

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: P437056

Luminaire Tested: **ISS-SA1A-760-U-T4W**

Issue Date: 12/9/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P437056  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2011-074-12)  
Test Lab: INNOVATION CENTER  
Issue Date: 12/9/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: ISS-SA1A-760-U-T4W  
Description: IMPACT ELITE LED QUARTER SPHERE LUMINAIRE  
(1) 70 CRI, 5700K, 350mA LIGHTSQUARE WITH 16 LEDS AND TYPE IV WIDE OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 2780 lumens  
Efficiency: N/A  
Efficacy: 138.3 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B1 - U0 - G1

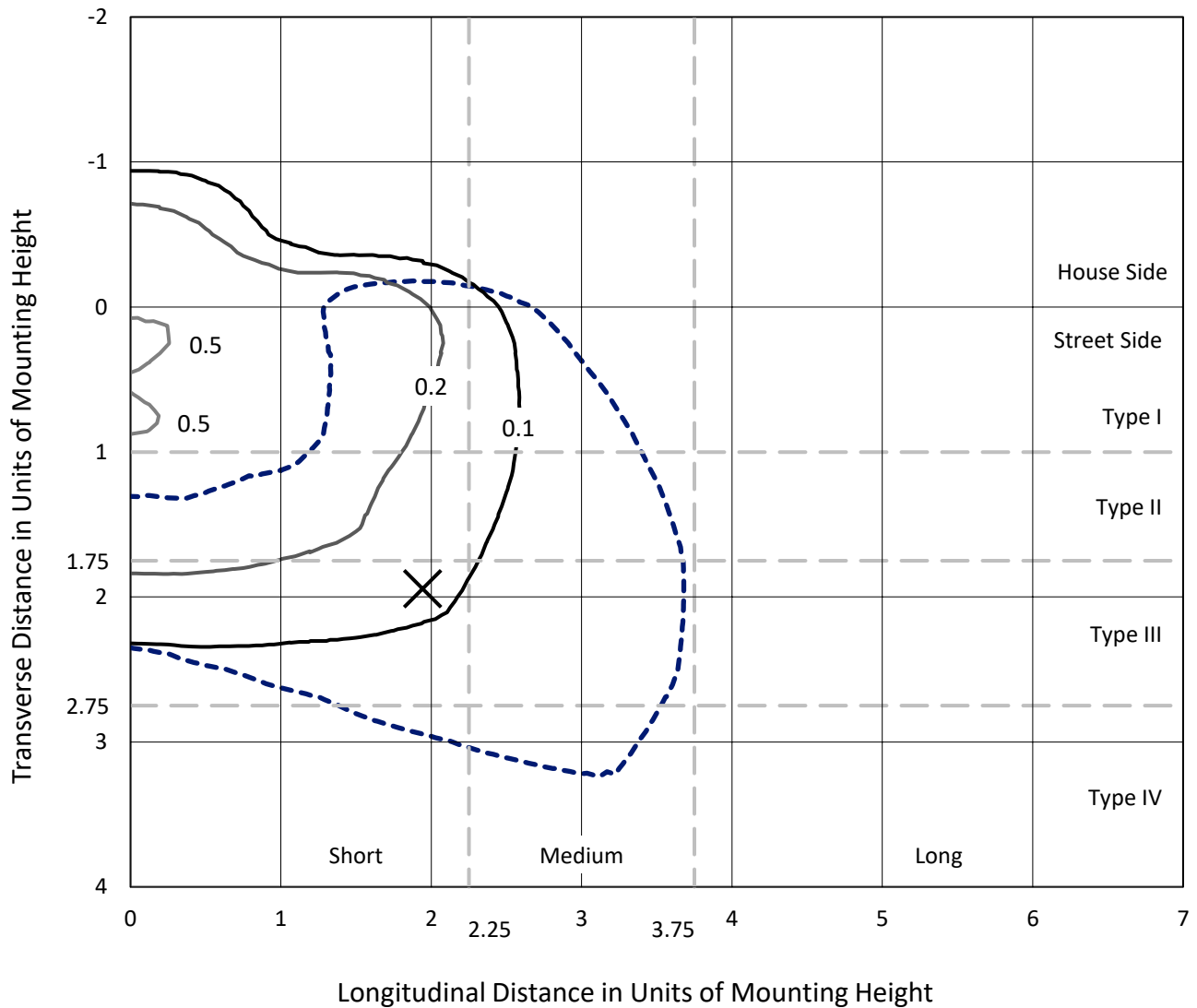
Input Watts (W): 20.1  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT



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### Iso-Footcandle Lines of Horizontal Illumination

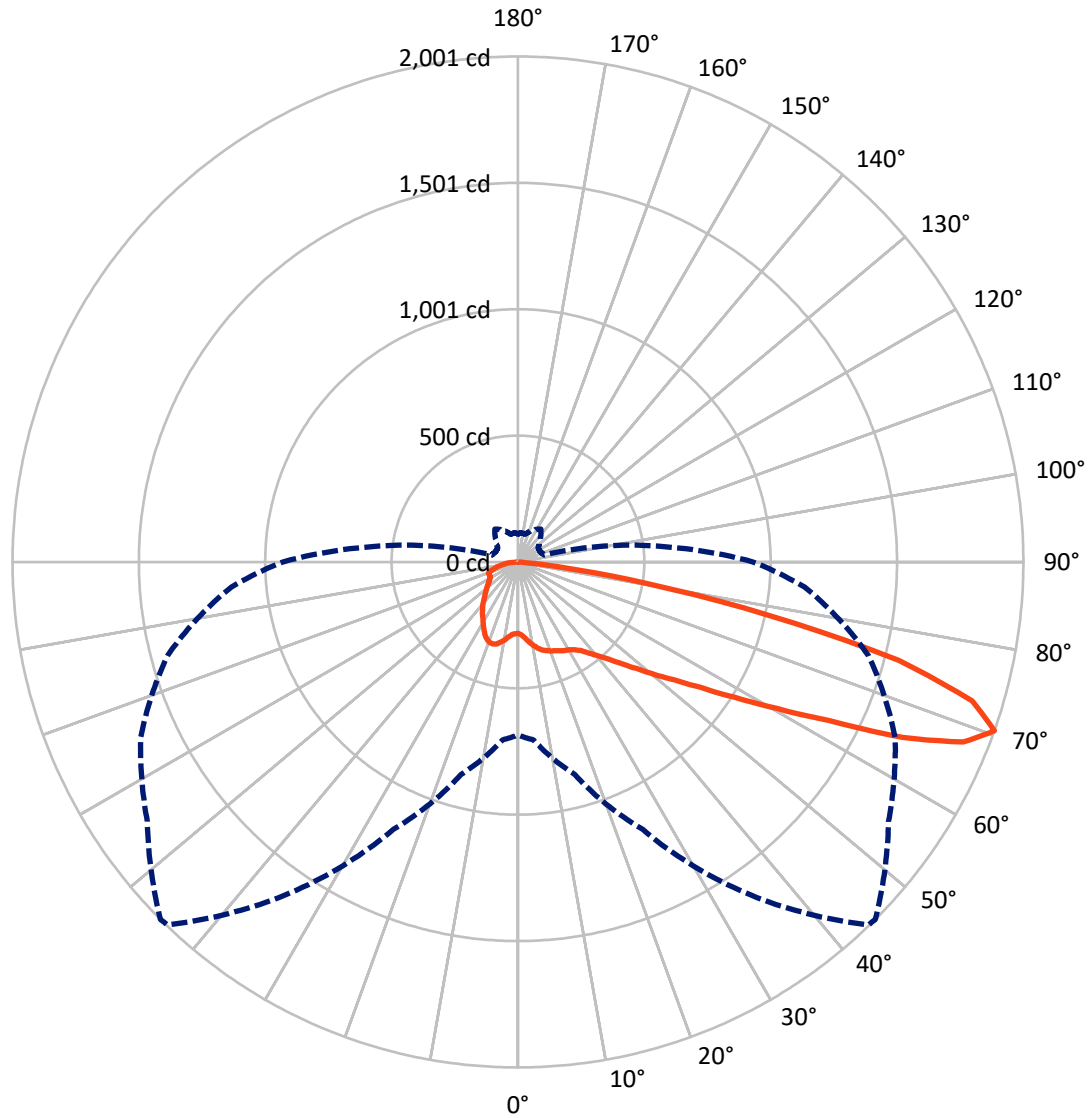
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 0.6 fc  
 Type IV - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 45-Deg Lateral      - - - Horizontal Cone Through 70-Deg Vertical

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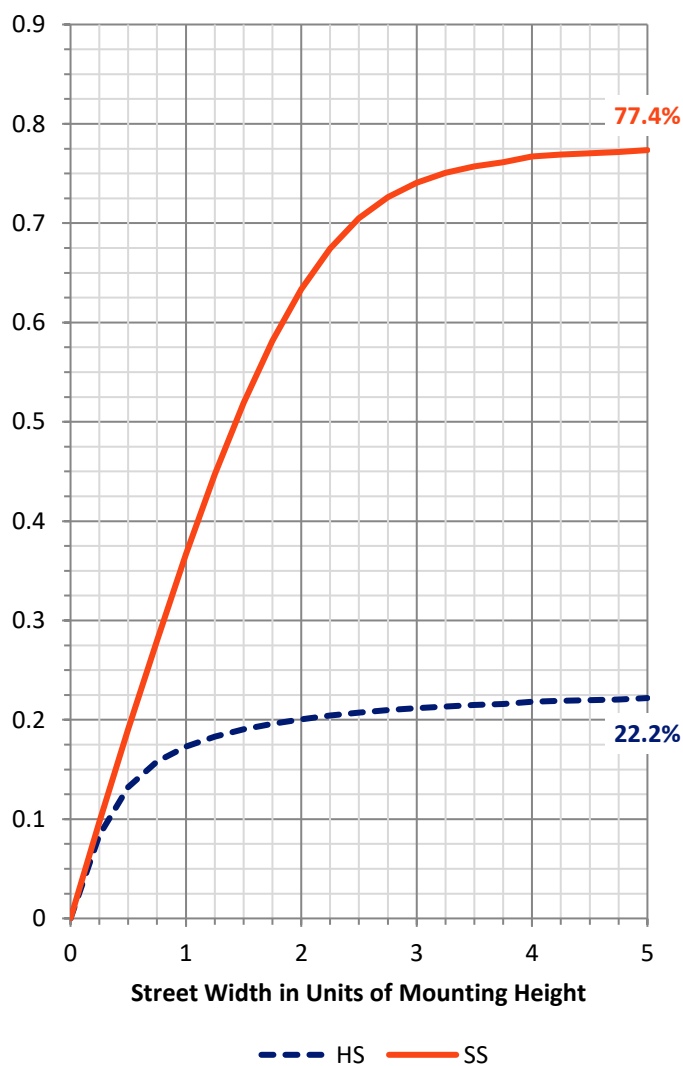
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 627.7    | 0.0    | 627.7  |
|                    | % Fixture | 22.6     | 0.0    | 22.6   |
| <b>Street Side</b> | Lumens    | 2152.4   | 0.0    | 2152.4 |
|                    | % Fixture | 77.4     | 0.0    | 77.4   |
| <b>Total</b>       | Lumens    | 2780.0   | 0.0    | 2780.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 29.2   | 1.0       |
| 10°-20°   | 97.7   | 3.5       |
| 20°-30°   | 165.4  | 5.9       |
| 30°-40°   | 239.1  | 8.6       |
| 40°-50°   | 344.7  | 12.4      |
| 50°-60°   | 565.4  | 20.3      |
| 60°-70°   | 810.0  | 29.1      |
| 70°-80°   | 481.5  | 17.3      |
| 80°-90°   | 47.1   | 1.7       |
| 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°    | 2780.0 | 100.0     |
| 0°-180°   | 2780.0 | 100.0     |

**Coefficient of Utilization**



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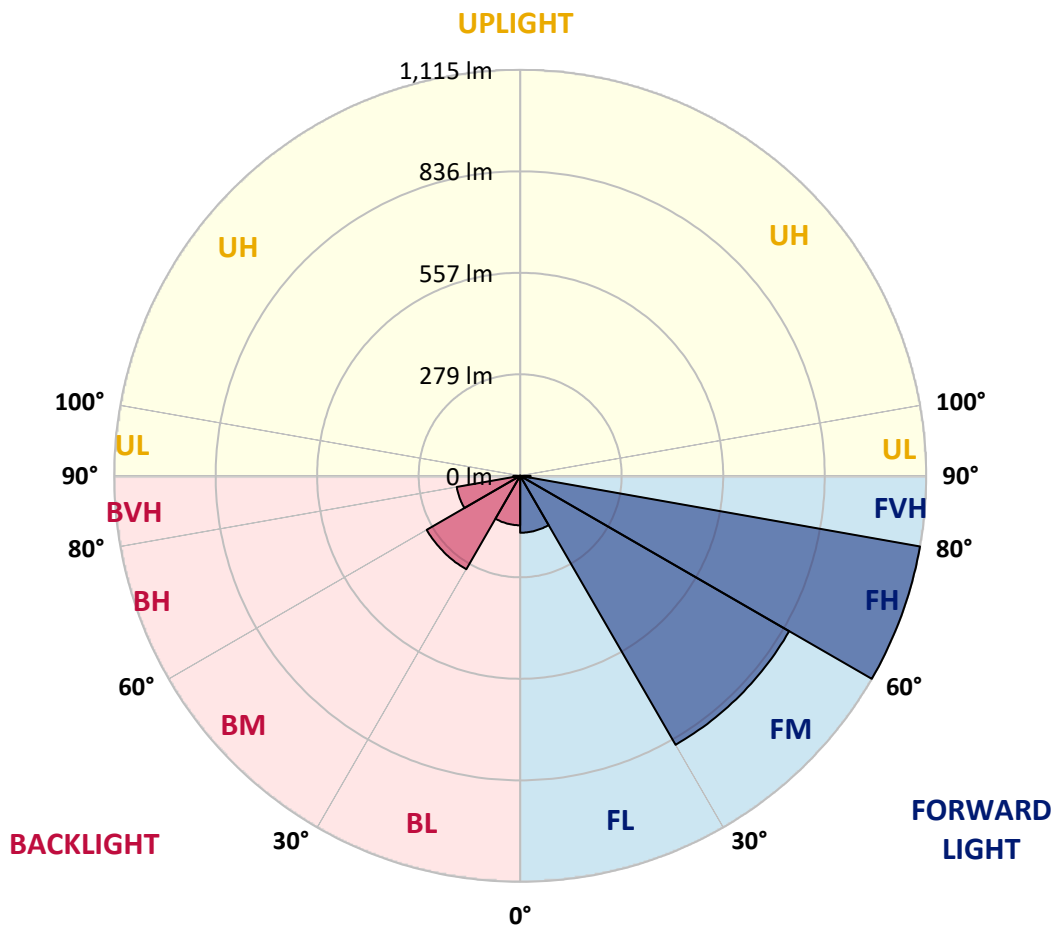
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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 156.3  | 5.6       |                         |      |         |
| FM (30°-60°)   | 852.9  | 30.7      |                         |      |         |
| FH (60°-80°)   | 1114.7 | 40.1      |                         |      | G1/1800 |
| FVH (80°-90°)  | 28.4   | 1.0       |                         |      | G1/100  |
| BL (0°-30°)    | 135.8  | 4.9       | B1/500                  |      |         |
| BM (30°-60°)   | 296.3  | 10.7      | B1/1000                 |      |         |
| BH (60°-80°)   | 176.8  | 6.4       | B1/500                  |      | G1/500  |
| BVH (80°-90°)  | 18.7   | 0.7       |                         |      | G1/100  |
| UL (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B1-U0-G1**

Type IV Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°   | 5°   | 15°  | 25°  | 35°  | 44°  | 45°  | 55°  | 65°  | 75°  | 85°  |
|-------|------|------|------|------|------|------|------|------|------|------|------|
| 0°    | 283  | 283  | 283  | 283  | 283  | 283  | 283  | 283  | 283  | 283  | 283  |
| 2.5°  | 297  | 297  | 296  | 295  | 293  | 291  | 290  | 287  | 287  | 286  | 284  |
| 5°    | 319  | 317  | 316  | 312  | 309  | 304  | 303  | 296  | 292  | 289  | 287  |
| 7.5°  | 342  | 343  | 339  | 334  | 327  | 320  | 320  | 312  | 305  | 298  | 292  |
| 10°   | 364  | 364  | 359  | 353  | 346  | 337  | 335  | 326  | 318  | 309  | 302  |
| 12.5° | 381  | 380  | 374  | 368  | 359  | 352  | 350  | 339  | 332  | 321  | 311  |
| 15°   | 393  | 393  | 387  | 378  | 369  | 362  | 362  | 354  | 344  | 333  | 321  |
| 17.5° | 400  | 399  | 394  | 384  | 376  | 370  | 369  | 363  | 357  | 346  | 331  |
| 20°   | 400  | 398  | 394  | 386  | 379  | 375  | 376  | 371  | 367  | 354  | 342  |
| 22.5° | 399  | 398  | 391  | 385  | 383  | 382  | 381  | 379  | 372  | 362  | 352  |
| 25°   | 408  | 407  | 399  | 391  | 387  | 387  | 389  | 385  | 381  | 371  | 362  |
| 27.5° | 433  | 429  | 418  | 403  | 397  | 396  | 397  | 392  | 389  | 382  | 374  |
| 30°   | 475  | 473  | 456  | 428  | 412  | 404  | 403  | 402  | 398  | 393  | 386  |
| 32.5° | 530  | 528  | 502  | 466  | 432  | 414  | 415  | 410  | 410  | 403  | 397  |
| 35°   | 598  | 594  | 568  | 517  | 462  | 432  | 430  | 423  | 424  | 412  | 406  |
| 37.5° | 658  | 654  | 629  | 569  | 500  | 461  | 458  | 441  | 430  | 415  | 416  |
| 40°   | 709  | 710  | 692  | 632  | 549  | 493  | 488  | 455  | 442  | 429  | 435  |
| 42.5° | 761  | 764  | 752  | 688  | 599  | 528  | 526  | 479  | 468  | 458  | 472  |
| 45°   | 812  | 818  | 808  | 748  | 655  | 581  | 573  | 518  | 511  | 505  | 547  |
| 47.5° | 857  | 859  | 858  | 811  | 717  | 641  | 630  | 569  | 578  | 594  | 664  |
| 50°   | 913  | 916  | 900  | 874  | 801  | 709  | 699  | 633  | 670  | 722  | 828  |
| 52.5° | 996  | 1000 | 955  | 939  | 905  | 791  | 776  | 727  | 807  | 885  | 1011 |
| 55°   | 1044 | 1038 | 1018 | 1020 | 1001 | 889  | 876  | 842  | 956  | 1049 | 1218 |
| 57.5° | 1075 | 1072 | 1084 | 1111 | 1111 | 1015 | 1010 | 995  | 1116 | 1228 | 1382 |
| 60°   | 1125 | 1131 | 1159 | 1213 | 1242 | 1180 | 1177 | 1180 | 1296 | 1353 | 1499 |
| 62.5° | 1156 | 1169 | 1240 | 1333 | 1394 | 1401 | 1382 | 1380 | 1436 | 1457 | 1576 |
| 65°   | 1101 | 1122 | 1238 | 1389 | 1576 | 1689 | 1675 | 1554 | 1552 | 1551 | 1561 |
| 67.5° | 956  | 972  | 1140 | 1364 | 1674 | 1910 | 1902 | 1709 | 1662 | 1559 | 1421 |
| 70°   | 685  | 707  | 871  | 1168 | 1611 | 1998 | 2001 | 1791 | 1648 | 1437 | 1139 |
| 72.5° | 424  | 425  | 531  | 832  | 1364 | 1869 | 1881 | 1710 | 1483 | 1197 | 805  |
| 75°   | 131  | 142  | 225  | 436  | 923  | 1520 | 1557 | 1421 | 1187 | 828  | 441  |
| 77.5° | 65   | 67   | 81   | 160  | 444  | 984  | 1012 | 949  | 750  | 401  | 185  |
| 80°   | 37   | 39   | 50   | 71   | 170  | 489  | 512  | 500  | 304  | 145  | 79   |
| 82.5° | 18   | 19   | 25   | 36   | 72   | 146  | 164  | 180  | 116  | 77   | 43   |
| 85°   | 5    | 5    | 7    | 12   | 19   | 30   | 30   | 33   | 41   | 39   | 21   |
| 87.5° | 0    | 0    | 0    | 1    | 1    | 1    | 2    | 1    | 2    | 3    | 3    |
| 90°   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |



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**CANDELA DISTRIBUTION (continued):**

|       | 90°  | 95°  | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|------|------|------|------|------|------|------|------|------|------|------|
| 0°    | 283  | 283  | 283  | 283  | 283  | 283  | 283  | 283  | 283  | 283  | 283  |
| 2.5°  | 284  | 284  | 282  | 283  | 283  | 284  | 284  | 285  | 286  | 287  | 287  |
| 5°    | 286  | 285  | 284  | 285  | 286  | 288  | 291  | 294  | 296  | 299  | 298  |
| 7.5°  | 292  | 289  | 290  | 290  | 294  | 298  | 304  | 308  | 312  | 314  | 314  |
| 10°   | 299  | 297  | 296  | 300  | 304  | 312  | 317  | 323  | 326  | 331  | 329  |
| 12.5° | 309  | 304  | 305  | 310  | 318  | 324  | 328  | 333  | 336  | 340  | 339  |
| 15°   | 317  | 314  | 315  | 323  | 331  | 335  | 337  | 339  | 340  | 343  | 344  |
| 17.5° | 327  | 326  | 327  | 334  | 339  | 340  | 339  | 337  | 336  | 339  | 338  |
| 20°   | 338  | 337  | 338  | 343  | 341  | 337  | 333  | 330  | 327  | 329  | 330  |
| 22.5° | 347  | 348  | 349  | 347  | 339  | 329  | 322  | 317  | 315  | 317  | 319  |
| 25°   | 358  | 359  | 360  | 350  | 331  | 315  | 305  | 302  | 303  | 306  | 307  |
| 27.5° | 372  | 375  | 372  | 349  | 320  | 297  | 289  | 288  | 289  | 292  | 295  |
| 30°   | 387  | 391  | 381  | 344  | 305  | 279  | 272  | 272  | 275  | 277  | 280  |
| 32.5° | 400  | 408  | 389  | 335  | 284  | 262  | 257  | 255  | 255  | 257  | 258  |
| 35°   | 416  | 426  | 394  | 319  | 264  | 248  | 244  | 238  | 233  | 234  | 233  |
| 37.5° | 432  | 447  | 392  | 294  | 242  | 232  | 228  | 219  | 211  | 206  | 208  |
| 40°   | 462  | 480  | 388  | 262  | 222  | 218  | 211  | 201  | 191  | 182  | 181  |
| 42.5° | 515  | 516  | 379  | 233  | 203  | 201  | 195  | 186  | 174  | 162  | 162  |
| 45°   | 586  | 568  | 367  | 206  | 185  | 187  | 182  | 173  | 159  | 148  | 148  |
| 47.5° | 693  | 630  | 344  | 182  | 170  | 174  | 171  | 162  | 147  | 137  | 137  |
| 50°   | 843  | 731  | 321  | 165  | 159  | 163  | 162  | 151  | 137  | 129  | 129  |
| 52.5° | 1017 | 863  | 305  | 152  | 146  | 153  | 153  | 143  | 130  | 124  | 123  |
| 55°   | 1196 | 987  | 289  | 141  | 137  | 143  | 146  | 137  | 125  | 120  | 119  |
| 57.5° | 1323 | 1049 | 267  | 132  | 127  | 135  | 139  | 133  | 122  | 117  | 116  |
| 60°   | 1387 | 1055 | 224  | 123  | 118  | 128  | 135  | 130  | 122  | 120  | 120  |
| 62.5° | 1402 | 1030 | 179  | 115  | 112  | 124  | 136  | 134  | 128  | 130  | 131  |
| 65°   | 1338 | 947  | 146  | 109  | 108  | 123  | 142  | 141  | 129  | 134  | 135  |
| 67.5° | 1185 | 803  | 124  | 103  | 102  | 125  | 153  | 141  | 122  | 127  | 125  |
| 70°   | 931  | 636  | 107  | 97   | 97   | 124  | 159  | 139  | 114  | 116  | 110  |
| 72.5° | 612  | 417  | 95   | 91   | 88   | 113  | 155  | 135  | 110  | 104  | 97   |
| 75°   | 310  | 207  | 85   | 86   | 77   | 96   | 150  | 134  | 109  | 99   | 96   |
| 77.5° | 128  | 97   | 76   | 78   | 65   | 82   | 141  | 124  | 98   | 88   | 85   |
| 80°   | 67   | 60   | 64   | 65   | 53   | 65   | 112  | 107  | 88   | 81   | 77   |
| 82.5° | 39   | 38   | 49   | 50   | 37   | 53   | 99   | 93   | 74   | 66   | 64   |
| 85°   | 18   | 21   | 33   | 30   | 23   | 35   | 60   | 46   | 33   | 29   | 28   |
| 87.5° | 2    | 3    | 7    | 7    | 5    | 3    | 1    | 0    | 0    | 0    | 0    |
| 90°   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |



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**Test Information**

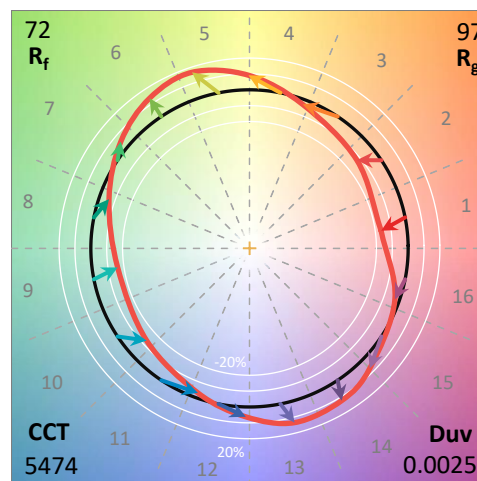
Test Method: LM-79-2008  
 Report Number: SP1-1908-441-9-R4  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 10/28/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: McGRAW-EDISON  
 Catalog Number: **SA1C-760-U-5WQ**  
 Description: McGRAW EDISON ROADWAY AND AREA LUMINAIRE

\*\*\*THIS IS A REVISION OF SP1-1908-441-4-R3. TO UPDATE THE CATALOG INFORMATION.\*\*\*TESTED IN SITU. ROADWAY AND AREA LUMINAIRE. (1) 70 CRI, 5000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

**Spectral Parameters**

CCT (K): 5474  
 CIE u': 0.2052  
 CIE v': 0.4804  
 Duv: 0.0025  
 CIE x: 0.3330  
 CIE y: 0.3466  
 CIE z: 0.3204  
 Peak Wavelength (nm): 442  
 Dominant Wavelength (nm): 554  
 Purity: 4.1  
 Rf: 72.1  
 Rg: 97.2

|           |      |      |       |
|-----------|------|------|-------|
| CRI (Ra): | 71.7 |      |       |
| R1:       | 70.6 | R9:  | -27.1 |
| R2:       | 74.6 | R10: | 40.8  |
| R3:       | 78.3 | R11: | 74.6  |
| R4:       | 73.8 | R12: | 50.4  |
| R5:       | 72.4 | R13: | 70.0  |
| R6:       | 67.5 | R14: | 87.8  |
| R7:       | 77.5 |      |       |
| R8:       | 58.9 |      |       |



**Test Conditions**

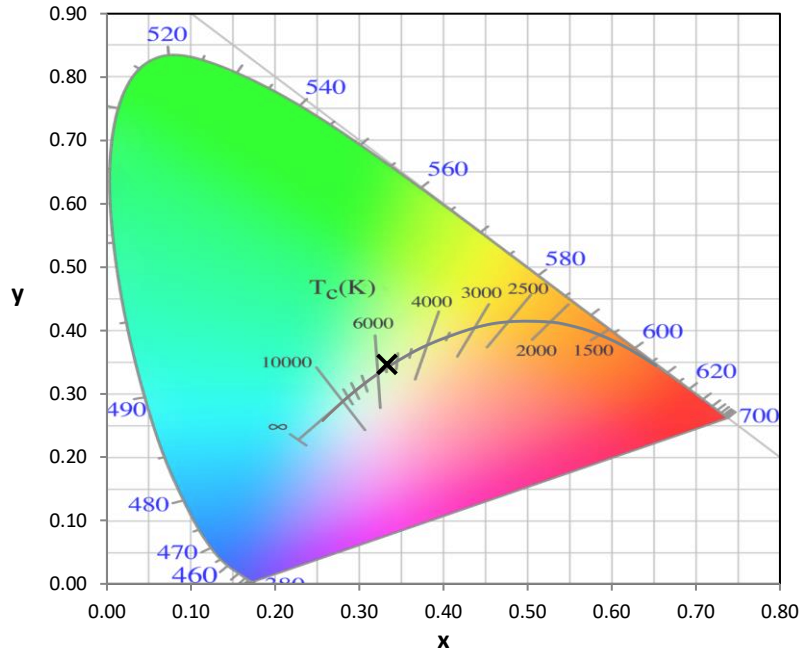
Stabilization Time: 240M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 24.6/31%  
 Sphere Temperature (°C): 25.9

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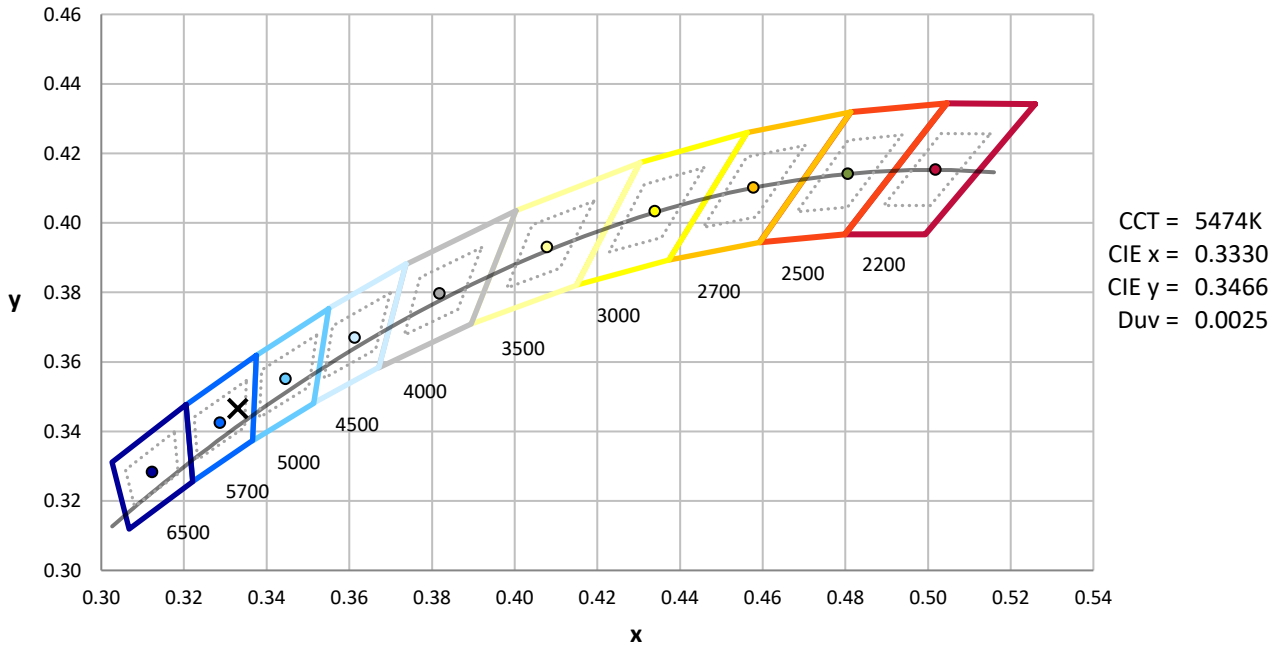
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 6/28/2019        | 12/28/2019           |
| Power Meter                    | IN0071                | 12/5/2018        | 12/5/2019            |
| AC Power Source                | IN0063                | 12/5/2018        | 12/5/2019            |
| DC Power Source                | IN0208                | 12/5/2018        | 12/5/2019            |
| Sphere Thermometer             | IN0085                | 12/5/2018        | 12/5/2019            |
| Room Thermometer               | IN0046                | 12/5/2018        | 12/5/2019            |

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CIE 1931 Chromaticity Diagram



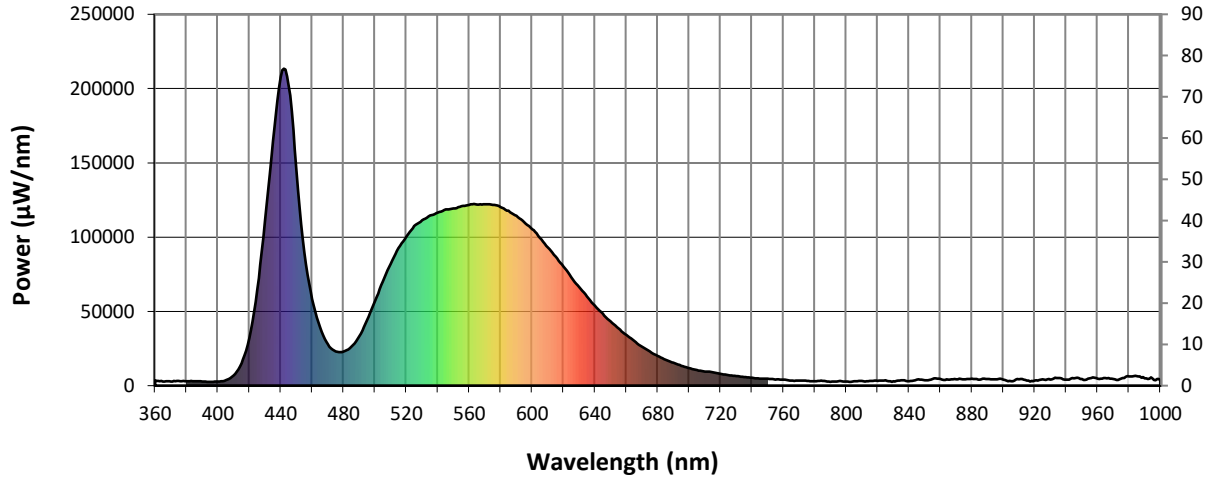
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 5700K 4-step quadrangle

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**Photopic Flux vs. Wavelength**

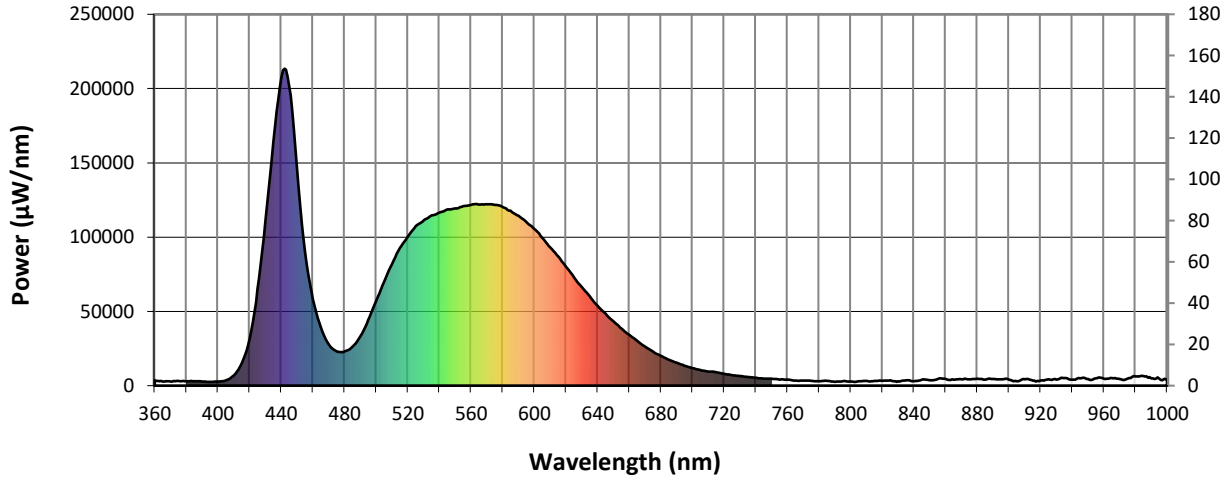


#####

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360    | 3540          | NR            | 490    | 33363         | NR            | 620    | 80193         | NR            | 750    | 4663          | NR            | 880    | 4678          | NR            |
| 365    | 2862          | NR            | 495    | 44177         | NR            | 625    | 73091         | NR            | 755    | 4147          | NR            | 885    | 4128          | NR            |
| 370    | 2865          | NR            | 500    | 57019         | NR            | 630    | 66269         | NR            | 760    | 4040          | NR            | 890    | 4504          | NR            |
| 375    | 3254          | NR            | 505    | 70030         | NR            | 635    | 60012         | NR            | 765    | 3474          | NR            | 895    | 4371          | NR            |
| 380    | 3076          | NR            | 510    | 81972         | NR            | 640    | 53914         | NR            | 770    | 3469          | NR            | 900    | 4082          | NR            |
| 385    | 2904          | NR            | 515    | 92590         | NR            | 645    | 48385         | NR            | 775    | 3181          | NR            | 905    | 2982          | NR            |
| 390    | 2689          | NR            | 520    | 100305        | NR            | 650    | 43219         | NR            | 780    | 2969          | NR            | 910    | 4351          | NR            |
| 395    | 2619          | NR            | 525    | 107452        | NR            | 655    | 38562         | NR            | 785    | 3132          | NR            | 915    | 3365          | NR            |
| 400    | 2679          | NR            | 530    | 111373        | NR            | 660    | 34110         | NR            | 790    | 2507          | NR            | 920    | 3430          | NR            |
| 405    | 3515          | NR            | 535    | 114505        | NR            | 665    | 30085         | NR            | 795    | 2968          | NR            | 925    | 4264          | NR            |
| 410    | 6934          | NR            | 540    | 116408        | NR            | 670    | 26205         | NR            | 800    | 2758          | NR            | 930    | 4095          | NR            |
| 415    | 14943         | NR            | 545    | 118700        | NR            | 675    | 22906         | NR            | 805    | 2872          | NR            | 935    | 5048          | NR            |
| 420    | 31939         | NR            | 550    | 119209        | NR            | 680    | 20058         | NR            | 810    | 3094          | NR            | 940    | 4074          | NR            |
| 425    | 64701         | NR            | 555    | 120742        | NR            | 685    | 17413         | NR            | 815    | 3222          | NR            | 945    | 4949          | NR            |
| 430    | 110939        | NR            | 560    | 121594        | NR            | 690    | 15447         | NR            | 820    | 3238          | NR            | 950    | 4387          | NR            |
| 435    | 164597        | NR            | 565    | 121913        | NR            | 695    | 13398         | NR            | 825    | 3524          | NR            | 955    | 4978          | NR            |
| 440    | 207696        | NR            | 570    | 122147        | NR            | 700    | 11777         | NR            | 830    | 2921          | NR            | 960    | 4706          | NR            |
| 445    | 201830        | NR            | 575    | 121605        | NR            | 705    | 10412         | NR            | 835    | 3595          | NR            | 965    | 5083          | NR            |
| 450    | 145410        | NR            | 580    | 120248        | NR            | 710    | 9544          | NR            | 840    | 3016          | NR            | 970    | 4522          | NR            |
| 455    | 89594         | NR            | 585    | 117717        | NR            | 715    | 8940          | NR            | 845    | 4032          | NR            | 975    | 4740          | NR            |
| 460    | 58321         | NR            | 590    | 114359        | NR            | 720    | 7897          | NR            | 850    | 3579          | NR            | 980    | 6122          | NR            |
| 465    | 39318         | NR            | 595    | 109974        | NR            | 725    | 7045          | NR            | 855    | 4571          | NR            | 985    | 6450          | NR            |
| 470    | 27693         | NR            | 600    | 105269        | NR            | 730    | 6483          | NR            | 860    | 4485          | NR            | 990    | 4875          | NR            |
| 475    | 23081         | NR            | 605    | 99453         | NR            | 735    | 5838          | NR            | 865    | 3978          | NR            | 995    | 4764          | NR            |
| 480    | 23002         | NR            | 610    | 92921         | NR            | 740    | 5261          | NR            | 870    | 4298          | NR            | 1000   | 3640          | NR            |
| 485    | 26201         | NR            | 615    | 86989         | NR            | 745    | 4760          | NR            | 875    | 4356          | NR            |        |               |               |

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Scotopic Flux vs. Wavelength

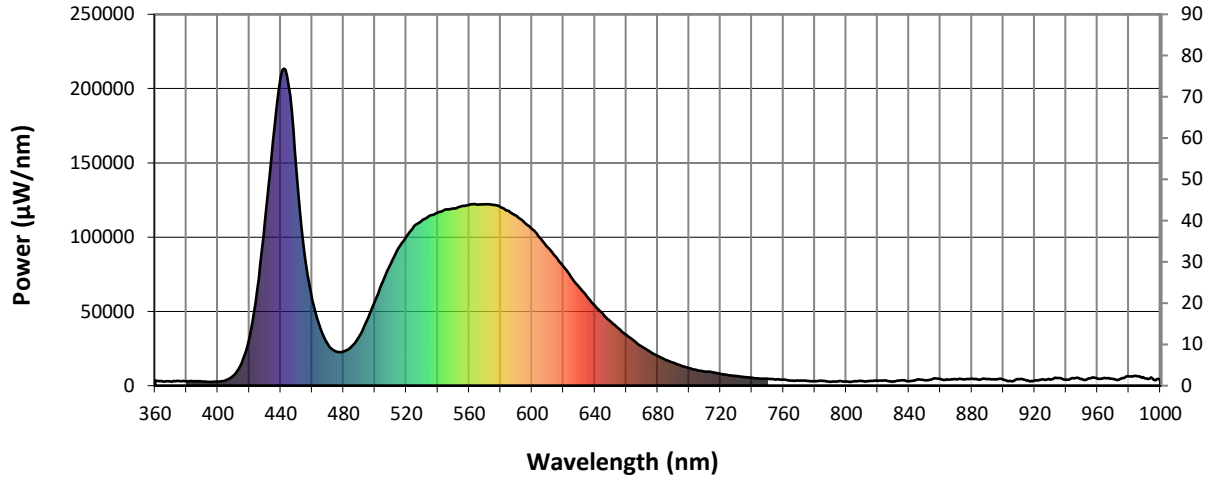


Scotopic Lumens: 13759.3 S/P: 1.85

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360    | 3540          | NR            | 490    | 33363         | NR            | 620    | 80193         | NR            | 750    | 4663          | NR            | 880    | 4678          | NR            |
| 365    | 2862          | NR            | 495    | 44177         | NR            | 625    | 73091         | NR            | 755    | 4147          | NR            | 885    | 4128          | NR            |
| 370    | 2865          | NR            | 500    | 57019         | NR            | 630    | 66269         | NR            | 760    | 4040          | NR            | 890    | 4504          | NR            |
| 375    | 3254          | NR            | 505    | 70030         | NR            | 635    | 60012         | NR            | 765    | 3474          | NR            | 895    | 4371          | NR            |
| 380    | 3076          | NR            | 510    | 81972         | NR            | 640    | 53914         | NR            | 770    | 3469          | NR            | 900    | 4082          | NR            |
| 385    | 2904          | NR            | 515    | 92590         | NR            | 645    | 48385         | NR            | 775    | 3181          | NR            | 905    | 2982          | NR            |
| 390    | 2689          | NR            | 520    | 100305        | NR            | 650    | 43219         | NR            | 780    | 2969          | NR            | 910    | 4351          | NR            |
| 395    | 2619          | NR            | 525    | 107452        | NR            | 655    | 38562         | NR            | 785    | 3132          | NR            | 915    | 3365          | NR            |
| 400    | 2679          | NR            | 530    | 111373        | NR            | 660    | 34110         | NR            | 790    | 2507          | NR            | 920    | 3430          | NR            |
| 405    | 3515          | NR            | 535    | 114505        | NR            | 665    | 30085         | NR            | 795    | 2968          | NR            | 925    | 4264          | NR            |
| 410    | 6934          | NR            | 540    | 116408        | NR            | 670    | 26205         | NR            | 800    | 2758          | NR            | 930    | 4095          | NR            |
| 415    | 14943         | NR            | 545    | 118700        | NR            | 675    | 22906         | NR            | 805    | 2872          | NR            | 935    | 5048          | NR            |
| 420    | 31939         | NR            | 550    | 119209        | NR            | 680    | 20058         | NR            | 810    | 3094          | NR            | 940    | 4074          | NR            |
| 425    | 64701         | NR            | 555    | 120742        | NR            | 685    | 17413         | NR            | 815    | 3222          | NR            | 945    | 4949          | NR            |
| 430    | 110939        | NR            | 560    | 121594        | NR            | 690    | 15447         | NR            | 820    | 3238          | NR            | 950    | 4387          | NR            |
| 435    | 164597        | NR            | 565    | 121913        | NR            | 695    | 13398         | NR            | 825    | 3524          | NR            | 955    | 4978          | NR            |
| 440    | 207696        | NR            | 570    | 122147        | NR            | 700    | 11777         | NR            | 830    | 2921          | NR            | 960    | 4706          | NR            |
| 445    | 201830        | NR            | 575    | 121605        | NR            | 705    | 10412         | NR            | 835    | 3595          | NR            | 965    | 5083          | NR            |
| 450    | 145410        | NR            | 580    | 120248        | NR            | 710    | 9544          | NR            | 840    | 3016          | NR            | 970    | 4522          | NR            |
| 455    | 89594         | NR            | 585    | 117717        | NR            | 715    | 8940          | NR            | 845    | 4032          | NR            | 975    | 4740          | NR            |
| 460    | 58321         | NR            | 590    | 114359        | NR            | 720    | 7897          | NR            | 850    | 3579          | NR            | 980    | 6122          | NR            |
| 465    | 39318         | NR            | 595    | 109974        | NR            | 725    | 7045          | NR            | 855    | 4571          | NR            | 985    | 6450          | NR            |
| 470    | 27693         | NR            | 600    | 105269        | NR            | 730    | 6483          | NR            | 860    | 4485          | NR            | 990    | 4875          | NR            |
| 475    | 23081         | NR            | 605    | 99453         | NR            | 735    | 5838          | NR            | 865    | 3978          | NR            | 995    | 4764          | NR            |
| 480    | 23002         | NR            | 610    | 92921         | NR            | 740    | 5261          | NR            | 870    | 4298          | NR            | 1000   | 3640          | NR            |
| 485    | 26201         | NR            | 615    | 86989         | NR            | 745    | 4760          | NR            | 875    | 4356          | NR            |        |               |               |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 5527.6 M/P: 0.74**

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360    | 3540          | NR            | 490    | 33363         | NR            | 620    | 80193         | NR            | 750    | 4663          | NR            | 880    | 4678          | NR            |
| 365    | 2862          | NR            | 495    | 44177         | NR            | 625    | 73091         | NR            | 755    | 4147          | NR            | 885    | 4128          | NR            |
| 370    | 2865          | NR            | 500    | 57019         | NR            | 630    | 66269         | NR            | 760    | 4040          | NR            | 890    | 4504          | NR            |
| 375    | 3254          | NR            | 505    | 70030         | NR            | 635    | 60012         | NR            | 765    | 3474          | NR            | 895    | 4371          | NR            |
| 380    | 3076          | NR            | 510    | 81972         | NR            | 640    | 53914         | NR            | 770    | 3469          | NR            | 900    | 4082          | NR            |
| 385    | 2904          | NR            | 515    | 92590         | NR            | 645    | 48385         | NR            | 775    | 3181          | NR            | 905    | 2982          | NR            |
| 390    | 2689          | NR            | 520    | 100305        | NR            | 650    | 43219         | NR            | 780    | 2969          | NR            | 910    | 4351          | NR            |
| 395    | 2619          | NR            | 525    | 107452        | NR            | 655    | 38562         | NR            | 785    | 3132          | NR            | 915    | 3365          | NR            |
| 400    | 2679          | NR            | 530    | 111373        | NR            | 660    | 34110         | NR            | 790    | 2507          | NR            | 920    | 3430          | NR            |
| 405    | 3515          | NR            | 535    | 114505        | NR            | 665    | 30085         | NR            | 795    | 2968          | NR            | 925    | 4264          | NR            |
| 410    | 6934          | NR            | 540    | 116408        | NR            | 670    | 26205         | NR            | 800    | 2758          | NR            | 930    | 4095          | NR            |
| 415    | 14943         | NR            | 545    | 118700        | NR            | 675    | 22906         | NR            | 805    | 2872          | NR            | 935    | 5048          | NR            |
| 420    | 31939         | NR            | 550    | 119209        | NR            | 680    | 20058         | NR            | 810    | 3094          | NR            | 940    | 4074          | NR            |
| 425    | 64701         | NR            | 555    | 120742        | NR            | 685    | 17413         | NR            | 815    | 3222          | NR            | 945    | 4949          | NR            |
| 430    | 110939        | NR            | 560    | 121594        | NR            | 690    | 15447         | NR            | 820    | 3238          | NR            | 950    | 4387          | NR            |
| 435    | 164597        | NR            | 565    | 121913        | NR            | 695    | 13398         | NR            | 825    | 3524          | NR            | 955    | 4978          | NR            |
| 440    | 207696        | NR            | 570    | 122147        | NR            | 700    | 11777         | NR            | 830    | 2921          | NR            | 960    | 4706          | NR            |
| 445    | 201830        | NR            | 575    | 121605        | NR            | 705    | 10412         | NR            | 835    | 3595          | NR            | 965    | 5083          | NR            |
| 450    | 145410        | NR            | 580    | 120248        | NR            | 710    | 9544          | NR            | 840    | 3016          | NR            | 970    | 4522          | NR            |
| 455    | 89594         | NR            | 585    | 117717        | NR            | 715    | 8940          | NR            | 845    | 4032          | NR            | 975    | 4740          | NR            |
| 460    | 58321         | NR            | 590    | 114359        | NR            | 720    | 7897          | NR            | 850    | 3579          | NR            | 980    | 6122          | NR            |
| 465    | 39318         | NR            | 595    | 109974        | NR            | 725    | 7045          | NR            | 855    | 4571          | NR            | 985    | 6450          | NR            |
| 470    | 27693         | NR            | 600    | 105269        | NR            | 730    | 6483          | NR            | 860    | 4485          | NR            | 990    | 4875          | NR            |
| 475    | 23081         | NR            | 605    | 99453         | NR            | 735    | 5838          | NR            | 865    | 3978          | NR            | 995    | 4764          | NR            |
| 480    | 23002         | NR            | 610    | 92921         | NR            | 740    | 5261          | NR            | 870    | 4298          | NR            | 1000   | 3640          | NR            |
| 485    | 26201         | NR            | 615    | 86989         | NR            | 745    | 4760          | NR            | 875    | 4356          | NR            |        |               |               |



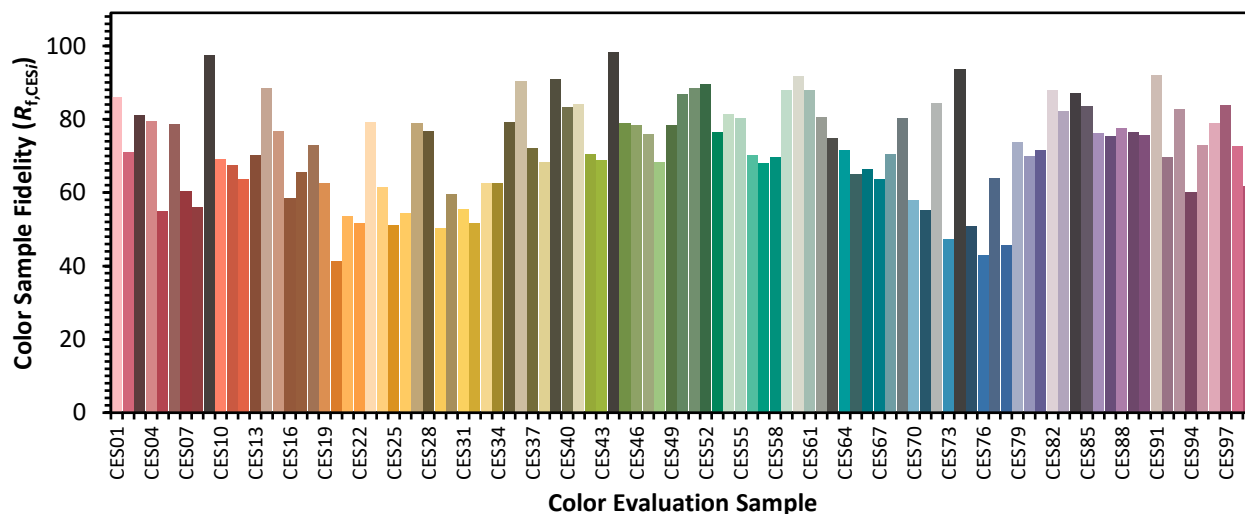


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**Individual Sample Fidelity Index ( $R_{f,i}$ )**

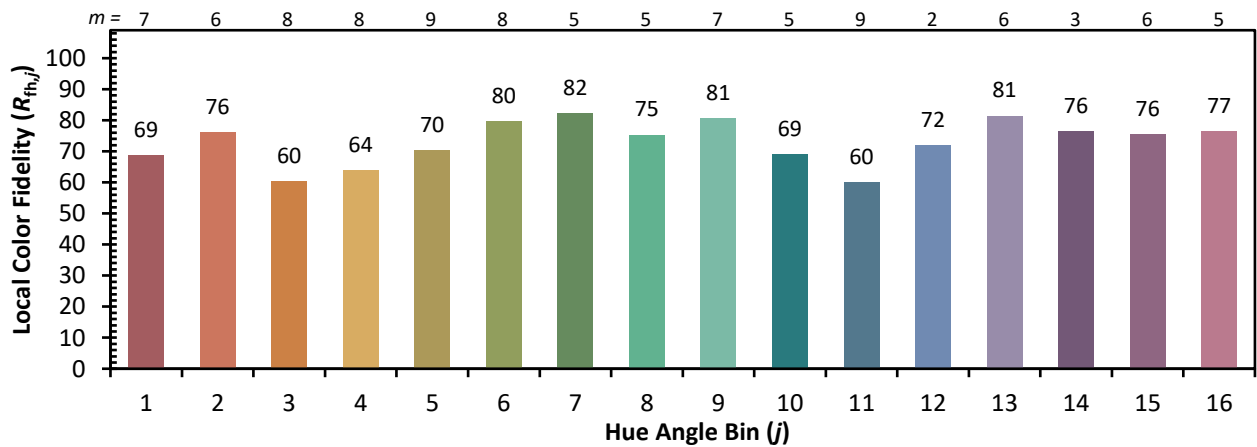
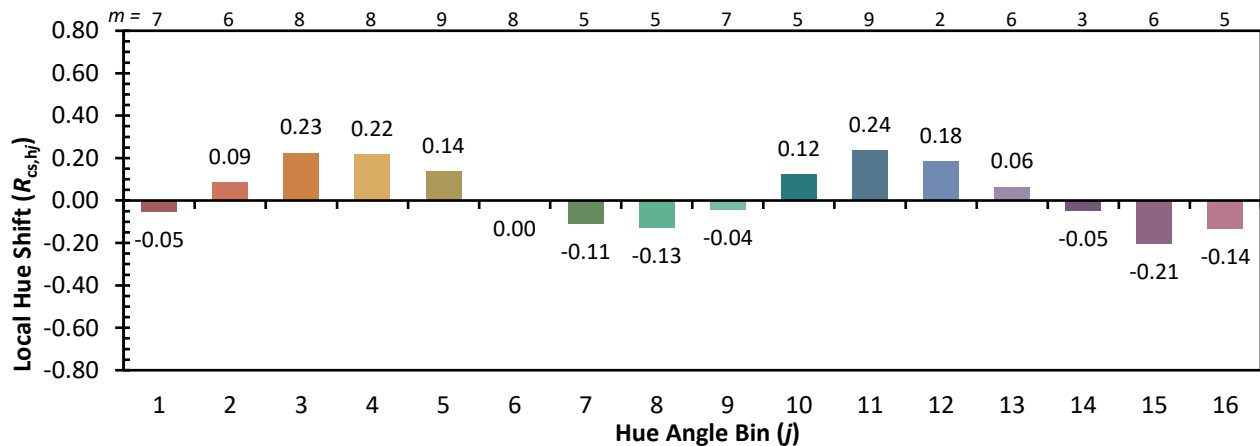
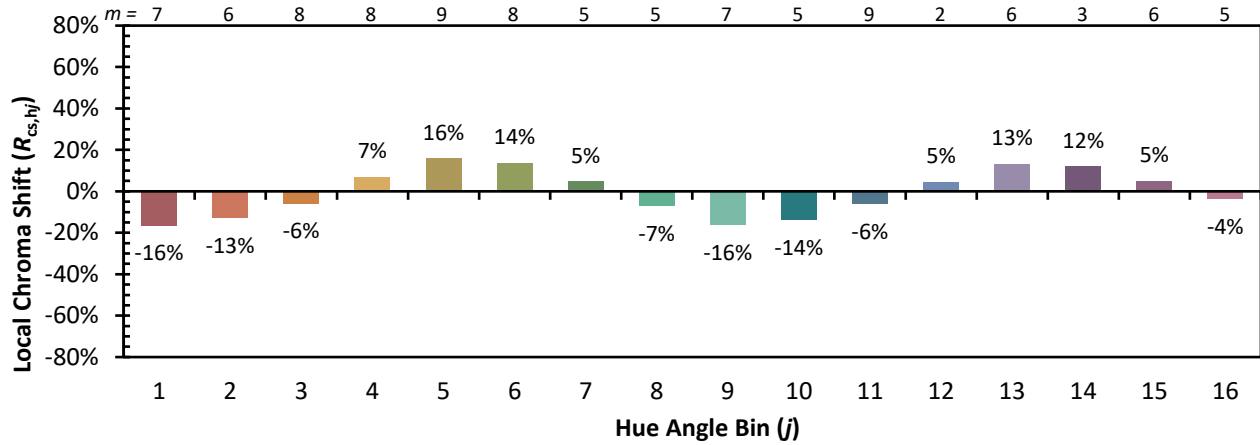
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| CES02 = 59 | CES27 = 79 | CES52 = 90 | CES77 = 64 |
| CES03 = 30 | CES28 = 77 | CES53 = 77 | CES78 = 46 |
| CES04 = 69 | CES29 = 50 | CES54 = 81 | CES79 = 74 |
| CES05 = 46 | CES30 = 59 | CES55 = 80 | CES80 = 70 |
| CES06 = 50 | CES31 = 55 | CES56 = 70 | CES81 = 71 |
| CES07 = 38 | CES32 = 52 | CES57 = 68 | CES82 = 88 |
| CES08 = 38 | CES33 = 63 | CES58 = 70 | CES83 = 82 |
| CES09 = 29 | CES34 = 63 | CES59 = 88 | CES84 = 87 |
| CES10 = 72 | CES35 = 79 | CES60 = 92 | CES85 = 84 |
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| CES14 = 74 | CES39 = 91 | CES64 = 72 | CES89 = 76 |
| CES15 = 70 | CES40 = 83 | CES65 = 65 | CES90 = 76 |
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| CES18 = 55 | CES43 = 69 | CES68 = 71 | CES93 = 83 |
| CES19 = 70 | CES44 = 98 | CES69 = 80 | CES94 = 60 |
| CES20 = 64 | CES45 = 79 | CES70 = 58 | CES95 = 73 |
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| CES23 = 91 | CES48 = 68 | CES73 = 47 | CES98 = 73 |
| CES24 = 90 | CES49 = 78 | CES74 = 94 | CES99 = 62 |
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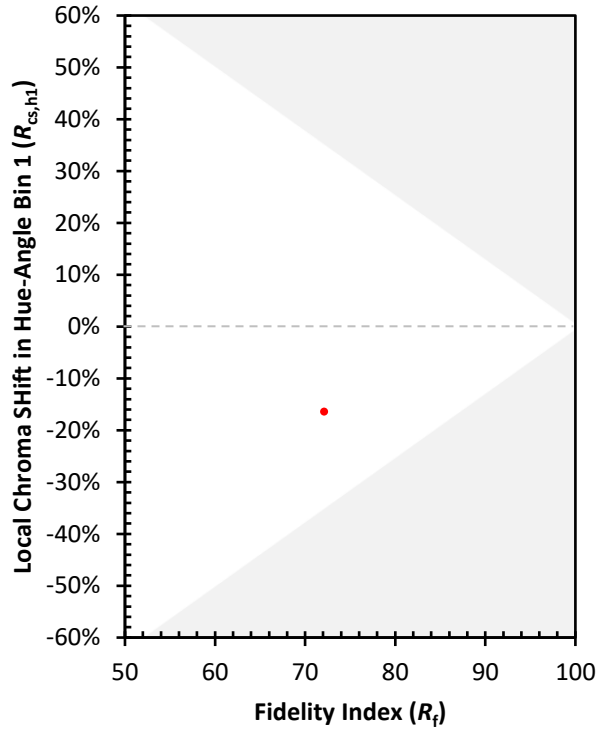
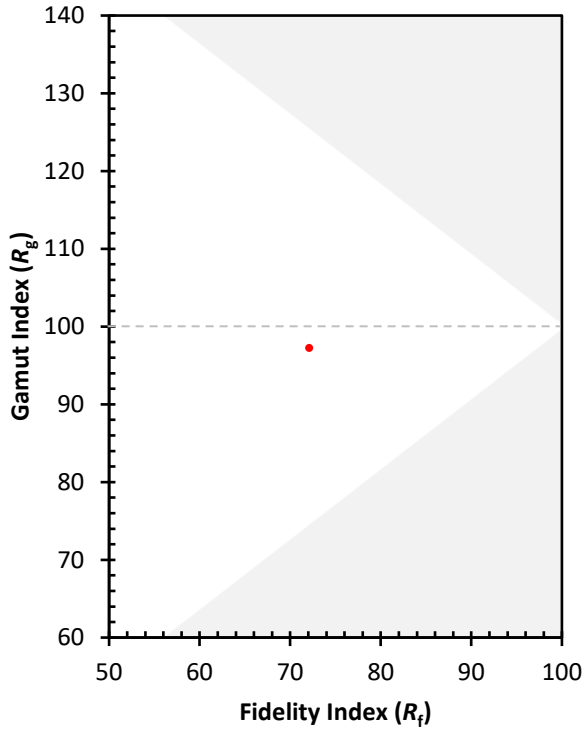
Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)