

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: P321609

Luminaire Tested: **GLEON-SA5C-740-U-T3R-HSS**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P321609  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-11)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA5C-740-U-T3R-HSS  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(5) 70 CRI, 4000K, 1050mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III  
ROADWAY OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 27189 lumens  
Efficiency: N/A  
Efficacy: 97.5 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type III - Medium  
BUG Rating: B2 - U0 - G4

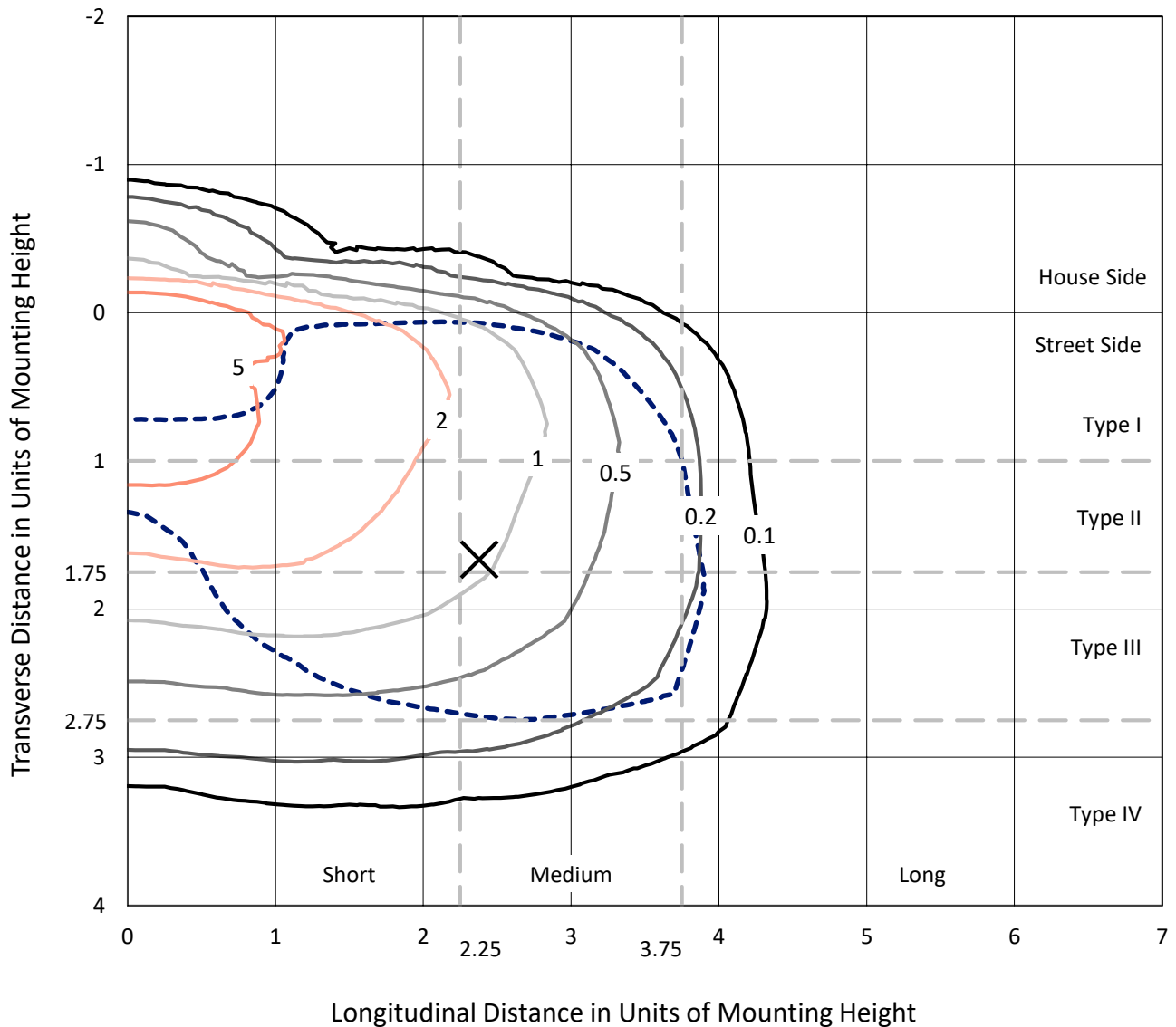
Input Watts (W): 279  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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### Iso-Footcandle Lines of Horizontal Illumination

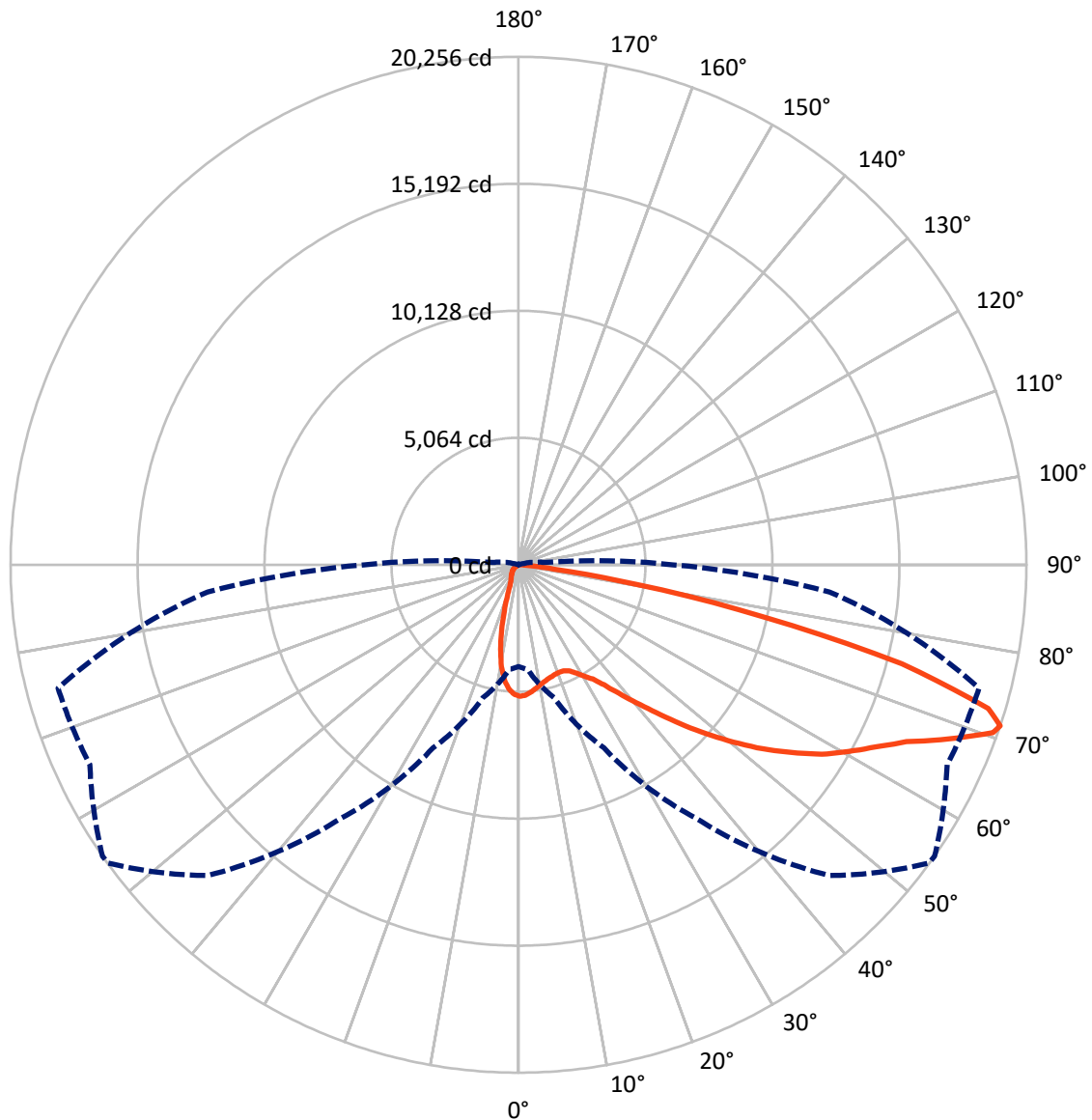
× Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 8.6 fc  
 Type III - Medium - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 55-Deg Lateral      - - - Horizontal Cone Through 71-Deg Vertical

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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 2152.6   | 0.0    | 2152.6  |
|                    | % Fixture | 7.9      | 0.0    | 7.9     |
| <b>Street Side</b> | Lumens    | 25036.4  | 0.0    | 25036.4 |
|                    | % Fixture | 92.1     | 0.0    | 92.1    |
| <b>Total</b>       | Lumens    | 27189.0  | 0.0    | 27189.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 447.1   | 1.6       |
| 10°-20°   | 1009.3  | 3.7       |
| 20°-30°   | 1622.0  | 6.0       |
| 30°-40°   | 2755.9  | 10.1      |
| 40°-50°   | 4277.4  | 15.7      |
| 50°-60°   | 5750.9  | 21.2      |
| 60°-70°   | 7035.3  | 25.9      |
| 70°-80°   | 4113.4  | 15.1      |
| 80°-90°   | 177.8   | 0.7       |
| 90°-100°  | 0.0     | 0.0       |
| 100°-110° | 0.0     | 0.0       |
| 110°-120° | 0.0     | 0.0       |
| 120°-130° | 0.0     | 0.0       |
| 130°-140° | 0.0     | 0.0       |
| 140°-150° | 0.0     | 0.0       |
| 150°-160° | 0.0     | 0.0       |
| 160°-170° | 0.0     | 0.0       |
| 170°-180° | 0.0     | 0.0       |
| 0°-90°    | 27189.0 | 100.0     |
| 0°-180°   | 27189.0 | 100.0     |

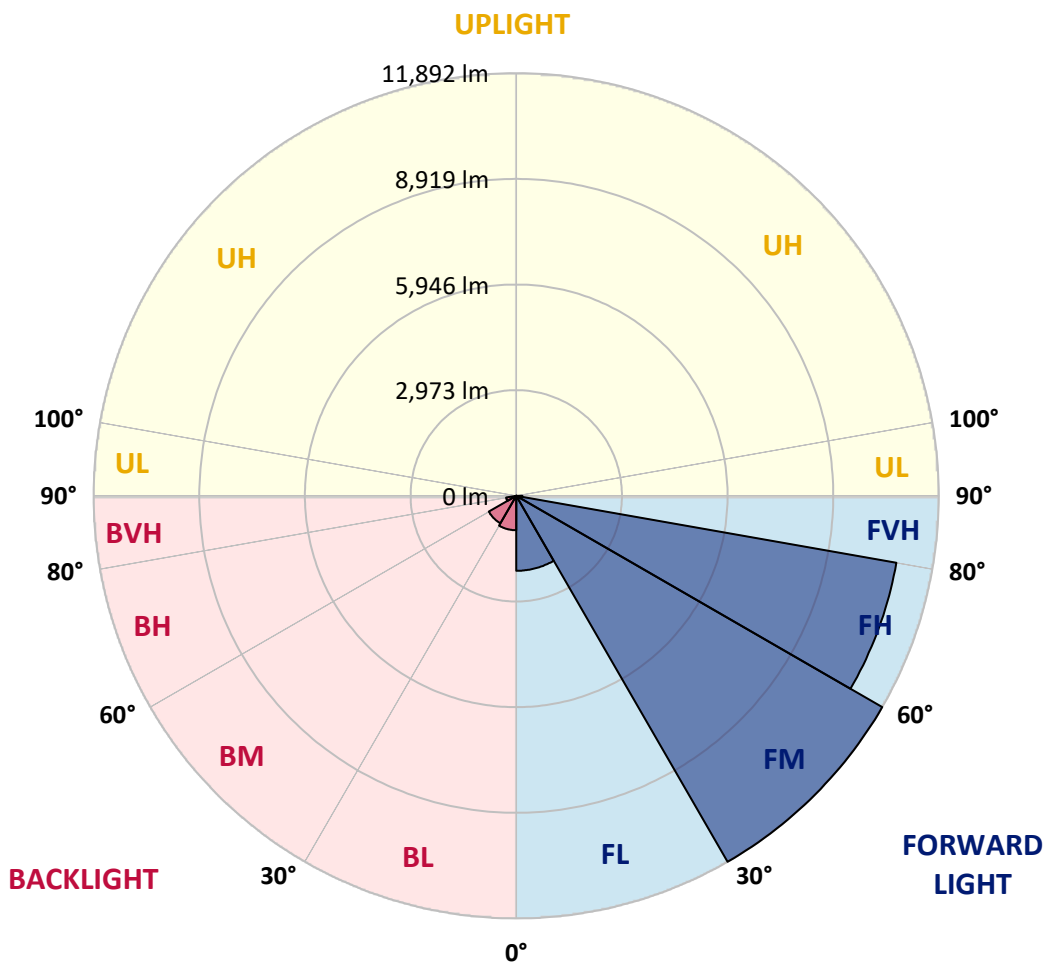


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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |          |
|----------------|---------|-----------|-------------------------|------|----------|
|                |         |           | B                       | U    | G        |
| FL (0°-30°)    | 2109.5  | 7.8       |                         |      |          |
| FM (30°-60°)   | 11891.7 | 43.7      |                         |      |          |
| FH (60°-80°)   | 10860.2 | 39.9      |                         |      | G4/12000 |
| FVH (80°-90°)  | 175.0   | 0.6       |                         |      | G2/225   |
| BL (0°-30°)    | 968.9   | 3.6       | B2/1000                 |      |          |
| BM (30°-60°)   | 892.5   | 3.3       | B1/1000                 |      |          |
| BH (60°-80°)   | 288.4   | 1.1       | B1/500                  |      | G1/500   |
| BVH (80°-90°)  | 2.8     | 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-G4**  
 Type III Medium





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 54°     | 55°     | 65°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 5243.5  | 5243.5  | 5243.5  | 5243.5  | 5243.5  | 5243.5  | 5243.5  | 5243.5  | 5243.5  | 5243.5  | 5243.5  |
| 2.5°  | 5089.7  | 5095.8  | 5117.7  | 5127.5  | 5150.7  | 5189.8  | 5209.3  | 5210.5  | 5242.3  | 5254.5  | 5264.3  |
| 5°    | 4729.5  | 4766.1  | 4802.8  | 4841.8  | 4912.6  | 5006.7  | 5099.4  | 5108.0  | 5210.5  | 5286.2  | 5326.5  |
| 7.5°  | 4419.4  | 4452.4  | 4496.3  | 4558.6  | 4658.7  | 4806.4  | 4961.5  | 4979.8  | 5173.9  | 5346.0  | 5436.4  |
| 10°   | 4100.8  | 4127.7  | 4191.1  | 4282.7  | 4420.7  | 4618.4  | 4827.2  | 4857.7  | 5140.9  | 5426.6  | 5585.3  |
| 12.5° | 3760.2  | 3776.0  | 3853.0  | 3984.8  | 4187.5  | 4439.0  | 4713.7  | 4753.9  | 5120.2  | 5519.4  | 5761.1  |
| 15°   | 3501.4  | 3508.7  | 3581.9  | 3718.7  | 3950.6  | 4277.8  | 4625.8  | 4674.6  | 5125.1  | 5630.5  | 5952.8  |
| 17.5° | 3435.4  | 3439.1  | 3478.2  | 3572.2  | 3777.3  | 4133.8  | 4556.2  | 4616.0  | 5139.7  | 5739.2  | 6145.7  |
| 20°   | 3702.8  | 3677.2  | 3636.9  | 3622.2  | 3710.1  | 4047.1  | 4514.7  | 4581.8  | 5159.3  | 5835.6  | 6319.1  |
| 22.5° | 4436.5  | 4360.8  | 4193.6  | 3970.2  | 3834.6  | 4053.2  | 4525.6  | 4592.8  | 5221.5  | 5954.0  | 6519.3  |
| 25°   | 5525.5  | 5420.5  | 5136.1  | 4696.6  | 4274.2  | 4229.0  | 4617.2  | 4685.6  | 5342.4  | 6095.6  | 6710.9  |
| 27.5° | 6764.7  | 6660.9  | 6312.9  | 5685.4  | 4965.1  | 4576.9  | 4827.2  | 4890.7  | 5521.8  | 6221.4  | 6857.4  |
| 30°   | 7951.3  | 7922.0  | 7511.8  | 6798.8  | 5834.4  | 5140.9  | 5098.2  | 5151.9  | 5654.9  | 6297.1  | 6973.4  |
| 32.5° | 8957.3  | 8910.9  | 8581.3  | 7887.8  | 6829.4  | 5818.5  | 5416.9  | 5432.7  | 5755.0  | 6394.7  | 7124.8  |
| 35°   | 9890.0  | 9832.6  | 9543.3  | 8887.7  | 7850.0  | 6646.2  | 5907.6  | 5884.4  | 5973.6  | 6591.3  | 7344.6  |
| 37.5° | 10704.3 | 10756.8 | 10435.7 | 9811.9  | 8765.6  | 7506.9  | 6569.3  | 6499.7  | 6315.4  | 6911.2  | 7663.2  |
| 40°   | 11385.5 | 11385.5 | 11218.3 | 10698.2 | 9754.5  | 8396.9  | 7317.7  | 7226.1  | 6829.4  | 7404.4  | 8067.3  |
| 42.5° | 11630.9 | 11683.4 | 11745.7 | 11451.5 | 10639.6 | 9322.3  | 8151.5  | 8056.3  | 7553.3  | 8103.9  | 8577.6  |
| 45°   | 11645.6 | 11728.6 | 12047.2 | 12046.0 | 11439.2 | 10241.6 | 9091.6  | 9046.4  | 8481.2  | 9002.5  | 9210.0  |
| 47.5° | 11439.2 | 11543.0 | 12068.0 | 12365.9 | 12072.9 | 11097.4 | 10119.5 | 10063.4 | 9571.4  | 10103.6 | 9871.7  |
| 50°   | 11120.6 | 11235.4 | 11845.8 | 12491.6 | 12503.8 | 11842.1 | 11202.4 | 11118.2 | 10771.4 | 11362.3 | 10555.4 |
| 52.5° | 10550.5 | 10772.7 | 11646.8 | 12520.9 | 12787.0 | 12485.5 | 12232.8 | 12196.2 | 12114.4 | 12574.6 | 11099.9 |
| 55°   | 9330.9  | 9577.5  | 11147.5 | 12530.7 | 13049.5 | 13055.6 | 13198.5 | 13208.2 | 13373.1 | 13707.6 | 11505.2 |
| 57.5° | 8754.6  | 8893.8  | 10275.8 | 12577.1 | 13439.0 | 13702.7 | 14182.5 | 14258.2 | 14513.3 | 14783.1 | 11967.9 |
| 60°   | 8392.0  | 8556.8  | 9846.1  | 12513.6 | 14050.6 | 14551.2 | 15094.4 | 15120.1 | 15393.5 | 15892.9 | 12594.2 |
| 62.5° | 8102.7  | 8265.1  | 9575.0  | 12269.4 | 14737.9 | 15571.8 | 15985.6 | 15988.1 | 16193.2 | 17215.0 | 13305.9 |
| 65°   | 7388.5  | 7525.2  | 9026.9  | 11994.7 | 15192.1 | 16581.4 | 17020.9 | 17005.0 | 17172.3 | 18609.2 | 14132.4 |
| 67.5° | 6355.7  | 6460.7  | 7907.4  | 10953.4 | 15021.2 | 17499.5 | 18583.6 | 18531.1 | 18328.4 | 19814.2 | 14457.2 |
| 70°   | 4913.9  | 4951.7  | 6232.4  | 9128.2  | 13419.4 | 17852.3 | 20093.8 | 20066.9 | 19037.7 | 19598.1 | 13266.8 |
| 71°   | 4061.7  | 4186.3  | 5492.5  | 8056.3  | 12346.3 | 17526.3 | 20240.3 | 20256.1 | 18859.5 | 19009.7 | 12447.7 |
| 72.5° | 2358.7  | 2464.9  | 3981.2  | 6187.2  | 10482.1 | 16166.3 | 19480.9 | 19595.7 | 18026.9 | 17290.7 | 10632.3 |
| 75°   | 505.4   | 540.8   | 1476.0  | 2994.7  | 5766.0  | 11330.6 | 15376.4 | 15785.4 | 14692.8 | 11762.8 | 6408.2  |
| 77.5° | 351.6   | 379.7   | 632.4   | 1358.8  | 1905.7  | 5598.8  | 9551.8  | 10013.3 | 8777.8  | 4420.7  | 2051.0  |
| 80°   | 278.4   | 310.1   | 493.2   | 671.5   | 515.2   | 1805.6  | 4474.4  | 4756.4  | 2927.6  | 986.4   | 345.5   |
| 82.5° | 155.0   | 184.3   | 384.6   | 362.6   | 197.8   | 343.1   | 1252.6  | 1416.2  | 586.0   | 199.0   | 81.8    |
| 85°   | 45.2    | 54.9    | 247.8   | 263.7   | 84.2    | 65.9    | 213.6   | 264.9   | 111.1   | 52.5    | 36.6    |
| 87.5° | 0.0     | 0.0     | 119.6   | 101.3   | 24.4    | 9.8     | 19.5    | 22.0    | 22.0    | 22.0    | 24.4    |
| 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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CATALOG NUMBER: GLEON-SA5C-740-U-T3R-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 5243.5 | 5243.5 | 5243.5 | 5243.5 | 5243.5 | 5243.5 | 5243.5 | 5243.5 | 5243.5 | 5243.5 | 5243.5 |
| 2.5°  | 5264.3 | 5272.8 | 5242.3 | 5202.0 | 5159.3 | 5106.8 | 5051.8 | 5009.1 | 5007.9 | 4987.1 | 4966.4 |
| 5°    | 5329.0 | 5324.1 | 5239.8 | 5111.6 | 4960.3 | 4802.8 | 4652.6 | 4482.9 | 4426.8 | 4357.2 | 4334.0 |
| 7.5°  | 5448.6 | 5414.4 | 5236.2 | 4955.4 | 4623.3 | 4293.7 | 3953.1 | 3610.0 | 3463.5 | 3331.7 | 3308.5 |
| 10°   | 5598.8 | 5534.1 | 5213.0 | 4721.0 | 4111.8 | 3503.8 | 2989.8 | 2523.5 | 2318.4 | 2160.9 | 2153.6 |
| 12.5° | 5755.0 | 5656.1 | 5148.3 | 4366.9 | 3441.5 | 2587.0 | 1994.8 | 1535.8 | 1364.9 | 1255.0 | 1264.8 |
| 15°   | 5918.6 | 5770.9 | 5009.1 | 3889.6 | 2678.5 | 1755.6 | 1225.7 | 955.9  | 887.5  | 859.5  | 866.8  |
| 17.5° | 6085.9 | 5850.3 | 4815.0 | 3314.6 | 1925.3 | 1132.9 | 848.5  | 772.8  | 772.8  | 778.9  | 781.3  |
| 20°   | 6231.2 | 5893.0 | 4529.3 | 2670.0 | 1305.1 | 825.3  | 742.3  | 731.3  | 737.4  | 747.2  | 748.4  |
| 22.5° | 6375.2 | 5895.4 | 4157.0 | 2016.8 | 913.2  | 722.7  | 706.9  | 702.0  | 705.6  | 716.6  | 717.9  |
| 25°   | 6492.4 | 5866.1 | 3690.6 | 1434.5 | 728.8  | 681.2  | 673.9  | 671.5  | 673.9  | 687.3  | 687.3  |
| 27.5° | 6540.0 | 5759.9 | 3121.7 | 1008.4 | 653.1  | 634.8  | 632.4  | 634.8  | 638.5  | 648.3  | 649.5  |
| 30°   | 6544.9 | 5574.3 | 2501.5 | 730.1  | 592.1  | 572.6  | 577.5  | 586.0  | 582.3  | 579.9  | 582.3  |
| 32.5° | 6557.1 | 5359.5 | 1897.2 | 600.7  | 540.8  | 510.3  | 504.2  | 504.2  | 489.6  | 481.0  | 476.1  |
| 35°   | 6597.4 | 5106.8 | 1375.9 | 539.6  | 488.3  | 452.9  | 429.7  | 402.9  | 374.8  | 360.1  | 356.5  |
| 37.5° | 6660.9 | 4841.8 | 985.2  | 499.3  | 441.9  | 401.7  | 357.7  | 310.1  | 269.8  | 258.8  | 258.8  |
| 40°   | 6776.9 | 4568.4 | 728.8  | 467.6  | 405.3  | 355.3  | 289.3  | 227.1  | 190.5  | 184.3  | 184.3  |
| 42.5° | 6960.0 | 4280.3 | 581.1  | 439.5  | 373.6  | 307.7  | 221.0  | 164.8  | 138.0  | 134.3  | 133.1  |
| 45°   | 7150.4 | 3962.8 | 507.9  | 412.6  | 339.4  | 252.7  | 163.6  | 122.1  | 106.2  | 102.6  | 102.6  |
| 47.5° | 7340.9 | 3624.7 | 472.5  | 387.0  | 306.4  | 196.6  | 122.1  | 96.4   | 89.1   | 89.1   | 90.3   |
| 50°   | 7502.0 | 3271.8 | 446.8  | 358.9  | 263.7  | 148.9  | 96.4   | 81.8   | 79.4   | 84.2   | 85.5   |
| 52.5° | 7542.3 | 2925.1 | 415.1  | 323.5  | 211.2  | 113.5  | 79.4   | 72.0   | 72.0   | 72.0   | 72.0   |
| 55°   | 7517.9 | 2656.5 | 373.6  | 279.6  | 156.3  | 90.3   | 68.4   | 63.5   | 62.3   | 62.3   | 62.3   |
| 57.5° | 7600.9 | 2497.8 | 299.1  | 217.3  | 112.3  | 73.3   | 59.8   | 56.2   | 53.7   | 52.5   | 52.5   |
| 60°   | 7768.2 | 2394.1 | 213.6  | 156.3  | 84.2   | 61.0   | 51.3   | 47.6   | 44.0   | 41.5   | 41.5   |
| 62.5° | 7990.4 | 2303.7 | 158.7  | 116.0  | 64.7   | 48.8   | 42.7   | 39.1   | 34.2   | 31.7   | 31.7   |
| 65°   | 8161.3 | 2142.6 | 120.9  | 86.7   | 48.8   | 39.1   | 33.0   | 31.7   | 24.4   | 22.0   | 20.8   |
| 67.5° | 7900.0 | 1788.5 | 97.7   | 63.5   | 36.6   | 30.5   | 25.6   | 24.4   | 14.7   | 12.2   | 12.2   |
| 70°   | 6775.6 | 1245.3 | 78.1   | 46.4   | 26.9   | 24.4   | 20.8   | 15.9   | 11.0   | 9.8    | 9.8    |
| 71°   | 6144.5 | 1040.2 | 70.8   | 39.1   | 23.2   | 23.2   | 19.5   | 13.4   | 9.8    | 8.5    | 8.5    |
| 72.5° | 5104.3 | 738.6  | 59.8   | 30.5   | 20.8   | 24.4   | 20.8   | 12.2   | 9.8    | 8.5    | 7.3    |
| 75°   | 2963.0 | 308.9  | 41.5   | 20.8   | 15.9   | 29.3   | 26.9   | 11.0   | 7.3    | 6.1    | 6.1    |
| 77.5° | 891.2  | 113.5  | 23.2   | 13.4   | 12.2   | 25.6   | 30.5   | 9.8    | 3.7    | 1.2    | 1.2    |
| 80°   | 162.4  | 48.8   | 14.7   | 8.5    | 8.5    | 15.9   | 23.2   | 4.9    | 0.0    | 0.0    | 0.0    |
| 82.5° | 57.4   | 24.4   | 8.5    | 4.9    | 3.7    | 7.3    | 11.0   | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 33.0   | 17.1   | 4.9    | 2.4    | 0.0    | 1.2    | 2.4    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 22.0   | 4.9    | 0.0    | 0.0    | 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-79-08: Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Report Prepared for

Cooper Lighting Solutions

MCGRAW, INVUE, LUMARK AND STREETWORKS

DATA VALID FOR LUMINIAIRES UTILIZING SA LIGHT ENGINES

Report Number: SP1-2101-121-2

Luminaire Tested: IFLD-S-SA2A-740-U-T3R-HSS

Test Date: 03/05/2021

**Test Information**

Test Method: LM-79-08  
 Report Number: SP1-2101-121-2  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1  
 Measurement Geometry: 4π  
 Issue Date: 03/05/2021  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: STREETWORKS  
 Catalog Number: **IFLD-S-SA2A-740-U-T3R-HSS**  
 Description: STREETWORKS INF FLOOD

SHIELD, DRIVER PROGRAMMED @ 615mA.

**Spectral Parameters**

|                           |         |           |      |      |       |
|---------------------------|---------|-----------|------|------|-------|
| CCT (K):                  | 3905    | CRI (Ra): | 71.2 | R9:  | -29.7 |
| CIE u':                   | 0.2273  | R1:       | 68.9 | R10: | 46.2  |
| CIE v':                   | 0.5024  | R2:       | 77.0 | R11: | 68.8  |
| Duv:                      | -0.0008 | R3:       | 84.0 | R12: | 45.6  |
| CIE x:                    | 0.3841  | R4:       | 71.6 | R13: | 69.5  |
| CIE y:                    | 0.3774  | R5:       | 68.9 | R14: | 90.7  |
| CIE z:                    | 0.2385  | R6:       | 68.3 |      |       |
| Peak Wavelength (nm):     | 443     | R7:       | 78.7 |      |       |
| Dominant Wavelength (nm): | 579     | R8:       | 52.2 |      |       |
| Purity:                   | 28.7    |           |      |      |       |
| Rf:                       | 71.7    |           |      |      |       |
| Rg:                       | 96.9    |           |      |      |       |



**Test Conditions**

Stabilization Time: 211M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 24.8/312%  
 Sphere Temperature (°C): 24.1

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| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 1/31/2021        | 7/31/2021            |
| Power Meter                    | IN0071                | 12/1/2020        | 12/1/2021            |
| AC Power Source                | IN0063                | 12/1/2020        | 12/1/2021            |
| DC Power Source                | IN0208                | 12/1/2020        | 12/1/2021            |
| Sphere Thermometer             | IN0085                | 12/1/2020        | 12/1/2021            |
| Room Thermometer               | IN0046                | 12/1/2020        | 12/1/2021            |

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CIE 1931 Chromaticity Diagram



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



CCT = 3905K  
 CIE x = 0.3841  
 CIE y = 0.3774  
 Duv = -0.0008

Point lies inside the ANSI 4000K 4-step quadrangle

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**Photopic Flux vs. Wavelength**



#####

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360    | 2304          | 0.0           | 490    | 19043         | 2.7           | 620    | 97577         | 25.4          | 750    | 4830          | 0.0           | 880    | 3505          | 0.0           |
| 365    | 2150          | 0.0           | 495    | 26606         | 4.8           | 625    | 90158         | 19.9          | 755    | 4664          | 0.0           | 885    | 2991          | 0.0           |
| 370    | 2146          | 0.0           | 500    | 36376         | 8.0           | 630    | 82240         | 14.9          | 760    | 4006          | 0.0           | 890    | 2327          | 0.0           |
| 375    | 2332          | 0.0           | 505    | 47714         | 13.3          | 635    | 74361         | 11.2          | 765    | 3715          | 0.0           | 895    | 2775          | 0.0           |
| 380    | 2527          | 0.0           | 510    | 58741         | 20.2          | 640    | 66994         | 8.0           | 770    | 3696          | 0.0           | 900    | 2141          | 0.0           |
| 385    | 2304          | 0.0           | 515    | 68716         | 28.5          | 645    | 60405         | 5.8           | 775    | 3117          | 0.0           | 905    | 2421          | 0.0           |
| 390    | 2064          | 0.0           | 520    | 77136         | 37.4          | 650    | 53806         | 3.9           | 780    | 3062          | 0.0           | 910    | 2200          | 0.0           |
| 395    | 1856          | 0.0           | 525    | 83567         | 44.9          | 655    | 47610         | 2.7           | 785    | 2907          | 0.0           | 915    | 2716          | 0.0           |
| 400    | 1856          | 0.0           | 530    | 89283         | 52.6          | 660    | 42018         | 1.8           | 790    | 2655          | 0.0           | 920    | 2656          | 0.0           |
| 405    | 2374          | 0.0           | 535    | 94097         | 58.4          | 665    | 36742         | 1.2           | 795    | 2467          | 0.0           | 925    | 2671          | 0.0           |
| 410    | 4084          | 0.0           | 540    | 96845         | 63.1          | 670    | 32105         | 0.7           | 800    | 2609          | 0.0           | 930    | 3292          | 0.0           |
| 415    | 8543          | 0.0           | 545    | 100829        | 67.1          | 675    | 27946         | 0.5           | 805    | 2293          | 0.0           | 935    | 3188          | 0.0           |
| 420    | 18394         | 0.1           | 550    | 105648        | 71.8          | 680    | 24146         | 0.3           | 810    | 2188          | 0.0           | 940    | 1997          | 0.0           |
| 425    | 37987         | 0.2           | 555    | 110017        | 75.1          | 685    | 21191         | 0.2           | 815    | 2386          | 0.0           | 945    | 2623          | 0.0           |
| 430    | 67605         | 0.5           | 560    | 114586        | 77.9          | 690    | 18544         | 0.1           | 820    | 2712          | 0.0           | 950    | 2969          | 0.0           |
| 435    | 102160        | 1.2           | 565    | 118987        | 79.1          | 695    | 16058         | 0.1           | 825    | 2473          | 0.0           | 955    | 2277          | 0.0           |
| 440    | 135103        | 2.1           | 570    | 122326        | 79.5          | 700    | 14133         | 0.0           | 830    | 1969          | 0.0           | 960    | 4267          | 0.0           |
| 445    | 140126        | 2.9           | 575    | 125968        | 78.4          | 705    | 12309         | 0.0           | 835    | 1917          | 0.0           | 965    | 2034          | 0.0           |
| 450    | 102339        | 2.7           | 580    | 127613        | 75.8          | 710    | 11142         | 0.0           | 840    | 2248          | 0.0           | 970    | 3586          | 0.0           |
| 455    | 58751         | 2.0           | 585    | 129466        | 71.9          | 715    | 10143         | 0.0           | 845    | 2266          | 0.0           | 975    | 2505          | 0.0           |
| 460    | 36892         | 1.5           | 590    | 128813        | 66.6          | 720    | 9072          | 0.0           | 850    | 2558          | 0.0           | 980    | 2666          | 0.0           |
| 465    | 24637         | 1.3           | 595    | 126387        | 59.9          | 725    | 8130          | 0.0           | 855    | 2767          | 0.0           | 985    | 2934          | 0.0           |
| 470    | 16738         | 1.0           | 600    | 123477        | 53.2          | 730    | 7149          | 0.0           | 860    | 2826          | 0.0           | 990    | 4120          | 0.0           |
| 475    | 13456         | 1.1           | 605    | 118718        | 46.0          | 735    | 6311          | 0.0           | 865    | 2385          | 0.0           | 995    | 3858          | 0.0           |
| 480    | 13081         | 1.2           | 610    | 112091        | 38.5          | 740    | 5711          | 0.0           | 870    | 3194          | 0.0           | 1000   | 3405          | 0.0           |
| 485    | 14734         | 1.7           | 615    | 105039        | 31.7          | 745    | 5111          | 0.0           | 875    | 3189          | 0.0           |        |               |               |

REPORT NUMBER: SP1-2101-121-2

**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: 10425.8 S/P: 1.47**

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360    | 2304          | 0.0           | 490    | 19043         | 29.3          | 620    | 97577         | 1.2           | 750    | 4830          | 0.0           | 880    | 3505          | 0.0           |
| 365    | 2150          | 0.0           | 495    | 26606         | 43.0          | 625    | 90158         | 0.8           | 755    | 4664          | 0.0           | 885    | 2991          | 0.0           |
| 370    | 2146          | 0.0           | 500    | 36376         | 60.8          | 630    | 82240         | 0.5           | 760    | 4006          | 0.0           | 890    | 2327          | 0.0           |
| 375    | 2332          | 0.0           | 505    | 47714         | 81.1          | 635    | 74361         | 0.3           | 765    | 3715          | 0.0           | 895    | 2775          | 0.0           |
| 380    | 2527          | 0.0           | 510    | 58741         | 99.6          | 640    | 66994         | 0.2           | 770    | 3696          | 0.0           | 900    | 2141          | 0.0           |
| 385    | 2304          | 0.0           | 515    | 68716         | 113.9         | 645    | 60405         | 0.1           | 775    | 3117          | 0.0           | 905    | 2421          | 0.0           |
| 390    | 2064          | 0.0           | 520    | 77136         | 122.6         | 650    | 53806         | 0.1           | 780    | 3062          | 0.0           | 910    | 2200          | 0.0           |
| 395    | 1856          | 0.0           | 525    | 83567         | 125.0         | 655    | 47610         | 0.0           | 785    | 2907          | 0.0           | 915    | 2716          | 0.0           |
| 400    | 1856          | 0.0           | 530    | 89283         | 123.1         | 660    | 42018         | 0.0           | 790    | 2655          | 0.0           | 920    | 2656          | 0.0           |
| 405    | 2374          | 0.1           | 535    | 94097         | 117.3         | 665    | 36742         | 0.0           | 795    | 2467          | 0.0           | 925    | 2671          | 0.0           |
| 410    | 4084          | 0.2           | 540    | 96845         | 107.0         | 670    | 32105         | 0.0           | 800    | 2609          | 0.0           | 930    | 3292          | 0.0           |
| 415    | 8543          | 0.9           | 545    | 100829        | 96.7          | 675    | 27946         | 0.0           | 805    | 2293          | 0.0           | 935    | 3188          | 0.0           |
| 420    | 18394         | 3.0           | 550    | 105648        | 86.4          | 680    | 24146         | 0.0           | 810    | 2188          | 0.0           | 940    | 1997          | 0.0           |
| 425    | 37987         | 9.3           | 555    | 110017        | 75.2          | 685    | 21191         | 0.0           | 815    | 2386          | 0.0           | 945    | 2623          | 0.0           |
| 430    | 67605         | 23.0          | 560    | 114586        | 64.0          | 690    | 18544         | 0.0           | 820    | 2712          | 0.0           | 950    | 2969          | 0.0           |
| 435    | 102160        | 45.7          | 565    | 118987        | 53.4          | 695    | 16058         | 0.0           | 825    | 2473          | 0.0           | 955    | 2277          | 0.0           |
| 440    | 135103        | 75.5          | 570    | 122326        | 43.2          | 700    | 14133         | 0.0           | 830    | 1969          | 0.0           | 960    | 4267          | 0.0           |
| 445    | 140126        | 93.8          | 575    | 125968        | 34.3          | 705    | 12309         | 0.0           | 835    | 1917          | 0.0           | 965    | 2034          | 0.0           |
| 450    | 102339        | 79.3          | 580    | 127613        | 26.3          | 710    | 11142         | 0.0           | 840    | 2248          | 0.0           | 970    | 3586          | 0.0           |
| 455    | 58751         | 51.3          | 585    | 129466        | 19.8          | 715    | 10143         | 0.0           | 845    | 2266          | 0.0           | 975    | 2505          | 0.0           |
| 460    | 36892         | 35.6          | 590    | 128813        | 14.3          | 720    | 9072          | 0.0           | 850    | 2558          | 0.0           | 980    | 2666          | 0.0           |
| 465    | 24637         | 26.0          | 595    | 126387        | 10.1          | 725    | 8130          | 0.0           | 855    | 2767          | 0.0           | 985    | 2934          | 0.0           |
| 470    | 16738         | 19.3          | 600    | 123477        | 7.0           | 730    | 7149          | 0.0           | 860    | 2826          | 0.0           | 990    | 4120          | 0.0           |
| 475    | 13456         | 16.8          | 605    | 118718        | 4.7           | 735    | 6311          | 0.0           | 865    | 2385          | 0.0           | 995    | 3858          | 0.0           |
| 480    | 13081         | 17.7          | 610    | 112091        | 3.0           | 740    | 5711          | 0.0           | 870    | 3194          | 0.0           | 1000   | 3405          | 0.0           |
| 485    | 14734         | 21.4          | 615    | 105039        | 1.9           | 745    | 5111          | 0.0           | 875    | 3189          | 0.0           |        |               |               |

REPORT NUMBER: SP1-2101-121-2

**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 3927.2 M/P: 0.55**

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360    | 2304          | 0.0           | 490    | 19043         | 15.8          | 620    | 97577         | 0.1           | 750    | 4830          | 0.0           | 880    | 3505          | 0.0           |
| 365    | 2150          | 0.0           | 495    | 26606         | 22.0          | 625    | 90158         | 0.0           | 755    | 4664          | 0.0           | 885    | 2991          | 0.0           |
| 370    | 2146          | 0.0           | 500    | 36376         | 29.2          | 630    | 82240         | 0.0           | 760    | 4006          | 0.0           | 890    | 2327          | 0.0           |
| 375    | 2332          | 0.0           | 505    | 47714         | 36.6          | 635    | 74361         | 0.0           | 765    | 3715          | 0.0           | 895    | 2775          | 0.0           |
| 380    | 2527          | 0.0           | 510    | 58741         | 42.2          | 640    | 66994         | 0.0           | 770    | 3696          | 0.0           | 900    | 2141          | 0.0           |
| 385    | 2304          | 0.0           | 515    | 68716         | 44.9          | 645    | 60405         | 0.0           | 775    | 3117          | 0.0           | 905    | 2421          | 0.0           |
| 390    | 2064          | 0.0           | 520    | 77136         | 44.9          | 650    | 53806         | 0.0           | 780    | 3062          | 0.0           | 910    | 2200          | 0.0           |
| 395    | 1856          | 0.0           | 525    | 83567         | 42.4          | 655    | 47610         | 0.0           | 785    | 2907          | 0.0           | 915    | 2716          | 0.0           |
| 400    | 1856          | 0.0           | 530    | 89283         | 38.6          | 660    | 42018         | 0.0           | 790    | 2655          | 0.0           | 920    | 2656          | 0.0           |
| 405    | 2374          | 0.0           | 535    | 94097         | 33.9          | 665    | 36742         | 0.0           | 795    | 2467          | 0.0           | 925    | 2671          | 0.0           |
| 410    | 4084          | 0.2           | 540    | 96845         | 28.3          | 670    | 32105         | 0.0           | 800    | 2609          | 0.0           | 930    | 3292          | 0.0           |
| 415    | 8543          | 0.6           | 545    | 100829        | 23.4          | 675    | 27946         | 0.0           | 805    | 2293          | 0.0           | 935    | 3188          | 0.0           |
| 420    | 18394         | 2.1           | 550    | 105648        | 19.0          | 680    | 24146         | 0.0           | 810    | 2188          | 0.0           | 940    | 1997          | 0.0           |
| 425    | 37987         | 5.9           | 555    | 110017        | 14.8          | 685    | 21191         | 0.0           | 815    | 2386          | 0.0           | 945    | 2623          | 0.0           |
| 430    | 67605         | 14.3          | 560    | 114586        | 11.3          | 690    | 18544         | 0.0           | 820    | 2712          | 0.0           | 950    | 2969          | 0.0           |
| 435    | 102160        | 27.3          | 565    | 118987        | 8.4           | 695    | 16058         | 0.0           | 825    | 2473          | 0.0           | 955    | 2277          | 0.0           |
| 440    | 135103        | 45.1          | 570    | 122326        | 6.0           | 700    | 14133         | 0.0           | 830    | 1969          | 0.0           | 960    | 4267          | 0.0           |
| 445    | 140126        | 55.3          | 575    | 125968        | 4.2           | 705    | 12309         | 0.0           | 835    | 1917          | 0.0           | 965    | 2034          | 0.0           |
| 450    | 102339        | 47.2          | 580    | 127613        | 2.9           | 710    | 11142         | 0.0           | 840    | 2248          | 0.0           | 970    | 3586          | 0.0           |
| 455    | 58751         | 30.8          | 585    | 129466        | 1.9           | 715    | 10143         | 0.0           | 845    | 2266          | 0.0           | 975    | 2505          | 0.0           |
| 460    | 36892         | 21.7          | 590    | 128813        | 1.3           | 720    | 9072          | 0.0           | 850    | 2558          | 0.0           | 980    | 2666          | 0.0           |
| 465    | 24637         | 16.1          | 595    | 126387        | 0.8           | 725    | 8130          | 0.0           | 855    | 2767          | 0.0           | 985    | 2934          | 0.0           |
| 470    | 16738         | 12.0          | 600    | 123477        | 0.5           | 730    | 7149          | 0.0           | 860    | 2826          | 0.0           | 990    | 4120          | 0.0           |
| 475    | 13456         | 10.3          | 605    | 118718        | 0.3           | 735    | 6311          | 0.0           | 865    | 2385          | 0.0           | 995    | 3858          | 0.0           |
| 480    | 13081         | 10.5          | 610    | 112091        | 0.2           | 740    | 5711          | 0.0           | 870    | 3194          | 0.0           | 1000   | 3405          | 0.0           |
| 485    | 14734         | 12.1          | 615    | 105039        | 0.1           | 745    | 5111          | 0.0           | 875    | 3189          | 0.0           |        |               |               |

**Summary**

$R_f = 71.7$   
 $R_g = 96.9$   
 CIE  $R_a = 71.2$   
 $R_g = -29.7$



**Color Vector Graphics**





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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 55 | CES51 = 86 | CES76 = 45 |
| CES02 = 61 | CES27 = 80 | CES52 = 87 | CES77 = 68 |
| CES03 = 30 | CES28 = 79 | CES53 = 74 | CES78 = 49 |
| CES04 = 70 | CES29 = 51 | CES54 = 81 | CES79 = 77 |
| CES05 = 47 | CES30 = 60 | CES55 = 80 | CES80 = 75 |
| CES06 = 50 | CES31 = 56 | CES56 = 69 | CES81 = 75 |
| CES07 = 40 | CES32 = 52 | CES57 = 67 | CES82 = 90 |
| CES08 = 39 | CES33 = 62 | CES58 = 69 | CES83 = 85 |
| CES09 = 29 | CES34 = 65 | CES59 = 86 | CES84 = 87 |
| CES10 = 74 | CES35 = 81 | CES60 = 91 | CES85 = 83 |
| CES11 = 57 | CES36 = 92 | CES61 = 85 | CES86 = 72 |
| CES12 = 63 | CES37 = 74 | CES62 = 81 | CES87 = 77 |
| CES13 = 42 | CES38 = 69 | CES63 = 72 | CES88 = 77 |
| CES14 = 74 | CES39 = 92 | CES64 = 69 | CES89 = 72 |
| CES15 = 71 | CES40 = 86 | CES65 = 64 | CES90 = 75 |
| CES16 = 46 | CES41 = 84 | CES66 = 63 | CES91 = 91 |
| CES17 = 49 | CES42 = 75 | CES67 = 60 | CES92 = 66 |
| CES18 = 56 | CES43 = 70 | CES68 = 67 | CES93 = 80 |
| CES19 = 72 | CES44 = 98 | CES69 = 77 | CES94 = 56 |
| CES20 = 65 | CES45 = 80 | CES70 = 57 | CES95 = 72 |
| CES21 = 86 | CES46 = 77 | CES71 = 53 | CES96 = 78 |
| CES22 = 78 | CES47 = 74 | CES72 = 84 | CES97 = 83 |
| CES23 = 92 | CES48 = 66 | CES73 = 47 | CES98 = 73 |
| CES24 = 91 | CES49 = 76 | CES74 = 96 | CES99 = 63 |
| CES25 = 72 | CES50 = 85 | CES75 = 52 |            |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)