

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: P383546

Luminaire Tested: **GLEON-SA8B-735-U-T4FT-HSS**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P383546  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-17)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA8B-735-U-T4FT-HSS  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(8) 70 CRI, 3500K, 800mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE IV  
FORWARD THROW OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 30297.7 lumens  
Efficiency: N/A  
Efficacy: 90.7 lumens/watt  
Luminous Opening: Rectangular (W 2' x L: 1' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B3 - U0 - G5

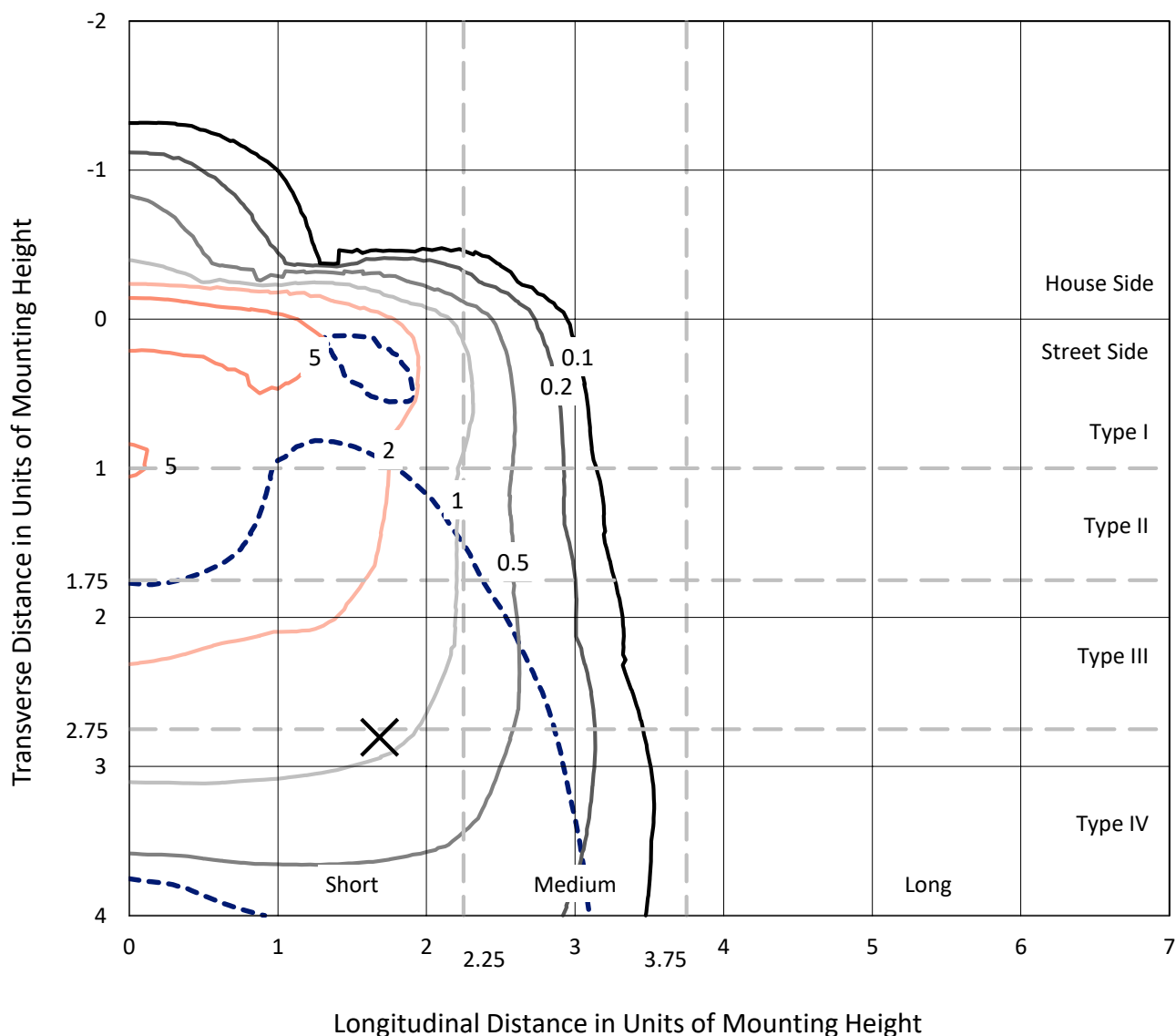
Input Watts (W): 334  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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## Iso-Footcandle Lines of Horizontal Illumination

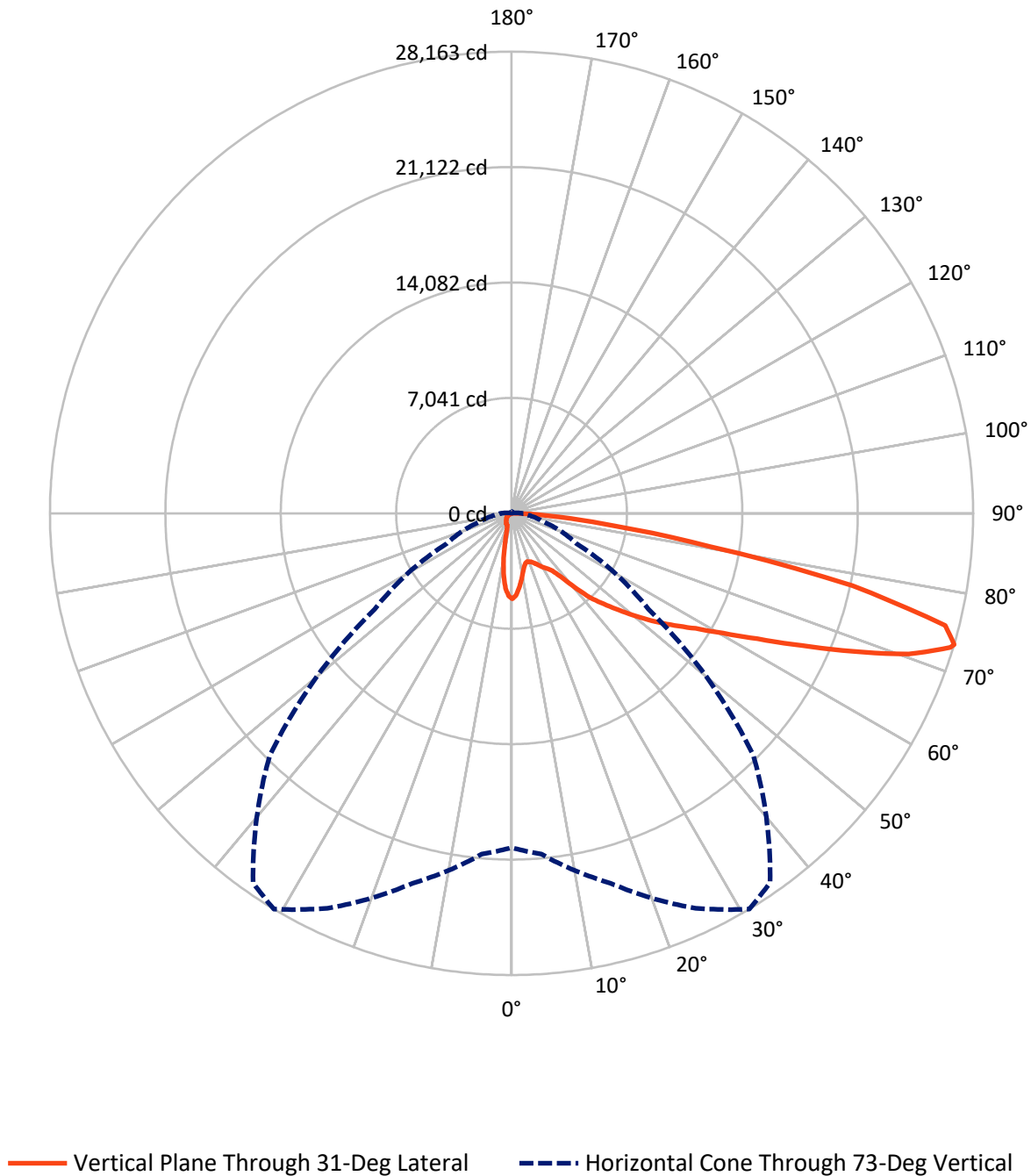
× Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 8.3 fc  
 Type IV - 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    | 2761.7   | 0.0    | 2761.7  |
|                    | % Fixture | 9.1      | 0.0    | 9.1     |
| <b>Street Side</b> | Lumens    | 27535.9  | 0.0    | 27535.9 |
|                    | % Fixture | 90.9     | 0.0    | 90.9    |
| <b>Total</b>       | Lumens    | 30297.7  | 0.0    | 30297.7 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 432.2   | 1.4       |
| 10°-20°   | 938.5   | 3.1       |
| 20°-30°   | 1406.1  | 4.6       |
| 30°-40°   | 2237.1  | 7.4       |
| 40°-50°   | 3994.8  | 13.2      |
| 50°-60°   | 6198.8  | 20.5      |
| 60°-70°   | 8240.4  | 27.2      |
| 70°-80°   | 6198.5  | 20.5      |
| 80°-90°   | 651.3   | 2.1       |
| 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°    | 30297.7 | 100.0     |
| 0°-180°   | 30297.7 | 100.0     |

**Coefficient of Utilization**



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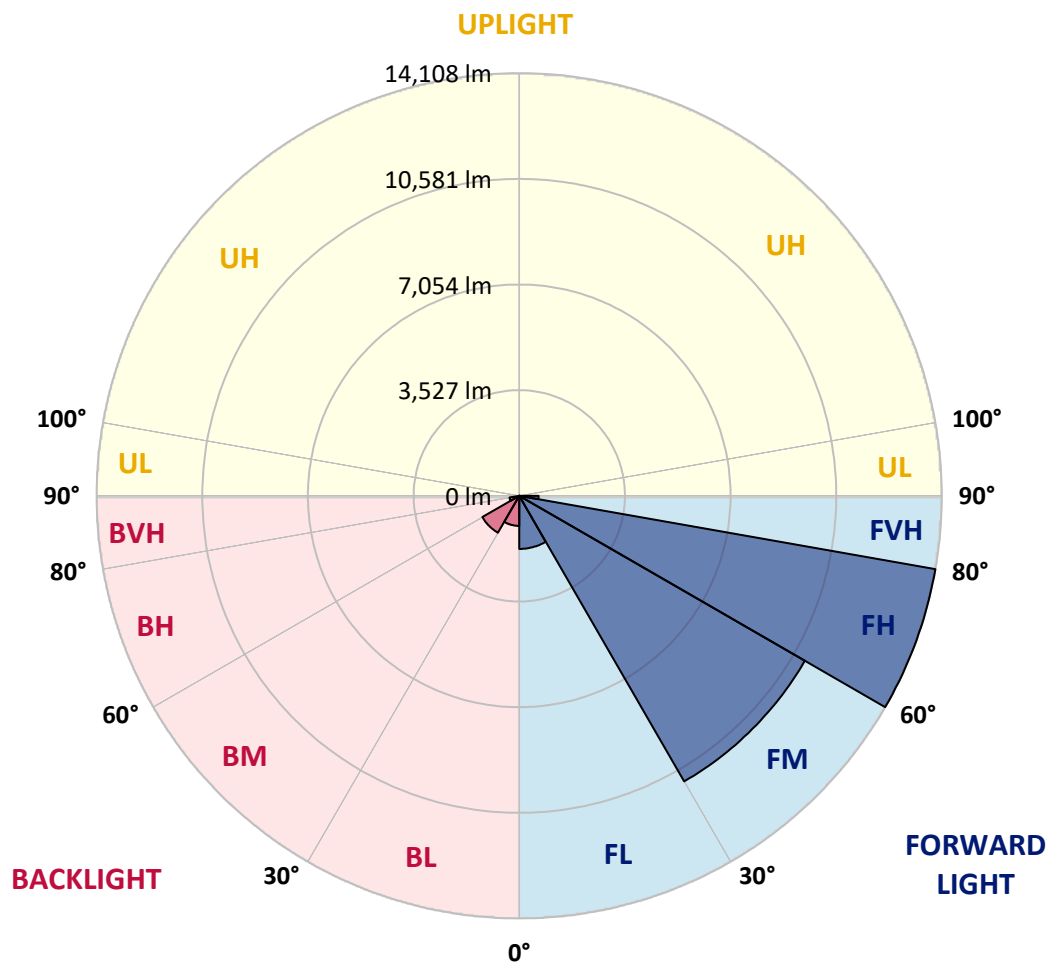
CATALOG NUMBER: GLEON-SA8B-735-U-T4FT-HSS

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |        |
|------|-------------|---------|-----------|-------------------------|------|--------|
|      |             |         |           | B                       | U    | G      |
| FL   | (0°-30°)    | 1772.5  | 5.9       |                         |      |        |
| FM   | (30°-60°)   | 11009.1 | 36.3      |                         |      |        |
| FH   | (60°-80°)   | 14108.5 | 46.6      |                         |      | G5     |
| FVH  | (80°-90°)   | 645.9   | 2.1       |                         |      | G4/750 |
| BL   | (0°-30°)    | 1004.3  | 3.3       | B3/2500                 |      |        |
| BM   | (30°-60°)   | 1421.5  | 4.7       | B2/2500                 |      |        |
| BH   | (60°-80°)   | 330.4   | 1.1       | B1/500                  |      | G1/500 |
| BVH  | (80°-90°)   | 5.5     | 0.0       |                         |      | G0/10  |
| UL   | (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |        |
| UH   | (100°-180°) | 0.0     | 0.0       |                         | U0/0 |        |

**BUG Rating: B3-U0-G5**

Type IV Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 31°     | 35°     | 45°     | 55°     | 65°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 5212.8  | 5212.8  | 5212.8  | 5212.8  | 5212.8  | 5212.8  | 5212.8  | 5212.8  | 5212.8  | 5212.8  | 5212.8  |
| 2.5°  | 4940.0  | 4960.8  | 4982.9  | 4987.4  | 5024.5  | 5026.0  | 5079.4  | 5119.4  | 5159.4  | 5197.9  | 5211.3  |
| 5°    | 4433.0  | 4467.1  | 4507.1  | 4547.1  | 4625.7  | 4656.8  | 4787.3  | 4920.7  | 5048.2  | 5169.8  | 5229.1  |
| 7.5°  | 3891.8  | 3930.3  | 3986.7  | 4086.0  | 4173.5  | 4234.3  | 4440.3  | 4677.6  | 4914.8  | 5138.6  | 5267.6  |
| 10°   | 3398.1  | 3433.7  | 3492.9  | 3598.2  | 3733.2  | 3816.2  | 4093.4  | 4422.5  | 4770.9  | 5110.5  | 5325.5  |
| 12.5° | 3083.8  | 3103.1  | 3135.7  | 3248.3  | 3369.9  | 3463.3  | 3789.5  | 4197.2  | 4652.3  | 5109.0  | 5418.8  |
| 15°   | 3025.9  | 3031.9  | 3005.2  | 3055.6  | 3150.5  | 3240.9  | 3571.6  | 4014.9  | 4561.9  | 5132.7  | 5540.4  |
| 17.5° | 3117.9  | 3114.9  | 3025.9  | 3020.0  | 3095.6  | 3169.8  | 3464.8  | 3888.8  | 4498.2  | 5187.6  | 5697.6  |
| 20°   | 3257.2  | 3246.9  | 3092.6  | 3064.5  | 3144.5  | 3214.2  | 3457.3  | 3841.4  | 4474.4  | 5279.5  | 5888.9  |
| 22.5° | 3442.5  | 3424.7  | 3183.1  | 3153.5  | 3239.5  | 3312.1  | 3549.3  | 3887.3  | 4495.2  | 5402.5  | 6111.2  |
| 25°   | 3672.3  | 3645.7  | 3338.8  | 3306.2  | 3393.6  | 3466.3  | 3713.9  | 4019.3  | 4557.5  | 5552.3  | 6392.9  |
| 27.5° | 3931.8  | 3893.3  | 3587.9  | 3503.4  | 3602.7  | 3678.3  | 3933.3  | 4220.9  | 4655.3  | 5710.9  | 6738.3  |
| 30°   | 4176.4  | 4126.0  | 3850.3  | 3710.9  | 3832.5  | 3917.0  | 4170.5  | 4461.1  | 4812.5  | 5955.6  | 7211.3  |
| 32.5° | 4422.5  | 4366.3  | 4084.6  | 3918.5  | 4028.2  | 4120.1  | 4415.2  | 4791.7  | 5107.5  | 6329.1  | 7839.9  |
| 35°   | 4988.9  | 4929.6  | 4584.1  | 4309.9  | 4308.4  | 4360.3  | 4757.6  | 5243.9  | 5497.4  | 6849.6  | 8590.1  |
| 37.5° | 5942.2  | 5908.1  | 5578.9  | 5058.6  | 4919.2  | 4861.4  | 5224.7  | 5783.6  | 6057.9  | 7565.7  | 9436.7  |
| 40°   | 6986.0  | 6956.3  | 6587.2  | 6115.7  | 5903.7  | 5761.3  | 5894.7  | 6535.3  | 6849.6  | 8440.4  | 10301.1 |
| 42.5° | 8164.6  | 8023.8  | 7365.5  | 7224.6  | 7034.9  | 6926.6  | 6806.5  | 7461.9  | 7822.1  | 9392.1  | 11158.0 |
| 45°   | 9235.0  | 8997.8  | 8143.9  | 7930.4  | 7887.3  | 7914.1  | 7980.8  | 8707.3  | 8916.3  | 10523.4 | 12011.9 |
| 47.5° | 9872.5  | 9685.8  | 9030.4  | 8825.9  | 8813.9  | 8990.4  | 9494.5  | 10114.2 | 10005.9 | 11509.4 | 12763.6 |
| 50°   | 10478.9 | 10309.9 | 9765.8  | 9816.2  | 9871.1  | 10111.2 | 11212.8 | 11561.3 | 11000.8 | 12403.3 | 13452.9 |
| 52.5° | 10969.6 | 10711.7 | 10427.0 | 10710.2 | 10980.1 | 11367.0 | 12986.0 | 12859.9 | 11706.5 | 13115.0 | 14043.1 |
| 55°   | 11252.8 | 11135.7 | 11273.6 | 11558.3 | 12065.3 | 12693.9 | 14659.9 | 13940.8 | 12222.5 | 13764.4 | 14435.9 |
| 57.5° | 12290.7 | 12060.8 | 12335.1 | 12581.2 | 13242.4 | 14121.6 | 16093.5 | 14745.8 | 12594.6 | 14166.1 | 14526.4 |
| 60°   | 13546.4 | 13361.1 | 13522.6 | 13931.9 | 14824.4 | 15857.7 | 17433.7 | 15402.6 | 12788.8 | 14424.1 | 14292.2 |
| 62.5° | 15544.9 | 15300.3 | 15199.5 | 15657.6 | 16840.7 | 17968.9 | 18450.8 | 15857.7 | 12745.8 | 14310.0 | 13488.5 |
| 65°   | 18222.5 | 17968.9 | 17518.2 | 17933.4 | 19438.2 | 20234.3 | 19587.9 | 15954.1 | 12449.3 | 13386.2 | 11457.4 |
| 67.5° | 20965.2 | 20781.4 | 20396.0 | 21095.7 | 22453.7 | 22710.3 | 20790.3 | 15719.9 | 11494.5 | 10854.0 | 8095.0  |
| 70°   | 22777.0 | 22698.4 | 22949.0 | 24496.8 | 25708.0 | 25634.0 | 21893.3 | 14461.2 | 8959.3  | 6674.6  | 4004.4  |
| 72.5° | 21470.8 | 21847.4 | 23697.6 | 26504.2 | 27983.8 | 27378.9 | 21327.0 | 11104.6 | 5120.8  | 2567.8  | 1157.9  |
| 73°   | 20388.5 | 20870.4 | 23361.1 | 26579.8 | 28163.2 | 27500.5 | 20851.1 | 10192.8 | 4364.8  | 2026.7  | 877.7   |
| 75°   | 14183.9 | 14775.5 | 19340.3 | 24754.8 | 27324.1 | 26201.7 | 17380.3 | 6238.8  | 2022.2  | 898.5   | 354.4   |
| 77.5° | 6886.7  | 7324.0  | 10649.5 | 17885.9 | 21249.9 | 20471.6 | 10819.9 | 2324.7  | 913.3   | 561.9   | 163.1   |
| 80°   | 2570.8  | 2858.5  | 4622.7  | 9103.1  | 12280.2 | 12602.0 | 4759.1  | 879.2   | 607.8   | 452.2   | 83.0    |
| 82.5° | 673.1   | 750.2   | 1705.0  | 4059.3  | 6293.5  | 6587.2  | 1500.4  | 443.3   | 444.8   | 372.2   | 50.4    |
| 85°   | 215.0   | 246.1   | 532.3   | 1822.1  | 2965.2  | 2603.4  | 391.4   | 215.0   | 323.2   | 277.2   | 28.1    |
| 87.5° | 26.6    | 34.1    | 169.0   | 428.5   | 653.9   | 363.2   | 60.8    | 63.7    | 137.9   | 154.2   | 16.3    |
| 90°   | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     |



REPORT NUMBER: P383546

CATALOG NUMBER: GLEON-SA8B-735-U-T4FT-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 5212.8  | 5212.8 | 5212.8 | 5212.8 | 5212.8 | 5212.8 | 5212.8 | 5212.8 | 5212.8 | 5212.8 | 5212.8 |
| 2.5°  | 5224.7  | 5217.2 | 5218.7 | 5180.1 | 5155.0 | 5104.5 | 5052.6 | 5029.0 | 5003.7 | 4993.4 | 5003.7 |
| 5°    | 5251.3  | 5238.0 | 5199.4 | 5080.8 | 4954.8 | 4791.7 | 4639.0 | 4523.4 | 4378.1 | 4338.0 | 4379.6 |
| 7.5°  | 5292.9  | 5266.1 | 5153.5 | 4911.8 | 4631.6 | 4320.2 | 3970.3 | 3715.4 | 3506.3 | 3371.4 | 3420.4 |
| 10°   | 5353.6  | 5303.2 | 5076.4 | 4665.7 | 4164.6 | 3613.1 | 3116.4 | 2729.4 | 2455.2 | 2342.5 | 2338.0 |
| 12.5° | 5455.9  | 5361.1 | 4981.5 | 4345.5 | 3593.8 | 2858.5 | 2207.6 | 1788.0 | 1565.7 | 1421.8 | 1418.8 |
| 15°   | 5568.6  | 5429.2 | 4861.4 | 3961.5 | 2929.6 | 2047.4 | 1421.8 | 1103.0 | 959.2  | 913.3  | 907.3  |
| 17.5° | 5706.5  | 5507.8 | 4705.7 | 3488.6 | 2234.2 | 1356.6 | 928.1  | 836.2  | 830.3  | 825.8  | 825.8  |
| 20°   | 5879.9  | 5601.2 | 4505.6 | 2947.4 | 1584.8 | 905.8  | 788.7  | 794.7  | 797.6  | 791.7  | 793.2  |
| 22.5° | 6081.6  | 5696.1 | 4266.9 | 2366.2 | 1071.9 | 757.6  | 754.6  | 762.0  | 765.0  | 762.0  | 763.5  |
| 25°   | 6315.8  | 5805.8 | 3976.3 | 1756.9 | 773.9  | 719.1  | 726.4  | 736.9  | 744.2  | 744.2  | 744.2  |
| 27.5° | 6606.4  | 5939.3 | 3626.4 | 1226.1 | 668.7  | 679.0  | 699.8  | 719.1  | 729.4  | 732.4  | 732.4  |
| 30°   | 6984.5  | 6105.3 | 3206.9 | 840.6  | 607.8  | 625.6  | 664.2  | 701.3  | 720.6  | 723.5  | 725.0  |
| 32.5° | 7461.9  | 6292.1 | 2720.6 | 621.2  | 555.9  | 569.3  | 610.8  | 673.1  | 710.1  | 716.1  | 716.1  |
| 35°   | 8008.9  | 6508.5 | 2197.1 | 541.1  | 518.9  | 523.3  | 555.9  | 627.1  | 692.3  | 708.7  | 710.1  |
| 37.5° | 8607.9  | 6722.0 | 1670.9 | 505.6  | 487.8  | 487.8  | 511.5  | 572.2  | 649.4  | 699.8  | 705.7  |
| 40°   | 9166.8  | 6851.1 | 1171.2 | 477.4  | 459.6  | 459.6  | 480.4  | 524.8  | 597.5  | 673.1  | 689.4  |
| 42.5° | 9682.8  | 6895.5 | 815.4  | 450.7  | 432.9  | 437.4  | 455.2  | 490.7  | 545.6  | 621.2  | 636.1  |
| 45°   | 10213.6 | 6888.1 | 594.5  | 419.6  | 406.2  | 419.6  | 432.9  | 459.6  | 499.6  | 542.6  | 545.6  |
| 47.5° | 10613.9 | 6825.8 | 471.5  | 389.9  | 381.0  | 398.8  | 410.7  | 428.5  | 450.7  | 447.7  | 447.7  |
| 50°   | 10988.9 | 6674.6 | 379.5  | 349.9  | 355.9  | 376.5  | 382.5  | 388.5  | 389.9  | 361.7  | 358.8  |
| 52.5° | 11273.6 | 6438.9 | 304.0  | 306.9  | 330.6  | 351.4  | 345.4  | 336.6  | 321.8  | 287.7  | 281.7  |
| 55°   | 11368.5 | 5985.2 | 238.7  | 253.6  | 293.5  | 320.3  | 298.0  | 278.7  | 250.6  | 222.4  | 216.5  |
| 57.5° | 11196.5 | 5399.6 | 194.2  | 197.2  | 247.6  | 269.9  | 244.6  | 222.4  | 191.2  | 167.5  | 163.1  |
| 60°   | 10831.8 | 4748.8 | 160.1  | 148.3  | 191.2  | 210.5  | 194.2  | 172.0  | 143.8  | 126.0  | 124.5  |
| 62.5° | 10108.3 | 4054.8 | 131.9  | 115.6  | 145.3  | 161.6  | 151.2  | 134.9  | 111.2  | 99.3   | 97.8   |
| 65°   | 8587.1  | 3243.9 | 106.8  | 93.4   | 112.7  | 126.0  | 117.1  | 105.3  | 87.5   | 78.6   | 77.1   |
| 67.5° | 5994.1  | 2192.8 | 87.5   | 77.1   | 89.0   | 99.3   | 91.9   | 86.0   | 69.7   | 68.2   | 69.7   |
| 70°   | 2891.1  | 1057.1 | 72.7   | 62.2   | 69.7   | 77.1   | 74.2   | 69.7   | 66.7   | 77.1   | 89.0   |
| 72.5° | 828.8   | 354.4  | 57.8   | 51.9   | 56.4   | 60.8   | 63.7   | 62.2   | 72.7   | 93.4   | 108.2  |
| 73°   | 637.6   | 286.2  | 54.9   | 48.9   | 53.4   | 59.3   | 62.2   | 60.8   | 74.2   | 94.9   | 108.2  |
| 75°   | 272.8   | 137.9  | 41.5   | 40.1   | 44.4   | 51.9   | 54.9   | 54.9   | 74.2   | 96.3   | 103.8  |
| 77.5° | 123.1   | 74.2   | 26.6   | 31.1   | 38.6   | 41.5   | 45.9   | 45.9   | 59.3   | 74.2   | 74.2   |
| 80°   | 69.7    | 40.1   | 20.8   | 23.8   | 28.1   | 28.1   | 28.1   | 25.2   | 26.6   | 29.6   | 32.6   |
| 82.5° | 44.4    | 26.6   | 16.3   | 19.3   | 17.8   | 14.8   | 11.8   | 11.8   | 10.3   | 11.8   | 14.8   |
| 85°   | 25.2    | 14.8   | 14.8   | 11.8   | 7.5    | 6.0    | 7.5    | 6.0    | 1.5    | 0.0    | 1.5    |
| 87.5° | 14.8    | 8.8    | 4.5    | 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

All Brands

Data applicable to all product families using SA light engines

Report Number: SP1-2101-121-7

Luminaire Tested: IFLD-S-SA2A-735-U-T2

Test Date: 03/04/2021

### Test Information

Test Method: LM-79-08  
 Report Number: SP1-2101-121-7  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1  
 Measurement Geometry:  $4\pi$   
 Issue Date: 03/04/2021  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: STREETWORKS  
 Catalog Number: **IFLD-S-SA2A-735-U-T2**  
 Description: STREETWORKS INF FLOOD

PROGRAMMED @ 615mA.

### Spectral Parameters

|                           |        |           |      |      |       |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K):                  | 3388   | CRI (Ra): | 73.1 |      |       |
| CIE u':                   | 0.2371 | R1:       | 68.9 | R9:  | -34.6 |
| CIE v':                   | 0.5177 | R2:       | 81.1 | R10: | 57.8  |
| Duv:                      | 0.0032 | R3:       | 93.1 | R11: | 68.6  |
| CIE x:                    | 0.4153 | R4:       | 71.6 | R12: | 53.9  |
| CIE y:                    | 0.4030 | R5:       | 69.4 | R13: | 70.9  |
| CIE z:                    | 0.1817 | R6:       | 75.0 | R14: | 96.2  |
| Peak Wavelength (nm):     | 590    | R7:       | 79.5 |      |       |
| Dominant Wavelength (nm): | 580    | R8:       | 46.4 |      |       |
| Purity:                   | 45.7   |           |      |      |       |
| Rf:                       | 76.9   |           |      |      |       |
| Rg:                       | 94.4   |           |      |      |       |



### Test Conditions

Stabilization Time: 81M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.0/30%  
 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**



Point lies inside the ANSI 3500K 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       | 2672             | 0.0              | 490       | 34553            | 4.9              | 620       | 136720           | 35.6             | 750       | 5870             | 0.0              | 880       | 4216             | 0.0              |
| 365       | 2252             | 0.0              | 495       | 44336            | 8.0              | 625       | 126308           | 27.9             | 755       | 5421             | 0.0              | 885       | 4132             | 0.0              |
| 370       | 2217             | 0.0              | 500       | 54643            | 12.1             | 630       | 114625           | 20.7             | 760       | 5097             | 0.0              | 890       | 3992             | 0.0              |
| 375       | 2697             | 0.0              | 505       | 64676            | 18.1             | 635       | 103216           | 15.5             | 765       | 4626             | 0.0              | 895       | 3214             | 0.0              |
| 380       | 3039             | 0.0              | 510       | 73825            | 25.4             | 640       | 92605            | 11.1             | 770       | 3782             | 0.0              | 900       | 2580             | 0.0              |
| 385       | 2655             | 0.0              | 515       | 81872            | 33.9             | 645       | 83234            | 8.0              | 775       | 3506             | 0.0              | 905       | 1776             | 0.0              |
| 390       | 2357             | 0.0              | 520       | 88574            | 43.0             | 650       | 73263            | 5.4              | 780       | 3507             | 0.0              | 910       | 3995             | 0.0              |
| 395       | 2186             | 0.0              | 525       | 93289            | 50.1             | 655       | 64627            | 3.7              | 785       | 3267             | 0.0              | 915       | 4288             | 0.0              |
| 400       | 2015             | 0.0              | 530       | 98393            | 57.9             | 660       | 56614            | 2.4              | 790       | 2849             | 0.0              | 920       | 2446             | 0.0              |
| 405       | 2234             | 0.0              | 535       | 103269           | 64.0             | 665       | 49537            | 1.6              | 795       | 3037             | 0.0              | 925       | 3009             | 0.0              |
| 410       | 3412             | 0.0              | 540       | 107316           | 69.9             | 670       | 42866            | 0.9              | 800       | 2716             | 0.0              | 930       | 3026             | 0.0              |
| 415       | 6135             | 0.0              | 545       | 113101           | 75.3             | 675       | 36708            | 0.6              | 805       | 2648             | 0.0              | 935       | 4734             | 0.0              |
| 420       | 12146            | 0.0              | 550       | 120690           | 82.0             | 680       | 31814            | 0.4              | 810       | 3187             | 0.0              | 940       | 3719             | 0.0              |
| 425       | 23983            | 0.1              | 555       | 128583           | 87.8             | 685       | 27485            | 0.2              | 815       | 2931             | 0.0              | 945       | 1480             | 0.0              |
| 430       | 42142            | 0.3              | 560       | 137796           | 93.6             | 690       | 23698            | 0.1              | 820       | 2717             | 0.0              | 950       | 3450             | 0.0              |
| 435       | 68228            | 0.8              | 565       | 146577           | 97.5             | 695       | 20309            | 0.1              | 825       | 2236             | 0.0              | 955       | 5051             | 0.0              |
| 440       | 99323            | 1.6              | 570       | 154581           | 100.5            | 700       | 17890            | 0.1              | 830       | 2628             | 0.0              | 960       | 3176             | 0.0              |
| 445       | 115584           | 2.4              | 575       | 162633           | 101.2            | 705       | 15500            | 0.0              | 835       | 3140             | 0.0              | 965       | 5178             | 0.0              |
| 450       | 94997            | 2.5              | 580       | 168101           | 99.9             | 710       | 13699            | 0.0              | 840       | 3675             | 0.0              | 970       | 6385             | 0.0              |
| 455       | 61433            | 2.1              | 585       | 173145           | 96.2             | 715       | 12398            | 0.0              | 845       | 3283             | 0.0              | 975       | 3810             | 0.0              |
| 460       | 43373            | 1.8              | 590       | 174675           | 90.3             | 720       | 11147            | 0.0              | 850       | 3055             | 0.0              | 980       | 4322             | 0.0              |
| 465       | 32472            | 1.7              | 595       | 173724           | 82.3             | 725       | 9761             | 0.0              | 855       | 2932             | 0.0              | 985       | 4200             | 0.0              |
| 470       | 24257            | 1.5              | 600       | 171241           | 73.8             | 730       | 8651             | 0.0              | 860       | 3382             | 0.0              | 990       | 4661             | 0.0              |
| 475       | 21690            | 1.7              | 605       | 165134           | 64.0             | 735       | 7730             | 0.0              | 865       | 2605             | 0.0              | 995       | 6746             | 0.0              |
| 480       | 23173            | 2.2              | 610       | 156652           | 53.8             | 740       | 6847             | 0.0              | 870       | 3325             | 0.0              | 1000      | 4150             | 0.0              |
| 485       | 27564            | 3.3              | 615       | 147879           | 44.6             | 745       | 6124             | 0.0              | 875       | 3325             | 0.0              |           |                  |                  |

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### Scotopic Flux vs. Wavelength



Scotopic Lumens: 12126

S/P: 1.36

| 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       | 2672             | 0.0              | 490       | 34553            | 53.2             | 620       | 136720           | 1.7              | 750       | 5870             | 0.0              | 880       | 4216             | 0.0              |
| 365       | 2252             | 0.0              | 495       | 44336            | 71.7             | 625       | 126308           | 1.1              | 755       | 5421             | 0.0              | 885       | 4132             | 0.0              |
| 370       | 2217             | 0.0              | 500       | 54643            | 91.4             | 630       | 114625           | 0.6              | 760       | 5097             | 0.0              | 890       | 3992             | 0.0              |
| 375       | 2697             | 0.0              | 505       | 64676            | 110.0            | 635       | 103216           | 0.4              | 765       | 4626             | 0.0              | 895       | 3214             | 0.0              |
| 380       | 3039             | 0.0              | 510       | 73825            | 125.1            | 640       | 92605            | 0.2              | 770       | 3782             | 0.0              | 900       | 2580             | 0.0              |
| 385       | 2655             | 0.0              | 515       | 81872            | 135.7            | 645       | 83234            | 0.1              | 775       | 3506             | 0.0              | 905       | 1776             | 0.0              |
| 390       | 2357             | 0.0              | 520       | 88574            | 140.8            | 650       | 73263            | 0.1              | 780       | 3507             | 0.0              | 910       | 3995             | 0.0              |
| 395       | 2186             | 0.0              | 525       | 93289            | 139.6            | 655       | 64627            | 0.1              | 785       | 3267             | 0.0              | 915       | 4288             | 0.0              |
| 400       | 2015             | 0.0              | 530       | 98393            | 135.7            | 660       | 56614            | 0.0              | 790       | 2849             | 0.0              | 920       | 2446             | 0.0              |
| 405       | 2234             | 0.1              | 535       | 103269           | 128.7            | 665       | 49537            | 0.0              | 795       | 3037             | 0.0              | 925       | 3009             | 0.0              |
| 410       | 3412             | 0.2              | 540       | 107316           | 118.6            | 670       | 42866            | 0.0              | 800       | 2716             | 0.0              | 930       | 3026             | 0.0              |
| 415       | 6135             | 0.6              | 545       | 113101           | 108.4            | 675       | 36708            | 0.0              | 805       | 2648             | 0.0              | 935       | 4734             | 0.0              |
| 420       | 12146            | 2.0              | 550       | 120690           | 98.7             | 680       | 31814            | 0.0              | 810       | 3187             | 0.0              | 940       | 3719             | 0.0              |
| 425       | 23983            | 5.9              | 555       | 128583           | 87.9             | 685       | 27485            | 0.0              | 815       | 2931             | 0.0              | 945       | 1480             | 0.0              |
| 430       | 42142            | 14.3             | 560       | 137796           | 77.0             | 690       | 23698            | 0.0              | 820       | 2717             | 0.0              | 950       | 3450             | 0.0              |
| 435       | 68228            | 30.5             | 565       | 146577           | 65.8             | 695       | 20309            | 0.0              | 825       | 2236             | 0.0              | 955       | 5051             | 0.0              |
| 440       | 99323            | 55.5             | 570       | 154581           | 54.6             | 700       | 17890            | 0.0              | 830       | 2628             | 0.0              | 960       | 3176             | 0.0              |
| 445       | 115584           | 77.4             | 575       | 162633           | 44.3             | 705       | 15500            | 0.0              | 835       | 3140             | 0.0              | 965       | 5178             | 0.0              |
| 450       | 94997            | 73.6             | 580       | 168101           | 34.6             | 710       | 13699            | 0.0              | 840       | 3675             | 0.0              | 970       | 6385             | 0.0              |
| 455       | 61433            | 53.7             | 585       | 173145           | 26.5             | 715       | 12398            | 0.0              | 845       | 3283             | 0.0              | 975       | 3810             | 0.0              |
| 460       | 43373            | 41.9             | 590       | 174675           | 19.5             | 720       | 11147            | 0.0              | 850       | 3055             | 0.0              | 980       | 4322             | 0.0              |
| 465       | 32472            | 34.3             | 595       | 173724           | 13.9             | 725       | 9761             | 0.0              | 855       | 2932             | 0.0              | 985       | 4200             | 0.0              |
| 470       | 24257            | 27.9             | 600       | 171241           | 9.7              | 730       | 8651             | 0.0              | 860       | 3382             | 0.0              | 990       | 4661             | 0.0              |
| 475       | 21690            | 27.1             | 605       | 165134           | 6.5              | 735       | 7730             | 0.0              | 865       | 2605             | 0.0              | 995       | 6746             | 0.0              |
| 480       | 23173            | 31.3             | 610       | 156652           | 4.2              | 740       | 6847             | 0.0              | 870       | 3325             | 0.0              | 1000      | 4150             | 0.0              |
| 485       | 27564            | 40.0             | 615       | 147879           | 2.7              | 745       | 6124             | 0.0              | 875       | 3325             | 0.0              |           |                  |                  |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: 4490.7

M/P: 0.5

| 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       | 2672             | 0.0              | 490       | 34553            | 28.8             | 620       | 136720           | 0.1              | 750       | 5870             | 0.0              | 880       | 4216             | 0.0              |
| 365       | 2252             | 0.0              | 495       | 44336            | 36.6             | 625       | 126308           | 0.1              | 755       | 5421             | 0.0              | 885       | 4132             | 0.0              |
| 370       | 2217             | 0.0              | 500       | 54643            | 43.9             | 630       | 114625           | 0.0              | 760       | 5097             | 0.0              | 890       | 3992             | 0.0              |
| 375       | 2697             | 0.0              | 505       | 64676            | 49.6             | 635       | 103216           | 0.0              | 765       | 4626             | 0.0              | 895       | 3214             | 0.0              |
| 380       | 3039             | 0.0              | 510       | 73825            | 53.0             | 640       | 92605            | 0.0              | 770       | 3782             | 0.0              | 900       | 2580             | 0.0              |
| 385       | 2655             | 0.0              | 515       | 81872            | 53.5             | 645       | 83234            | 0.0              | 775       | 3506             | 0.0              | 905       | 1776             | 0.0              |
| 390       | 2357             | 0.0              | 520       | 88574            | 51.6             | 650       | 73263            | 0.0              | 780       | 3507             | 0.0              | 910       | 3995             | 0.0              |
| 395       | 2186             | 0.0              | 525       | 93289            | 47.3             | 655       | 64627            | 0.0              | 785       | 3267             | 0.0              | 915       | 4288             | 0.0              |
| 400       | 2015             | 0.0              | 530       | 98393            | 42.5             | 660       | 56614            | 0.0              | 790       | 2849             | 0.0              | 920       | 2446             | 0.0              |
| 405       | 2234             | 0.0              | 535       | 103269           | 37.2             | 665       | 49537            | 0.0              | 795       | 3037             | 0.0              | 925       | 3009             | 0.0              |
| 410       | 3412             | 0.1              | 540       | 107316           | 31.4             | 670       | 42866            | 0.0              | 800       | 2716             | 0.0              | 930       | 3026             | 0.0              |
| 415       | 6135             | 0.4              | 545       | 113101           | 26.3             | 675       | 36708            | 0.0              | 805       | 2648             | 0.0              | 935       | 4734             | 0.0              |
| 420       | 12146            | 1.4              | 550       | 120690           | 21.7             | 680       | 31814            | 0.0              | 810       | 3187             | 0.0              | 940       | 3719             | 0.0              |
| 425       | 23983            | 3.7              | 555       | 128583           | 17.3             | 685       | 27485            | 0.0              | 815       | 2931             | 0.0              | 945       | 1480             | 0.0              |
| 430       | 42142            | 8.9              | 560       | 137796           | 13.6             | 690       | 23698            | 0.0              | 820       | 2717             | 0.0              | 950       | 3450             | 0.0              |
| 435       | 68228            | 18.2             | 565       | 146577           | 10.3             | 695       | 20309            | 0.0              | 825       | 2236             | 0.0              | 955       | 5051             | 0.0              |
| 440       | 99323            | 33.2             | 570       | 154581           | 7.6              | 700       | 17890            | 0.0              | 830       | 2628             | 0.0              | 960       | 3176             | 0.0              |
| 445       | 115584           | 45.6             | 575       | 162633           | 5.4              | 705       | 15500            | 0.0              | 835       | 3140             | 0.0              | 965       | 5178             | 0.0              |
| 450       | 94997            | 43.8             | 580       | 168101           | 3.8              | 710       | 13699            | 0.0              | 840       | 3675             | 0.0              | 970       | 6385             | 0.0              |
| 455       | 61433            | 32.2             | 585       | 173145           | 2.6              | 715       | 12398            | 0.0              | 845       | 3283             | 0.0              | 975       | 3810             | 0.0              |
| 460       | 43373            | 25.6             | 590       | 174675           | 1.7              | 720       | 11147            | 0.0              | 850       | 3055             | 0.0              | 980       | 4322             | 0.0              |
| 465       | 32472            | 21.2             | 595       | 173724           | 1.1              | 725       | 9761             | 0.0              | 855       | 2932             | 0.0              | 985       | 4200             | 0.0              |
| 470       | 24257            | 17.4             | 600       | 171241           | 0.7              | 730       | 8651             | 0.0              | 860       | 3382             | 0.0              | 990       | 4661             | 0.0              |
| 475       | 21690            | 16.6             | 605       | 165134           | 0.5              | 735       | 7730             | 0.0              | 865       | 2605             | 0.0              | 995       | 6746             | 0.0              |
| 480       | 23173            | 18.6             | 610       | 156652           | 0.3              | 740       | 6847             | 0.0              | 870       | 3325             | 0.0              | 1000      | 4150             | 0.0              |
| 485       | 27564            | 22.7             | 615       | 147879           | 0.2              | 745       | 6124             | 0.0              | 875       | 3325             | 0.0              |           |                  |                  |

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TM-30-18

### Summary

$R_f = 76.9$   
 $R_g = 94.4$   
 CIE  $R_a = 73.1$   
 $R_g = -34.6$

### Spectral Power Distribution Comparison



### Color Vector Graphics



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 68 | CES51 = 90 | CES76 = 63 |
| CES02 = 62 | CES27 = 88 | CES52 = 89 | CES77 = 80 |
| CES03 = 31 | CES28 = 87 | CES53 = 80 | CES78 = 65 |
| CES04 = 70 | CES29 = 67 | CES54 = 84 | CES79 = 87 |
| CES05 = 48 | CES30 = 74 | CES55 = 84 | CES80 = 86 |
| CES06 = 51 | CES31 = 71 | CES56 = 75 | CES81 = 75 |
| CES07 = 40 | CES32 = 67 | CES57 = 74 | CES82 = 94 |
| CES08 = 39 | CES33 = 74 | CES58 = 76 | CES83 = 91 |
| CES09 = 29 | CES34 = 78 | CES59 = 87 | CES84 = 89 |
| CES10 = 75 | CES35 = 89 | CES60 = 93 | CES85 = 80 |
| CES11 = 58 | CES36 = 98 | CES61 = 86 | CES86 = 66 |
| CES12 = 64 | CES37 = 86 | CES62 = 89 | CES87 = 79 |
| CES13 = 43 | CES38 = 82 | CES63 = 77 | CES88 = 79 |
| CES14 = 74 | CES39 = 95 | CES64 = 74 | CES89 = 70 |
| CES15 = 71 | CES40 = 91 | CES65 = 68 | CES90 = 77 |
| CES16 = 47 | CES41 = 89 | CES66 = 71 | CES91 = 88 |
| CES17 = 50 | CES42 = 88 | CES67 = 69 | CES92 = 60 |
| CES18 = 56 | CES43 = 82 | CES68 = 74 | CES93 = 77 |
| CES19 = 72 | CES44 = 99 | CES69 = 82 | CES94 = 52 |
| CES20 = 65 | CES45 = 87 | CES70 = 67 | CES95 = 69 |
| CES21 = 86 | CES46 = 82 | CES71 = 66 | CES96 = 78 |
| CES22 = 79 | CES47 = 82 | CES72 = 88 | CES97 = 85 |
| CES23 = 92 | CES48 = 72 | CES73 = 59 | CES98 = 76 |
| CES24 = 91 | CES49 = 82 | CES74 = 97 | CES99 = 63 |
| CES25 = 72 | CES50 = 88 | CES75 = 66 |            |



**Color Rendition by Hue-Angle Bin**


**Measure Comparisons**


(END OF REPORT)