

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: P324771

Luminaire Tested: **GLEON-SA7C-730-U-AFL-HSS**

Issue Date: 3/3/2020

### Test Information

Test Method: LM-79-08  
Report Number: P324771  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-30)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA7C-730-U-AFL-HSS  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(7) 70 CRI, 3000K, 1050mA LIGHTSQUARES WITH 16 LEDS EACH AND AUTOMOTIVE  
FRONTLINE OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

### Summary

Lumens per Lamp: N/A  
Luminaire Lumens: 37297 lumens  
Efficiency: N/A  
Efficacy: 95.4 lumens/watt  
Luminous Opening: Rectangular (W 2' x L: 1' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B2 - U0 - G3

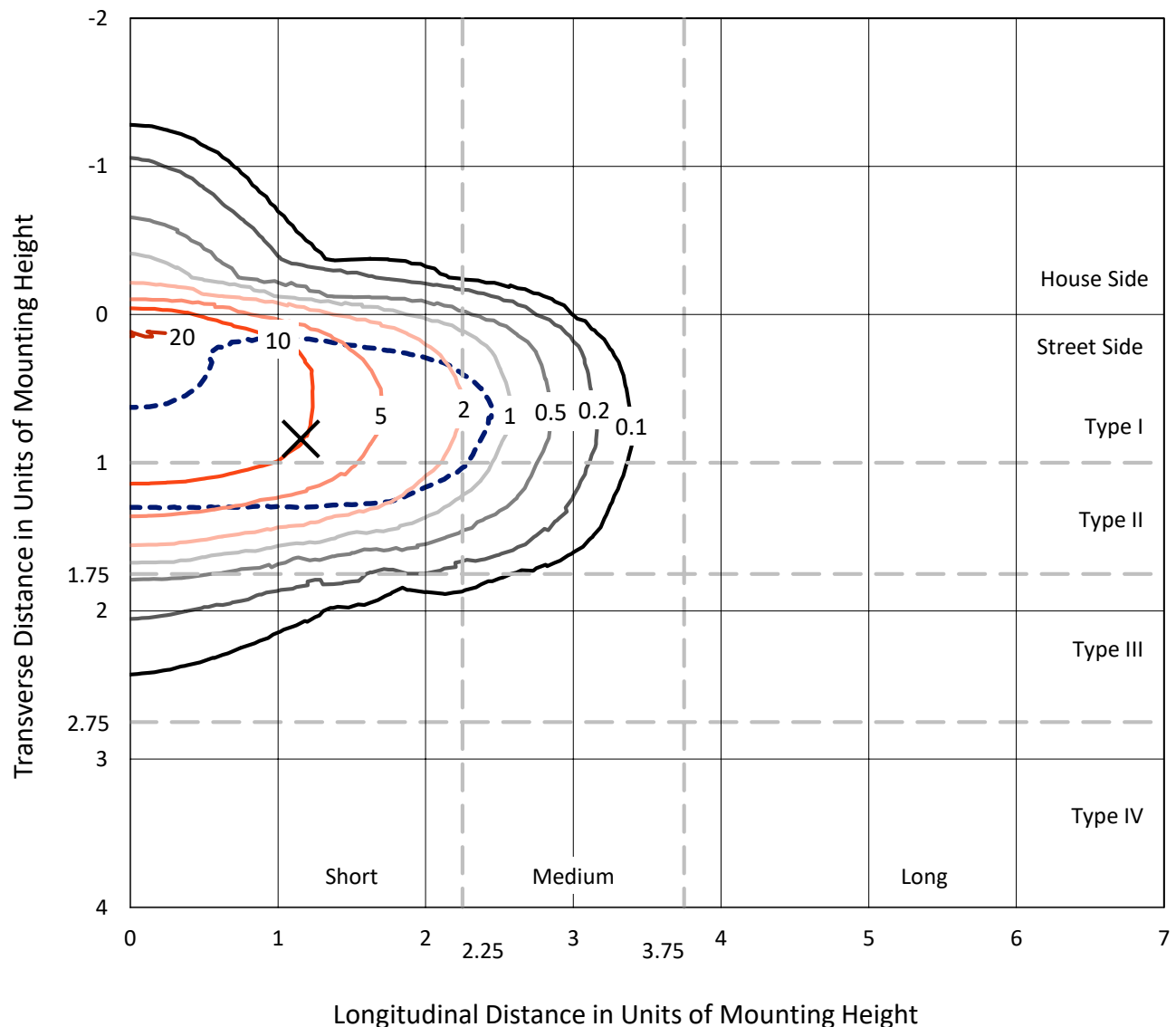
Input Watts (W): 391  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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## Iso-Footcandle Lines of Horizontal Illumination

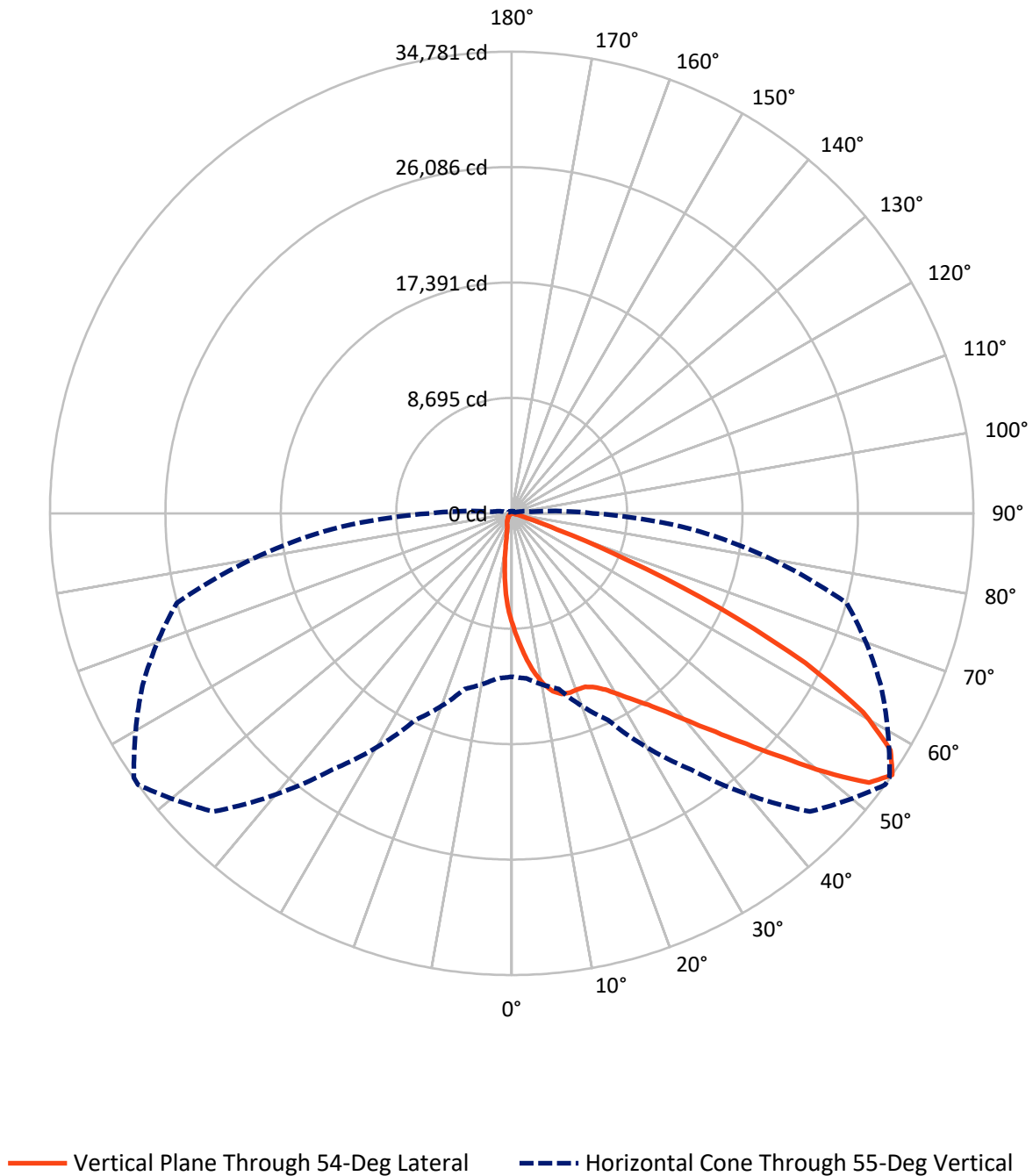
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 20.5 fc  
 Type II - Short - N/A

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## Luminous Intensity Polar Plot



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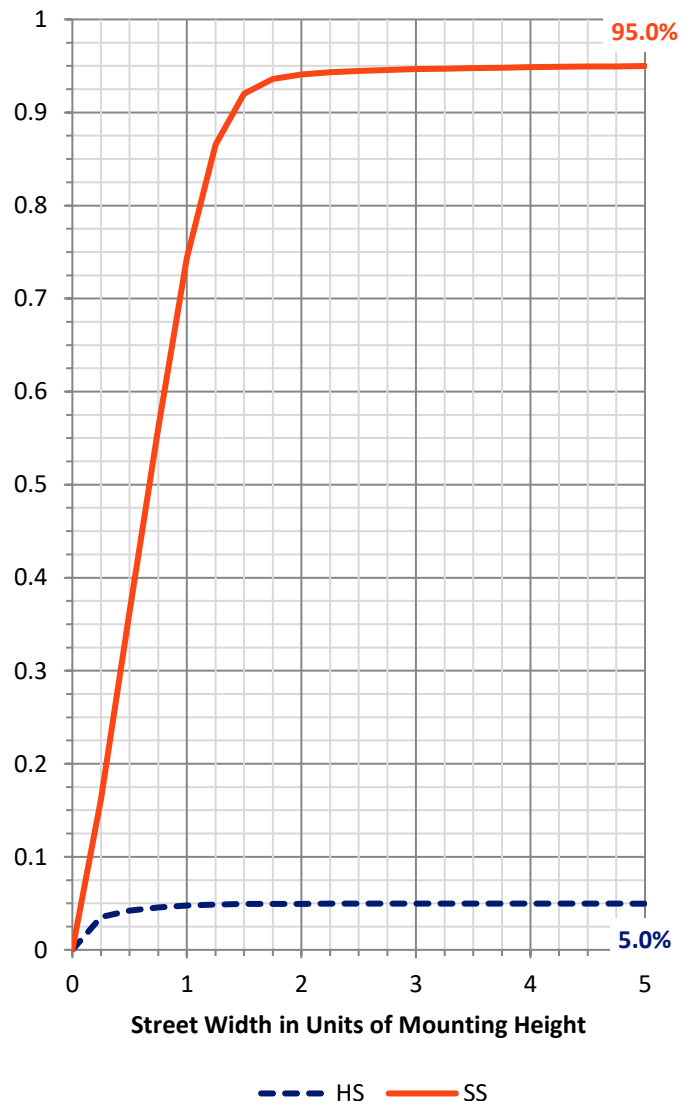
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 1860.9   | 0.0    | 1860.9  |
|                    | % Fixture | 5.0      | 0.0    | 5.0     |
| <b>Street Side</b> | Lumens    | 35436.2  | 0.0    | 35436.2 |
|                    | % Fixture | 95.0     | 0.0    | 95.0    |
| <b>Total</b>       | Lumens    | 37297.0  | 0.0    | 37297.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 769.2   | 2.1       |
| 10°-20°   | 2109.6  | 5.7       |
| 20°-30°   | 3601.8  | 9.7       |
| 30°-40°   | 5780.3  | 15.5      |
| 40°-50°   | 9236.9  | 24.8      |
| 50°-60°   | 9897.6  | 26.5      |
| 60°-70°   | 5081.7  | 13.6      |
| 70°-80°   | 769.8   | 2.1       |
| 80°-90°   | 50.1    | 0.1       |
| 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°    | 37297.0 | 100.0     |
| 0°-180°   | 37297.0 | 100.0     |

**Coefficient of Utilization**



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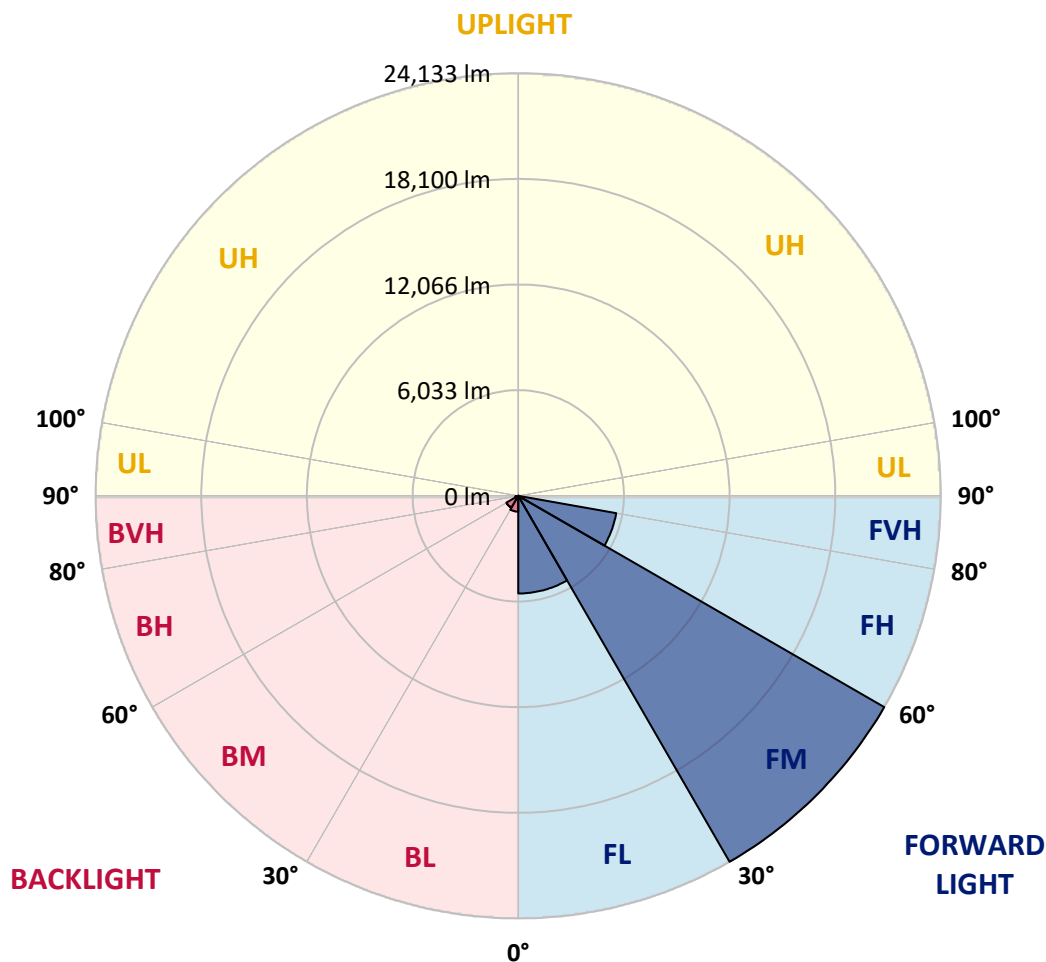
CATALOG NUMBER: GLEON-SA7C-730-U-AFL-HSS

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|---------|-----------|-------------------------|------|---------|
|      |             |         |           | B                       | U    | G       |
| FL   | (0°-30°)    | 5575.3  | 14.9      |                         |      |         |
| FM   | (30°-60°)   | 24132.8 | 64.7      |                         |      |         |
| FH   | (60°-80°)   | 5680.0  | 15.2      |                         |      | G3/7500 |
| FVH  | (80°-90°)   | 48.1    | 0.1       |                         |      | G1/100  |
| BL   | (0°-30°)    | 905.4   | 2.4       | B2/1000                 |      |         |
| BM   | (30°-60°)   | 782.0   | 2.1       | B1/1000                 |      |         |
| BH   | (60°-80°)   | 171.5   | 0.5       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 2.0     | 0.0       |                         |      | G0/10   |
| UL   | (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0     | 0.0       |                         | U0/0 |         |

**BUG Rating: B2-U0-G3**

Type II Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 54°     | 55°     | 65°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 8353.0  | 8353.0  | 8353.0  | 8353.0  | 8353.0  | 8353.0  | 8353.0  | 8353.0  | 8353.0  | 8353.0  | 8353.0  |
| 2.5°  | 10482.4 | 10326.1 | 10331.0 | 10260.1 | 10000.8 | 9797.8  | 9586.8  | 9536.9  | 9208.3  | 8863.6  | 8531.8  |
| 5°    | 12294.4 | 12180.0 | 12152.6 | 12015.7 | 11654.9 | 11273.2 | 10864.1 | 10769.1 | 10126.4 | 9420.9  | 8726.7  |
| 7.5°  | 13225.4 | 13227.0 | 13204.4 | 13154.5 | 12929.0 | 12558.5 | 12059.2 | 11959.4 | 11084.8 | 10026.5 | 8929.7  |
| 10°   | 12954.8 | 13016.0 | 13141.6 | 13307.5 | 13479.9 | 13433.1 | 13057.9 | 12967.7 | 12017.3 | 10667.6 | 9155.2  |
| 12.5° | 12323.4 | 12331.4 | 12471.6 | 12743.8 | 13239.9 | 13748.8 | 13755.3 | 13724.7 | 12908.1 | 11337.6 | 9403.2  |
| 15°   | 12009.3 | 12039.9 | 12091.4 | 12267.0 | 12737.3 | 13552.3 | 14135.4 | 14178.9 | 13724.7 | 12049.6 | 9667.4  |
| 17.5° | 12215.5 | 12259.0 | 12215.5 | 12236.4 | 12508.6 | 13241.5 | 14201.4 | 14312.6 | 14438.2 | 12753.4 | 9917.0  |
| 20°   | 12774.4 | 12814.6 | 12737.3 | 12652.0 | 12705.1 | 13151.3 | 14154.7 | 14304.5 | 14997.1 | 13378.4 | 10126.4 |
| 22.5° | 13528.2 | 13544.3 | 13426.7 | 13286.6 | 13247.9 | 13457.3 | 14193.4 | 14348.0 | 15444.9 | 13943.7 | 10258.5 |
| 25°   | 14357.7 | 14372.2 | 14225.6 | 14064.5 | 13972.7 | 14058.1 | 14510.7 | 14626.7 | 15839.5 | 14483.3 | 10334.2 |
| 27.5° | 15261.3 | 15274.2 | 15090.5 | 14892.4 | 14786.1 | 14789.3 | 15034.2 | 15158.2 | 16259.9 | 15098.6 | 10395.4 |
| 30°   | 16216.4 | 16210.0 | 16040.8 | 15765.4 | 15630.1 | 15626.9 | 15788.0 | 15913.6 | 16868.7 | 15887.8 | 10479.1 |
| 32.5° | 17289.1 | 17276.2 | 17036.3 | 16694.8 | 16541.8 | 16564.3 | 16707.7 | 16780.2 | 17624.2 | 16728.6 | 10628.9 |
| 35°   | 18701.7 | 18664.7 | 18302.3 | 17878.6 | 17596.8 | 17588.7 | 17709.5 | 17767.5 | 18587.3 | 17746.6 | 10878.6 |
| 37.5° | 20534.7 | 20500.8 | 20009.6 | 19394.3 | 18998.1 | 18849.9 | 18993.2 | 19067.3 | 19961.3 | 19052.8 | 11279.7 |
| 40°   | 22341.9 | 22308.0 | 22016.5 | 21452.8 | 20842.3 | 20486.3 | 20599.1 | 20678.0 | 21676.6 | 20637.8 | 11785.4 |
| 42.5° | 23588.5 | 23617.5 | 23719.0 | 23765.7 | 23193.9 | 22446.6 | 22498.1 | 22580.2 | 23479.0 | 22332.2 | 12363.6 |
| 45°   | 23917.1 | 23979.9 | 24553.3 | 25679.2 | 25893.4 | 25310.4 | 24770.8 | 24815.9 | 25310.4 | 24026.6 | 12941.9 |
| 47.5° | 22929.8 | 23045.7 | 24152.3 | 26246.2 | 28059.8 | 28472.1 | 27451.0 | 27391.4 | 27067.6 | 25397.3 | 13352.6 |
| 50°   | 20686.1 | 20792.4 | 22225.9 | 25323.2 | 28717.0 | 31490.6 | 30662.7 | 30487.1 | 28609.1 | 26217.2 | 13497.6 |
| 52.5° | 17438.9 | 17567.8 | 18732.3 | 22417.6 | 27478.3 | 32837.1 | 33703.7 | 33557.1 | 29739.8 | 26281.6 | 13521.7 |
| 55°   | 12315.3 | 12471.6 | 13703.7 | 17181.2 | 23553.1 | 31766.0 | 34781.2 | 34737.7 | 30678.8 | 26110.9 | 13573.3 |
| 57.5° | 6921.1  | 7033.9  | 8362.7  | 11013.9 | 17250.5 | 27668.4 | 33655.3 | 33943.7 | 31245.7 | 25814.5 | 13650.6 |
| 60°   | 3073.2  | 3103.8  | 3791.6  | 5482.8  | 10099.0 | 21145.1 | 30432.4 | 30918.8 | 30759.3 | 25418.3 | 13781.1 |
| 62.5° | 1704.1  | 1678.3  | 1678.3  | 2279.1  | 4389.1  | 13090.1 | 24815.9 | 25619.6 | 28683.1 | 24949.6 | 13787.5 |
| 65°   | 1335.3  | 1311.1  | 1241.8  | 1251.5  | 1671.9  | 5809.8  | 17184.4 | 18613.1 | 24740.2 | 23575.6 | 13323.6 |
| 67.5° | 1132.3  | 1111.4  | 1042.1  | 1014.7  | 1038.9  | 1916.7  | 9441.9  | 10925.3 | 18772.6 | 20004.8 | 11540.6 |
| 70°   | 956.7   | 942.3   | 906.8   | 873.0   | 811.8   | 947.1   | 3612.8  | 4621.1  | 11568.0 | 13307.5 | 7877.9  |
| 72.5° | 769.9   | 763.5   | 776.4   | 747.4   | 673.3   | 631.4   | 1235.4  | 1496.3  | 5196.1  | 5938.6  | 3245.5  |
| 75°   | 663.6   | 660.4   | 666.8   | 637.8   | 554.1   | 439.7   | 628.2   | 686.2   | 1465.7  | 1452.8  | 657.2   |
| 77.5° | 431.7   | 436.5   | 552.5   | 539.6   | 476.8   | 293.1   | 325.4   | 351.1   | 444.6   | 333.4   | 199.7   |
| 80°   | 275.4   | 272.2   | 280.3   | 447.8   | 428.4   | 223.9   | 162.7   | 170.7   | 214.2   | 164.3   | 96.6    |
| 82.5° | 167.5   | 164.3   | 183.6   | 209.4   | 215.8   | 156.2   | 99.9    | 101.5   | 133.7   | 106.3   | 51.5    |
| 85°   | 14.5    | 19.3    | 111.1   | 103.1   | 74.1    | 48.3    | 48.3    | 51.5    | 70.9    | 62.8    | 29.0    |
| 87.5° | 0.0     | 0.0     | 19.3    | 29.0    | 16.1    | 17.7    | 17.7    | 19.3    | 27.4    | 27.4    | 14.5    |
| 90°   | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 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°    | 8353.0 | 8353.0 | 8353.0 | 8353.0 | 8353.0 | 8353.0 | 8353.0 | 8353.0 | 8353.0 | 8353.0 | 8353.0 |
| 2.5°  | 8359.5 | 8192.0 | 7853.7 | 7528.4 | 7252.9 | 6987.2 | 6684.4 | 6384.8 | 6244.6 | 6188.3 | 6130.3 |
| 5°    | 8374.0 | 8029.3 | 7331.9 | 6629.6 | 5901.6 | 5246.0 | 4687.1 | 4113.7 | 3827.0 | 3701.4 | 3643.4 |
| 7.5°  | 8393.3 | 7868.2 | 6740.7 | 5561.7 | 4389.1 | 3500.0 | 2723.7 | 2224.4 | 2008.5 | 1974.7 | 1890.9 |
| 10°   | 8396.5 | 7673.3 | 6054.6 | 4382.7 | 2942.7 | 2110.0 | 1623.6 | 1365.9 | 1270.8 | 1254.7 | 1227.3 |
| 12.5° | 8403.0 | 7443.0 | 5292.7 | 3245.5 | 1961.8 | 1411.0 | 1174.2 | 1088.8 | 1063.1 | 1061.4 | 1061.4 |
| 15°   | 8422.3 | 7201.4 | 4501.9 | 2338.7 | 1409.4 | 1117.8 | 1030.8 | 997.0  | 987.4  | 992.2  | 990.6  |
| 17.5° | 8422.3 | 6916.3 | 3725.5 | 1742.8 | 1138.8 | 1005.1 | 956.7  | 934.2  | 931.0  | 935.8  | 937.4  |
| 20°   | 8361.1 | 6570.0 | 3013.6 | 1356.2 | 1009.9 | 932.6  | 889.1  | 868.2  | 860.1  | 863.3  | 864.9  |
| 22.5° | 8214.5 | 6144.8 | 2433.8 | 1122.6 | 924.5  | 866.6  | 819.8  | 787.6  | 774.7  | 776.4  | 776.4  |
| 25°   | 7985.8 | 5640.6 | 1903.8 | 971.2  | 855.3  | 795.7  | 740.9  | 703.9  | 695.8  | 694.2  | 697.4  |
| 27.5° | 7692.6 | 5083.3 | 1515.7 | 855.3  | 773.1  | 716.8  | 662.0  | 631.4  | 624.9  | 626.6  | 628.2  |
| 30°   | 7404.3 | 4505.1 | 1195.1 | 757.0  | 681.3  | 628.2  | 586.3  | 571.8  | 571.8  | 576.6  | 578.2  |
| 32.5° | 7140.2 | 3949.4 | 945.5  | 671.7  | 599.2  | 550.9  | 526.7  | 525.1  | 533.1  | 536.4  | 538.0  |
| 35°   | 6913.1 | 3435.6 | 782.8  | 605.6  | 534.7  | 492.9  | 484.8  | 491.3  | 500.9  | 507.4  | 509.0  |
| 37.5° | 6752.0 | 2976.6 | 684.5  | 550.9  | 484.8  | 451.0  | 449.4  | 462.3  | 475.2  | 489.6  | 492.9  |
| 40°   | 6684.4 | 2588.4 | 616.9  | 502.5  | 444.6  | 418.8  | 413.9  | 431.7  | 455.8  | 476.8  | 480.0  |
| 42.5° | 6628.0 | 2271.1 | 558.9  | 455.8  | 412.3  | 375.3  | 373.7  | 396.2  | 425.2  | 446.2  | 451.0  |
| 45°   | 6579.7 | 2016.6 | 505.8  | 405.9  | 370.5  | 322.1  | 327.0  | 356.0  | 378.5  | 401.1  | 405.9  |
| 47.5° | 6479.8 | 1807.2 | 447.8  | 352.7  | 306.0  | 275.4  | 285.1  | 310.9  | 328.6  | 362.4  | 367.2  |
| 50°   | 6301.0 | 1636.5 | 388.2  | 288.3  | 249.7  | 238.4  | 252.9  | 270.6  | 293.1  | 322.1  | 325.4  |
| 52.5° | 6180.2 | 1507.6 | 336.6  | 241.6  | 206.2  | 209.4  | 223.9  | 230.3  | 243.2  | 254.5  | 251.3  |
| 55°   | 6111.0 | 1436.7 | 294.8  | 209.4  | 175.6  | 185.2  | 188.5  | 180.4  | 174.0  | 162.7  | 157.8  |
| 57.5° | 6102.9 | 1372.3 | 262.5  | 182.0  | 154.6  | 159.5  | 148.2  | 120.8  | 98.3   | 85.4   | 82.1   |
| 60°   | 6090.0 | 1293.4 | 236.8  | 153.0  | 136.9  | 130.5  | 106.3  | 66.0   | 46.7   | 43.5   | 43.5   |
| 62.5° | 5949.9 | 1171.0 | 217.4  | 128.9  | 116.0  | 98.3   | 61.2   | 30.6   | 25.8   | 27.4   | 27.4   |
| 65°   | 5503.7 | 1000.2 | 198.1  | 104.7  | 91.8   | 70.9   | 30.6   | 17.7   | 9.7    | 11.3   | 11.3   |
| 67.5° | 4679.1 | 797.3  | 177.2  | 80.5   | 69.3   | 45.1   | 17.7   | 8.1    | 0.0    | 0.0    | 0.0    |
| 70°   | 3132.8 | 494.5  | 149.8  | 56.4   | 45.1   | 27.4   | 12.9   | 1.6    | 0.0    | 0.0    | 0.0    |
| 72.5° | 1201.6 | 267.4  | 120.8  | 33.8   | 29.0   | 19.3   | 8.1    | 0.0    | 0.0    | 0.0    | 0.0    |
| 75°   | 270.6  | 175.6  | 83.8   | 24.2   | 20.9   | 12.9   | 3.2    | 0.0    | 0.0    | 0.0    | 0.0    |
| 77.5° | 103.1  | 127.2  | 48.3   | 16.1   | 14.5   | 8.1    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 80°   | 49.9   | 75.7   | 22.5   | 9.7    | 8.1    | 3.2    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 82.5° | 25.8   | 29.0   | 9.7    | 4.8    | 3.2    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 14.5   | 14.5   | 4.8    | 3.2    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 8.1    | 4.8    | 1.6    | 1.6    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

LM-79-2008: Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

Report Number: SP1-1908-441-2-R4

Test Date: 10/03/2019

Luminaire Tested: SA1C-730-U-5WQ

Data in this report applies to families of products SA1C-730-U-5WQ .

### Test Information

Test Method: LM-79-2008  
Report Number: SP1-1908-441-2-R4  
Test Lab: COOPER LIGHTING SOLUTIONS  
Photometer: SP1 - 76IN SPHERE  
Measurement Geometry: 4 $\pi$   
Issue Date: 10/28/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: MCGRAW-EDISON  
Catalog Number: **SA1C-730-U-5WQ**  
Description: MCGRAW EDISON ROADWAY AND AREA LUMINAIRE

\*\*\*THIS IS A REVISION OF SP1-1908-441-2-R3. TO UPDATE THE CATALOG INFORMATION.\*\*\*TESTED IN SITU. (1) 70 CRI, 3000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

### Spectral Parameters

|                           |        |           |      |      |       |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K):                  | 2993   | CRI (Ra): | 71.8 |      |       |
| CIE u':                   | 0.2508 | R1:       | 67.5 | R9:  | -38.3 |
| CIE v':                   | 0.5215 | R2:       | 82.9 | R10: | 62.5  |
| Duv:                      | 0.0000 | R3:       | 94.7 | R11: | 63.7  |
| CIE x:                    | 0.4374 | R4:       | 67.7 | R12: | 57.8  |
| CIE y:                    | 0.4043 | R5:       | 67.9 | R13: | 70.4  |
| CIE z:                    | 0.1583 | R6:       | 77.6 | R14: | 97.3  |
| Peak Wavelength (nm):     | 593    | R7:       | 76.0 |      |       |
| Dominant Wavelength (nm): | 582    | R8:       | 40.5 |      |       |
| Purity:                   | 53     |           |      |      |       |
| Rf:                       | 75.7   |           |      |      |       |
| Rg:                       | 93.9   |           |      |      |       |



### Test Conditions

Stabilization Time: 53M  
Operation Time: 12H  
Room Temperature (°C) / RH%: 25.0./44%  
Sphere Temperature (°C): 25.7

REPORT NUMBER: SP1-1908-441-2-R4

| 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 3000K 4-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       | 2397             | NR               | 490       | 24908            | NR               | 620       | 118784           | NR               | 750       | 5037             | NR               | 880       | 2677             | NR               |
| 365       | 2084             | NR               | 495       | 30998            | NR               | 625       | 108951           | NR               | 755       | 4413             | NR               | 885       | 2940             | NR               |
| 370       | 2143             | NR               | 500       | 37103            | NR               | 630       | 99573            | NR               | 760       | 4189             | NR               | 890       | 3116             | NR               |
| 375       | 2413             | NR               | 505       | 42987            | NR               | 635       | 90444            | NR               | 765       | 3677             | NR               | 895       | 3345             | NR               |
| 380       | 2172             | NR               | 510       | 48702            | NR               | 640       | 80749            | NR               | 770       | 3366             | NR               | 900       | 2312             | NR               |
| 385       | 1997             | NR               | 515       | 53741            | NR               | 645       | 71664            | NR               | 775       | 3211             | NR               | 905       | 2829             | NR               |
| 390       | 1830             | NR               | 520       | 57283            | NR               | 650       | 63936            | NR               | 780       | 2682             | NR               | 910       | 2783             | NR               |
| 395       | 1861             | NR               | 525       | 61876            | NR               | 655       | 56611            | NR               | 785       | 2804             | NR               | 915       | 2662             | NR               |
| 400       | 1717             | NR               | 530       | 65398            | NR               | 660       | 49763            | NR               | 790       | 2581             | NR               | 920       | 3047             | NR               |
| 405       | 1761             | NR               | 535       | 69597            | NR               | 665       | 42891            | NR               | 795       | 2711             | NR               | 925       | 2256             | NR               |
| 410       | 2680             | NR               | 540       | 74214            | NR               | 670       | 36939            | NR               | 800       | 2609             | NR               | 930       | 2976             | NR               |
| 415       | 4374             | NR               | 545       | 79911            | NR               | 675       | 31946            | NR               | 805       | 2581             | NR               | 935       | 3503             | NR               |
| 420       | 8071             | NR               | 550       | 86153            | NR               | 680       | 27385            | NR               | 810       | 2404             | NR               | 940       | 4226             | NR               |
| 425       | 15169            | NR               | 555       | 93952            | NR               | 685       | 23504            | NR               | 815       | 2556             | NR               | 945       | 2930             | NR               |
| 430       | 26038            | NR               | 560       | 102904           | NR               | 690       | 20210            | NR               | 820       | 2742             | NR               | 950       | 2115             | NR               |
| 435       | 41316            | NR               | 565       | 112009           | NR               | 695       | 17459            | NR               | 825       | 2014             | NR               | 955       | 2634             | NR               |
| 440       | 59674            | NR               | 570       | 121662           | NR               | 700       | 15207            | NR               | 830       | 2488             | NR               | 960       | 4200             | NR               |
| 445       | 72751            | NR               | 575       | 130476           | NR               | 705       | 13322            | NR               | 835       | 2625             | NR               | 965       | 1982             | NR               |
| 450       | 65091            | NR               | 580       | 137926           | NR               | 710       | 11676            | NR               | 840       | 2754             | NR               | 970       | 3613             | NR               |
| 455       | 44894            | NR               | 585       | 143406           | NR               | 715       | 10626            | NR               | 845       | 2708             | NR               | 975       | 4034             | NR               |
| 460       | 32712            | NR               | 590       | 147039           | NR               | 720       | 9416             | NR               | 850       | 2608             | NR               | 980       | 3922             | NR               |
| 465       | 25296            | NR               | 595       | 147365           | NR               | 725       | 8333             | NR               | 855       | 2605             | NR               | 985       | 1909             | NR               |
| 470       | 19318            | NR               | 600       | 145800           | NR               | 730       | 7134             | NR               | 860       | 1765             | NR               | 990       | 3617             | NR               |
| 475       | 17265            | NR               | 605       | 141363           | NR               | 735       | 6437             | NR               | 865       | 2581             | NR               | 995       | 4767             | NR               |
| 480       | 18260            | NR               | 610       | 134199           | NR               | 740       | 5834             | NR               | 870       | 3016             | NR               | 1000      | 2528             | NR               |
| 485       | 20845            | NR               | 615       | 127683           | NR               | 745       | 5500             | NR               | 875       | 3952             | NR               |           |                  |                  |

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Scotopic Flux vs. Wavelength



Scotopic Lumens: 8494.8

S/P: 1.23

| 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       | 2397             | NR               | 490       | 24908            | NR               | 620       | 118784           | NR               | 750       | 5037             | NR               | 880       | 2677             | NR               |
| 365       | 2084             | NR               | 495       | 30998            | NR               | 625       | 108951           | NR               | 755       | 4413             | NR               | 885       | 2940             | NR               |
| 370       | 2143             | NR               | 500       | 37103            | NR               | 630       | 99573            | NR               | 760       | 4189             | NR               | 890       | 3116             | NR               |
| 375       | 2413             | NR               | 505       | 42987            | NR               | 635       | 90444            | NR               | 765       | 3677             | NR               | 895       | 3345             | NR               |
| 380       | 2172             | NR               | 510       | 48702            | NR               | 640       | 80749            | NR               | 770       | 3366             | NR               | 900       | 2312             | NR               |
| 385       | 1997             | NR               | 515       | 53741            | NR               | 645       | 71664            | NR               | 775       | 3211             | NR               | 905       | 2829             | NR               |
| 390       | 1830             | NR               | 520       | 57283            | NR               | 650       | 63936            | NR               | 780       | 2682             | NR               | 910       | 2783             | NR               |
| 395       | 1861             | NR               | 525       | 61876            | NR               | 655       | 56611            | NR               | 785       | 2804             | NR               | 915       | 2662             | NR               |
| 400       | 1717             | NR               | 530       | 65398            | NR               | 660       | 49763            | NR               | 790       | 2581             | NR               | 920       | 3047             | NR               |
| 405       | 1761             | NR               | 535       | 69597            | NR               | 665       | 42891            | NR               | 795       | 2711             | NR               | 925       | 2256             | NR               |
| 410       | 2680             | NR               | 540       | 74214            | NR               | 670       | 36939            | NR               | 800       | 2609             | NR               | 930       | 2976             | NR               |
| 415       | 4374             | NR               | 545       | 79911            | NR               | 675       | 31946            | NR               | 805       | 2581             | NR               | 935       | 3503             | NR               |
| 420       | 8071             | NR               | 550       | 86153            | NR               | 680       | 27385            | NR               | 810       | 2404             | NR               | 940       | 4226             | NR               |
| 425       | 15169            | NR               | 555       | 93952            | NR               | 685       | 23504            | NR               | 815       | 2556             | NR               | 945       | 2930             | NR               |
| 430       | 26038            | NR               | 560       | 102904           | NR               | 690       | 20210            | NR               | 820       | 2742             | NR               | 950       | 2115             | NR               |
| 435       | 41316            | NR               | 565       | 112009           | NR               | 695       | 17459            | NR               | 825       | 2014             | NR               | 955       | 2634             | NR               |
| 440       | 59674            | NR               | 570       | 121662           | NR               | 700       | 15207            | NR               | 830       | 2488             | NR               | 960       | 4200             | NR               |
| 445       | 72751            | NR               | 575       | 130476           | NR               | 705       | 13322            | NR               | 835       | 2625             | NR               | 965       | 1982             | NR               |
| 450       | 65091            | NR               | 580       | 137926           | NR               | 710       | 11676            | NR               | 840       | 2754             | NR               | 970       | 3613             | NR               |
| 455       | 44894            | NR               | 585       | 143406           | NR               | 715       | 10626            | NR               | 845       | 2708             | NR               | 975       | 4034             | NR               |
| 460       | 32712            | NR               | 590       | 147039           | NR               | 720       | 9416             | NR               | 850       | 2608             | NR               | 980       | 3922             | NR               |
| 465       | 25296            | NR               | 595       | 147365           | NR               | 725       | 8333             | NR               | 855       | 2605             | NR               | 985       | 1909             | NR               |
| 470       | 19318            | NR               | 600       | 145800           | NR               | 730       | 7134             | NR               | 860       | 1765             | NR               | 990       | 3617             | NR               |
| 475       | 17265            | NR               | 605       | 141363           | NR               | 735       | 6437             | NR               | 865       | 2581             | NR               | 995       | 4767             | NR               |
| 480       | 18260            | NR               | 610       | 134199           | NR               | 740       | 5834             | NR               | 870       | 3016             | NR               | 1000      | 2528             | NR               |
| 485       | 20845            | NR               | 615       | 127683           | NR               | 745       | 5500             | NR               | 875       | 3952             | NR               |           |                  |                  |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 3101.5 M/P: 0.45**

| 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       | 2397             | NR               | 490       | 24908            | NR               | 620       | 118784           | NR               | 750       | 5037             | NR               | 880       | 2677             | NR               |
| 365       | 2084             | NR               | 495       | 30998            | NR               | 625       | 108951           | NR               | 755       | 4413             | NR               | 885       | 2940             | NR               |
| 370       | 2143             | NR               | 500       | 37103            | NR               | 630       | 99573            | NR               | 760       | 4189             | NR               | 890       | 3116             | NR               |
| 375       | 2413             | NR               | 505       | 42987            | NR               | 635       | 90444            | NR               | 765       | 3677             | NR               | 895       | 3345             | NR               |
| 380       | 2172             | NR               | 510       | 48702            | NR               | 640       | 80749            | NR               | 770       | 3366             | NR               | 900       | 2312             | NR               |
| 385       | 1997             | NR               | 515       | 53741            | NR               | 645       | 71664            | NR               | 775       | 3211             | NR               | 905       | 2829             | NR               |
| 390       | 1830             | NR               | 520       | 57283            | NR               | 650       | 63936            | NR               | 780       | 2682             | NR               | 910       | 2783             | NR               |
| 395       | 1861             | NR               | 525       | 61876            | NR               | 655       | 56611            | NR               | 785       | 2804             | NR               | 915       | 2662             | NR               |
| 400       | 1717             | NR               | 530       | 65398            | NR               | 660       | 49763            | NR               | 790       | 2581             | NR               | 920       | 3047             | NR               |
| 405       | 1761             | NR               | 535       | 69597            | NR               | 665       | 42891            | NR               | 795       | 2711             | NR               | 925       | 2256             | NR               |
| 410       | 2680             | NR               | 540       | 74214            | NR               | 670       | 36939            | NR               | 800       | 2609             | NR               | 930       | 2976             | NR               |
| 415       | 4374             | NR               | 545       | 79911            | NR               | 675       | 31946            | NR               | 805       | 2581             | NR               | 935       | 3503             | NR               |
| 420       | 8071             | NR               | 550       | 86153            | NR               | 680       | 27385            | NR               | 810       | 2404             | NR               | 940       | 4226             | NR               |
| 425       | 15169            | NR               | 555       | 93952            | NR               | 685       | 23504            | NR               | 815       | 2556             | NR               | 945       | 2930             | NR               |
| 430       | 26038            | NR               | 560       | 102904           | NR               | 690       | 20210            | NR               | 820       | 2742             | NR               | 950       | 2115             | NR               |
| 435       | 41316            | NR               | 565       | 112009           | NR               | 695       | 17459            | NR               | 825       | 2014             | NR               | 955       | 2634             | NR               |
| 440       | 59674            | NR               | 570       | 121662           | NR               | 700       | 15207            | NR               | 830       | 2488             | NR               | 960       | 4200             | NR               |
| 445       | 72751            | NR               | 575       | 130476           | NR               | 705       | 13322            | NR               | 835       | 2625             | NR               | 965       | 1982             | NR               |
| 450       | 65091            | NR               | 580       | 137926           | NR               | 710       | 11676            | NR               | 840       | 2754             | NR               | 970       | 3613             | NR               |
| 455       | 44894            | NR               | 585       | 143406           | NR               | 715       | 10626            | NR               | 845       | 2708             | NR               | 975       | 4034             | NR               |
| 460       | 32712            | NR               | 590       | 147039           | NR               | 720       | 9416             | NR               | 850       | 2608             | NR               | 980       | 3922             | NR               |
| 465       | 25296            | NR               | 595       | 147365           | NR               | 725       | 8333             | NR               | 855       | 2605             | NR               | 985       | 1909             | NR               |
| 470       | 19318            | NR               | 600       | 145800           | NR               | 730       | 7134             | NR               | 860       | 1765             | NR               | 990       | 3617             | NR               |
| 475       | 17265            | NR               | 605       | 141363           | NR               | 735       | 6437             | NR               | 865       | 2581             | NR               | 995       | 4767             | NR               |
| 480       | 18260            | NR               | 610       | 134199           | NR               | 740       | 5834             | NR               | 870       | 3016             | NR               | 1000      | 2528             | NR               |
| 485       | 20845            | NR               | 615       | 127683           | NR               | 745       | 5500             | NR               | 875       | 3952             | NR               |           |                  |                  |

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**Summary**

$R_f = 75.7$   
 $R_g = 93.9$   
 CIE  $R_a = 71.8$   
 $R_g = -38.3$



**Color Vector Graphics**



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 67 | CES51 = 87 | CES76 = 63 |
| CES02 = 63 | CES27 = 88 | CES52 = 86 | CES77 = 80 |
| CES03 = 31 | CES28 = 87 | CES53 = 78 | CES78 = 67 |
| CES04 = 71 | CES29 = 66 | CES54 = 84 | CES79 = 87 |
| CES05 = 49 | CES30 = 73 | CES55 = 84 | CES80 = 86 |
| CES06 = 51 | CES31 = 70 | CES56 = 75 | CES81 = 71 |
| CES07 = 41 | CES32 = 65 | CES57 = 74 | CES82 = 94 |
| CES08 = 40 | CES33 = 73 | CES58 = 76 | CES83 = 90 |
| CES09 = 29 | CES34 = 79 | CES59 = 85 | CES84 = 89 |
| CES10 = 76 | CES35 = 89 | CES60 = 93 | CES85 = 77 |
| CES11 = 59 | CES36 = 97 | CES61 = 84 | CES86 = 61 |
| CES12 = 65 | CES37 = 87 | CES62 = 91 | CES87 = 78 |
| CES13 = 43 | CES38 = 81 | CES63 = 77 | CES88 = 77 |
| CES14 = 74 | CES39 = 95 | CES64 = 72 | CES89 = 67 |
| CES15 = 71 | CES40 = 92 | CES65 = 68 | CES90 = 76 |
| CES16 = 47 | CES41 = 88 | CES66 = 69 | CES91 = 89 |
| CES17 = 50 | CES42 = 89 | CES67 = 67 | CES92 = 58 |
| CES18 = 56 | CES43 = 79 | CES68 = 72 | CES93 = 74 |
| CES19 = 73 | CES44 = 99 | CES69 = 81 | CES94 = 49 |
| CES20 = 66 | CES45 = 85 | CES70 = 66 | CES95 = 68 |
| CES21 = 87 | CES46 = 80 | CES71 = 67 | CES96 = 76 |
| CES22 = 79 | CES47 = 82 | CES72 = 88 | CES97 = 82 |
| CES23 = 92 | CES48 = 69 | CES73 = 59 | CES98 = 75 |
| CES24 = 91 | CES49 = 80 | CES74 = 95 | CES99 = 62 |
| CES25 = 73 | CES50 = 87 | CES75 = 69 |            |



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**Color Rendition by Hue-Angle Bin**



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**Measure Comparisons**



(END OF REPORT)