

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: P832506

Luminaire Tested: **TTN-D0-740-U-DL-CG**

Issue Date: 5/14/2024

**Test Information**

Test Method: LM-79-08  
Report Number: P832506  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2312-254-15)  
Test Lab: INNOVATION CENTER  
Issue Date: 5/14/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: MCGRAW-EDISON  
Catalog Number: TTN-D0-740-U-DL-CG  
Description: TOPTIER NANO LED PARKING GARAGE LUMINAIRE  
4000K, 70 CRI LEDS AND DRIVE LANE DISTRIBUTION WITH CLEAR GLASS  
Light Source: -  
Ballast/Driver: -

**Summary**

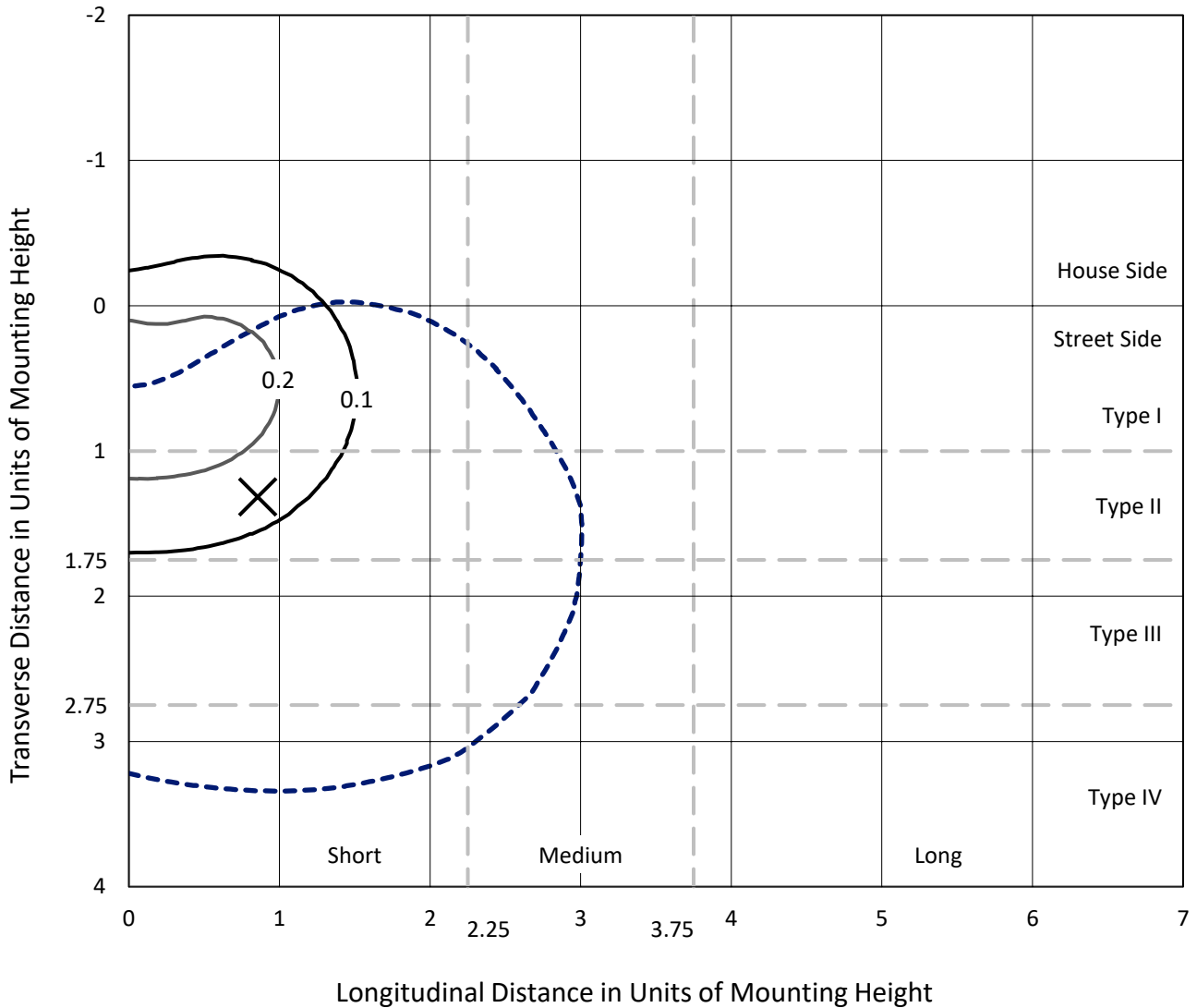
Lumens per Lamp: N/A  
Luminaire Lumens: 1141.9 lumens  
Efficiency: N/A  
Efficacy: 106.7 lumens/watt  
Luminous Opening: Circular (Dia: 0.71' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B0 - U0 - G1  
  
Input Watts (W): 10.7  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage 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: 24 FT



REPORT NUMBER: P832506  
 CATALOG NUMBER: TTN-D0-740-U-DL-CG

### Iso-Footcandle Lines of Horizontal Illumination

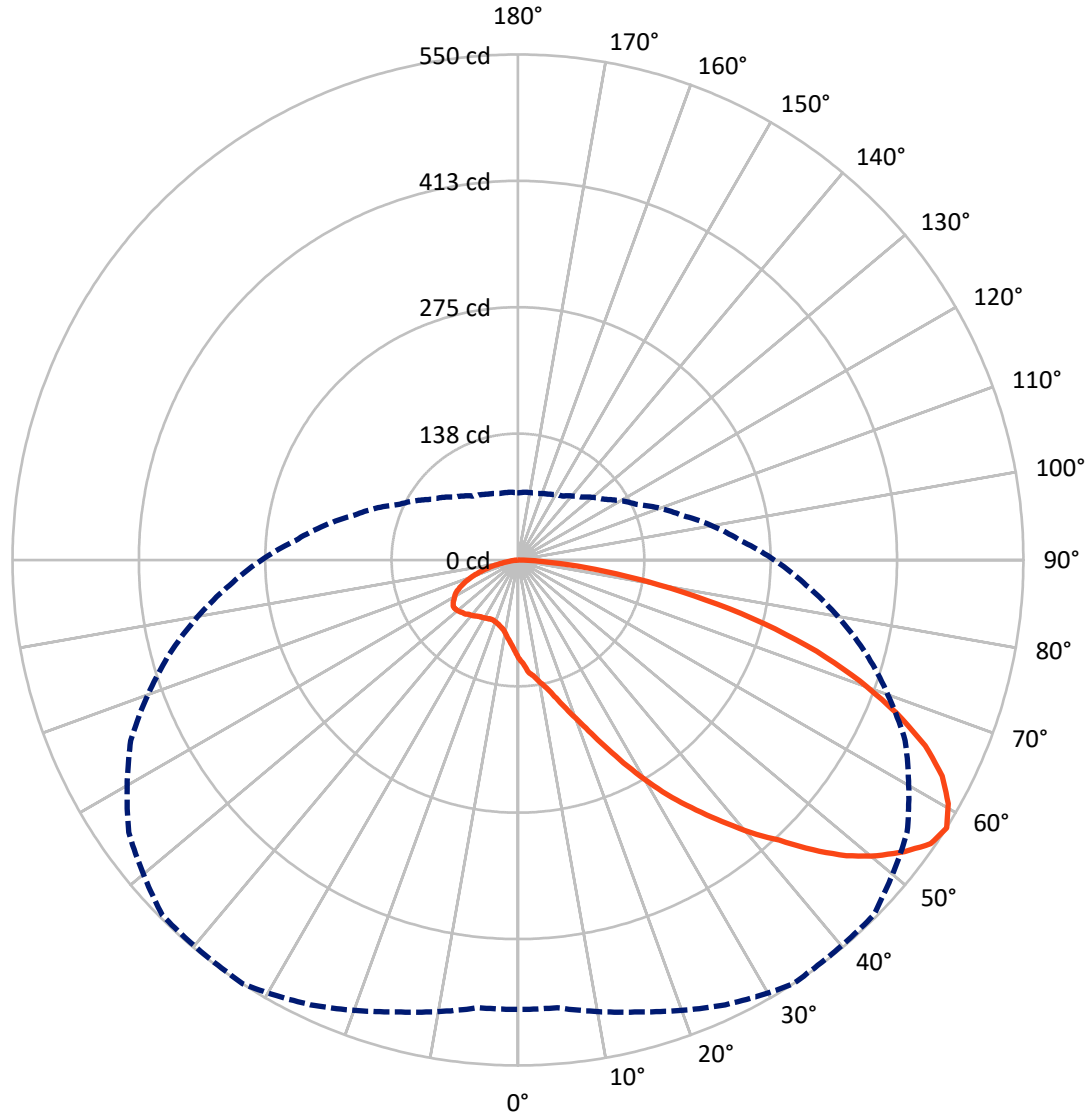
× Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 0.3 fc  
 Type IV - Short - N/A

REPORT NUMBER: P832506  
CATALOG NUMBER: TTN-D0-740-U-DL-CG

### Luminous Intensity Polar Plot



— Vertical Plane Through 33-Deg Lateral      - - - Horizontal Cone Through 57.5-Deg Vertical

REPORT NUMBER: P832506

CATALOG NUMBER: TTN-D0-740-U-DL-CG

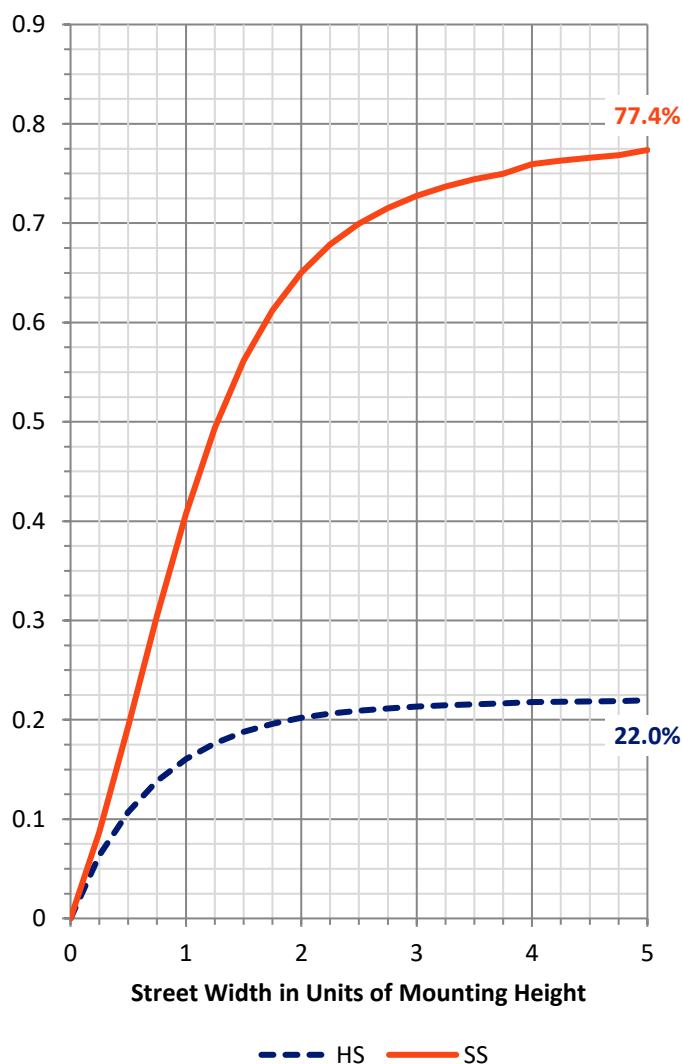
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 251.9    | 0.0    | 251.9  |
|                    | % Fixture | 22.1     | 0.0    | 22.1   |
| <b>Street Side</b> | Lumens    | 890.0    | 0.0    | 890.0  |
|                    | % Fixture | 77.9     | 0.0    | 77.9   |
| <b>Total</b>       | Lumens    | 1141.9   | 0.0    | 1141.9 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 10.2   | 0.9       |
| 10°-20°   | 33.2   | 2.9       |
| 20°-30°   | 70.0   | 6.1       |
| 30°-40°   | 127.2  | 11.1      |
| 40°-50°   | 200.9  | 17.6      |
| 50°-60°   | 266.9  | 23.4      |
| 60°-70°   | 256.9  | 22.5      |
| 70°-80°   | 150.8  | 13.2      |
| 80°-90°   | 25.9   | 2.3       |
| 90°-100°  | 0.0    | 0.0       |
| 100°-110° | 0.0    | 0.0       |
| 110°-120° | 0.0    | 0.0       |
| 120°-130° | 0.0    | 0.0       |
| 130°-140° | 0.0    | 0.0       |
| 140°-150° | 0.0    | 0.0       |
| 150°-160° | 0.0    | 0.0       |
| 160°-170° | 0.0    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| 0°-90°    | 1141.9 | 100.0     |
| 0°-180°   | 1141.9 | 100.0     |

**Coefficient of Utilization**



REPORT NUMBER: P832506

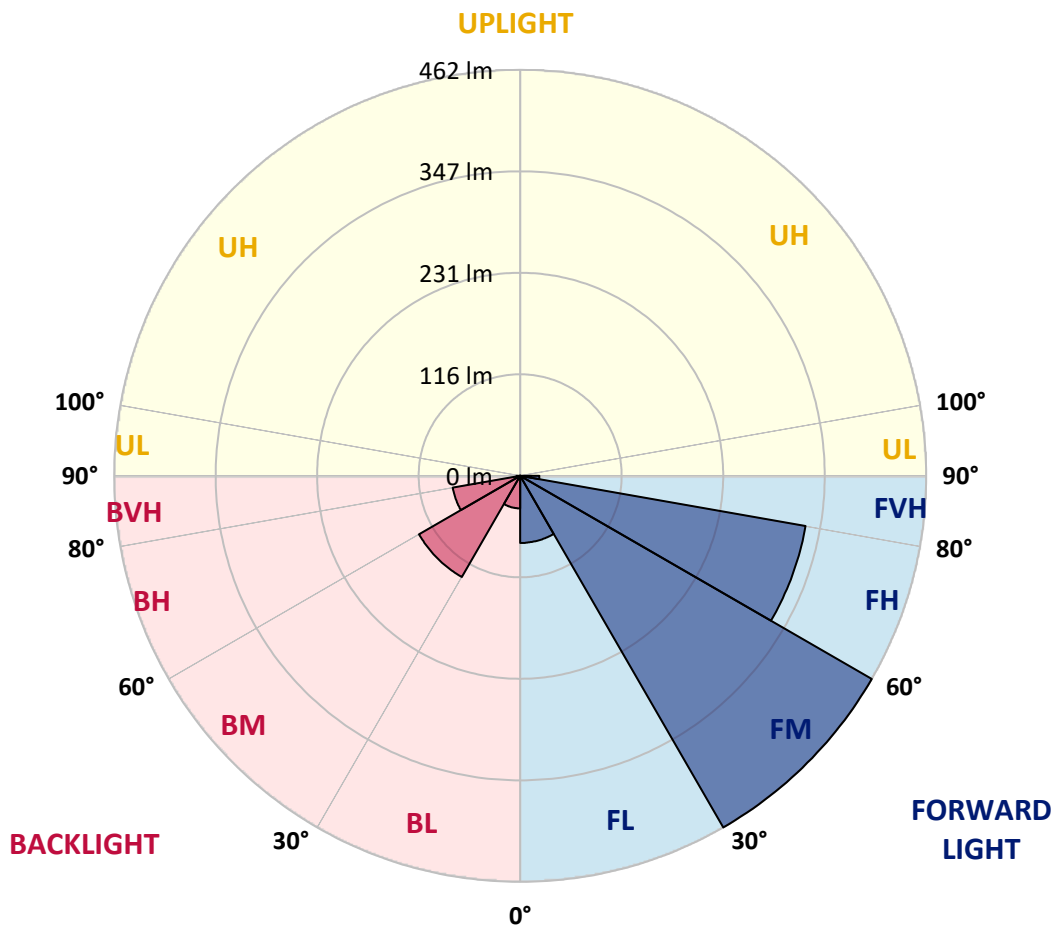
CATALOG NUMBER: TTN-D0-740-U-DL-CG

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

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |        |
|----------------|--------|-----------|-------------------------|------|--------|
|                |        |           | B                       | U    | G      |
| FL (0°-30°)    | 76.4   | 6.7       |                         |      |        |
| FM (30°-60°)   | 462.0  | 40.5      |                         |      |        |
| FH (60°-80°)   | 329.7  | 28.9      |                         |      | G0/660 |
| FVH (80°-90°)  | 21.9   | 1.9       |                         |      | G1/100 |
| BL (0°-30°)    | 37.1   | 3.2       | B0/110                  |      |        |
| BM (30°-60°)   | 133.0  | 11.6      | B0/220                  |      |        |
| BH (60°-80°)   | 77.9   | 6.8       | B0/110                  |      | G0/110 |
| BVH (80°-90°)  | 4.0    | 0.4       |                         |      | G0/10  |
| UL (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |        |
| UH (100°-180°) | 0.0    | 0.0       |                         | U0/0 |        |

**BUG Rating: B0-U0-G1**

Type IV Short





REPORT NUMBER: P832506  
 CATALOG NUMBER: TTN-D0-740-U-DL-CG

**CANDELA DISTRIBUTION (FULL):**

|       | 0°    | 5°    | 15°   | 25°   | 33°   | 35°   | 45°   | 55°   | 65°   | 75°   | 85°   |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 107.0 | 107.0 | 107.0 | 107.0 | 107.0 | 107.0 | 107.0 | 107.0 | 107.0 | 107.0 | 107.0 |
| 2.5°  | 114.0 | 115.0 | 114.0 | 114.0 | 113.0 | 113.0 | 112.0 | 111.0 | 110.0 | 109.0 | 107.0 |
| 5°    | 127.0 | 127.0 | 126.0 | 124.0 | 123.0 | 122.0 | 120.0 | 117.0 | 115.0 | 112.0 | 109.0 |
| 7.5°  | 133.0 | 133.0 | 132.0 | 130.0 | 128.0 | 127.0 | 124.0 | 120.0 | 117.0 | 113.0 | 109.0 |
| 10°   | 141.0 | 142.0 | 140.0 | 138.0 | 136.0 | 135.0 | 131.0 | 126.0 | 121.0 | 116.0 | 110.0 |
| 12.5° | 150.0 | 151.0 | 150.0 | 147.0 | 144.0 | 143.0 | 139.0 | 133.0 | 127.0 | 120.0 | 113.0 |
| 15°   | 162.1 | 164.1 | 161.0 | 159.0 | 156.0 | 155.0 | 150.0 | 143.0 | 136.0 | 127.0 | 118.0 |
| 17.5° | 176.1 | 177.1 | 175.1 | 172.1 | 170.1 | 169.1 | 164.1 | 156.0 | 146.0 | 136.0 | 125.0 |
| 20°   | 192.1 | 193.1 | 192.1 | 188.1 | 186.1 | 185.1 | 180.1 | 171.1 | 159.0 | 148.0 | 134.0 |
| 22.5° | 211.1 | 213.1 | 210.1 | 207.1 | 205.1 | 205.1 | 199.1 | 189.1 | 175.1 | 161.0 | 145.0 |
| 25°   | 233.1 | 236.1 | 232.1 | 230.1 | 228.1 | 227.1 | 222.1 | 210.1 | 194.1 | 177.1 | 157.0 |
| 27.5° | 260.1 | 262.1 | 259.1 | 258.1 | 254.1 | 254.1 | 246.1 | 232.1 | 215.1 | 195.1 | 172.1 |
| 30°   | 284.1 | 286.1 | 284.1 | 284.1 | 281.1 | 280.1 | 272.1 | 258.1 | 237.1 | 213.1 | 185.1 |
| 32.5° | 307.1 | 309.1 | 308.1 | 309.1 | 308.1 | 307.1 | 297.1 | 282.1 | 261.1 | 230.1 | 198.1 |
| 35°   | 330.1 | 333.1 | 332.1 | 335.1 | 334.1 | 333.1 | 325.1 | 307.1 | 282.1 | 251.1 | 212.1 |
| 37.5° | 354.1 | 357.1 | 357.1 | 360.1 | 361.1 | 361.1 | 352.1 | 333.1 | 305.1 | 270.1 | 228.1 |
| 40°   | 380.1 | 383.1 | 383.1 | 388.1 | 390.1 | 390.1 | 380.1 | 361.1 | 330.1 | 291.1 | 245.1 |
| 42.5° | 405.1 | 408.1 | 409.1 | 414.1 | 417.1 | 418.1 | 410.1 | 388.1 | 352.1 | 312.1 | 261.1 |
| 45°   | 429.1 | 432.1 | 435.1 | 445.1 | 450.1 | 449.1 | 443.1 | 420.1 | 380.1 | 334.1 | 278.1 |
| 47.5° | 452.1 | 456.1 | 461.1 | 474.1 | 481.1 | 480.1 | 476.1 | 450.1 | 406.1 | 355.1 | 293.1 |
| 50°   | 470.1 | 473.1 | 483.1 | 497.2 | 506.2 | 507.2 | 501.2 | 476.1 | 428.1 | 371.1 | 304.1 |
| 52.5° | 484.1 | 488.2 | 500.2 | 520.2 | 527.2 | 530.2 | 523.2 | 498.2 | 450.1 | 385.1 | 313.1 |
| 55°   | 494.2 | 494.2 | 512.2 | 535.2 | 545.2 | 547.2 | 547.2 | 516.2 | 463.1 | 394.1 | 318.1 |
| 57.5° | 489.2 | 489.2 | 509.2 | 534.2 | 550.2 | 549.2 | 547.2 | 517.2 | 465.1 | 392.1 | 315.1 |
| 60°   | 475.1 | 478.1 | 497.2 | 522.2 | 538.2 | 537.2 | 531.2 | 504.2 | 455.1 | 384.1 | 309.1 |
| 62.5° | 456.1 | 461.1 | 481.1 | 500.2 | 518.2 | 521.2 | 513.2 | 489.2 | 438.1 | 372.1 | 298.1 |
| 65°   | 420.1 | 427.1 | 452.1 | 473.1 | 487.2 | 493.2 | 483.1 | 461.1 | 415.1 | 349.1 | 275.1 |
| 67.5° | 380.1 | 385.1 | 406.1 | 436.1 | 444.1 | 450.1 | 445.1 | 422.1 | 383.1 | 312.1 | 249.1 |
| 70°   | 334.1 | 342.1 | 356.1 | 386.1 | 395.1 | 401.1 | 401.1 | 378.1 | 341.1 | 274.1 | 218.1 |
| 72.5° | 280.1 | 289.1 | 306.1 | 328.1 | 340.1 | 344.1 | 343.1 | 324.1 | 291.1 | 232.1 | 184.1 |
| 75°   | 221.1 | 228.1 | 248.1 | 264.1 | 277.1 | 280.1 | 279.1 | 263.1 | 233.1 | 187.1 | 146.0 |
| 77.5° | 163.1 | 170.1 | 185.1 | 197.1 | 209.1 | 207.1 | 207.1 | 195.1 | 176.1 | 139.0 | 111.0 |
| 80°   | 107.0 | 113.0 | 126.0 | 130.0 | 143.0 | 142.0 | 142.0 | 133.0 | 120.0 | 93.0  | 74.0  |
| 82.5° | 59.0  | 64.0  | 73.0  | 77.0  | 85.0  | 83.0  | 84.0  | 78.0  | 70.0  | 52.0  | 42.0  |
| 85°   | 21.0  | 25.0  | 30.0  | 33.0  | 37.0  | 37.0  | 37.0  | 32.0  | 30.0  | 20.0  | 17.0  |
| 87.5° | 1.0   | 2.0   | 4.0   | 4.0   | 6.0   | 6.0   | 6.0   | 4.0   | 4.0   | 1.0   | 1.0   |
| 90°   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |



REPORT NUMBER: P832506  
 CATALOG NUMBER: TTN-D0-740-U-DL-CG

**CANDELA DISTRIBUTION (continued):**

|       | 90°   | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 107.0 | 107.0 | 107.0 | 107.0 | 107.0 | 107.0 | 107.0 | 107.0 | 107.0 | 107.0 | 107.0 |
| 2.5°  | 106.0 | 105.0 | 104.0 | 102.0 | 101.0 | 100.0 | 99.0  | 98.0  | 98.0  | 98.0  | 98.0  |
| 5°    | 107.0 | 106.0 | 103.0 | 100.0 | 97.0  | 94.0  | 92.0  | 91.0  | 90.0  | 89.0  | 89.0  |
| 7.5°  | 107.0 | 105.0 | 101.0 | 97.0  | 94.0  | 90.0  | 87.0  | 84.0  | 82.0  | 81.0  | 81.0  |
| 10°   | 108.0 | 105.0 | 100.0 | 96.0  | 91.0  | 86.0  | 82.0  | 78.0  | 76.0  | 74.0  | 74.0  |
| 12.5° | 110.0 | 107.0 | 100.0 | 95.0  | 89.0  | 83.0  | 78.0  | 74.0  | 71.0  | 69.0  | 69.0  |
| 15°   | 114.0 | 110.0 | 102.0 | 95.0  | 88.0  | 81.0  | 76.0  | 71.0  | 68.0  | 66.0  | 66.0  |
| 17.5° | 120.0 | 115.0 | 105.0 | 95.0  | 87.0  | 80.0  | 74.0  | 69.0  | 65.0  | 63.0  | 63.0  |
| 20°   | 127.0 | 121.0 | 109.0 | 97.0  | 87.0  | 79.0  | 73.0  | 67.0  | 63.0  | 61.0  | 61.0  |
| 22.5° | 137.0 | 128.0 | 114.0 | 100.0 | 89.0  | 80.0  | 72.0  | 66.0  | 62.0  | 60.0  | 60.0  |
| 25°   | 148.0 | 138.0 | 120.0 | 104.0 | 91.0  | 80.0  | 72.0  | 66.0  | 62.0  | 60.0  | 59.0  |
| 27.5° | 160.0 | 149.0 | 127.0 | 108.0 | 93.0  | 82.0  | 73.0  | 66.0  | 62.0  | 60.0  | 60.0  |
| 30°   | 171.1 | 158.0 | 134.0 | 113.0 | 96.0  | 83.0  | 74.0  | 67.0  | 62.0  | 60.0  | 60.0  |
| 32.5° | 183.1 | 168.1 | 141.0 | 118.0 | 99.0  | 85.0  | 75.0  | 68.0  | 63.0  | 61.0  | 60.0  |
| 35°   | 195.1 | 178.1 | 148.0 | 122.0 | 102.0 | 87.0  | 76.0  | 69.0  | 64.0  | 62.0  | 62.0  |
| 37.5° | 208.1 | 189.1 | 155.0 | 127.0 | 105.0 | 89.0  | 78.0  | 70.0  | 65.0  | 63.0  | 63.0  |
| 40°   | 222.1 | 200.1 | 162.1 | 131.0 | 108.0 | 91.0  | 80.0  | 72.0  | 67.0  | 65.0  | 65.0  |
| 42.5° | 236.1 | 212.1 | 170.1 | 136.0 | 111.0 | 93.0  | 81.0  | 74.0  | 69.0  | 67.0  | 67.0  |
| 45°   | 250.1 | 222.1 | 177.1 | 141.0 | 114.0 | 96.0  | 84.0  | 76.0  | 71.0  | 69.0  | 69.0  |
| 47.5° | 263.1 | 233.1 | 183.1 | 144.0 | 117.0 | 98.0  | 85.0  | 78.0  | 73.0  | 72.0  | 71.0  |
| 50°   | 272.1 | 240.1 | 187.1 | 147.0 | 118.0 | 99.0  | 87.0  | 79.0  | 75.0  | 73.0  | 73.0  |
| 52.5° | 279.1 | 247.1 | 190.1 | 149.0 | 119.0 | 100.0 | 88.0  | 81.0  | 77.0  | 75.0  | 74.0  |
| 55°   | 283.1 | 248.1 | 190.1 | 147.0 | 118.0 | 100.0 | 88.0  | 81.0  | 77.0  | 75.0  | 75.0  |
| 57.5° | 279.1 | 243.1 | 186.1 | 143.0 | 115.0 | 97.0  | 85.0  | 79.0  | 75.0  | 74.0  | 73.0  |
| 60°   | 271.1 | 235.1 | 178.1 | 137.0 | 110.0 | 92.0  | 81.0  | 76.0  | 73.0  | 72.0  | 71.0  |
| 62.5° | 260.1 | 225.1 | 170.1 | 129.0 | 103.0 | 86.0  | 78.0  | 72.0  | 70.0  | 69.0  | 68.0  |
| 65°   | 238.1 | 206.1 | 157.0 | 119.0 | 94.0  | 79.0  | 71.0  | 67.0  | 65.0  | 63.0  | 62.0  |
| 67.5° | 214.1 | 185.1 | 139.0 | 107.0 | 83.0  | 71.0  | 64.0  | 60.0  | 57.0  | 57.0  | 56.0  |
| 70°   | 188.1 | 163.1 | 120.0 | 91.0  | 72.0  | 62.0  | 55.0  | 52.0  | 50.0  | 50.0  | 49.0  |
| 72.5° | 157.0 | 137.0 | 100.0 | 74.0  | 59.0  | 51.0  | 46.0  | 43.0  | 42.0  | 42.0  | 41.0  |
| 75°   | 126.0 | 108.0 | 79.0  | 58.0  | 46.0  | 40.0  | 36.0  | 34.0  | 33.0  | 33.0  | 32.0  |
| 77.5° | 93.0  | 79.0  | 57.0  | 42.0  | 33.0  | 29.0  | 26.0  | 25.0  | 24.0  | 24.0  | 23.0  |
| 80°   | 62.0  | 52.0  | 37.0  | 27.0  | 20.0  | 18.0  | 16.0  | 16.0  | 15.0  | 16.0  | 15.0  |
| 82.5° | 34.0  | 28.0  | 20.0  | 14.0  | 10.0  | 9.0   | 8.0   | 8.0   | 9.0   | 9.0   | 8.0   |
| 85°   | 13.0  | 10.0  | 7.0   | 4.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 2.0   |
| 87.5° | 1.0   | 1.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 90°   | 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

MCGRAW EDISON

Report Number: SP1-2411-284-2

Test Date: 11/20/2024

Luminaire Tested: TTN-D0-740-U-WQ

Data in this report applies to TT and TTN families of products

**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2411-284-2  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 11/20/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: MCGRAW EDISON  
 Catalog Number: **TTN-D0-740-U-WQ**  
 Description: TOPTIER NANO LED PARKING GARAGE LUMINAIRE. 4000K, 70 CRI LEDS AND WIDE DISTRIBUTION

**Spectral Parameters**

CCT (K): 3863  
 CIE u': 0.2247  
 CIE v': 0.5111  
 Duv: 0.0055  
 CIE x: 0.3911  
 CIE y: 0.3954  
 CIE z: 0.2136  
 Peak Wavelength (nm): 448  
 Dominant Wavelength (nm): 577  
 Purity: 36.03443  
 Rf: 74.7  
 Rg: 95.4

|           |      |      |       |
|-----------|------|------|-------|
| CRI (Ra): | 71.9 |      |       |
| R1:       | 69.4 | R9:  | -23.5 |
| R2:       | 76.9 | R10: | 45.4  |
| R3:       | 83.3 | R11: | 68.7  |
| R4:       | 72.7 | R12: | 38.7  |
| R5:       | 68.4 | R13: | 70.0  |
| R6:       | 67.5 | R14: | 90.3  |
| R7:       | 82.0 | R15: | 62.1  |
| R8:       | 55.3 |      |       |



**Test Conditions**

Stabilization Time: 37M  
 Operation Time: 1H 37M  
 Sphere Temperature (°C): 25.0

REPORT NUMBER: SP1-2411-284-2

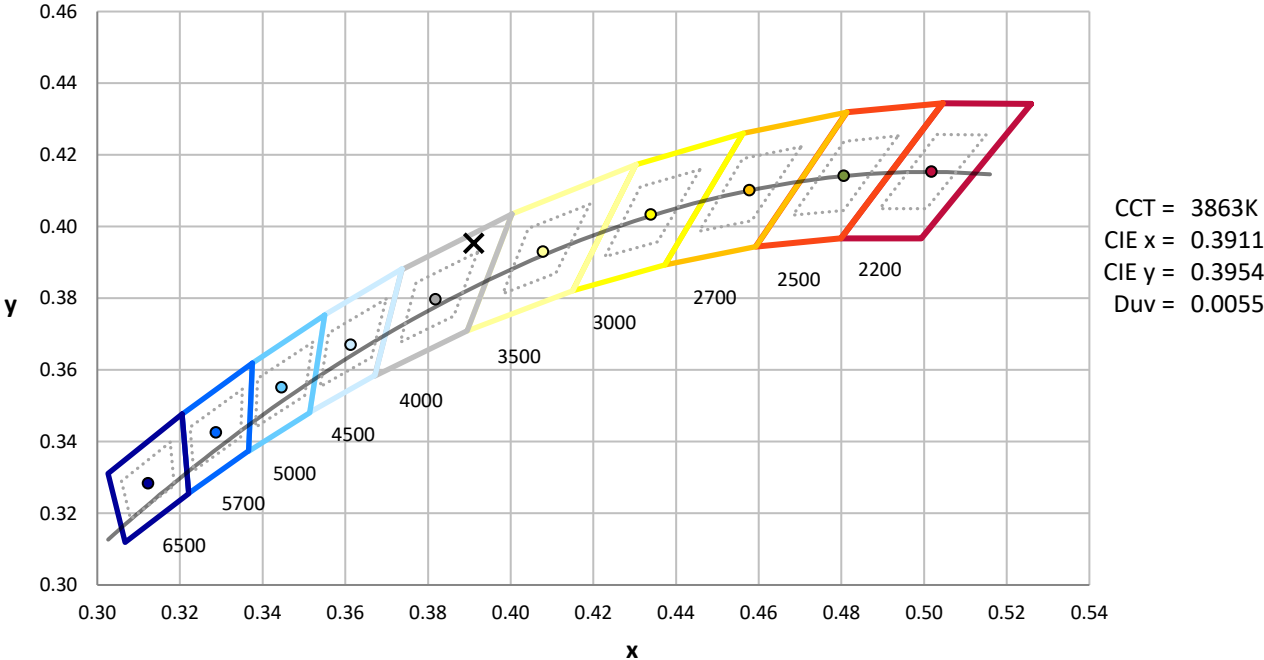
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date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

REPORT NUMBER: SP1-2411-284-2

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: SP1-2411-284-2

**Photopic Flux vs. Wavelength**



**Photopic Lumens: NR**

| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 118                      | NR            | 620    | 730                      | NR            | 750    | 25                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 170                      | NR            | 625    | 680                      | NR            | 755    | 22                       | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 245                      | NR            | 630    | 630                      | NR            | 760    | 19                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 338                      | NR            | 635    | 579                      | NR            | 765    | 17                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 431                      | NR            | 640    | 529                      | NR            | 770    | 14                       | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 521                      | NR            | 645    | 477                      | NR            | 775    | 13                       | NR            | 905    | 0                        | NR            |
| 390    | 1                        | NR            | 520    | 596                      | NR            | 650    | 429                      | NR            | 780    | 11                       | NR            | 910    | 0                        | NR            |
| 395    | 3                        | NR            | 525    | 655                      | NR            | 655    | 383                      | NR            | 785    | 9                        | NR            | 915    | 0                        | NR            |
| 400    | 6                        | NR            | 530    | 701                      | NR            | 660    | 338                      | NR            | 790    | 8                        | NR            | 920    | 0                        | NR            |
| 405    | 9                        | NR            | 535    | 739                      | NR            | 665    | 298                      | NR            | 795    | 7                        | NR            | 925    | 0                        | NR            |
| 410    | 16                       | NR            | 540    | 766                      | NR            | 670    | 261                      | NR            | 800    | 6                        | NR            | 930    | 0                        | NR            |
| 415    | 32                       | NR            | 545    | 791                      | NR            | 675    | 228                      | NR            | 805    | 5                        | NR            | 935    | 0                        | NR            |
| 420    | 65                       | NR            | 550    | 813                      | NR            | 680    | 200                      | NR            | 810    | 5                        | NR            | 940    | 0                        | NR            |
| 425    | 131                      | NR            | 555    | 833                      | NR            | 685    | 173                      | NR            | 815    | 4                        | NR            | 945    | 0                        | NR            |
| 430    | 245                      | NR            | 560    | 852                      | NR            | 690    | 151                      | NR            | 820    | 3                        | NR            | 950    | 0                        | NR            |
| 435    | 432                      | NR            | 565    | 870                      | NR            | 695    | 130                      | NR            | 825    | 3                        | NR            | 955    | 0                        | NR            |
| 440    | 622                      | NR            | 570    | 885                      | NR            | 700    | 112                      | NR            | 830    | 3                        | NR            | 960    | 0                        | NR            |
| 445    | 870                      | NR            | 575    | 900                      | NR            | 705    | 97                       | NR            | 835    | 2                        | NR            | 965    | 0                        | NR            |
| 450    | 969                      | NR            | 580    | 911                      | NR            | 710    | 83                       | NR            | 840    | 2                        | NR            | 970    | 0                        | NR            |
| 455    | 544                      | NR            | 585    | 916                      | NR            | 715    | 71                       | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 304                      | NR            | 590    | 912                      | NR            | 720    | 60                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 231                      | NR            | 595    | 901                      | NR            | 725    | 51                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 142                      | NR            | 600    | 882                      | NR            | 730    | 43                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 96                       | NR            | 605    | 855                      | NR            | 735    | 37                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 92                       | NR            | 610    | 820                      | NR            | 740    | 32                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 96                       | NR            | 615    | 776                      | NR            | 745    | 29                       | NR            | 875    | 1                        | NR            |        |                          |               |

REPORT NUMBER: SP1-2411-284-2

**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    | 118                      | NR            | 620    | 730                      | NR            | 750    | 25                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 170                      | NR            | 625    | 680                      | NR            | 755    | 22                       | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 245                      | NR            | 630    | 630                      | NR            | 760    | 19                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 338                      | NR            | 635    | 579                      | NR            | 765    | 17                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 431                      | NR            | 640    | 529                      | NR            | 770    | 14                       | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 521                      | NR            | 645    | 477                      | NR            | 775    | 13                       | NR            | 905    | 0                        | NR            |
| 390    | 1                        | NR            | 520    | 596                      | NR            | 650    | 429                      | NR            | 780    | 11                       | NR            | 910    | 0                        | NR            |
| 395    | 3                        | NR            | 525    | 655                      | NR            | 655    | 383                      | NR            | 785    | 9                        | NR            | 915    | 0                        | NR            |
| 400    | 6                        | NR            | 530    | 701                      | NR            | 660    | 338                      | NR            | 790    | 8                        | NR            | 920    | 0                        | NR            |
| 405    | 9                        | NR            | 535    | 739                      | NR            | 665    | 298                      | NR            | 795    | 7                        | NR            | 925    | 0                        | NR            |
| 410    | 16                       | NR            | 540    | 766                      | NR            | 670    | 261                      | NR            | 800    | 6                        | NR            | 930    | 0                        | NR            |
| 415    | 32                       | NR            | 545    | 791                      | NR            | 675    | 228                      | NR            | 805    | 5                        | NR            | 935    | 0                        | NR            |
| 420    | 65                       | NR            | 550    | 813                      | NR            | 680    | 200                      | NR            | 810    | 5                        | NR            | 940    | 0                        | NR            |
| 425    | 131                      | NR            | 555    | 833                      | NR            | 685    | 173                      | NR            | 815    | 4                        | NR            | 945    | 0                        | NR            |
| 430    | 245                      | NR            | 560    | 852                      | NR            | 690    | 151                      | NR            | 820    | 3                        | NR            | 950    | 0                        | NR            |
| 435    | 432                      | NR            | 565    | 870                      | NR            | 695    | 130                      | NR            | 825    | 3                        | NR            | 955    | 0                        | NR            |
| 440    | 622                      | NR            | 570    | 885                      | NR            | 700    | 112                      | NR            | 830    | 3                        | NR            | 960    | 0                        | NR            |
| 445    | 870                      | NR            | 575    | 900                      | NR            | 705    | 97                       | NR            | 835    | 2                        | NR            | 965    | 0                        | NR            |
| 450    | 969                      | NR            | 580    | 911                      | NR            | 710    | 83                       | NR            | 840    | 2                        | NR            | 970    | 0                        | NR            |
| 455    | 544                      | NR            | 585    | 916                      | NR            | 715    | 71                       | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 304                      | NR            | 590    | 912                      | NR            | 720    | 60                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 231                      | NR            | 595    | 901                      | NR            | 725    | 51                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 142                      | NR            | 600    | 882                      | NR            | 730    | 43                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 96                       | NR            | 605    | 855                      | NR            | 735    | 37                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 92                       | NR            | 610    | 820                      | NR            | 740    | 32                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 96                       | NR            | 615    | 776                      | NR            | 745    | 29                       | NR            | 875    | 1                        | NR            |        |                          |               |

REPORT NUMBER: SP1-2411-284-2

**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: NR**

**M/P: 2.72**

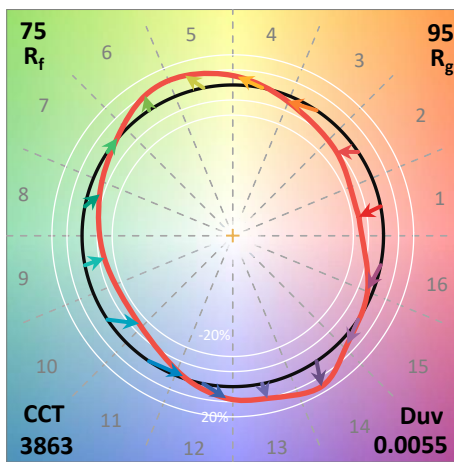
| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 118                      | NR            | 620    | 730                      | NR            | 750    | 25                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 170                      | NR            | 625    | 680                      | NR            | 755    | 22                       | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 245                      | NR            | 630    | 630                      | NR            | 760    | 19                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 338                      | NR            | 635    | 579                      | NR            | 765    | 17                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 431                      | NR            | 640    | 529                      | NR            | 770    | 14                       | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 521                      | NR            | 645    | 477                      | NR            | 775    | 13                       | NR            | 905    | 0                        | NR            |
| 390    | 1                        | NR            | 520    | 596                      | NR            | 650    | 429                      | NR            | 780    | 11                       | NR            | 910    | 0                        | NR            |
| 395    | 3                        | NR            | 525    | 655                      | NR            | 655    | 383                      | NR            | 785    | 9                        | NR            | 915    | 0                        | NR            |
| 400    | 6                        | NR            | 530    | 701                      | NR            | 660    | 338                      | NR            | 790    | 8                        | NR            | 920    | 0                        | NR            |
| 405    | 9                        | NR            | 535    | 739                      | NR            | 665    | 298                      | NR            | 795    | 7                        | NR            | 925    | 0                        | NR            |
| 410    | 16                       | NR            | 540    | 766                      | NR            | 670    | 261                      | NR            | 800    | 6                        | NR            | 930    | 0                        | NR            |
| 415    | 32                       | NR            | 545    | 791                      | NR            | 675    | 228                      | NR            | 805    | 5                        | NR            | 935    | 0                        | NR            |
| 420    | 65                       | NR            | 550    | 813                      | NR            | 680    | 200                      | NR            | 810    | 5                        | NR            | 940    | 0                        | NR            |
| 425    | 131                      | NR            | 555    | 833                      | NR            | 685    | 173                      | NR            | 815    | 4                        | NR            | 945    | 0                        | NR            |
| 430    | 245                      | NR            | 560    | 852                      | NR            | 690    | 151                      | NR            | 820    | 3                        | NR            | 950    | 0                        | NR            |
| 435    | 432                      | NR            | 565    | 870                      | NR            | 695    | 130                      | NR            | 825    | 3                        | NR            | 955    | 0                        | NR            |
| 440    | 622                      | NR            | 570    | 885                      | NR            | 700    | 112                      | NR            | 830    | 3                        | NR            | 960    | 0                        | NR            |
| 445    | 870                      | NR            | 575    | 900                      | NR            | 705    | 97                       | NR            | 835    | 2                        | NR            | 965    | 0                        | NR            |
| 450    | 969                      | NR            | 580    | 911                      | NR            | 710    | 83                       | NR            | 840    | 2                        | NR            | 970    | 0                        | NR            |
| 455    | 544                      | NR            | 585    | 916                      | NR            | 715    | 71                       | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 304                      | NR            | 590    | 912                      | NR            | 720    | 60                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 231                      | NR            | 595    | 901                      | NR            | 725    | 51                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 142                      | NR            | 600    | 882                      | NR            | 730    | 43                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 96                       | NR            | 605    | 855                      | NR            | 735    | 37                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 92                       | NR            | 610    | 820                      | NR            | 740    | 32                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 96                       | NR            | 615    | 776                      | NR            | 745    | 29                       | NR            | 875    | 1                        | NR            |        |                          |               |

**Summary**

$R_f = 74.7$   
 $R_g = 95.4$   
 $CIE R_a = 71.9$   
 $R_g = -23.5$



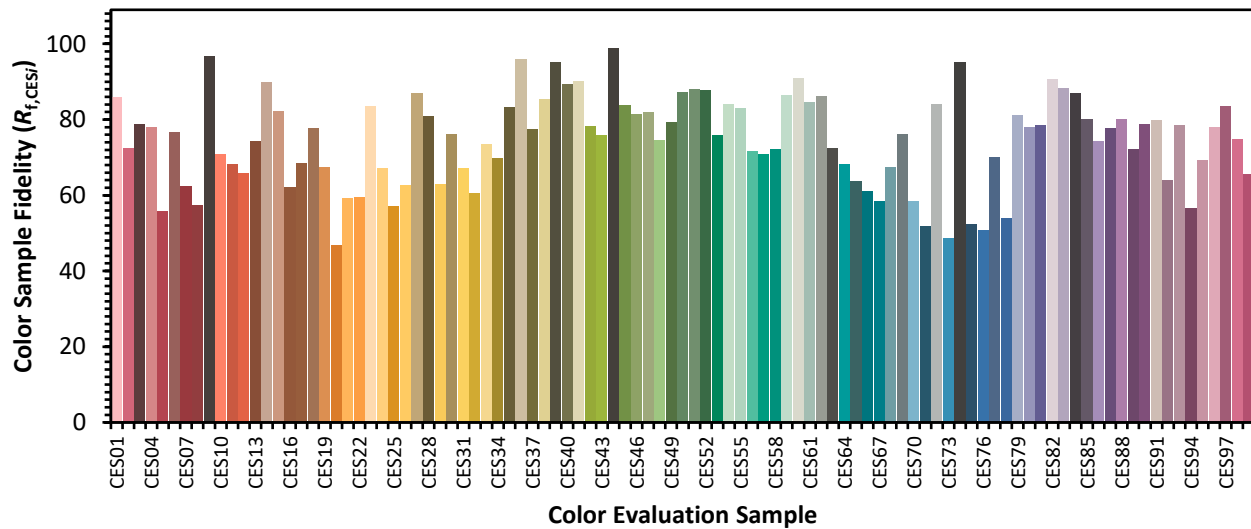
**Color Vector Graphics**





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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 63 | CES51 = 88 | CES76 = 51 |
| CES02 = 61 | CES27 = 87 | CES52 = 88 | CES77 = 70 |
| CES03 = 30 | CES28 = 81 | CES53 = 76 | CES78 = 54 |
| CES04 = 70 | CES29 = 63 | CES54 = 84 | CES79 = 81 |
| CES05 = 47 | CES30 = 76 | CES55 = 83 | CES80 = 78 |
| CES06 = 50 | CES31 = 67 | CES56 = 72 | CES81 = 79 |
| CES07 = 40 | CES32 = 61 | CES57 = 71 | CES82 = 91 |
| CES08 = 39 | CES33 = 73 | CES58 = 72 | CES83 = 88 |
| CES09 = 29 | CES34 = 70 | CES59 = 86 | CES84 = 87 |
| CES10 = 74 | CES35 = 83 | CES60 = 91 | CES85 = 80 |
| CES11 = 57 | CES36 = 96 | CES61 = 85 | CES86 = 74 |
| CES12 = 63 | CES37 = 77 | CES62 = 86 | CES87 = 78 |
| CES13 = 42 | CES38 = 85 | CES63 = 72 | CES88 = 80 |
| CES14 = 74 | CES39 = 95 | CES64 = 68 | CES89 = 72 |
| CES15 = 71 | CES40 = 89 | CES65 = 64 | CES90 = 79 |
| CES16 = 46 | CES41 = 90 | CES66 = 61 | CES91 = 80 |
| CES17 = 49 | CES42 = 78 | CES67 = 58 | CES92 = 64 |
| CES18 = 56 | CES43 = 76 | CES68 = 67 | CES93 = 78 |
| CES19 = 71 | CES44 = 99 | CES69 = 76 | CES94 = 57 |
| CES20 = 65 | CES45 = 84 | CES70 = 58 | CES95 = 69 |
| CES21 = 86 | CES46 = 81 | CES71 = 52 | CES96 = 78 |
| CES22 = 78 | CES47 = 82 | CES72 = 84 | CES97 = 84 |
| CES23 = 92 | CES48 = 75 | CES73 = 49 | CES98 = 75 |
| CES24 = 91 | CES49 = 79 | CES74 = 95 | CES99 = 66 |
| CES25 = 72 | CES50 = 87 | CES75 = 52 |            |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)