

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: P543175

Luminaire Tested: **TT-D8-750-U-5MQ-PM**

Issue Date: 6/22/2021

**Test Information**

Test Method: LM-79-08  
Report Number: P543175  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2012-100-9)  
Test Lab: INNOVATION CENTER  
Issue Date: 6/22/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: MCGRAW-EDISON  
Catalog Number: TT-D8-750-U-5MQ-PM  
Description: TOPTIER LED SITE LUMINAIRE  
5000K, 70 CRI LEDS AND MEDIUM DISTRIBUTION  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 18279 lumens  
Efficiency: N/A  
Efficacy: 122.9 lumens/watt  
Luminous Opening: Circular (Dia: 1.12' x H: 0')  
IES Classification: Type V - Short  
BUG Rating: B4 - U0 - G3

Input Watts (W): 148.7  
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: 28.75 FT



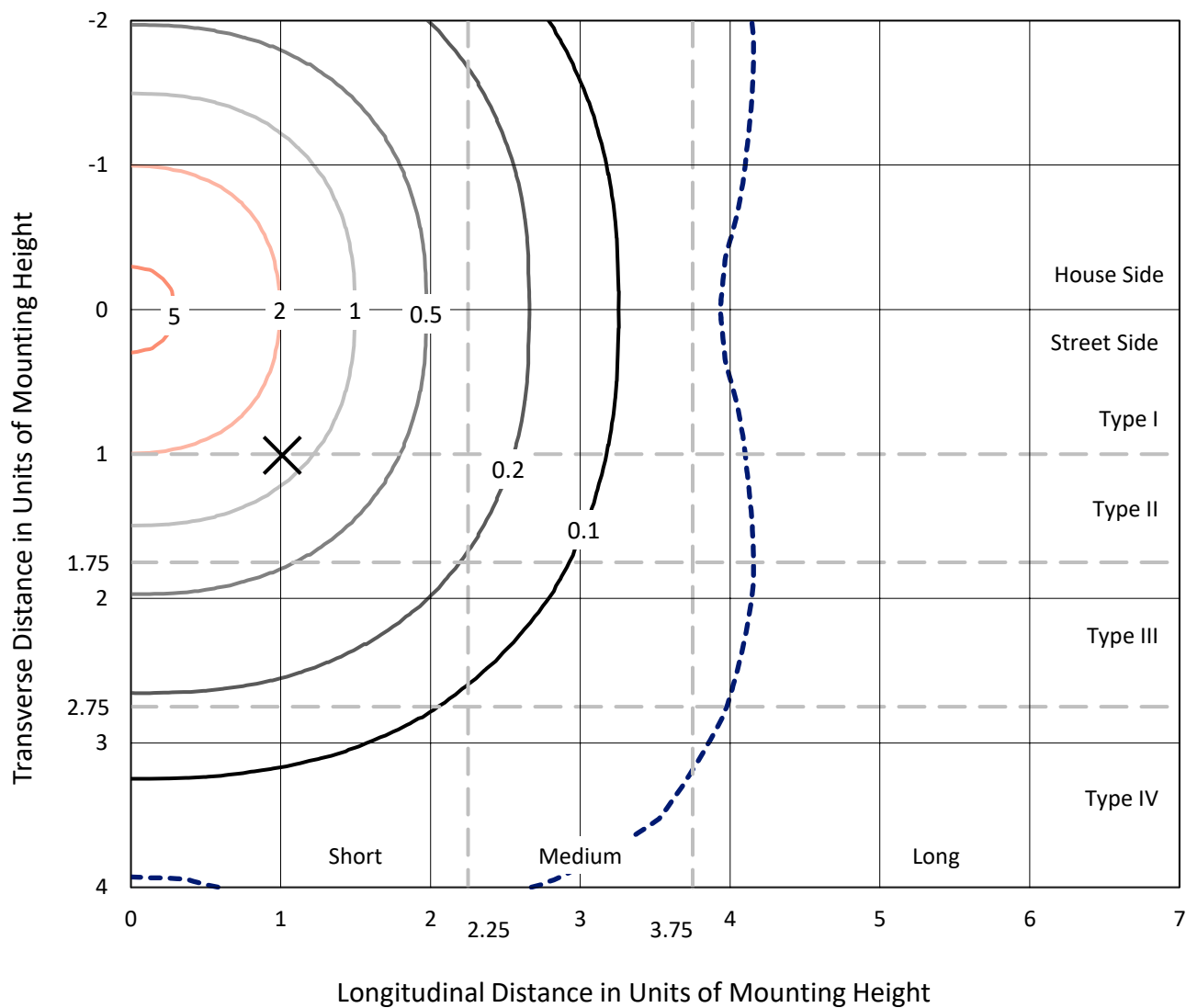
REPORT NUMBER: P543175

CATALOG NUMBER: TT-D8-750-U-5MQ-PM

## Iso-Footcandle Lines of Horizontal Illumination

✕ Max cd

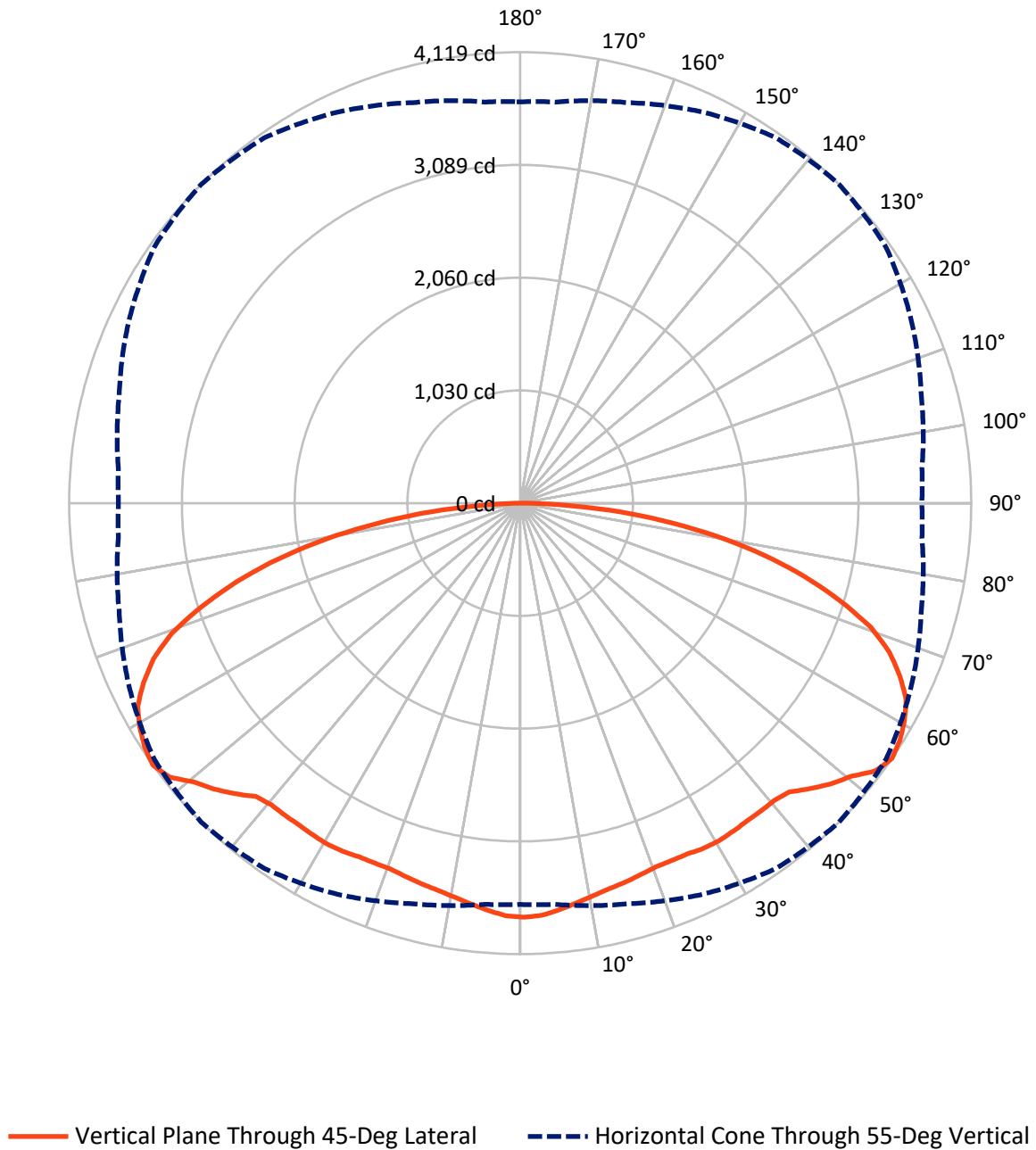
--- 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 6.1 fc  
 Type V - Short - N/A

REPORT NUMBER: P543175  
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## Luminous Intensity Polar Plot



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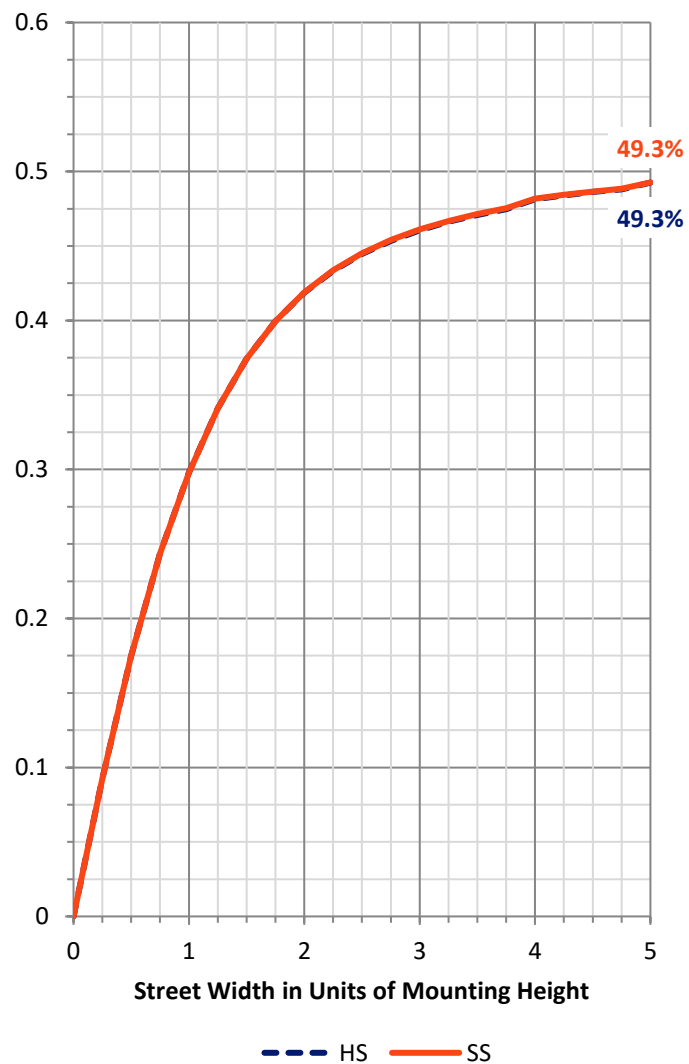
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 9139.5   | 0.0    | 9139.5  |
|                    | % Fixture | 50.0     | 0.0    | 50.0    |
| <b>Street Side</b> | Lumens    | 9139.5   | 0.0    | 9139.5  |
|                    | % Fixture | 50.0     | 0.0    | 50.0    |
| <b>Total</b>       | Lumens    | 18279.0  | 0.0    | 18279.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 353.1   | 1.9       |
| 10°-20°   | 1014.1  | 5.5       |
| 20°-30°   | 1634.2  | 8.9       |
| 30°-40°   | 2214.6  | 12.1      |
| 40°-50°   | 2807.3  | 15.4      |
| 50°-60°   | 3453.7  | 18.9      |
| 60°-70°   | 3478.7  | 19.0      |
| 70°-80°   | 2546.0  | 13.9      |
| 80°-90°   | 777.2   | 4.3       |
| 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°    | 18279.0 | 100.0     |
| 0°-180°   | 18279.0 | 100.0     |

**Coefficient of Utilization**



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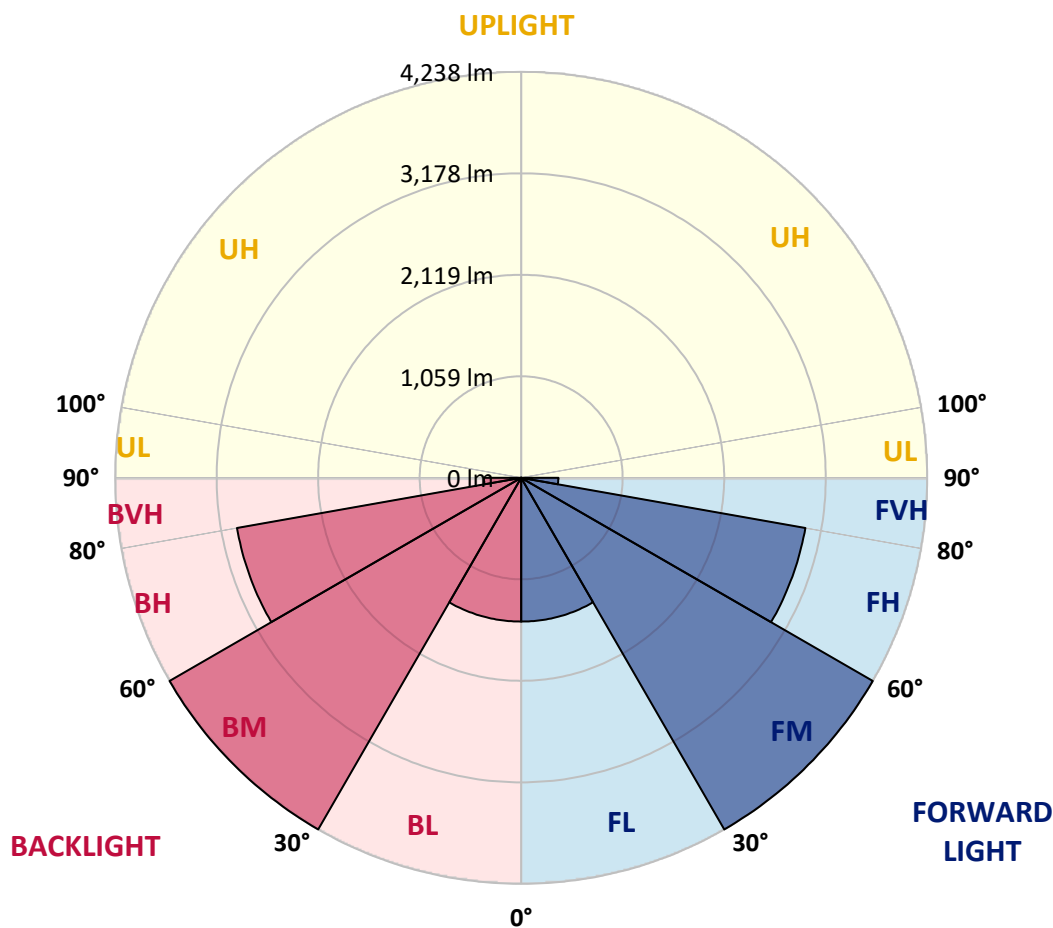
CATALOG NUMBER: TT-D8-750-U-5MQ-PM

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 1500.7 | 8.2       |                         |      |         |
| FM   | (30°-60°)   | 4237.8 | 23.2      |                         |      |         |
| FH   | (60°-80°)   | 3012.3 | 16.5      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 388.6  | 2.1       |                         |      | G3/500  |
| BL   | (0°-30°)    | 1500.7 | 8.2       | B3/2500                 |      |         |
| BM   | (30°-60°)   | 4237.8 | 23.2      | B3/5000                 |      |         |
| BH   | (60°-80°)   | 3012.3 | 16.5      | B4/5000                 |      | G2/5000 |
| BVH  | (80°-90°)   | 388.6  | 2.1       |                         |      | G3/500  |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B4-U0-G3**

Type V Short



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CATALOG NUMBER: TT-D8-750-U-5MQ-PM

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°    | 75°    | 85°    | 90°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 3782.1 | 3782.1 | 3782.1 | 3782.1 | 3782.1 | 3782.1 | 3782.1 | 3782.1 | 3782.1 | 3782.1 | 3782.1 |
| 2.5°  | 3765.3 | 3767.7 | 3766.9 | 3768.5 | 3768.5 | 3770.1 | 3768.5 | 3770.1 | 3767.7 | 3768.5 | 3768.5 |
| 5°    | 3724.4 | 3727.6 | 3725.2 | 3729.2 | 3730.0 | 3730.8 | 3728.4 | 3728.4 | 3726.0 | 3726.0 | 3726.8 |
| 7.5°  | 3680.4 | 3682.0 | 3682.0 | 3686.0 | 3688.4 | 3688.4 | 3686.0 | 3682.8 | 3681.2 | 3678.8 | 3678.8 |
| 10°   | 3638.0 | 3640.4 | 3639.6 | 3643.6 | 3646.8 | 3647.6 | 3644.4 | 3638.8 | 3636.4 | 3634.8 | 3634.8 |
| 12.5° | 3601.1 | 3603.5 | 3605.1 | 3609.9 | 3614.8 | 3614.8 | 3613.2 | 3606.7 | 3602.7 | 3600.3 | 3599.5 |
| 15°   | 3573.9 | 3576.3 | 3577.1 | 3584.3 | 3589.1 | 3591.5 | 3588.3 | 3581.9 | 3577.1 | 3573.9 | 3572.3 |
| 17.5° | 3546.7 | 3548.3 | 3552.3 | 3558.7 | 3563.5 | 3566.7 | 3563.5 | 3557.1 | 3550.7 | 3545.1 | 3543.5 |
| 20°   | 3520.3 | 3521.1 | 3526.7 | 3535.5 | 3541.9 | 3545.1 | 3541.9 | 3532.3 | 3522.7 | 3517.9 | 3517.1 |
| 22.5° | 3508.3 | 3509.9 | 3517.1 | 3529.9 | 3538.7 | 3545.1 | 3537.1 | 3525.1 | 3513.9 | 3505.9 | 3505.1 |
| 25°   | 3500.3 | 3501.1 | 3510.7 | 3528.3 | 3544.3 | 3549.1 | 3543.5 | 3526.7 | 3509.1 | 3498.7 | 3497.9 |
| 27.5° | 3507.5 | 3510.7 | 3523.5 | 3541.1 | 3561.9 | 3569.9 | 3564.3 | 3540.3 | 3521.1 | 3509.1 | 3506.7 |
| 30°   | 3505.9 | 3508.3 | 3522.7 | 3542.7 | 3561.9 | 3577.9 | 3566.7 | 3541.1 | 3518.7 | 3506.7 | 3505.1 |
| 32.5° | 3501.1 | 3504.3 | 3517.1 | 3533.9 | 3561.1 | 3572.3 | 3561.9 | 3532.3 | 3513.1 | 3504.3 | 3501.1 |
| 35°   | 3481.0 | 3486.7 | 3505.1 | 3529.9 | 3554.7 | 3565.9 | 3553.9 | 3529.1 | 3502.7 | 3488.3 | 3486.7 |
| 37.5° | 3473.0 | 3477.0 | 3495.5 | 3524.3 | 3557.1 | 3569.1 | 3553.1 | 3523.5 | 3493.9 | 3477.8 | 3473.8 |
| 40°   | 3460.2 | 3466.6 | 3489.1 | 3522.7 | 3560.3 | 3571.5 | 3558.7 | 3524.3 | 3490.7 | 3464.2 | 3457.0 |
| 42.5° | 3460.2 | 3465.8 | 3497.1 | 3543.5 | 3585.1 | 3605.1 | 3585.1 | 3545.9 | 3498.7 | 3461.8 | 3456.2 |
| 45°   | 3515.5 | 3522.7 | 3561.9 | 3630.8 | 3695.6 | 3719.6 | 3694.8 | 3634.8 | 3563.5 | 3521.1 | 3509.9 |
| 47.5° | 3562.7 | 3573.1 | 3632.4 | 3719.6 | 3800.5 | 3827.7 | 3798.1 | 3721.2 | 3633.2 | 3573.1 | 3562.7 |
| 50°   | 3597.9 | 3609.9 | 3686.8 | 3797.3 | 3883.8 | 3920.6 | 3887.0 | 3799.7 | 3688.4 | 3611.5 | 3599.5 |
| 52.5° | 3661.2 | 3679.6 | 3770.9 | 3895.8 | 4016.7 | 4063.1 | 4016.7 | 3899.8 | 3770.9 | 3682.0 | 3661.2 |
| 55°   | 3666.0 | 3678.0 | 3787.7 | 3942.2 | 4073.5 | 4119.1 | 4079.1 | 3943.0 | 3791.7 | 3683.6 | 3668.4 |
| 57.5° | 3610.7 | 3624.4 | 3740.4 | 3918.2 | 4048.7 | 4088.7 | 4049.5 | 3920.6 | 3750.9 | 3632.4 | 3618.8 |
| 60°   | 3511.5 | 3525.1 | 3646.0 | 3830.9 | 3971.0 | 4031.9 | 3974.2 | 3834.9 | 3658.0 | 3534.7 | 3519.5 |
| 62.5° | 3403.4 | 3429.0 | 3568.3 | 3752.5 | 3891.8 | 3955.8 | 3898.2 | 3755.7 | 3576.3 | 3438.6 | 3415.4 |
| 65°   | 3232.9 | 3244.1 | 3393.8 | 3593.1 | 3764.5 | 3810.9 | 3765.3 | 3598.7 | 3419.4 | 3253.7 | 3244.9 |
| 67.5° | 3059.9 | 3080.7 | 3204.8 | 3427.4 | 3593.1 | 3637.2 | 3592.3 | 3426.6 | 3220.9 | 3087.1 | 3071.9 |
| 70°   | 2772.5 | 2796.5 | 2971.1 | 3162.4 | 3319.3 | 3396.2 | 3324.1 | 3164.8 | 2998.3 | 2806.1 | 2793.3 |
| 72.5° | 2506.7 | 2531.5 | 2651.6 | 2867.0 | 3026.3 | 3059.1 | 3036.7 | 2871.0 | 2676.4 | 2549.1 | 2531.5 |
| 75°   | 2159.2 | 2168.1 | 2322.6 | 2505.1 | 2652.4 | 2687.6 | 2659.6 | 2502.7 | 2351.4 | 2188.1 | 2162.4 |
| 77.5° | 1798.2 | 1815.8 | 1924.7 | 2080.8 | 2208.1 | 2271.3 | 2206.5 | 2089.6 | 1935.9 | 1816.6 | 1799.0 |
| 80°   | 1385.1 | 1404.3 | 1517.2 | 1658.9 | 1757.3 | 1807.8 | 1759.7 | 1654.9 | 1527.6 | 1405.9 | 1397.1 |
| 82.5° | 976.7  | 977.5  | 1089.6 | 1182.5 | 1281.0 | 1309.8 | 1282.6 | 1201.7 | 1097.6 | 986.4  | 988.0  |
| 85°   | 553.2  | 558.8  | 635.7  | 720.5  | 777.4  | 815.8  | 785.4  | 725.4  | 643.7  | 566.0  | 558.8  |
| 87.5° | 125.7  | 124.9  | 164.9  | 213.8  | 277.0  | 276.2  | 270.6  | 221.0  | 169.7  | 123.3  | 121.7  |
| 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: SP1-2006-844-1

Luminaire Tested: TT-D4-750-U-WQ

Data valid for TT-D\* and TTN families of products

Test Date: 11/06/2020

### Test Information

Test Method: LM-79-08  
 Report Number: SP1-2006-844-1  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1  
 Measurement Geometry:  $4\pi$   
 Issue Date: 11/06/2020  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: MCGRAW-EDISON  
 Catalog Number: **TT-D4-750-U-WQ**  
 Description: MCGRAW EDISON

### DISTRIBUTION

### Spectral Parameters

|                           |        |           |      |      |       |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K):                  | 4778   | CRI (Ra): | 71.0 |      |       |
| CIE u':                   | 0.2092 | R1:       | 67.7 | R9:  | -28.7 |
| CIE v':                   | 0.4955 | R2:       | 75.2 | R10: | 41.2  |
| Duv:                      | 0.0068 | R3:       | 80.8 | R11: | 67.2  |
| CIE x:                    | 0.3535 | R4:       | 71.5 | R12: | 35.9  |
| CIE y:                    | 0.3721 | R5:       | 67.8 | R13: | 68.5  |
| CIE z:                    | 0.2744 | R6:       | 65.6 | R14: | 89.2  |
| Peak Wavelength (nm):     | 449    | R7:       | 82.2 |      |       |
| Dominant Wavelength (nm): | 570    | R8:       | 57.2 |      |       |
| Purity:                   | 17.8   |           |      |      |       |
| Rf:                       | 73.3   |           |      |      |       |
| Rg:                       | 94.5   |           |      |      |       |



### Test Conditions

Stabilization Time: 62M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 24.6/45%  
 Sphere Temperature (°C): 24.7

REPORT NUMBER: SP1-2006-844-1

| 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**



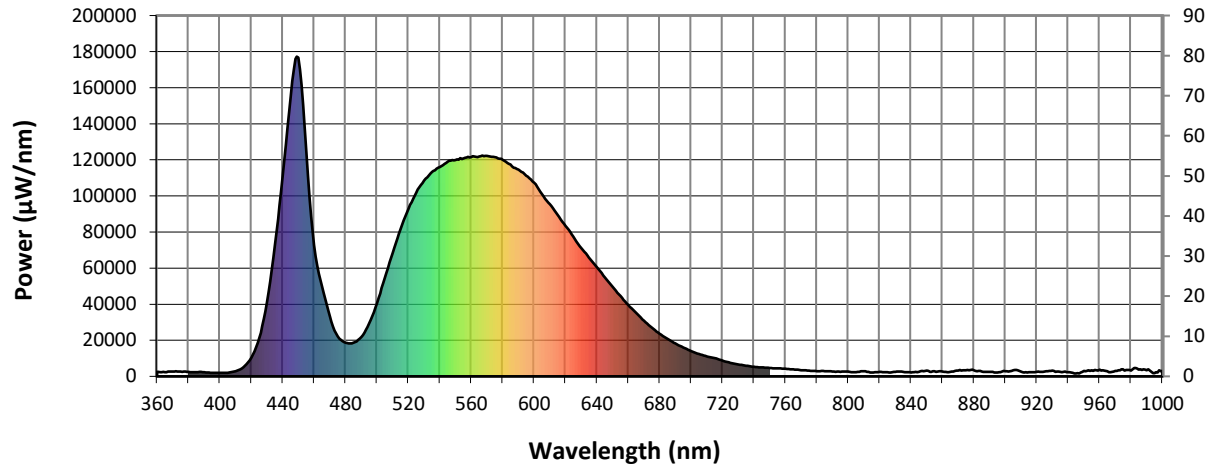
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 5000K 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       | 2529             | 0.0              | 490       | 21819            | 3.1              | 620       | 83437            | 21.7             | 750       | 4608             | 0.0              | 880       | 3335             | 0.0              |
| 365       | 2361             | 0.0              | 495       | 29270            | 5.3              | 625       | 77569            | 17.1             | 755       | 4412             | 0.0              | 885       | 2653             | 0.0              |
| 370       | 2648             | 0.0              | 500       | 40589            | 9.0              | 630       | 71183            | 12.9             | 760       | 4227             | 0.0              | 890       | 2411             | 0.0              |
| 375       | 2655             | 0.0              | 505       | 54498            | 15.2             | 635       | 65734            | 9.9              | 765       | 3922             | 0.0              | 895       | 2118             | 0.0              |
| 380       | 2428             | 0.0              | 510       | 68399            | 23.5             | 640       | 60418            | 7.2              | 770       | 3461             | 0.0              | 900       | 2873             | 0.0              |
| 385       | 2334             | 0.0              | 515       | 81428            | 33.7             | 645       | 54736            | 5.3              | 775       | 3226             | 0.0              | 905       | 3367             | 0.0              |
| 390       | 2269             | 0.0              | 520       | 92826            | 45.0             | 650       | 49620            | 3.6              | 780       | 2883             | 0.0              | 910       | 2749             | 0.0              |
| 395       | 2020             | 0.0              | 525       | 101684           | 54.6             | 655       | 44517            | 2.6              | 785       | 2864             | 0.0              | 915       | 2283             | 0.0              |
| 400       | 1873             | 0.0              | 530       | 108580           | 63.9             | 660       | 39493            | 1.6              | 790       | 2715             | 0.0              | 920       | 2425             | 0.0              |
| 405       | 2015             | 0.0              | 535       | 113290           | 70.3             | 665       | 35066            | 1.1              | 795       | 2547             | 0.0              | 925       | 2705             | 0.0              |
| 410       | 2831             | 0.0              | 540       | 116042           | 75.6             | 670       | 30825            | 0.7              | 800       | 2585             | 0.0              | 930       | 3144             | 0.0              |
| 415       | 5121             | 0.0              | 545       | 118948           | 79.2             | 675       | 27031            | 0.5              | 805       | 2308             | 0.0              | 935       | 2539             | 0.0              |
| 420       | 10348            | 0.0              | 550       | 119916           | 81.5             | 680       | 23555            | 0.3              | 810       | 2796             | 0.0              | 940       | 2288             | 0.0              |
| 425       | 21288            | 0.1              | 555       | 120734           | 82.5             | 685       | 20841            | 0.2              | 815       | 2196             | 0.0              | 945       | 1604             | 0.0              |
| 430       | 41173            | 0.3              | 560       | 121523           | 82.6             | 690       | 18232            | 0.1              | 820       | 2415             | 0.0              | 950       | 3031             | 0.0              |
| 435       | 73003            | 0.9              | 565       | 121859           | 81.0             | 695       | 16035            | 0.1              | 825       | 2281             | 0.0              | 955       | 3356             | 0.0              |
| 440       | 111013           | 1.7              | 570       | 122246           | 79.5             | 700       | 14010            | 0.0              | 830       | 2524             | 0.0              | 960       | 3704             | 0.0              |
| 445       | 154787           | 3.2              | 575       | 121449           | 75.6             | 705       | 12408            | 0.0              | 835       | 2461             | 0.0              | 965       | 2847             | 0.0              |
| 450       | 176733           | 4.6              | 580       | 120111           | 71.4             | 710       | 11063            | 0.0              | 840       | 2195             | 0.0              | 970       | 2985             | 0.0              |
| 455       | 124334           | 4.2              | 585       | 117354           | 65.2             | 715       | 10136            | 0.0              | 845       | 2487             | 0.0              | 975       | 3963             | 0.0              |
| 460       | 72664            | 3.0              | 590       | 114565           | 59.2             | 720       | 8693             | 0.0              | 850       | 3144             | 0.0              | 980       | 3221             | 0.0              |
| 465       | 49806            | 2.6              | 595       | 111127           | 52.7             | 725       | 7522             | 0.0              | 855       | 2809             | 0.0              | 985       | 3794             | 0.0              |
| 470       | 32995            | 2.1              | 600       | 107253           | 46.2             | 730       | 6612             | 0.0              | 860       | 2621             | 0.0              | 990       | 3296             | 0.0              |
| 475       | 22184            | 1.7              | 605       | 101156           | 39.2             | 735       | 5947             | 0.0              | 865       | 2410             | 0.0              | 995       | 1779             | 0.0              |
| 480       | 18691            | 1.8              | 610       | 95370            | 32.8             | 740       | 5253             | 0.0              | 870       | 3143             | 0.0              | 1000      | 2977             | 0.0              |
| 485       | 18593            | 2.2              | 615       | 89556            | 27.0             | 745       | 5032             | 0.0              | 875       | 3421             | 0.0              |           |                  |                  |

REPORT NUMBER: SP1-2006-844-1

### Scotopic Flux vs. Wavelength



Scotopic Lumens: 4867.6

S/P: 0.66

| 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       | 2529             | 0.0              | 490       | 21819            | 33.6             | 620       | 83437            | 1.0              | 750       | 4608             | 0.0              | 880       | 3335             | 0.0              |
| 365       | 2361             | 0.0              | 495       | 29270            | 47.3             | 625       | 77569            | 0.7              | 755       | 4412             | 0.0              | 885       | 2653             | 0.0              |
| 370       | 2648             | 0.0              | 500       | 40589            | 67.9             | 630       | 71183            | 0.4              | 760       | 4227             | 0.0              | 890       | 2411             | 0.0              |
| 375       | 2655             | 0.0              | 505       | 54498            | 92.6             | 635       | 65734            | 0.2              | 765       | 3922             | 0.0              | 895       | 2118             | 0.0              |
| 380       | 2428             | 0.0              | 510       | 68399            | 115.9            | 640       | 60418            | 0.2              | 770       | 3461             | 0.0              | 900       | 2873             | 0.0              |
| 385       | 2334             | 0.0              | 515       | 81428            | 135.0            | 645       | 54736            | 0.1              | 775       | 3226             | 0.0              | 905       | 3367             | 0.0              |
| 390       | 2269             | 0.0              | 520       | 92826            | 147.5            | 650       | 49620            | 0.1              | 780       | 2883             | 0.0              | 910       | 2749             | 0.0              |
| 395       | 2020             | 0.0              | 525       | 101684           | 152.1            | 655       | 44517            | 0.0              | 785       | 2864             | 0.0              | 915       | 2283             | 0.0              |
| 400       | 1873             | 0.0              | 530       | 108580           | 149.7            | 660       | 39493            | 0.0              | 790       | 2715             | 0.0              | 920       | 2425             | 0.0              |
| 405       | 2015             | 0.1              | 535       | 113290           | 141.2            | 665       | 35066            | 0.0              | 795       | 2547             | 0.0              | 925       | 2705             | 0.0              |
| 410       | 2831             | 0.2              | 540       | 116042           | 128.2            | 670       | 30825            | 0.0              | 800       | 2585             | 0.0              | 930       | 3144             | 0.0              |
| 415       | 5121             | 0.5              | 545       | 118948           | 114.0            | 675       | 27031            | 0.0              | 805       | 2308             | 0.0              | 935       | 2539             | 0.0              |
| 420       | 10348            | 1.7              | 550       | 119916           | 98.1             | 680       | 23555            | 0.0              | 810       | 2796             | 0.0              | 940       | 2288             | 0.0              |
| 425       | 21288            | 5.2              | 555       | 120734           | 82.5             | 685       | 20841            | 0.0              | 815       | 2196             | 0.0              | 945       | 1604             | 0.0              |
| 430       | 41173            | 14.0             | 560       | 121523           | 67.9             | 690       | 18232            | 0.0              | 820       | 2415             | 0.0              | 950       | 3031             | 0.0              |
| 435       | 73003            | 32.6             | 565       | 121859           | 54.7             | 695       | 16035            | 0.0              | 825       | 2281             | 0.0              | 955       | 3356             | 0.0              |
| 440       | 111013           | 62.0             | 570       | 122246           | 43.1             | 700       | 14010            | 0.0              | 830       | 2524             | 0.0              | 960       | 3704             | 0.0              |
| 445       | 154787           | 103.6            | 575       | 121449           | 33.1             | 705       | 12408            | 0.0              | 835       | 2461             | 0.0              | 965       | 2847             | 0.0              |
| 450       | 176733           | 137.0            | 580       | 120111           | 24.7             | 710       | 11063            | 0.0              | 840       | 2195             | 0.0              | 970       | 2985             | 0.0              |
| 455       | 124334           | 108.6            | 585       | 117354           | 17.9             | 715       | 10136            | 0.0              | 845       | 2487             | 0.0              | 975       | 3963             | 0.0              |
| 460       | 72664            | 70.2             | 590       | 114565           | 12.8             | 720       | 8693             | 0.0              | 850       | 3144             | 0.0              | 980       | 3221             | 0.0              |
| 465       | 49806            | 52.6             | 595       | 111127           | 8.9              | 725       | 7522             | 0.0              | 855       | 2809             | 0.0              | 985       | 3794             | 0.0              |
| 470       | 32995            | 38.0             | 600       | 107253           | 6.0              | 730       | 6612             | 0.0              | 860       | 2621             | 0.0              | 990       | 3296             | 0.0              |
| 475       | 22184            | 27.7             | 605       | 101156           | 4.0              | 735       | 5947             | 0.0              | 865       | 2410             | 0.0              | 995       | 1779             | 0.0              |
| 480       | 18691            | 25.2             | 610       | 95370            | 2.6              | 740       | 5253             | 0.0              | 870       | 3143             | 0.0              | 1000      | 2977             | 0.0              |
| 485       | 18593            | 27.0             | 615       | 89556            | 1.7              | 745       | 5032             | 0.0              | 875       | 3421             | 0.0              |           |                  |                  |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: 12457.9 S/P: 1.7

| 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       | 2529             | 0.0              | 490       | 21819            | 18.2             | 620       | 83437            | 0.1              | 750       | 4608             | 0.0              | 880       | 3335             | 0.0              |
| 365       | 2361             | 0.0              | 495       | 29270            | 24.2             | 625       | 77569            | 0.0              | 755       | 4412             | 0.0              | 885       | 2653             | 0.0              |
| 370       | 2648             | 0.0              | 500       | 40589            | 32.6             | 630       | 71183            | 0.0              | 760       | 4227             | 0.0              | 890       | 2411             | 0.0              |
| 375       | 2655             | 0.0              | 505       | 54498            | 41.8             | 635       | 65734            | 0.0              | 765       | 3922             | 0.0              | 895       | 2118             | 0.0              |
| 380       | 2428             | 0.0              | 510       | 68399            | 49.1             | 640       | 60418            | 0.0              | 770       | 3461             | 0.0              | 900       | 2873             | 0.0              |
| 385       | 2334             | 0.0              | 515       | 81428            | 53.2             | 645       | 54736            | 0.0              | 775       | 3226             | 0.0              | 905       | 3367             | 0.0              |
| 390       | 2269             | 0.0              | 520       | 92826            | 54.0             | 650       | 49620            | 0.0              | 780       | 2883             | 0.0              | 910       | 2749             | 0.0              |
| 395       | 2020             | 0.0              | 525       | 101684           | 51.6             | 655       | 44517            | 0.0              | 785       | 2864             | 0.0              | 915       | 2283             | 0.0              |
| 400       | 1873             | 0.0              | 530       | 108580           | 46.9             | 660       | 39493            | 0.0              | 790       | 2715             | 0.0              | 920       | 2425             | 0.0              |
| 405       | 2015             | 0.0              | 535       | 113290           | 40.8             | 665       | 35066            | 0.0              | 795       | 2547             | 0.0              | 925       | 2705             | 0.0              |
| 410       | 2831             | 0.1              | 540       | 116042           | 34.0             | 670       | 30825            | 0.0              | 800       | 2585             | 0.0              | 930       | 3144             | 0.0              |
| 415       | 5121             | 0.3              | 545       | 118948           | 27.6             | 675       | 27031            | 0.0              | 805       | 2308             | 0.0              | 935       | 2539             | 0.0              |
| 420       | 10348            | 1.2              | 550       | 119916           | 21.5             | 680       | 23555            | 0.0              | 810       | 2796             | 0.0              | 940       | 2288             | 0.0              |
| 425       | 21288            | 3.3              | 555       | 120734           | 16.3             | 685       | 20841            | 0.0              | 815       | 2196             | 0.0              | 945       | 1604             | 0.0              |
| 430       | 41173            | 8.7              | 560       | 121523           | 12.0             | 690       | 18232            | 0.0              | 820       | 2415             | 0.0              | 950       | 3031             | 0.0              |
| 435       | 73003            | 19.5             | 565       | 121859           | 8.6              | 695       | 16035            | 0.0              | 825       | 2281             | 0.0              | 955       | 3356             | 0.0              |
| 440       | 111013           | 37.1             | 570       | 122246           | 6.0              | 700       | 14010            | 0.0              | 830       | 2524             | 0.0              | 960       | 3704             | 0.0              |
| 445       | 154787           | 61.1             | 575       | 121449           | 4.0              | 705       | 12408            | 0.0              | 835       | 2461             | 0.0              | 965       | 2847             | 0.0              |
| 450       | 176733           | 81.4             | 580       | 120111           | 2.7              | 710       | 11063            | 0.0              | 840       | 2195             | 0.0              | 970       | 2985             | 0.0              |
| 455       | 124334           | 65.1             | 585       | 117354           | 1.7              | 715       | 10136            | 0.0              | 845       | 2487             | 0.0              | 975       | 3963             | 0.0              |
| 460       | 72664            | 42.8             | 590       | 114565           | 1.1              | 720       | 8693             | 0.0              | 850       | 3144             | 0.0              | 980       | 3221             | 0.0              |
| 465       | 49806            | 32.5             | 595       | 111127           | 0.7              | 725       | 7522             | 0.0              | 855       | 2809             | 0.0              | 985       | 3794             | 0.0              |
| 470       | 32995            | 23.6             | 600       | 107253           | 0.5              | 730       | 6612             | 0.0              | 860       | 2621             | 0.0              | 990       | 3296             | 0.0              |
| 475       | 22184            | 16.9             | 605       | 101156           | 0.3              | 735       | 5947             | 0.0              | 865       | 2410             | 0.0              | 995       | 1779             | 0.0              |
| 480       | 18691            | 15.0             | 610       | 95370            | 0.2              | 740       | 5253             | 0.0              | 870       | 3143             | 0.0              | 1000      | 2977             | 0.0              |
| 485       | 18593            | 15.3             | 615       | 89556            | 0.1              | 745       | 5032             | 0.0              | 875       | 3421             | 0.0              |           |                  |                  |

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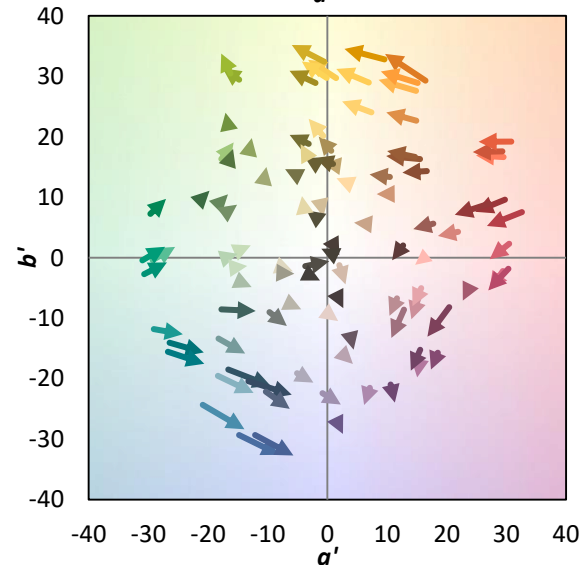
TM-30-18

### Summary

$R_f = 73.3$   
 $R_g = 94.5$   
 CIE  $R_a = 71.0$   
 $R_g = -28.7$



### Color Vector Graphics



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 60 | CES51 = 89 | CES76 = 47 |
| CES02 = 59 | CES27 = 86 | CES52 = 88 | CES77 = 65 |
| CES03 = 30 | CES28 = 79 | CES53 = 76 | CES78 = 50 |
| CES04 = 69 | CES29 = 62 | CES54 = 83 | CES79 = 78 |
| CES05 = 46 | CES30 = 79 | CES55 = 82 | CES80 = 74 |
| CES06 = 50 | CES31 = 66 | CES56 = 71 | CES81 = 77 |
| CES07 = 39 | CES32 = 59 | CES57 = 70 | CES82 = 89 |
| CES08 = 38 | CES33 = 75 | CES58 = 71 | CES83 = 87 |
| CES09 = 29 | CES34 = 67 | CES59 = 86 | CES84 = 86 |
| CES10 = 72 | CES35 = 81 | CES60 = 90 | CES85 = 79 |
| CES11 = 56 | CES36 = 94 | CES61 = 84 | CES86 = 77 |
| CES12 = 61 | CES37 = 75 | CES62 = 84 | CES87 = 76 |
| CES13 = 41 | CES38 = 88 | CES63 = 72 | CES88 = 79 |
| CES14 = 74 | CES39 = 95 | CES64 = 66 | CES89 = 73 |
| CES15 = 70 | CES40 = 89 | CES65 = 61 | CES90 = 78 |
| CES16 = 46 | CES41 = 92 | CES66 = 58 | CES91 = 77 |
| CES17 = 49 | CES42 = 75 | CES67 = 55 | CES92 = 63 |
| CES18 = 55 | CES43 = 75 | CES68 = 65 | CES93 = 78 |
| CES19 = 71 | CES44 = 99 | CES69 = 74 | CES94 = 57 |
| CES20 = 64 | CES45 = 83 | CES70 = 55 | CES95 = 67 |
| CES21 = 85 | CES46 = 82 | CES71 = 48 | CES96 = 77 |
| CES22 = 77 | CES47 = 84 | CES72 = 83 | CES97 = 84 |
| CES23 = 91 | CES48 = 76 | CES73 = 45 | CES98 = 73 |
| CES24 = 90 | CES49 = 80 | CES74 = 92 | CES99 = 63 |
| CES25 = 71 | CES50 = 88 | CES75 = 48 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)