 | NR | 685 | 203 | NR | 815 | 4 | NR | 945 | 0 | NR |
| 430 | 163 | NR | 560 | 843 | NR | 690 | 176 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 288 | NR | 565 | 873 | NR | 695 | 152 | NR | 825 | 3 | NR | 955 | 0 | NR |
| 440 | 416 | NR | 570 | 907 | NR | 700 | 131 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 566 | NR | 575 | 938 | NR | 705 | 112 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 810 | NR | 580 | 965 | NR | 710 | 96 | NR | 840 | 2 | NR | 970 | 0 | NR |
| 455 | 669 | NR | 585 | 986 | NR | 715 | 81 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 338 | NR | 590 | 997 | NR | 720 | 69 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 246 | NR | 595 | 997 | NR | 725 | 58 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 182 | NR | 600 | 991 | NR | 730 | 49 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 115 | NR | 605 | 968 | NR | 735 | 42 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 97 | NR | 610 | 939 | NR | 740 | 37 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 103 | NR | 615 | 896 | NR | 745 | 32 | NR | 875 | 1 | NR | | | |

Summary

$R_f = 76.6$
 $R_g = 95.4$
 $CIE R_a = 73.9$
 $R_9 = -18.0$

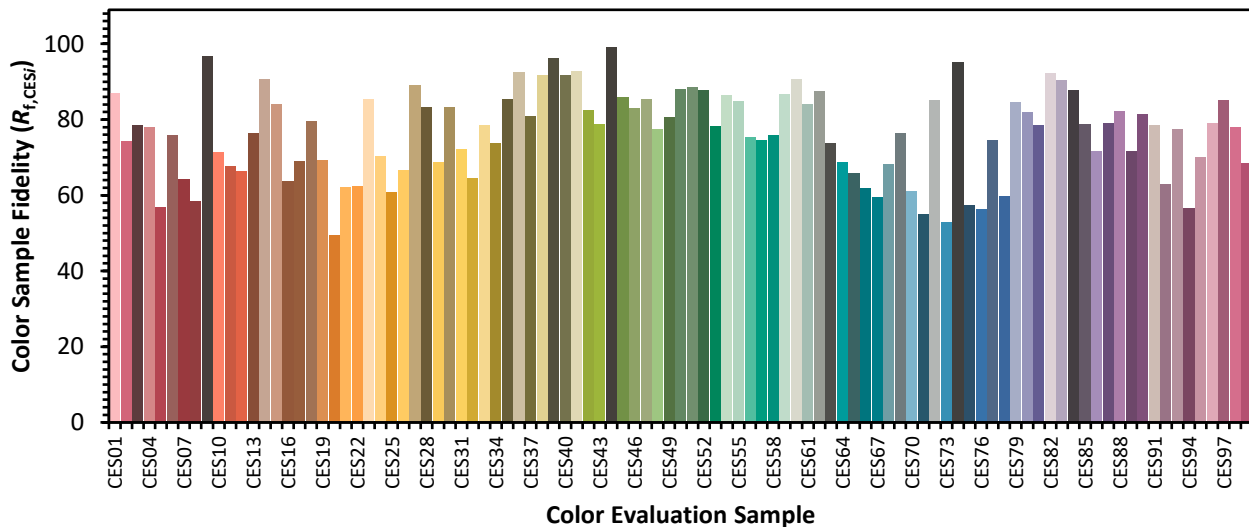


Color Vector Graphics

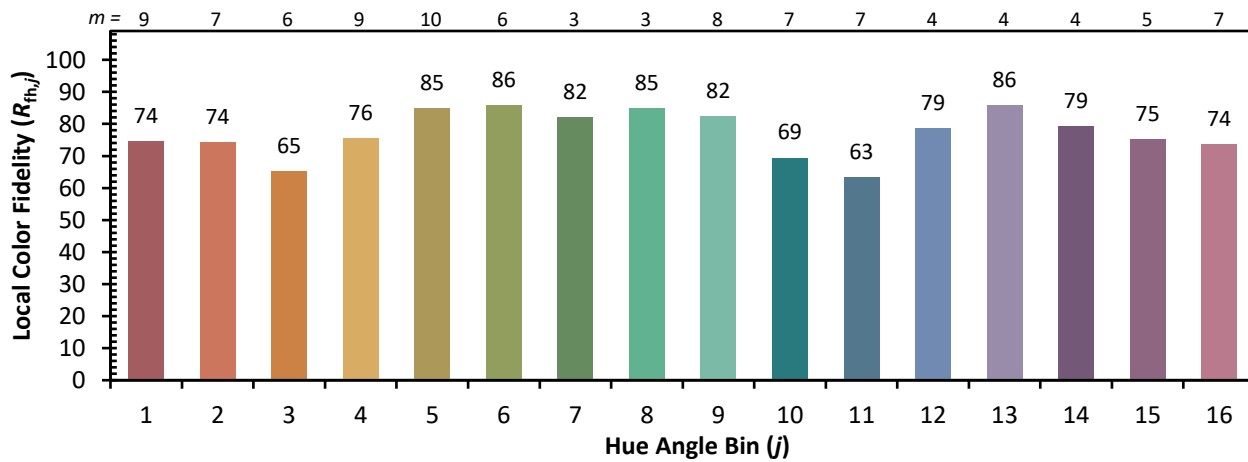


Individual Sample Fidelity Index ($R_{f,i}$)

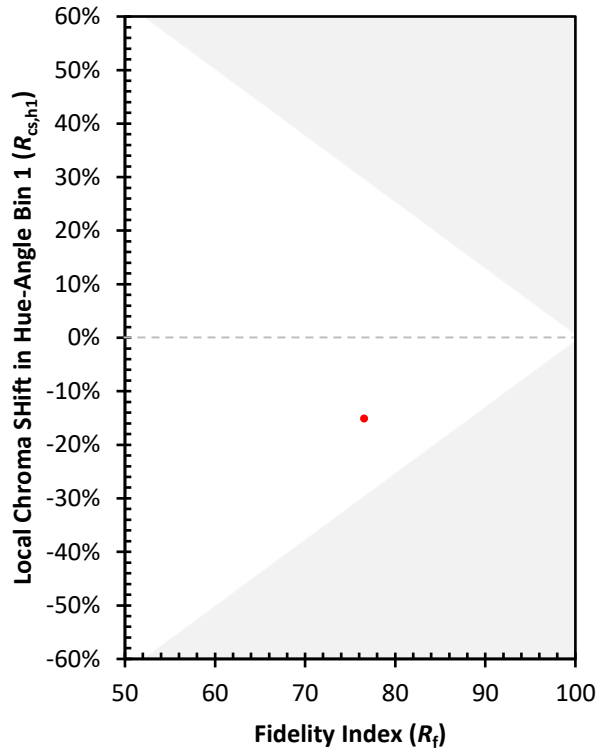
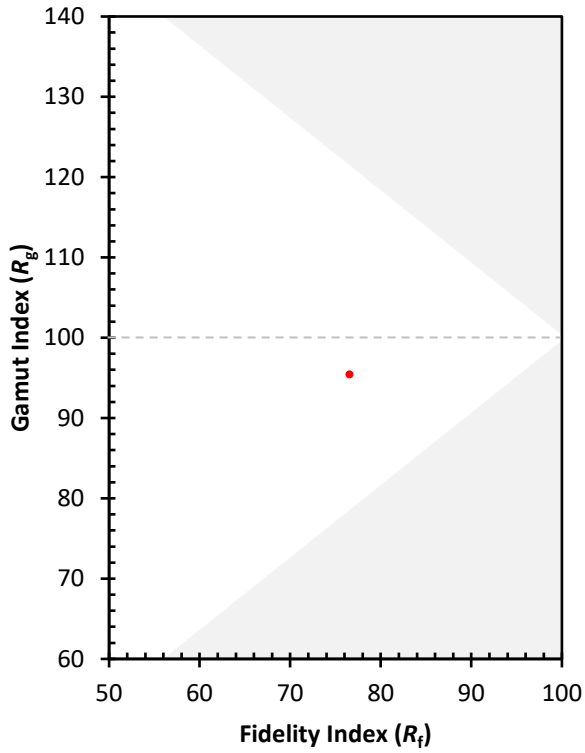
| | | | |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 67 | CES51 = 88 | CES76 = 56 |
| CES02 = 62 | CES27 = 89 | CES52 = 88 | CES77 = 75 |
| CES03 = 31 | CES28 = 83 | CES53 = 78 | CES78 = 60 |
| CES04 = 70 | CES29 = 69 | CES54 = 86 | CES79 = 85 |
| CES05 = 48 | CES30 = 83 | CES55 = 85 | CES80 = 82 |
| CES06 = 51 | CES31 = 72 | CES56 = 75 | CES81 = 78 |
| CES07 = 41 | CES32 = 65 | CES57 = 75 | CES82 = 92 |
| CES08 = 40 | CES33 = 78 | CES58 = 76 | CES83 = 90 |
| CES09 = 29 | CES34 = 74 | CES59 = 87 | CES84 = 88 |
| CES10 = 75 | CES35 = 86 | CES60 = 91 | CES85 = 79 |
| CES11 = 58 | CES36 = 93 | CES61 = 84 | CES86 = 72 |
| CES12 = 64 | CES37 = 81 | CES62 = 88 | CES87 = 79 |
| CES13 = 43 | CES38 = 92 | CES63 = 74 | CES88 = 82 |
| CES14 = 74 | CES39 = 96 | CES64 = 69 | CES89 = 72 |
| CES15 = 71 | CES40 = 92 | CES65 = 66 | CES90 = 82 |
| CES16 = 47 | CES41 = 93 | CES66 = 62 | CES91 = 79 |
| CES17 = 50 | CES42 = 83 | CES67 = 60 | CES92 = 63 |
| CES18 = 56 | CES43 = 79 | CES68 = 68 | CES93 = 77 |
| CES19 = 72 | CES44 = 99 | CES69 = 76 | CES94 = 56 |
| CES20 = 65 | CES45 = 86 | CES70 = 61 | CES95 = 70 |
| CES21 = 86 | CES46 = 83 | CES71 = 55 | CES96 = 79 |
| CES22 = 79 | CES47 = 85 | CES72 = 85 | CES97 = 85 |
| CES23 = 92 | CES48 = 78 | CES73 = 53 | CES98 = 78 |
| CES24 = 91 | CES49 = 81 | CES74 = 95 | CES99 = 68 |
| CES25 = 72 | CES50 = 88 | CES75 = 57 | |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)