

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: P387190

Luminaire Tested: **TT-D1-740-U-5CQ-PM**

Issue Date: 2/18/2020

### Test Information

Test Method: LM-79-08  
Report Number: P387190  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1908-473-17)  
Test Lab: INNOVATIONS CENTER  
Issue Date: 2/18/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: MCGRAW-EDISON  
Catalog Number: TT-D1-740-U-5CQ-PM  
Description: TOPTIER LED SITE LUMINAIRE  
4000K, 70 CRI LEDS AND CONCENTRATED DISTRIBUTION  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

### Summary

Lumens per Lamp: N/A  
Luminaire Lumens: 3828 lumens  
Efficiency: N/A  
Efficacy: 136.7 lumens/watt  
Luminous Opening: Circular (Dia: 1.12' x H: 0')  
IES Classification: Type V - Short  
BUG Rating: B1 - U0 - G1

Input Watts (W): 28  
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



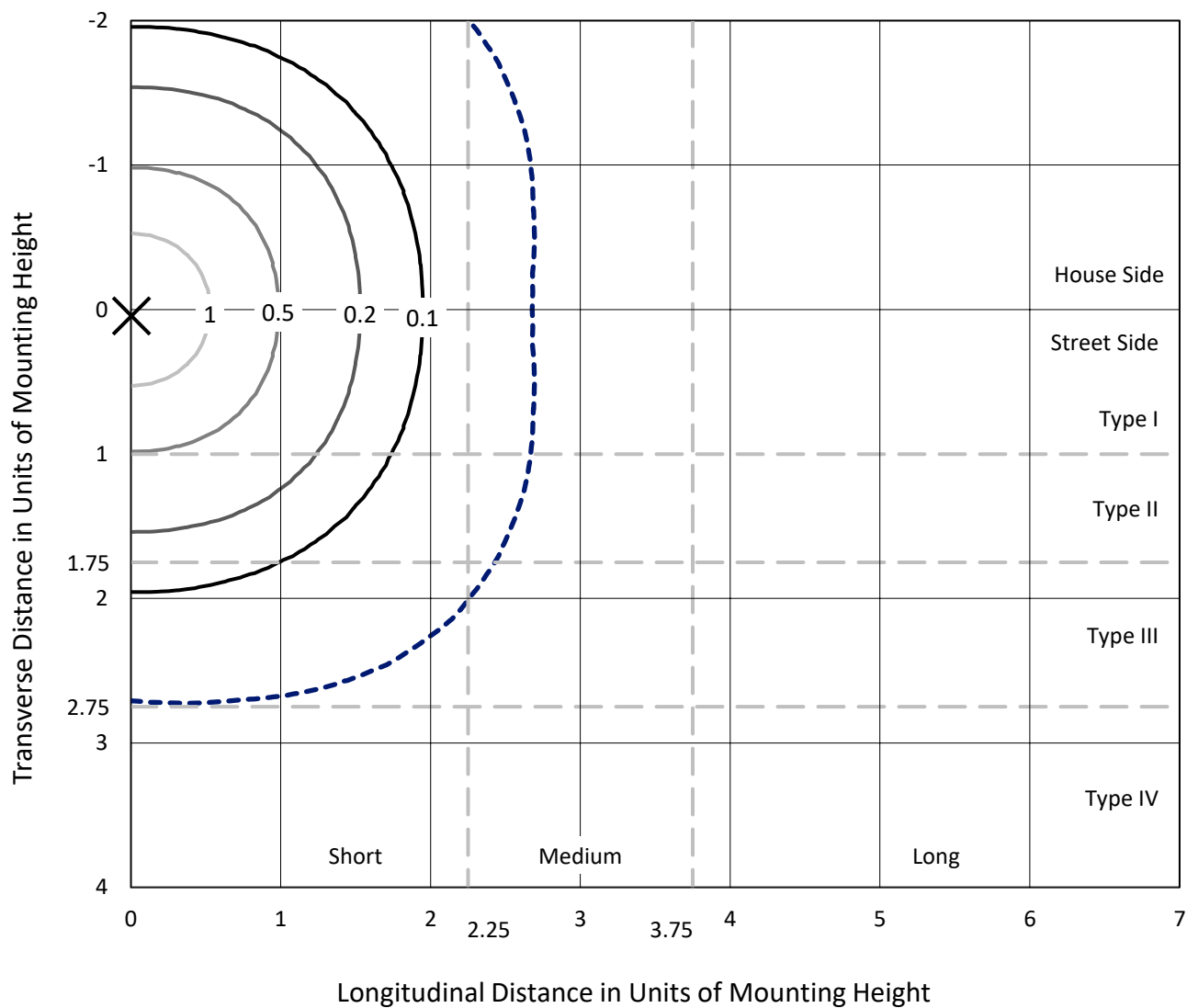
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CATALOG NUMBER: TT-D1-740-U-5CQ-PM

## Iso-Footcandle Lines of Horizontal Illumination

✕ Max cd

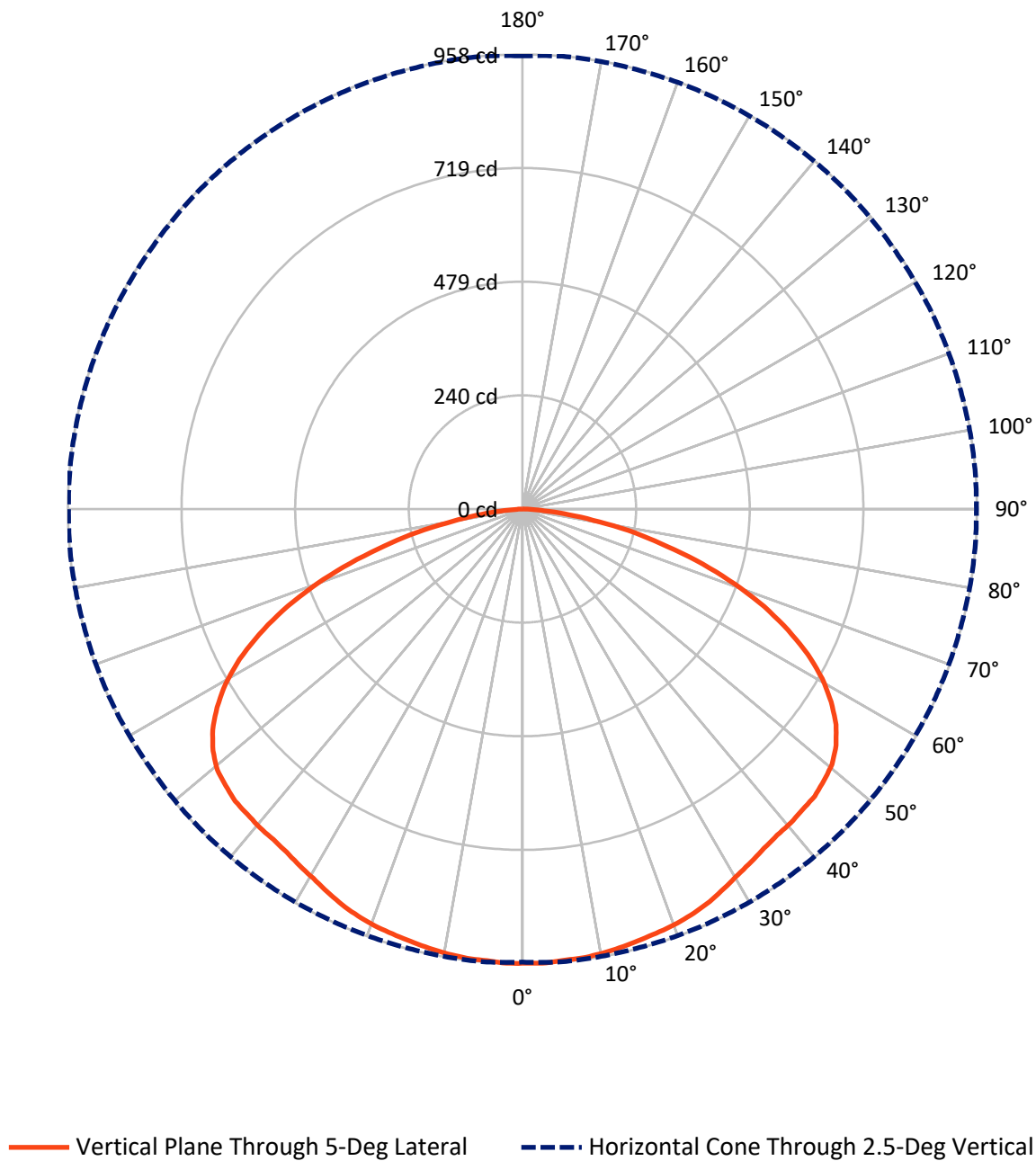
--- 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 1.5 fc  
 Type V - Short - N/A

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## Luminous Intensity Polar Plot



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CATALOG NUMBER: TT-D1-740-U-5CQ-PM

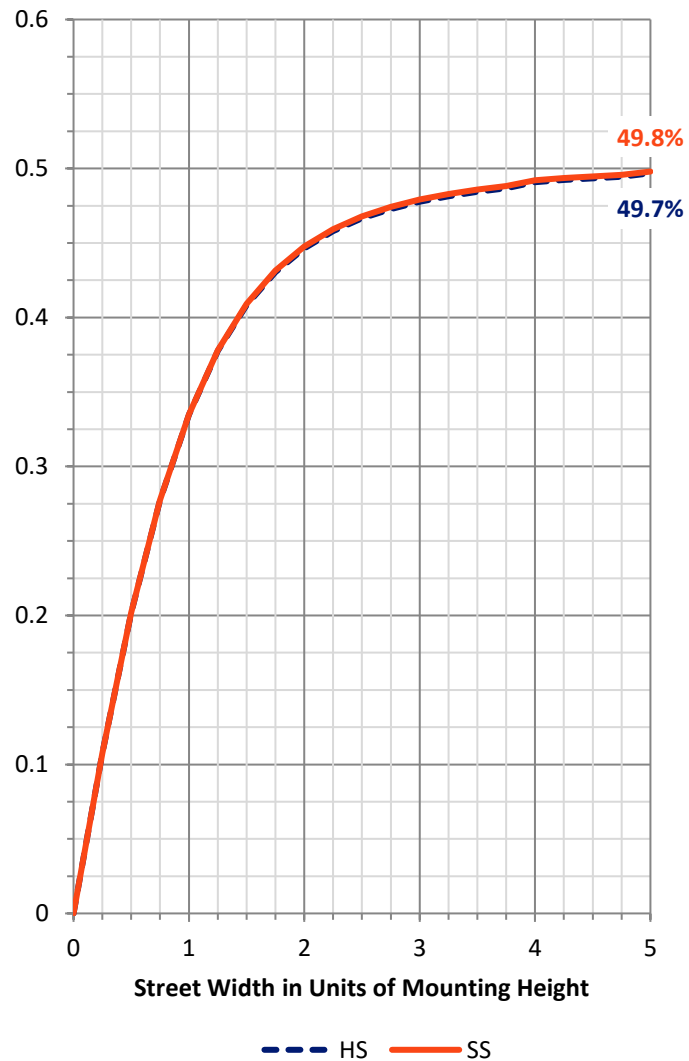
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 1914.0   | 0.0    | 1914.0 |
|                    | % Fixture | 50.0     | 0.0    | 50.0   |
| <b>Street Side</b> | Lumens    | 1914.0   | 0.0    | 1914.0 |
|                    | % Fixture | 50.0     | 0.0    | 50.0   |
| <b>Total</b>       | Lumens    | 3828.0   | 0.0    | 3828.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 91.1   | 2.4       |
| 10°-20°   | 266.7  | 7.0       |
| 20°-30°   | 424.2  | 11.1      |
| 30°-40°   | 558.0  | 14.6      |
| 40°-50°   | 683.0  | 17.8      |
| 50°-60°   | 739.8  | 19.3      |
| 60°-70°   | 636.4  | 16.6      |
| 70°-80°   | 357.8  | 9.3       |
| 80°-90°   | 70.9   | 1.9       |
| 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°    | 3828.0 | 100.0     |
| 0°-180°   | 3828.0 | 100.0     |

**Coefficient of Utilization**



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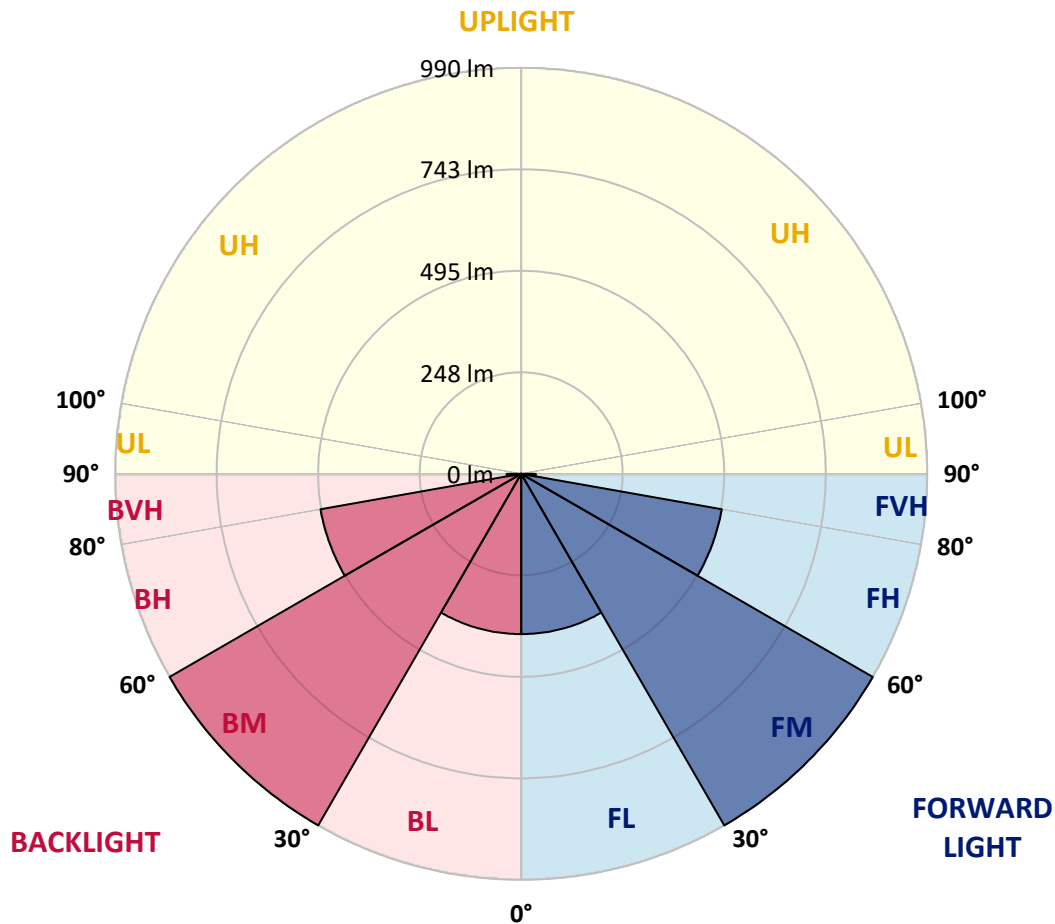
CATALOG NUMBER: TT-D1-740-U-5CQ-PM

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |        |
|------|-------------|--------|-----------|-------------------------|------|--------|
|      |             |        |           | B                       | U    | G      |
| FL   | (0°-30°)    | 391.0  | 10.2      |                         |      |        |
| FM   | (30°-60°)   | 990.4  | 25.9      |                         |      |        |
| FH   | (60°-80°)   | 497.1  | 13.0      |                         |      | G0/660 |
| FVH  | (80°-90°)   | 35.5   | 0.9       |                         |      | G1/100 |
| BL   | (0°-30°)    | 391.0  | 10.2      | B1/500                  |      |        |
| BM   | (30°-60°)   | 990.4  | 25.9      | B1/1000                 |      |        |
| BH   | (60°-80°)   | 497.1  | 13.0      | B1/500                  |      | G0/660 |
| BVH  | (80°-90°)   | 35.5   | 0.9       |                         |      | 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 V Short



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CATALOG NUMBER: TT-D1-740-U-5CQ-PM

**CANDELA DISTRIBUTION (FULL):**

|       | 0°    | 5°    | 15°   | 25°   | 35°   | 45°   | 55°   | 65°   | 75°   | 85°   | 90°   |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 957.7 | 957.7 | 957.7 | 957.7 | 957.7 | 957.7 | 957.7 | 957.7 | 957.7 | 957.7 | 957.7 |
| 2.5°  | 955.2 | 958.3 | 957.0 | 957.0 | 957.0 | 957.0 | 955.8 | 957.0 | 957.0 | 957.7 | 957.0 |
| 5°    | 955.8 | 955.2 | 955.2 | 955.8 | 955.8 | 956.4 | 955.2 | 955.8 | 956.4 | 956.4 | 957.0 |
| 7.5°  | 954.0 | 954.6 | 953.4 | 954.6 | 953.4 | 954.0 | 954.0 | 954.6 | 954.0 | 954.6 | 955.8 |
| 10°   | 950.3 | 951.0 | 950.3 | 950.3 | 950.3 | 951.6 | 949.1 | 951.0 | 950.3 | 951.0 | 950.3 |
| 12.5° | 943.6 | 946.7 | 945.5 | 946.7 | 946.7 | 946.7 | 944.9 | 946.1 | 946.7 | 946.7 | 946.7 |
| 15°   | 940.6 | 941.2 | 939.4 | 941.8 | 942.4 | 943.0 | 940.6 | 941.8 | 941.8 | 942.4 | 943.0 |
| 17.5° | 933.9 | 936.9 | 936.3 | 938.2 | 937.6 | 939.4 | 938.8 | 938.2 | 937.6 | 938.8 | 937.6 |
| 20°   | 929.0 | 932.1 | 931.5 | 933.3 | 933.9 | 935.7 | 933.9 | 933.9 | 932.1 | 932.7 | 934.5 |
| 22.5° | 924.1 | 925.4 | 925.4 | 927.2 | 927.2 | 929.0 | 927.2 | 926.6 | 926.6 | 926.0 | 927.8 |
| 25°   | 916.2 | 916.8 | 916.2 | 918.1 | 919.3 | 920.5 | 919.9 | 918.7 | 918.1 | 918.1 | 917.4 |
| 27.5° | 903.4 | 905.9 | 907.1 | 909.5 | 910.1 | 912.0 | 909.5 | 909.5 | 908.3 | 907.1 | 907.7 |
| 30°   | 893.7 | 894.9 | 894.9 | 900.4 | 900.4 | 903.4 | 900.4 | 899.8 | 899.2 | 898.6 | 897.3 |
| 32.5° | 884.6 | 886.4 | 888.2 | 892.5 | 895.5 | 896.7 | 894.9 | 893.7 | 890.6 | 888.8 | 888.2 |
| 35°   | 877.2 | 877.8 | 881.5 | 887.6 | 891.3 | 894.3 | 891.9 | 888.8 | 884.6 | 881.5 | 883.9 |
| 37.5° | 871.8 | 872.4 | 877.8 | 885.8 | 892.5 | 894.9 | 891.3 | 886.4 | 879.7 | 876.0 | 874.8 |
| 40°   | 866.9 | 870.5 | 876.6 | 887.6 | 894.9 | 898.6 | 895.5 | 888.8 | 879.1 | 871.8 | 871.1 |
| 42.5° | 864.4 | 866.3 | 875.4 | 888.2 | 898.6 | 903.4 | 899.2 | 890.0 | 877.8 | 869.3 | 868.7 |
| 45°   | 858.4 | 863.8 | 872.4 | 888.8 | 900.4 | 906.5 | 900.4 | 888.8 | 874.2 | 864.4 | 862.6 |
| 47.5° | 853.5 | 855.3 | 868.7 | 887.6 | 901.6 | 906.5 | 900.4 | 885.8 | 867.5 | 854.7 | 853.5 |
| 50°   | 841.9 | 846.2 | 859.6 | 879.7 | 896.1 | 901.0 | 893.7 | 874.2 | 853.5 | 839.5 | 837.0 |
| 52.5° | 824.2 | 827.9 | 843.7 | 868.7 | 884.6 | 890.0 | 879.1 | 858.4 | 834.0 | 816.9 | 816.9 |
| 55°   | 796.8 | 802.3 | 818.8 | 844.3 | 864.4 | 869.3 | 856.5 | 834.6 | 807.2 | 790.1 | 789.5 |
| 57.5° | 763.9 | 767.6 | 785.3 | 813.3 | 832.8 | 840.1 | 827.3 | 802.9 | 775.5 | 755.4 | 753.6 |
| 60°   | 721.3 | 726.2 | 745.0 | 771.8 | 792.0 | 798.0 | 787.1 | 762.7 | 734.7 | 713.4 | 713.4 |
| 62.5° | 670.1 | 675.6 | 694.5 | 721.9 | 742.6 | 751.7 | 736.5 | 713.4 | 684.1 | 663.4 | 661.6 |
| 65°   | 610.4 | 615.3 | 632.3 | 661.0 | 682.3 | 689.0 | 677.4 | 653.1 | 625.0 | 605.5 | 603.7 |
| 67.5° | 543.4 | 550.1 | 567.2 | 591.5 | 609.8 | 618.3 | 611.0 | 589.1 | 559.8 | 539.7 | 537.9 |
| 70°   | 470.9 | 475.8 | 489.2 | 511.7 | 532.4 | 538.5 | 527.6 | 512.9 | 485.5 | 467.3 | 464.8 |
| 72.5° | 393.5 | 397.8 | 408.8 | 430.1 | 444.7 | 452.6 | 446.5 | 427.7 | 405.7 | 390.5 | 392.9 |
| 75°   | 315.6 | 315.0 | 327.1 | 342.4 | 355.8 | 361.3 | 357.0 | 344.8 | 324.7 | 311.9 | 311.3 |
| 77.5° | 237.6 | 243.7 | 247.9 | 260.7 | 271.7 | 276.0 | 269.9 | 260.1 | 244.9 | 234.5 | 236.4 |
| 80°   | 166.9 | 163.3 | 171.2 | 179.1 | 186.4 | 190.7 | 187.0 | 181.5 | 171.2 | 163.3 | 162.0 |
| 82.5° | 102.3 | 99.3  | 103.0 | 110.3 | 115.1 | 116.4 | 117.0 | 110.3 | 106.0 | 99.9  | 101.1 |
| 85°   | 45.1  | 45.7  | 48.7  | 53.6  | 54.2  | 54.8  | 54.8  | 53.6  | 48.7  | 48.1  | 46.9  |
| 87.5° | 11.0  | 11.0  | 11.6  | 13.4  | 13.4  | 14.0  | 14.0  | 12.2  | 11.6  | 10.4  | 11.0  |
| 90°   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |

LM-79-08: Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

McGRAW-EDISON

Report Number: SP1-2006-844-6

Luminaire Tested: TT-D2-740-U-RW

Test Date: 06/30/2020

Data applicable to product families TT-x-740 and TTN-x-740



### Test Information

Test Method: LM-79-08  
 Report Number: SP1-2006-844-6  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1  
 Measurement Geometry:  $4\pi$   
 Issue Date: 06/30/2020  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: MCGRAW-EDISON  
 Catalog Number: **TT-D2-740-U-RW**  
 Description: MCGRAW EDISON

### RECTANGULAR DISTRIBUTION

### Spectral Parameters

|                           |        |           |      |      |       |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K):                  | 3623   | CRI (Ra): | 72.6 |      |       |
| CIE u':                   | 0.2297 | R1:       | 69.4 | R9:  | -22.4 |
| CIE v':                   | 0.5166 | R2:       | 78.4 | R10: | 49.0  |
| Duv:                      | 0.0060 | R3:       | 86.1 | R11: | 67.4  |
| CIE x:                    | 0.4044 | R4:       | 72.3 | R12: | 39.3  |
| CIE y:                    | 0.4042 | R5:       | 68.2 | R13: | 70.5  |
| CIE z:                    | 0.1914 | R6:       | 69.2 | R14: | 91.9  |
| Peak Wavelength (nm):     | 588    | R7:       | 83.0 |      |       |
| Dominant Wavelength (nm): | 578    | R8:       | 54.2 |      |       |
| Purity:                   | 42.8   |           |      |      |       |
| Rf:                       | 76.2   |           |      |      |       |
| Rg:                       | 94.3   |           |      |      |       |



### Test Conditions

Stabilization Time: 207M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.9/42%  
 Sphere Temperature (°C): 25.8

REPORT NUMBER: SP1-2006-844-6

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 7/29/2020        | 1/29/2021            |
| Power Meter                    | IN0071                | 12/3/2019        | 12/3/2020            |
| AC Power Source                | IN0063                | 12/3/2019        | 12/3/2020            |
| DC Power Source                | IN0208                | 12/3/2019        | 12/3/2020            |
| Sphere Thermometer             | IN0085                | 12/3/2019        | 12/3/2020            |
| Room Thermometer               | IN0046                | 12/3/2019        | 12/3/2020            |

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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 7-step quadrangle

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### Photopic Flux vs. Wavelength



#####

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 1254             | 0.0              | 490       | 9219             | 1.3              | 620       | 54761            | 14.3             | 750       | 2901             | 0.0              | 880       | 1835             | 0.0              |
| 365       | 1158             | 0.0              | 495       | 12322            | 2.2              | 625       | 51064            | 11.3             | 755       | 2733             | 0.0              | 885       | 1690             | 0.0              |
| 370       | 1131             | 0.0              | 500       | 17160            | 3.8              | 630       | 47879            | 8.7              | 760       | 2503             | 0.0              | 890       | 1819             | 0.0              |
| 375       | 1414             | 0.0              | 505       | 23071            | 6.5              | 635       | 44248            | 6.6              | 765       | 2289             | 0.0              | 895       | 1314             | 0.0              |
| 380       | 1275             | 0.0              | 510       | 29162            | 10.0             | 640       | 41034            | 4.9              | 770       | 2078             | 0.0              | 900       | 1547             | 0.0              |
| 385       | 1122             | 0.0              | 515       | 34992            | 14.5             | 645       | 37515            | 3.6              | 775       | 1927             | 0.0              | 905       | 1281             | 0.0              |
| 390       | 1074             | 0.0              | 520       | 40102            | 19.4             | 650       | 33900            | 2.5              | 780       | 1724             | 0.0              | 910       | 1345             | 0.0              |
| 395       | 1058             | 0.0              | 525       | 44194            | 23.7             | 655       | 30384            | 1.7              | 785       | 1617             | 0.0              | 915       | 1561             | 0.0              |
| 400       | 885              | 0.0              | 530       | 48014            | 28.3             | 660       | 26883            | 1.1              | 790       | 1709             | 0.0              | 920       | 1368             | 0.0              |
| 405       | 912              | 0.0              | 535       | 51019            | 31.6             | 665       | 23703            | 0.8              | 795       | 1561             | 0.0              | 925       | 1730             | 0.0              |
| 410       | 1108             | 0.0              | 540       | 53190            | 34.7             | 670       | 20603            | 0.5              | 800       | 1525             | 0.0              | 930       | 1629             | 0.0              |
| 415       | 1763             | 0.0              | 545       | 55452            | 36.9             | 675       | 18039            | 0.3              | 805       | 1332             | 0.0              | 935       | 1796             | 0.0              |
| 420       | 3421             | 0.0              | 550       | 57280            | 38.9             | 680       | 15849            | 0.2              | 810       | 1269             | 0.0              | 940       | 1595             | 0.0              |
| 425       | 6610             | 0.0              | 555       | 59041            | 40.3             | 685       | 13806            | 0.1              | 815       | 1261             | 0.0              | 945       | 1410             | 0.0              |
| 430       | 12444            | 0.1              | 560       | 60976            | 41.4             | 690       | 12093            | 0.1              | 820       | 1551             | 0.0              | 950       | 1937             | 0.0              |
| 435       | 21116            | 0.2              | 565       | 62904            | 41.8             | 695       | 10566            | 0.0              | 825       | 1708             | 0.0              | 955       | 2186             | 0.0              |
| 440       | 33463            | 0.5              | 570       | 64555            | 42.0             | 700       | 9300             | 0.0              | 830       | 1592             | 0.0              | 960       | 1583             | 0.0              |
| 445       | 49089            | 1.0              | 575       | 65785            | 40.9             | 705       | 8110             | 0.0              | 835       | 1642             | 0.0              | 965       | 1953             | 0.0              |
| 450       | 57374            | 1.5              | 580       | 66948            | 39.8             | 710       | 7052             | 0.0              | 840       | 1514             | 0.0              | 970       | 1519             | 0.0              |
| 455       | 42663            | 1.4              | 585       | 67963            | 37.8             | 715       | 6233             | 0.0              | 845       | 1376             | 0.0              | 975       | 1168             | 0.0              |
| 460       | 25334            | 1.0              | 590       | 68001            | 35.2             | 720       | 5362             | 0.0              | 850       | 1592             | 0.0              | 980       | 1593             | 0.0              |
| 465       | 17751            | 0.9              | 595       | 67308            | 31.9             | 725       | 4563             | 0.0              | 855       | 1667             | 0.0              | 985       | 1722             | 0.0              |
| 470       | 12447            | 0.8              | 600       | 66343            | 28.6             | 730       | 3976             | 0.0              | 860       | 1662             | 0.0              | 990       | 1648             | 0.0              |
| 475       | 8641             | 0.7              | 605       | 64393            | 24.9             | 735       | 3424             | 0.0              | 865       | 1916             | 0.0              | 995       | 2495             | 0.0              |
| 480       | 7423             | 0.7              | 610       | 61634            | 21.2             | 740       | 3222             | 0.0              | 870       | 1655             | 0.0              | 1000      | 2643             | 0.0              |
| 485       | 7759             | 0.9              | 615       | 58349            | 17.6             | 745       | 3060             | 0.0              | 875       | 2036             | 0.0              |           |                  |                  |

REPORT NUMBER: SP1-2006-844-6

### Scotopic Flux vs. Wavelength


**Scotopic Lumens: 1941.7**
**S/P: 0.51**

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 1254             | 0.0              | 490       | 9219             | 14.2             | 620       | 54761            | 0.7              | 750       | 2901             | 0.0              | 880       | 1835             | 0.0              |
| 365       | 1158             | 0.0              | 495       | 12322            | 19.9             | 625       | 51064            | 0.4              | 755       | 2733             | 0.0              | 885       | 1690             | 0.0              |
| 370       | 1131             | 0.0              | 500       | 17160            | 28.7             | 630       | 47879            | 0.3              | 760       | 2503             | 0.0              | 890       | 1819             | 0.0              |
| 375       | 1414             | 0.0              | 505       | 23071            | 39.2             | 635       | 44248            | 0.2              | 765       | 2289             | 0.0              | 895       | 1314             | 0.0              |
| 380       | 1275             | 0.0              | 510       | 29162            | 49.4             | 640       | 41034            | 0.1              | 770       | 2078             | 0.0              | 900       | 1547             | 0.0              |
| 385       | 1122             | 0.0              | 515       | 34992            | 58.0             | 645       | 37515            | 0.1              | 775       | 1927             | 0.0              | 905       | 1281             | 0.0              |
| 390       | 1074             | 0.0              | 520       | 40102            | 63.7             | 650       | 33900            | 0.0              | 780       | 1724             | 0.0              | 910       | 1345             | 0.0              |
| 395       | 1058             | 0.0              | 525       | 44194            | 66.1             | 655       | 30384            | 0.0              | 785       | 1617             | 0.0              | 915       | 1561             | 0.0              |
| 400       | 885              | 0.0              | 530       | 48014            | 66.2             | 660       | 26883            | 0.0              | 790       | 1709             | 0.0              | 920       | 1368             | 0.0              |
| 405       | 912              | 0.0              | 535       | 51019            | 63.6             | 665       | 23703            | 0.0              | 795       | 1561             | 0.0              | 925       | 1730             | 0.0              |
| 410       | 1108             | 0.1              | 540       | 53190            | 58.8             | 670       | 20603            | 0.0              | 800       | 1525             | 0.0              | 930       | 1629             | 0.0              |
| 415       | 1763             | 0.2              | 545       | 55452            | 53.2             | 675       | 18039            | 0.0              | 805       | 1332             | 0.0              | 935       | 1796             | 0.0              |
| 420       | 3421             | 0.6              | 550       | 57280            | 46.8             | 680       | 15849            | 0.0              | 810       | 1269             | 0.0              | 940       | 1595             | 0.0              |
| 425       | 6610             | 1.6              | 555       | 59041            | 40.3             | 685       | 13806            | 0.0              | 815       | 1261             | 0.0              | 945       | 1410             | 0.0              |
| 430       | 12444            | 4.2              | 560       | 60976            | 34.1             | 690       | 12093            | 0.0              | 820       | 1551             | 0.0              | 950       | 1937             | 0.0              |
| 435       | 21116            | 9.4              | 565       | 62904            | 28.2             | 695       | 10566            | 0.0              | 825       | 1708             | 0.0              | 955       | 2186             | 0.0              |
| 440       | 33463            | 18.7             | 570       | 64555            | 22.8             | 700       | 9300             | 0.0              | 830       | 1592             | 0.0              | 960       | 1583             | 0.0              |
| 445       | 49089            | 32.9             | 575       | 65785            | 17.9             | 705       | 8110             | 0.0              | 835       | 1642             | 0.0              | 965       | 1953             | 0.0              |
| 450       | 57374            | 44.5             | 580       | 66948            | 13.8             | 710       | 7052             | 0.0              | 840       | 1514             | 0.0              | 970       | 1519             | 0.0              |
| 455       | 42663            | 37.3             | 585       | 67963            | 10.4             | 715       | 6233             | 0.0              | 845       | 1376             | 0.0              | 975       | 1168             | 0.0              |
| 460       | 25334            | 24.5             | 590       | 68001            | 7.6              | 720       | 5362             | 0.0              | 850       | 1592             | 0.0              | 980       | 1593             | 0.0              |
| 465       | 17751            | 18.7             | 595       | 67308            | 5.4              | 725       | 4563             | 0.0              | 855       | 1667             | 0.0              | 985       | 1722             | 0.0              |
| 470       | 12447            | 14.3             | 600       | 66343            | 3.7              | 730       | 3976             | 0.0              | 860       | 1662             | 0.0              | 990       | 1648             | 0.0              |
| 475       | 8641             | 10.8             | 605       | 64393            | 2.5              | 735       | 3424             | 0.0              | 865       | 1916             | 0.0              | 995       | 2495             | 0.0              |
| 480       | 7423             | 10.0             | 610       | 61634            | 1.7              | 740       | 3222             | 0.0              | 870       | 1655             | 0.0              | 1000      | 2643             | 0.0              |
| 485       | 7759             | 11.2             | 615       | 58349            | 1.1              | 745       | 3060             | 0.0              | 875       | 2036             | 0.0              |           |                  |                  |

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### Melanopic Flux vs. Wavelength


**Melanopic Lumens: 5289.9**
**S/P: 1.39**

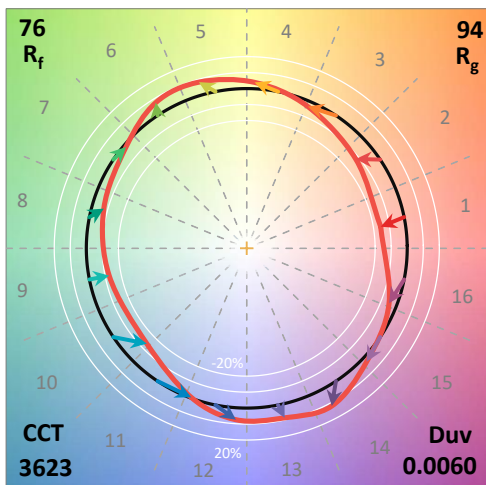
| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 1254             | 0.0              | 490       | 9219             | 7.7              | 620       | 54761            | 0.0              | 750       | 2901             | 0.0              | 880       | 1835             | 0.0              |
| 365       | 1158             | 0.0              | 495       | 12322            | 10.2             | 625       | 51064            | 0.0              | 755       | 2733             | 0.0              | 885       | 1690             | 0.0              |
| 370       | 1131             | 0.0              | 500       | 17160            | 13.8             | 630       | 47879            | 0.0              | 760       | 2503             | 0.0              | 890       | 1819             | 0.0              |
| 375       | 1414             | 0.0              | 505       | 23071            | 17.7             | 635       | 44248            | 0.0              | 765       | 2289             | 0.0              | 895       | 1314             | 0.0              |
| 380       | 1275             | 0.0              | 510       | 29162            | 20.9             | 640       | 41034            | 0.0              | 770       | 2078             | 0.0              | 900       | 1547             | 0.0              |
| 385       | 1122             | 0.0              | 515       | 34992            | 22.9             | 645       | 37515            | 0.0              | 775       | 1927             | 0.0              | 905       | 1281             | 0.0              |
| 390       | 1074             | 0.0              | 520       | 40102            | 23.3             | 650       | 33900            | 0.0              | 780       | 1724             | 0.0              | 910       | 1345             | 0.0              |
| 395       | 1058             | 0.0              | 525       | 44194            | 22.4             | 655       | 30384            | 0.0              | 785       | 1617             | 0.0              | 915       | 1561             | 0.0              |
| 400       | 885              | 0.0              | 530       | 48014            | 20.7             | 660       | 26883            | 0.0              | 790       | 1709             | 0.0              | 920       | 1368             | 0.0              |
| 405       | 912              | 0.0              | 535       | 51019            | 18.4             | 665       | 23703            | 0.0              | 795       | 1561             | 0.0              | 925       | 1730             | 0.0              |
| 410       | 1108             | 0.0              | 540       | 53190            | 15.6             | 670       | 20603            | 0.0              | 800       | 1525             | 0.0              | 930       | 1629             | 0.0              |
| 415       | 1763             | 0.1              | 545       | 55452            | 12.9             | 675       | 18039            | 0.0              | 805       | 1332             | 0.0              | 935       | 1796             | 0.0              |
| 420       | 3421             | 0.4              | 550       | 57280            | 10.3             | 680       | 15849            | 0.0              | 810       | 1269             | 0.0              | 940       | 1595             | 0.0              |
| 425       | 6610             | 1.0              | 555       | 59041            | 8.0              | 685       | 13806            | 0.0              | 815       | 1261             | 0.0              | 945       | 1410             | 0.0              |
| 430       | 12444            | 2.6              | 560       | 60976            | 6.0              | 690       | 12093            | 0.0              | 820       | 1551             | 0.0              | 950       | 1937             | 0.0              |
| 435       | 21116            | 5.6              | 565       | 62904            | 4.4              | 695       | 10566            | 0.0              | 825       | 1708             | 0.0              | 955       | 2186             | 0.0              |
| 440       | 33463            | 11.2             | 570       | 64555            | 3.2              | 700       | 9300             | 0.0              | 830       | 1592             | 0.0              | 960       | 1583             | 0.0              |
| 445       | 49089            | 19.4             | 575       | 65785            | 2.2              | 705       | 8110             | 0.0              | 835       | 1642             | 0.0              | 965       | 1953             | 0.0              |
| 450       | 57374            | 26.4             | 580       | 66948            | 1.5              | 710       | 7052             | 0.0              | 840       | 1514             | 0.0              | 970       | 1519             | 0.0              |
| 455       | 42663            | 22.4             | 585       | 67963            | 1.0              | 715       | 6233             | 0.0              | 845       | 1376             | 0.0              | 975       | 1168             | 0.0              |
| 460       | 25334            | 14.9             | 590       | 68001            | 0.7              | 720       | 5362             | 0.0              | 850       | 1592             | 0.0              | 980       | 1593             | 0.0              |
| 465       | 17751            | 11.6             | 595       | 67308            | 0.4              | 725       | 4563             | 0.0              | 855       | 1667             | 0.0              | 985       | 1722             | 0.0              |
| 470       | 12447            | 8.9              | 600       | 66343            | 0.3              | 730       | 3976             | 0.0              | 860       | 1662             | 0.0              | 990       | 1648             | 0.0              |
| 475       | 8641             | 6.6              | 605       | 64393            | 0.2              | 735       | 3424             | 0.0              | 865       | 1916             | 0.0              | 995       | 2495             | 0.0              |
| 480       | 7423             | 6.0              | 610       | 61634            | 0.1              | 740       | 3222             | 0.0              | 870       | 1655             | 0.0              | 1000      | 2643             | 0.0              |
| 485       | 7759             | 6.4              | 615       | 58349            | 0.1              | 745       | 3060             | 0.0              | 875       | 2036             | 0.0              |           |                  |                  |

### Summary

$R_f = 76.2$   
 $R_g = 94.3$   
 CIE  $R_a = 72.6$   
 $R_g = -22.4$



### Color Vector Graphics

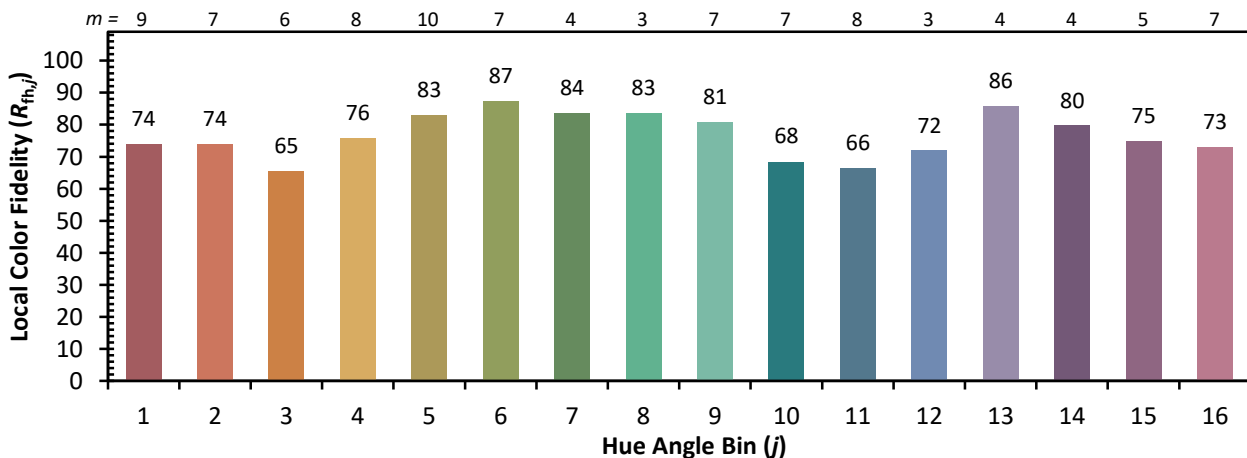


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 66 | CES51 = 88 | CES76 = 55 |
| CES02 = 61 | CES27 = 89 | CES52 = 88 | CES77 = 73 |
| CES03 = 31 | CES28 = 83 | CES53 = 78 | CES78 = 59 |
| CES04 = 70 | CES29 = 69 | CES54 = 85 | CES79 = 84 |
| CES05 = 48 | CES30 = 83 | CES55 = 84 | CES80 = 81 |
| CES06 = 51 | CES31 = 73 | CES56 = 74 | CES81 = 79 |
| CES07 = 40 | CES32 = 65 | CES57 = 73 | CES82 = 92 |
| CES08 = 39 | CES33 = 79 | CES58 = 74 | CES83 = 90 |
| CES09 = 29 | CES34 = 74 | CES59 = 86 | CES84 = 87 |
| CES10 = 74 | CES35 = 85 | CES60 = 90 | CES85 = 79 |
| CES11 = 57 | CES36 = 92 | CES61 = 84 | CES86 = 73 |
| CES12 = 63 | CES37 = 80 | CES62 = 87 | CES87 = 78 |
| CES13 = 42 | CES38 = 92 | CES63 = 73 | CES88 = 81 |
| CES14 = 74 | CES39 = 97 | CES64 = 68 | CES89 = 72 |
| CES15 = 71 | CES40 = 92 | CES65 = 65 | CES90 = 80 |
| CES16 = 47 | CES41 = 93 | CES66 = 61 | CES91 = 78 |
| CES17 = 49 | CES42 = 82 | CES67 = 58 | CES92 = 63 |
| CES18 = 56 | CES43 = 80 | CES68 = 68 | CES93 = 77 |
| CES19 = 72 | CES44 = 99 | CES69 = 76 | CES94 = 57 |
| CES20 = 65 | CES45 = 86 | CES70 = 60 | CES95 = 69 |
| CES21 = 86 | CES46 = 83 | CES71 = 54 | CES96 = 78 |
| CES22 = 78 | CES47 = 86 | CES72 = 85 | CES97 = 85 |
| CES23 = 92 | CES48 = 77 | CES73 = 52 | CES98 = 77 |
| CES24 = 91 | CES49 = 81 | CES74 = 95 | CES99 = 67 |
| CES25 = 72 | CES50 = 88 | CES75 = 56 |            |





**Color Rendition by Hue-Angle Bin**


**Measure Comparisons**



(END OF REPORT)