

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: P317744

Luminaire Tested: **GLEON-SA0D-730-U-T3R**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P317744  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-10)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA0D-730-U-T3R  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(10) 70 CRI, 3000K, 1200mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III  
ROADWAY OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 71509 lumens  
Efficiency: N/A  
Efficacy: 111.7 lumens/watt  
Luminous Opening: Rectangular (W 2.5' x L: 1' x H: 0')  
IES Classification: Type IV - Medium  
BUG Rating: B4 - U0 - G5

Input Watts (W): 640  
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

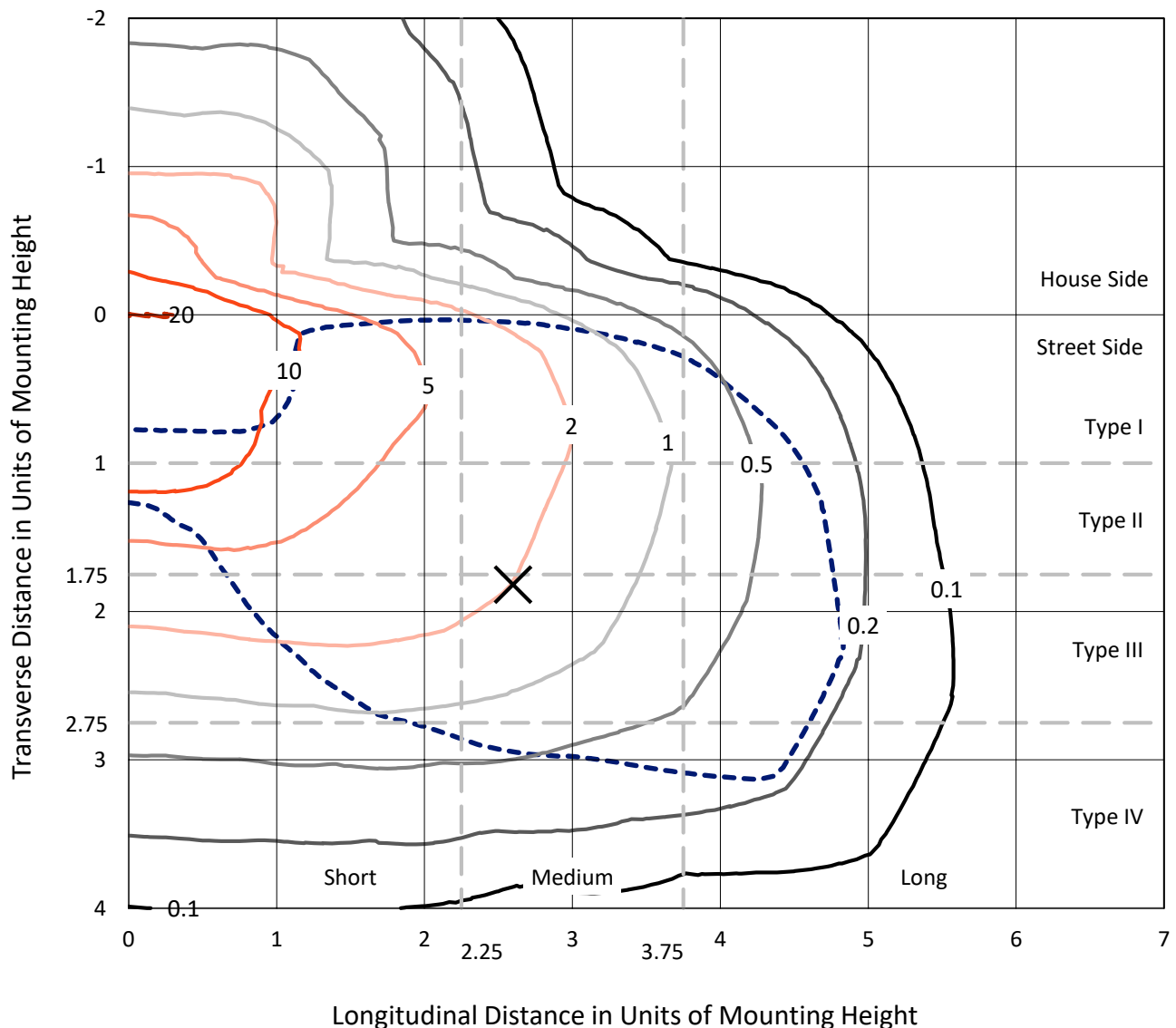


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## Iso-Footcandle Lines of Horizontal Illumination

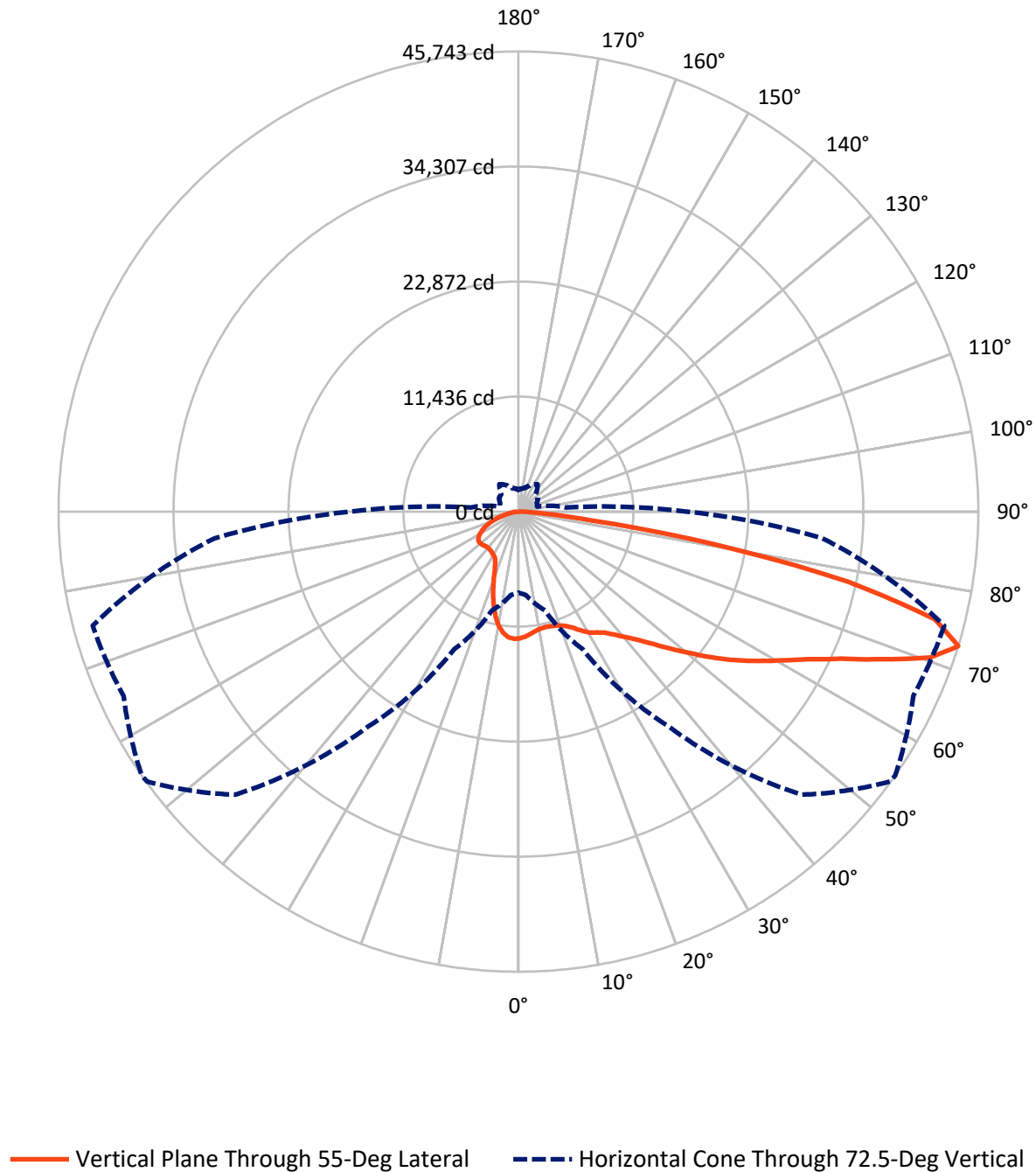
× Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 20.3 fc  
 Type IV - Medium - N/A

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## Luminous Intensity Polar Plot



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CATALOG NUMBER: GLEON-SA0D-730-U-T3R

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 13291.2  | 0.0    | 13291.2 |
|                    | % Fixture | 18.6     | 0.0    | 18.6    |
| <b>Street Side</b> | Lumens    | 58217.8  | 0.0    | 58217.8 |
|                    | % Fixture | 81.4     | 0.0    | 81.4    |
| <b>Total</b>       | Lumens    | 71509.0  | 0.0    | 71509.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 1141.3  | 1.6       |
| 10°-20°   | 3038.5  | 4.2       |
| 20°-30°   | 5009.8  | 7.0       |
| 30°-40°   | 7410.8  | 10.4      |
| 40°-50°   | 10343.9 | 14.5      |
| 50°-60°   | 13468.1 | 18.8      |
| 60°-70°   | 16551.8 | 23.1      |
| 70°-80°   | 12974.7 | 18.1      |
| 80°-90°   | 1570.1  | 2.2       |
| 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°    | 71509.0 | 100.0     |
| 0°-180°   | 71509.0 | 100.0     |

**Coefficient of Utilization**



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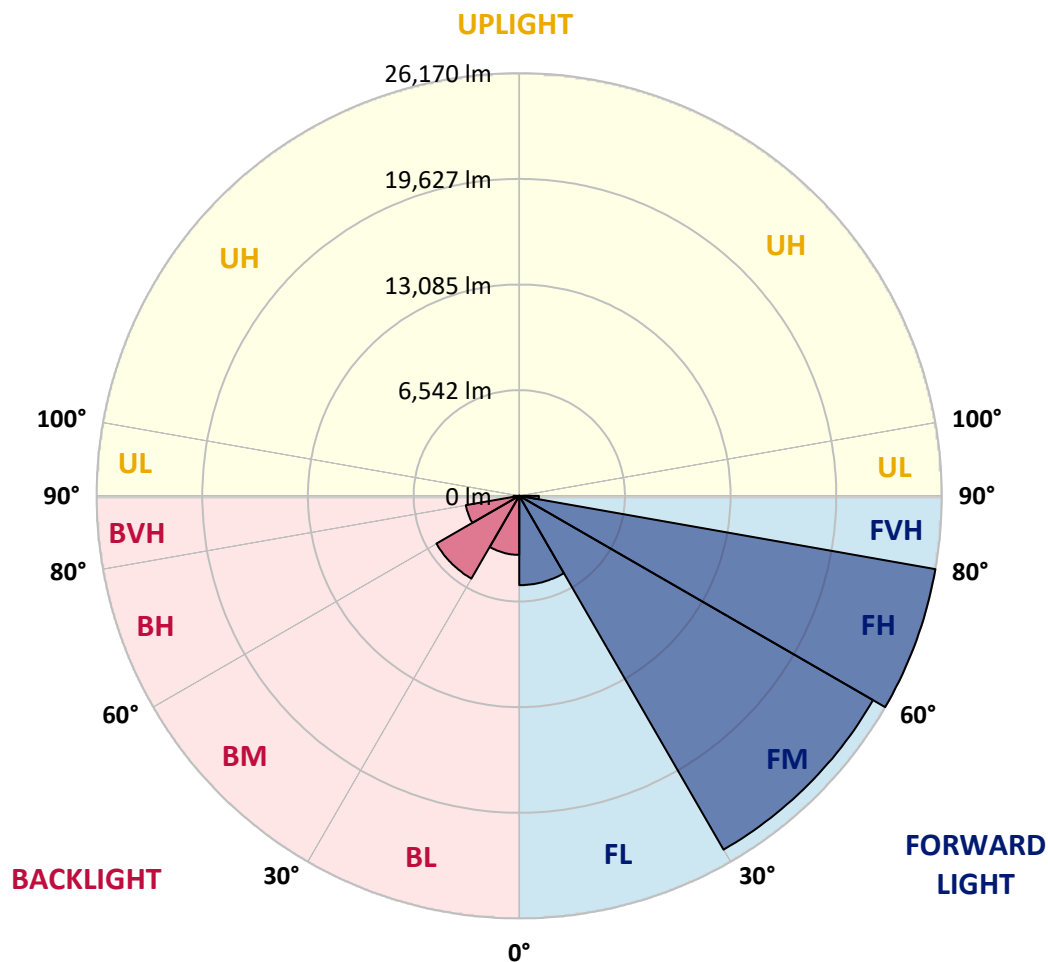
CATALOG NUMBER: GLEON-SA0D-730-U-T3R

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|---------|-----------|-------------------------|------|---------|
|      |             |         |           | B                       | U    | G       |
| FL   | (0°-30°)    | 5532.7  | 7.7       |                         |      |         |
| FM   | (30°-60°)   | 25301.3 | 35.4      |                         |      |         |
| FH   | (60°-80°)   | 26169.9 | 36.6      |                         |      | G5      |
| FVH  | (80°-90°)   | 1213.9  | 1.7       |                         |      | G5      |
| BL   | (0°-30°)    | 3657.0  | 5.1       | B4/5000                 |      |         |
| BM   | (30°-60°)   | 5921.4  | 8.3       | B4/8500                 |      |         |
| BH   | (60°-80°)   | 3356.6  | 4.7       | B4/5000                 |      | G4/5000 |
| BVH  | (80°-90°)   | 356.2   | 0.5       |                         |      | G3/500  |
| UL   | (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0     | 0.0       |                         | U0/0 |         |

**BUG Rating: B4-U0-G5**

Type IV Medium



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 54°     | 55°     | 65°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 12612.6 | 12612.6 | 12612.6 | 12612.6 | 12612.6 | 12612.6 | 12612.6 | 12612.6 | 12612.6 | 12612.6 | 12612.6 |
| 2.5°  | 12202.0 | 12173.1 | 12209.3 | 12260.0 | 12315.6 | 12390.4 | 12433.9 | 12453.2 | 12528.1 | 12557.1 | 12619.9 |
| 5°    | 11636.9 | 11622.4 | 11682.8 | 11769.7 | 11892.9 | 12066.8 | 12206.9 | 12233.4 | 12431.5 | 12571.6 | 12699.6 |
| 7.5°  | 11226.3 | 11226.3 | 11296.3 | 11400.2 | 11537.8 | 11772.1 | 11970.2 | 12006.4 | 12342.1 | 12644.0 | 12880.7 |
| 10°   | 10900.2 | 10912.3 | 10994.4 | 11117.6 | 11279.4 | 11528.2 | 11791.5 | 11832.5 | 12318.0 | 12813.1 | 13189.9 |
| 12.5° | 10682.8 | 10711.8 | 10786.7 | 10897.8 | 11098.3 | 11400.2 | 11733.5 | 11789.0 | 12368.7 | 13054.6 | 13561.9 |
| 15°   | 10820.5 | 10868.8 | 10876.1 | 10921.9 | 11033.0 | 11361.5 | 11767.3 | 11825.3 | 12477.4 | 13301.0 | 13984.5 |
| 17.5° | 11424.3 | 11441.2 | 11366.4 | 11269.7 | 11216.6 | 11426.7 | 11868.7 | 11929.1 | 12607.8 | 13545.0 | 14390.3 |
| 20°   | 12342.1 | 12332.5 | 12170.7 | 11909.8 | 11639.3 | 11673.1 | 12035.4 | 12098.2 | 12784.1 | 13759.9 | 14796.1 |
| 22.5° | 13501.5 | 13467.7 | 13218.9 | 12738.2 | 12276.9 | 12083.7 | 12327.6 | 12380.8 | 13049.8 | 14066.7 | 15230.8 |
| 25°   | 14907.2 | 14832.3 | 14503.8 | 13858.9 | 13180.2 | 12682.7 | 12767.2 | 12817.9 | 13436.3 | 14409.6 | 15629.3 |
| 27.5° | 16390.2 | 16315.3 | 15897.4 | 15117.3 | 14214.0 | 13438.7 | 13373.5 | 13416.9 | 13875.8 | 14663.2 | 15924.0 |
| 30°   | 17940.8 | 17861.1 | 17479.5 | 16605.1 | 15310.5 | 14221.2 | 13938.6 | 13955.6 | 14185.0 | 14800.9 | 16165.5 |
| 32.5° | 19498.6 | 19423.8 | 18996.3 | 17981.8 | 16501.3 | 15061.8 | 14346.8 | 14325.1 | 14371.0 | 14943.4 | 16438.5 |
| 35°   | 21078.2 | 21107.2 | 20607.3 | 19484.2 | 17820.0 | 15996.5 | 14829.9 | 14784.0 | 14682.6 | 15235.7 | 16824.9 |
| 37.5° | 22768.9 | 22749.6 | 22102.3 | 20928.5 | 19199.1 | 17010.9 | 15523.1 | 15515.8 | 15165.6 | 15788.8 | 17431.2 |
| 40°   | 23899.3 | 23911.4 | 23517.7 | 22406.7 | 20592.8 | 18134.0 | 16411.9 | 16395.0 | 15936.1 | 16617.2 | 18225.8 |
| 42.5° | 24341.3 | 24421.0 | 24522.4 | 23817.2 | 22051.6 | 19435.8 | 17472.2 | 17448.1 | 17010.9 | 17805.5 | 19160.5 |
| 45°   | 24372.7 | 24532.1 | 25160.1 | 25070.7 | 23529.8 | 20926.1 | 18827.2 | 18759.6 | 18445.6 | 19385.1 | 20276.4 |
| 47.5° | 24102.2 | 24266.4 | 25309.8 | 25817.0 | 24850.9 | 22498.4 | 20411.6 | 20358.5 | 20088.0 | 21360.8 | 21484.0 |
| 50°   | 23510.4 | 23667.4 | 25000.7 | 26181.8 | 25937.8 | 24010.4 | 22237.6 | 22097.5 | 21952.6 | 23643.3 | 22865.6 |
| 52.5° | 22401.8 | 22703.7 | 24587.7 | 26268.7 | 26587.5 | 25353.3 | 24157.7 | 24066.0 | 24145.7 | 26051.3 | 24249.5 |
| 55°   | 19776.4 | 20114.5 | 23522.5 | 26196.2 | 27068.2 | 26481.2 | 26077.9 | 26073.1 | 26486.1 | 28577.7 | 25734.9 |
| 57.5° | 18305.5 | 18544.6 | 21353.6 | 26073.1 | 27638.2 | 27601.9 | 27978.7 | 28024.6 | 28828.9 | 31328.7 | 27290.4 |
| 60°   | 17474.6 | 17725.8 | 20254.6 | 25616.6 | 28522.2 | 29051.1 | 29918.2 | 30010.0 | 31210.4 | 34374.4 | 29162.2 |
| 62.5° | 16718.6 | 16994.0 | 19573.5 | 24686.7 | 29563.2 | 31123.4 | 32241.7 | 32323.8 | 33732.0 | 37504.6 | 30971.3 |
| 65°   | 15426.5 | 15738.0 | 18576.0 | 24075.6 | 30510.0 | 33826.1 | 35195.6 | 35251.2 | 36627.9 | 40784.6 | 32355.2 |
| 67.5° | 13600.5 | 13885.5 | 16694.5 | 22725.5 | 31210.4 | 37108.5 | 39122.9 | 39154.3 | 39499.7 | 43100.9 | 33062.9 |
| 70°   | 11467.8 | 11576.5 | 14013.5 | 19938.2 | 30381.9 | 40178.4 | 43426.9 | 43434.2 | 42117.8 | 44583.9 | 32947.0 |
| 72.5° | 8057.4  | 8313.4  | 10173.2 | 15093.2 | 26109.3 | 39804.0 | 45661.1 | 45743.2 | 43335.1 | 43835.1 | 30314.3 |
| 75°   | 4941.7  | 5212.2  | 6381.2  | 9146.7  | 16564.1 | 31304.6 | 42187.9 | 42757.9 | 41052.7 | 39084.2 | 24764.0 |
| 77.5° | 3304.1  | 3405.6  | 4164.0  | 5333.0  | 7504.3  | 18010.8 | 32434.9 | 33507.3 | 34103.9 | 28502.8 | 15837.1 |
| 80°   | 1842.9  | 2036.1  | 2760.7  | 3313.8  | 3337.9  | 7156.5  | 19447.9 | 19699.1 | 18974.5 | 11349.5 | 4886.1  |
| 82.5° | 975.8   | 1082.1  | 1842.9  | 1946.7  | 1821.1  | 2396.0  | 7248.3  | 7255.5  | 6062.4  | 3043.3  | 1451.6  |
| 85°   | 756.0   | 845.4   | 1263.2  | 1188.3  | 929.9   | 1062.7  | 2391.1  | 2521.6  | 2062.7  | 1246.3  | 473.4   |
| 87.5° | 376.8   | 468.6   | 857.4   | 753.6   | 364.7   | 304.3   | 855.0   | 913.0   | 814.0   | 487.9   | 171.5   |
| 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°    | 12612.6 | 12612.6 | 12612.6 | 12612.6 | 12612.6 | 12612.6 | 12612.6 | 12612.6 | 12612.6 | 12612.6 | 12612.6 |
| 2.5°  | 12644.0 | 12665.8 | 12692.4 | 12663.4 | 12653.7 | 12615.1 | 12549.9 | 12535.4 | 12501.5 | 12504.0 | 12523.3 |
| 5°    | 12755.2 | 12791.4 | 12776.9 | 12665.8 | 12532.9 | 12347.0 | 12153.7 | 11989.5 | 11880.8 | 11873.6 | 11866.3 |
| 7.5°  | 12967.7 | 12991.8 | 12878.3 | 12561.9 | 12190.0 | 11760.1 | 11354.3 | 10999.2 | 10784.3 | 10731.1 | 10719.1 |
| 10°   | 13301.0 | 13296.2 | 12984.6 | 12347.0 | 11605.5 | 10837.4 | 10185.3 | 9692.6  | 9405.1  | 9320.6  | 9298.9  |
| 12.5° | 13673.0 | 13617.4 | 13020.8 | 11955.7 | 10779.4 | 9714.3  | 8888.3  | 8340.0  | 8040.5  | 7943.9  | 7919.7  |
| 15°   | 14057.0 | 13919.3 | 12931.5 | 11371.2 | 9765.0  | 8504.2  | 7637.1  | 7129.9  | 6968.1  | 6915.0  | 6905.3  |
| 17.5° | 14414.5 | 14148.8 | 12675.4 | 10579.0 | 8608.1  | 7299.0  | 6622.7  | 6419.8  | 6458.5  | 6528.5  | 6530.9  |
| 20°   | 14764.7 | 14303.4 | 12264.8 | 9579.0  | 7388.4  | 6306.3  | 6076.9  | 6226.6  | 6410.2  | 6552.7  | 6572.0  |
| 22.5° | 15110.1 | 14412.0 | 11735.9 | 8424.5  | 6296.7  | 5748.4  | 5910.2  | 6183.1  | 6393.3  | 6547.9  | 6574.4  |
| 25°   | 15399.9 | 14438.6 | 11006.5 | 7192.7  | 5538.3  | 5538.3  | 5830.5  | 6088.9  | 6296.7  | 6448.8  | 6475.4  |
| 27.5° | 15506.2 | 14259.9 | 9977.6  | 6052.7  | 5156.6  | 5441.7  | 5719.4  | 5934.4  | 6110.7  | 6272.5  | 6301.5  |
| 30°   | 15547.2 | 13929.0 | 8789.2  | 5137.3  | 4999.7  | 5337.8  | 5569.7  | 5753.2  | 5919.9  | 6072.0  | 6098.6  |
| 32.5° | 15554.5 | 13530.5 | 7528.5  | 4618.0  | 4891.0  | 5229.1  | 5383.7  | 5545.5  | 5724.2  | 5784.6  | 5794.3  |
| 35°   | 15600.4 | 13059.5 | 6200.1  | 4352.4  | 4789.5  | 5127.7  | 5250.8  | 5366.8  | 5076.9  | 5098.7  | 5118.0  |
| 37.5° | 15733.2 | 12593.3 | 5089.0  | 4202.6  | 4724.3  | 5074.5  | 5221.9  | 4801.6  | 4574.6  | 4521.4  | 4514.2  |
| 40°   | 15982.0 | 12095.8 | 4265.4  | 4081.8  | 4700.2  | 5101.1  | 5035.9  | 4482.8  | 4091.5  | 3799.3  | 3755.8  |
| 42.5° | 16327.4 | 11559.6 | 3738.9  | 4002.1  | 4717.1  | 5229.1  | 4777.4  | 4176.0  | 3526.3  | 3337.9  | 3313.8  |
| 45°   | 16716.2 | 10996.8 | 3453.9  | 3946.6  | 4775.0  | 5328.1  | 4724.3  | 3767.9  | 3263.1  | 3120.6  | 3108.5  |
| 47.5° | 17093.0 | 10308.5 | 3306.5  | 3922.4  | 4854.7  | 5248.4  | 4499.7  | 3642.3  | 3137.5  | 3062.6  | 3069.8  |
| 50°   | 17525.4 | 9687.7  | 3217.2  | 3895.9  | 4924.8  | 5197.7  | 4246.1  | 3577.0  | 3089.2  | 3180.9  | 3277.5  |
| 52.5° | 17890.1 | 9045.3  | 3137.5  | 3842.7  | 4951.3  | 5108.3  | 4180.9  | 3589.1  | 3089.2  | 3265.5  | 3357.3  |
| 55°   | 18322.4 | 8559.8  | 3045.7  | 3731.6  | 4900.6  | 4854.7  | 4135.0  | 3661.6  | 3125.4  | 3014.3  | 3023.9  |
| 57.5° | 18880.3 | 8400.4  | 2944.2  | 3557.7  | 4731.6  | 4485.2  | 4113.2  | 3731.6  | 3103.6  | 3033.6  | 3057.8  |
| 60°   | 19653.2 | 8569.5  | 2903.2  | 3330.7  | 4468.3  | 4195.4  | 4115.7  | 3695.4  | 2951.5  | 2830.7  | 2833.1  |
| 62.5° | 20389.9 | 8757.8  | 2900.8  | 3188.2  | 4144.6  | 3936.9  | 4060.1  | 3577.0  | 2874.2  | 2804.2  | 2830.7  |
| 65°   | 20631.4 | 8567.0  | 2784.8  | 3028.8  | 3779.9  | 3627.8  | 3958.7  | 3451.5  | 2816.2  | 2710.0  | 2705.1  |
| 67.5° | 20307.8 | 7975.3  | 2550.5  | 2770.3  | 3362.1  | 3267.9  | 3825.8  | 3301.7  | 2724.4  | 2637.5  | 2623.0  |
| 70°   | 19346.5 | 6654.1  | 2260.7  | 2429.8  | 2886.3  | 2862.1  | 3615.7  | 3127.8  | 2601.3  | 2526.4  | 2463.6  |
| 72.5° | 16759.7 | 4741.2  | 1905.7  | 2021.6  | 2350.1  | 2427.4  | 3325.9  | 2900.8  | 2427.4  | 2265.5  | 2168.9  |
| 75°   | 13764.7 | 3509.4  | 1565.1  | 1589.3  | 1784.9  | 1995.0  | 2927.3  | 2635.1  | 2222.1  | 1946.7  | 1871.9  |
| 77.5° | 8429.4  | 2147.2  | 1246.3  | 1256.0  | 1280.1  | 1591.7  | 2410.5  | 2338.0  | 1961.2  | 1623.1  | 1569.9  |
| 80°   | 2729.3  | 1171.4  | 900.9   | 946.8   | 874.3   | 1166.6  | 1864.6  | 1990.2  | 1683.5  | 1357.4  | 1299.4  |
| 82.5° | 1038.6  | 683.5   | 608.7   | 640.1   | 606.2   | 782.6   | 1359.8  | 1594.1  | 1379.1  | 1115.9  | 908.1   |
| 85°   | 502.4   | 386.4   | 359.9   | 403.4   | 374.4   | 400.9   | 869.5   | 1173.8  | 1045.8  | 727.0   | 676.3   |
| 87.5° | 178.7   | 171.5   | 137.7   | 186.0   | 159.4   | 142.5   | 265.7   | 591.7   | 690.8   | 500.0   | 446.8   |
| 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)