

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: P1435102

Luminaire Tested: **GALN-SB9D-935-U-T3LG**

Issue Date: 03/24/202

This test was performed under the Supervised Manufacturer's Testing Program. The results of this test have not been influenced by sources from within Cooper Lighting Solutions or from external interests.

Report Generated By 670245763



**Test Information**

Test Method: LM-79-08  
 Report Number: P1435102  
 Test Lab: INNOVATION CENTER(G1)  
 Issue Date: 03/24/202  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: McGRAW-EDISON  
 Catalog Number: GALN-SB9D-935-U-T3LG  
 Description: GALLEON II AREA AND ROADWAY HIGH DENSITY LUMINAIRE 900mA 9xLight Square PACKAGE 90CRI 3500K FIXTURE w/ TYPE III LOW GLARE  
 Light Source: (234) 3500K CCT, 90 CRI LEDS  
 Ballast/Driver: ELECTRONIC DRIVER

Luminaire Equipment:

| <u>Sample No.</u> | <u>Condition</u> | <u>Description</u> |
|-------------------|------------------|--------------------|
| a                 | good             | reflector          |
| b                 | good             | lens               |
| c                 | good             | housing            |
| d                 | good             | cord               |

**Summary**

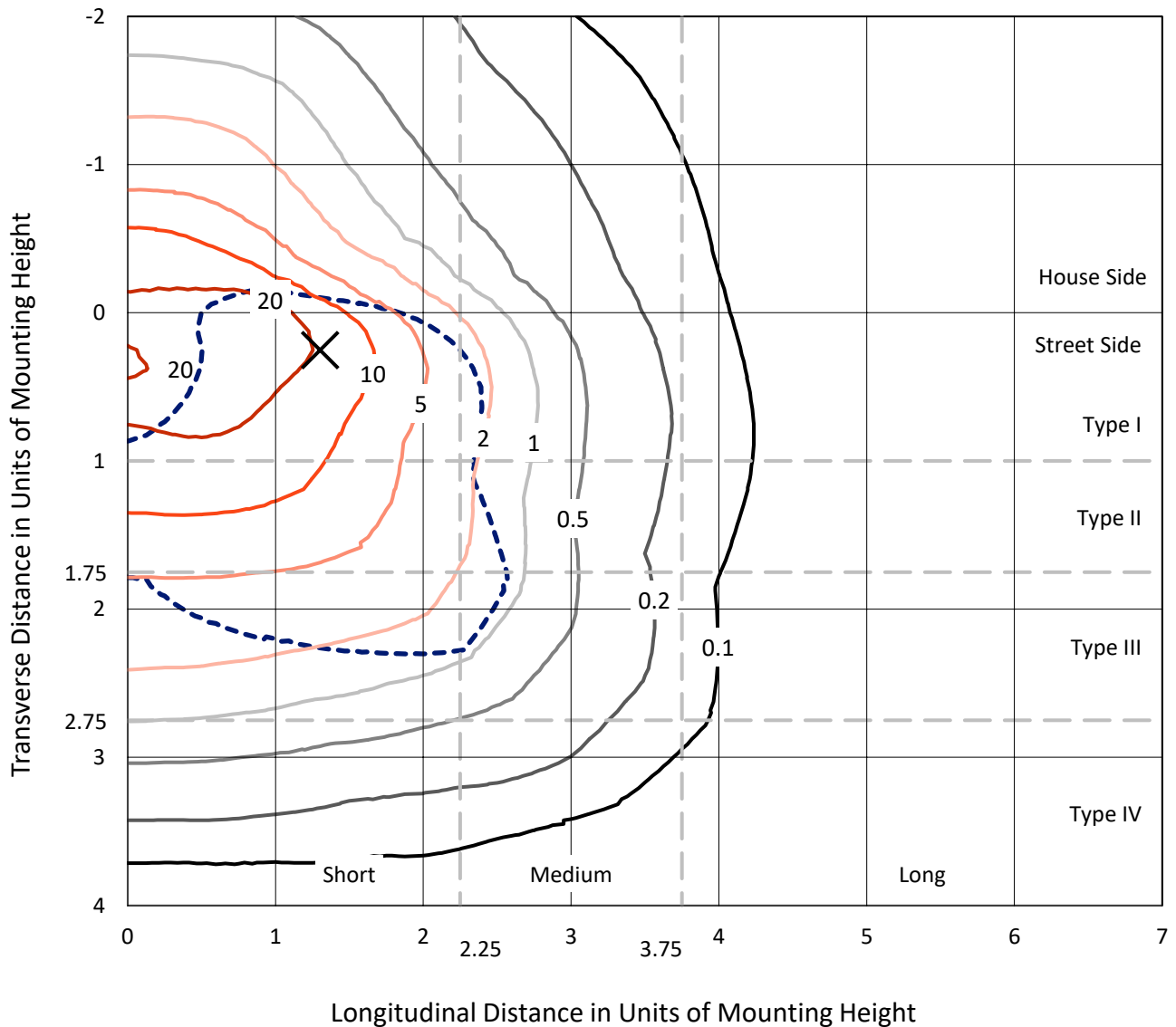
Lumens per Lamp: N/A  
 Luminaire Lumens: 62936.7 lumens  
 Efficiency: N/A  
 Efficacy: 95.6 lumens/watt  
 Luminous Opening: Rectangular (W 1.5' x L: 1.5' x H: 0')  
 IES Classification: Type III - Short  
 BUG Rating: B4 - U0 - G5

Input Watts (W): 658  
 Input Voltage (V): 120  
 Input Current (Ain): NR  
 Voltage Rise (V): NR  
 Power Factor: 0.97  
 Total Harmonic Distortion (THDi): NR  
 Frequency (hertz): 60  
 Stabilization Time: NR  
 Operation Time: NR  
 Ambient Temperature (°C): NR  
 Test Distance: 28.75 FT

REPORT NUMBER: P1435102  
 CATALOG NUMBER: GALN-SB9D-935-U-T3LG

### Iso-Footcandle Lines of Horizontal Illumination

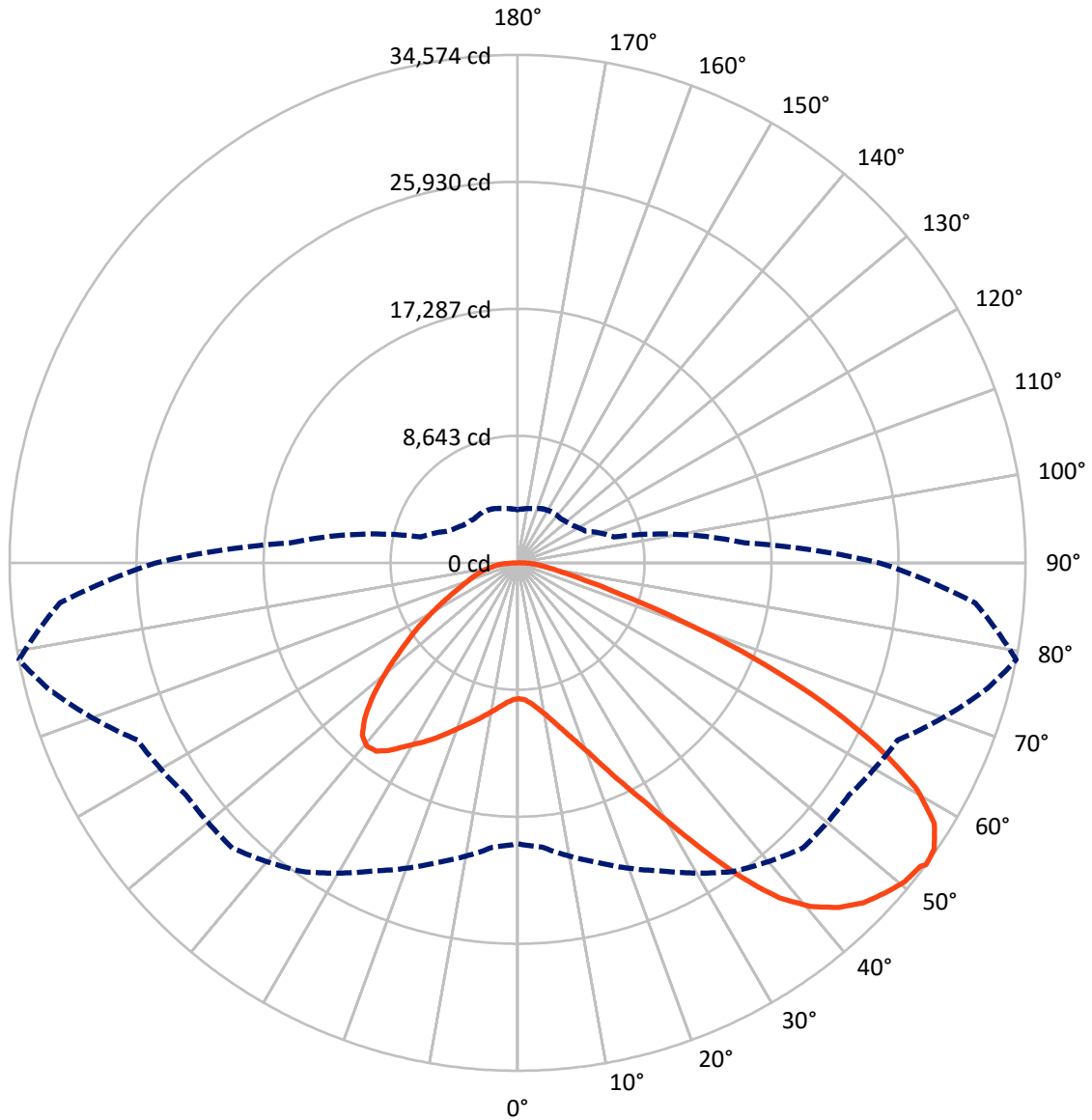
× Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 36 fc  
 Type III - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 79-Deg Lateral      - - - Horizontal Cone Through 53-Deg Vertical

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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 15865.9  | 0.0    | 15865.9 |
|                    | % Fixture | 25.2     | 0.0    | 25.2    |
| <b>Street Side</b> | Lumens    | 47070.8  | 0.0    | 47070.8 |
|                    | % Fixture | 74.8     | 0.0    | 74.8    |
| <b>Total</b>       | Lumens    | 62936.7  | 0.0    | 62936.7 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 880.4   | 1.4       |
| 10°-20°   | 2726.1  | 4.3       |
| 20°-30°   | 5212.2  | 8.3       |
| 30°-40°   | 8948.9  | 14.2      |
| 40°-50°   | 12534.7 | 19.9      |
| 50°-60°   | 14225.2 | 22.6      |
| 60°-70°   | 12474.6 | 19.8      |
| 70°-80°   | 4877.8  | 7.8       |
| 80°-90°   | 1056.9  | 1.7       |
| 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°    | 62936.7 | 100.0     |
| 0°-180°   | 62936.7 | 100.0     |

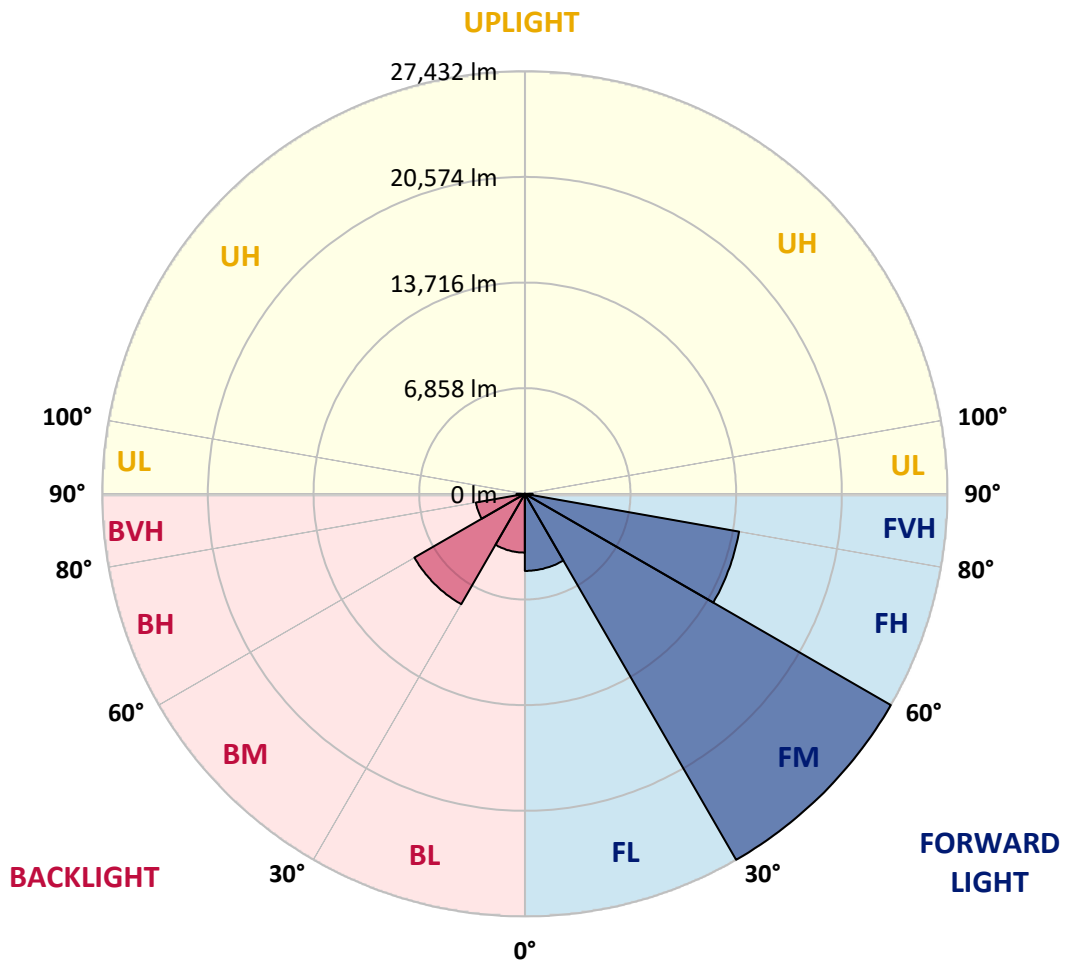


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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|---------|-----------|-------------------------|------|---------|
|                |         |           | B                       | U    | G       |
| FL (0°-30°)    | 5002.9  | 7.9       |                         |      |         |
| FM (30°-60°)   | 27431.9 | 43.6      |                         |      |         |
| FH (60°-80°)   | 14123.5 | 22.4      |                         |      | G5      |
| FVH (80°-90°)  | 512.6   | 0.8       |                         |      | G4/750  |
| BL (0°-30°)    | 3815.8  | 6.1       | B4/5000                 |      |         |
| BM (30°-60°)   | 8276.9  | 13.2      | B4/8500                 |      |         |
| BH (60°-80°)   | 3229.0  | 5.1       | B4/5000                 |      | G4/5000 |
| BVH (80°-90°)  | 544.2   | 0.9       |                         |      | G4/750  |
| UL (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |         |
| UH (100°-180°) | 0.0     | 0.0       |                         | U0/0 |         |

**BUG Rating: B4-U0-G5**  
 Type III Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 65°     | 75°     | 79°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 9239.3  | 9239.3  | 9239.3  | 9239.3  | 9239.3  | 9239.3  | 9239.3  | 9239.3  | 9239.3  | 9239.3  | 9239.3  |
| 2.5°  | 9253.3  | 9253.3  | 9197.2  | 9253.3  | 9225.2  | 9267.3  | 9295.3  | 9295.3  | 9351.4  | 9337.4  | 9337.4  |
| 5°    | 9099.1  | 9071.0  | 9057.0  | 9155.1  | 9211.2  | 9323.4  | 9449.6  | 9505.6  | 9603.8  | 9603.8  | 9617.8  |
| 7.5°  | 8692.5  | 8678.5  | 8748.6  | 8944.8  | 9127.1  | 9407.5  | 9673.9  | 9828.1  | 9982.3  | 10010.4 | 10010.4 |
| 10°   | 8440.1  | 8426.1  | 8510.2  | 8748.6  | 9043.0  | 9449.6  | 9870.2  | 10192.6 | 10445.0 | 10515.1 | 10515.1 |
| 12.5° | 8440.1  | 8440.1  | 8510.2  | 8748.6  | 9057.0  | 9547.7  | 10122.5 | 10669.3 | 11061.9 | 11146.0 | 11118.0 |
| 15°   | 8678.5  | 8664.4  | 8748.6  | 9000.9  | 9295.3  | 9758.0  | 10459.0 | 11188.1 | 11720.8 | 11875.0 | 11889.1 |
| 17.5° | 8930.8  | 8916.8  | 9043.0  | 9365.4  | 9715.9  | 10178.6 | 10893.6 | 11790.9 | 12548.0 | 12744.3 | 12786.4 |
| 20°   | 9323.4  | 9309.4  | 9463.6  | 9772.0  | 10206.7 | 10739.4 | 11482.5 | 12506.0 | 13557.5 | 13767.8 | 13823.8 |
| 22.5° | 9772.0  | 9786.0  | 9954.3  | 10332.8 | 10767.5 | 11468.5 | 12379.8 | 13515.4 | 14777.2 | 15099.7 | 15155.8 |
| 25°   | 10711.4 | 10669.3 | 10809.5 | 11075.9 | 11538.6 | 12379.8 | 13501.4 | 14735.2 | 16235.3 | 16627.9 | 16698.0 |
| 27.5° | 11959.2 | 11889.1 | 12043.3 | 12309.7 | 12646.2 | 13431.3 | 14721.1 | 16095.1 | 17903.7 | 18394.4 | 18408.4 |
| 30°   | 13080.8 | 13038.7 | 13249.0 | 13795.8 | 14146.3 | 14749.2 | 16123.1 | 17693.4 | 19964.7 | 20679.7 | 20707.7 |
| 32.5° | 14048.2 | 14034.1 | 14426.7 | 15127.7 | 15926.9 | 16571.8 | 17903.7 | 19712.3 | 22572.4 | 23399.6 | 23217.3 |
| 35°   | 14973.5 | 15015.6 | 15506.3 | 16235.3 | 17300.8 | 18590.7 | 19936.6 | 21997.6 | 25320.4 | 26315.8 | 26021.4 |
| 37.5° | 15912.8 | 15940.9 | 16585.8 | 17525.2 | 18646.8 | 20329.2 | 22137.8 | 24479.1 | 27703.8 | 28937.5 | 28292.6 |
| 40°   | 16782.1 | 16866.2 | 17735.5 | 18744.9 | 20203.0 | 21913.5 | 23932.4 | 26203.6 | 29540.4 | 30760.2 | 30059.2 |
| 42.5° | 17651.3 | 17777.5 | 18716.9 | 20104.9 | 21661.1 | 23441.7 | 25180.1 | 27255.1 | 30718.1 | 32078.1 | 30998.5 |
| 45°   | 18548.6 | 18632.7 | 19796.4 | 21240.5 | 23007.0 | 24647.4 | 25895.2 | 27928.1 | 31531.3 | 33003.4 | 31531.3 |
| 47.5° | 19151.5 | 19319.7 | 20595.6 | 22264.0 | 24030.5 | 25572.7 | 26470.0 | 28208.5 | 32050.0 | 33606.2 | 31727.5 |
| 50°   | 19389.8 | 19628.2 | 21002.2 | 22852.8 | 24871.7 | 26442.0 | 26918.6 | 28362.7 | 32624.8 | 34139.0 | 31685.5 |
| 52.5° | 19347.8 | 19572.1 | 21072.3 | 23119.2 | 25544.7 | 27241.1 | 27353.3 | 28531.0 | 33031.4 | 34321.3 | 31321.0 |
| 53°   | 19123.5 | 19431.9 | 21114.3 | 23133.2 | 25642.8 | 27451.4 | 27549.6 | 28545.0 | 33087.5 | 34573.6 | 31264.9 |
| 55°   | 18352.3 | 18520.6 | 20679.7 | 23119.2 | 26105.5 | 28236.5 | 28096.3 | 28965.6 | 33241.7 | 34405.4 | 30648.0 |
| 57.5° | 17651.3 | 17819.6 | 19698.3 | 22852.8 | 26484.0 | 29344.1 | 28979.6 | 28895.5 | 32400.5 | 33452.0 | 29091.8 |
| 60°   | 17202.7 | 17258.8 | 18843.1 | 22011.6 | 26329.8 | 30115.2 | 29554.4 | 28068.3 | 30325.5 | 31194.8 | 26357.8 |
| 62.5° | 16824.2 | 16810.1 | 18212.1 | 20805.9 | 25741.0 | 30227.4 | 29666.6 | 26021.4 | 27283.2 | 27423.4 | 22712.6 |
| 65°   | 15968.9 | 15870.8 | 17230.7 | 19445.9 | 24521.2 | 29722.7 | 28292.6 | 22922.9 | 23245.4 | 22782.7 | 18240.2 |
| 67.5° | 14272.5 | 14062.2 | 15267.9 | 17370.9 | 22039.6 | 28292.6 | 25670.9 | 19319.7 | 18324.3 | 17399.0 | 13739.7 |
| 70°   | 10220.7 | 10220.7 | 11188.1 | 13291.1 | 17693.4 | 24451.1 | 22039.6 | 14623.0 | 12618.1 | 11790.9 | 9183.2  |
| 72.5° | 5005.2  | 5131.4  | 6140.8  | 7851.3  | 11861.0 | 17749.5 | 16880.2 | 9477.6  | 7655.0  | 7248.4  | 5888.5  |
| 75°   | 2131.1  | 2145.1  | 2621.8  | 3477.0  | 6014.6  | 10501.1 | 10571.2 | 5467.8  | 4907.0  | 4710.8  | 3897.6  |
| 77.5° | 1486.1  | 1514.2  | 1724.5  | 2046.9  | 2860.1  | 4822.9  | 5495.9  | 3308.8  | 3294.7  | 3154.5  | 2776.0  |
| 80°   | 1135.6  | 1163.7  | 1303.9  | 1528.2  | 1920.8  | 2467.5  | 2846.1  | 2243.2  | 2355.4  | 2215.2  | 2004.9  |
| 82.5° | 855.2   | 883.3   | 981.4   | 1149.7  | 1374.0  | 1654.4  | 1598.3  | 1654.4  | 1738.5  | 1654.4  | 1444.1  |
| 85°   | 574.8   | 588.8   | 658.9   | 799.1   | 883.3   | 995.4   | 995.4   | 1205.7  | 1261.8  | 1233.8  | 1135.6  |
| 87.5° | 294.4   | 294.4   | 350.5   | 420.6   | 448.6   | 462.7   | 406.6   | 532.8   | 602.9   | 658.9   | 532.8   |
| 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: P1435102  
 CATALOG NUMBER: GALN-SB9D-935-U-T3LG

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°     | 105°    | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 9239.3  | 9239.3  | 9239.3  | 9239.3 | 9239.3 | 9239.3 | 9239.3 | 9239.3 | 9239.3 | 9239.3 | 9239.3 |
| 2.5°  | 9337.4  | 9351.4  | 9309.4  | 9295.3 | 9281.3 | 9211.2 | 9211.2 | 9141.1 | 9127.1 | 9141.1 | 9099.1 |
| 5°    | 9645.8  | 9617.8  | 9505.6  | 9421.5 | 9323.4 | 9127.1 | 9014.9 | 8860.7 | 8818.7 | 8776.6 | 8734.5 |
| 7.5°  | 10024.4 | 9982.3  | 9786.0  | 9561.7 | 9295.3 | 8916.8 | 8706.5 | 8454.1 | 8370.0 | 8299.9 | 8271.9 |
| 10°   | 10501.1 | 10417.0 | 10108.5 | 9631.8 | 9141.1 | 8678.5 | 8384.0 | 8075.6 | 7935.4 | 7907.4 | 7837.3 |
| 12.5° | 11118.0 | 10963.7 | 10388.9 | 9645.8 | 9000.9 | 8398.1 | 8075.6 | 7837.3 | 7781.2 | 7767.2 | 7697.1 |
| 15°   | 11804.9 | 11580.6 | 10655.3 | 9659.9 | 8818.7 | 8159.7 | 7963.4 | 7837.3 | 7837.3 | 7823.2 | 7781.2 |
| 17.5° | 12646.2 | 12281.6 | 10907.7 | 9603.8 | 8594.3 | 8089.6 | 7991.5 | 7879.3 | 7851.3 | 7865.3 | 7809.2 |
| 20°   | 13655.6 | 13052.7 | 11174.0 | 9533.7 | 8496.2 | 8103.6 | 7991.5 | 7837.3 | 7767.2 | 7753.1 | 7711.1 |
| 22.5° | 14819.3 | 13936.0 | 11468.5 | 9421.5 | 8496.2 | 8089.6 | 7907.4 | 7697.1 | 7556.8 | 7500.8 | 7444.7 |
| 25°   | 16151.2 | 14959.5 | 11776.9 | 9379.5 | 8524.2 | 8033.5 | 7739.1 | 7402.6 | 7178.3 | 7094.2 | 7052.1 |
| 27.5° | 17763.5 | 16039.0 | 12001.2 | 9421.5 | 8510.2 | 7907.4 | 7444.7 | 7010.1 | 6757.7 | 6617.5 | 6589.5 |
| 30°   | 19544.1 | 17202.7 | 12155.5 | 9491.6 | 8426.1 | 7669.0 | 7094.2 | 6603.5 | 6253.0 | 6084.7 | 6042.7 |
| 32.5° | 21647.1 | 18506.6 | 12309.7 | 9491.6 | 8215.8 | 7332.5 | 6687.6 | 6154.8 | 5790.3 | 5594.0 | 5566.0 |
| 35°   | 23974.4 | 20104.9 | 12449.9 | 9477.6 | 7963.4 | 6968.0 | 6281.0 | 5734.2 | 5355.7 | 5159.4 | 5145.4 |
| 37.5° | 25951.3 | 21310.6 | 12520.0 | 9337.4 | 7612.9 | 6547.4 | 5902.5 | 5355.7 | 4963.1 | 4752.8 | 4738.8 |
| 40°   | 27171.0 | 21815.3 | 12379.8 | 9057.0 | 7192.3 | 6112.8 | 5481.9 | 4977.1 | 4584.6 | 4332.2 | 4276.1 |
| 42.5° | 27633.7 | 21577.0 | 11931.1 | 8594.3 | 6687.6 | 5678.2 | 5131.4 | 4598.6 | 4079.9 | 3869.6 | 3827.5 |
| 45°   | 27479.5 | 20651.6 | 10977.8 | 7935.4 | 6126.8 | 5285.6 | 4822.9 | 4220.1 | 3883.6 | 3701.3 | 3687.3 |
| 47.5° | 26960.7 | 19221.6 | 9786.0  | 7108.2 | 5538.0 | 4935.1 | 4416.3 | 4121.9 | 3813.5 | 3617.2 | 3603.2 |
| 50°   | 26049.4 | 17693.4 | 8356.0  | 6168.9 | 5005.2 | 4570.6 | 4318.2 | 4079.9 | 3827.5 | 3673.3 | 3645.2 |
| 52.5° | 24885.7 | 15968.9 | 7038.1  | 5257.5 | 4542.5 | 4248.1 | 4220.1 | 4051.8 | 3855.5 | 3687.3 | 3617.2 |
| 53°   | 24619.3 | 15520.3 | 6785.7  | 5103.3 | 4472.4 | 4206.0 | 4192.0 | 4051.8 | 3827.5 | 3673.3 | 3617.2 |
| 55°   | 23343.5 | 14132.3 | 5986.6  | 4556.5 | 4121.9 | 4065.8 | 4192.0 | 4037.8 | 3757.4 | 3631.2 | 3589.2 |
| 57.5° | 21296.6 | 12309.7 | 5215.5  | 4051.8 | 3757.4 | 3897.6 | 4150.0 | 3981.7 | 3673.3 | 3449.0 | 3378.9 |
| 60°   | 18829.0 | 10220.7 | 4626.6  | 3715.3 | 3491.0 | 3687.3 | 3981.7 | 3785.4 | 3364.8 | 3252.7 | 3238.6 |
| 62.5° | 15884.8 | 8271.9  | 4178.0  | 3434.9 | 3266.7 | 3463.0 | 3729.4 | 3392.9 | 3084.4 | 3000.3 | 2972.3 |
| 65°   | 12407.8 | 6575.4  | 3827.5  | 3224.6 | 3042.4 | 3196.6 | 3378.9 | 3168.5 | 2972.3 | 2902.2 | 2888.1 |
| 67.5° | 9225.2  | 5159.4  | 3547.1  | 3042.4 | 2818.0 | 2916.2 | 3126.5 | 3070.4 | 2902.2 | 2860.1 | 2846.1 |
| 70°   | 6365.1  | 4192.0  | 3294.7  | 2874.1 | 2537.6 | 2649.8 | 2972.3 | 3014.3 | 2846.1 | 2818.0 | 2804.0 |
| 72.5° | 4458.4  | 3547.1  | 3028.3  | 2691.9 | 2313.3 | 2425.5 | 2902.2 | 2902.2 | 2719.9 | 2762.0 | 2733.9 |
| 75°   | 3350.8  | 2986.3  | 2719.9  | 2467.5 | 2032.9 | 2201.2 | 2804.0 | 2776.0 | 2593.7 | 2776.0 | 2705.9 |
| 77.5° | 2523.6  | 2411.5  | 2355.4  | 2187.1 | 1780.6 | 1948.8 | 2607.7 | 2551.7 | 2313.3 | 2327.3 | 2201.2 |
| 80°   | 1836.6  | 1864.7  | 2018.9  | 1864.7 | 1486.1 | 1612.3 | 2201.2 | 2173.1 | 1878.7 | 1934.8 | 1780.6 |
| 82.5° | 1317.9  | 1388.0  | 1724.5  | 1500.2 | 1079.5 | 1149.7 | 1514.2 | 1640.4 | 1472.1 | 1388.0 | 1416.0 |
| 85°   | 995.4   | 1037.5  | 1388.0  | 1107.6 | 673.0  | 757.1  | 1037.5 | 1177.7 | 1149.7 | 1065.5 | 1079.5 |
| 87.5° | 420.6   | 476.7   | 644.9   | 518.7  | 392.6  | 392.6  | 644.9  | 827.2  | 743.1  | 630.9  | 658.9  |
| 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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1121 Highway 74 South  
Peachtree City, GA 30269



LM-79-08: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

McGRAW-EDISON

Report Number: SP1-2106-271-3

Luminaire Tested: GFLD-SA1-A-935-U-WR-X-BK

Test Date: 06/15/2021

**Test Information**

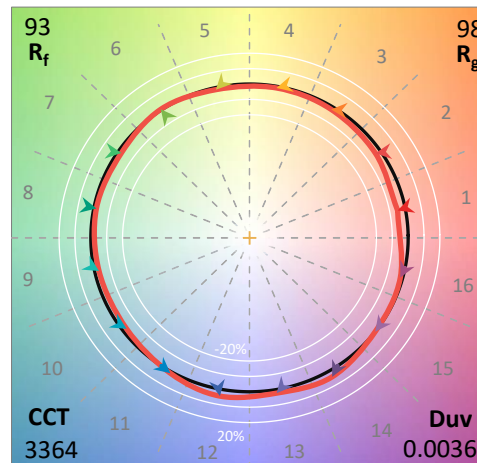
Test Method: LM-79-08  
 Report Number: SP1-2106-271-3  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1  
 Measurement Geometry: 4π  
 Issue Date: 06/15/2021  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: MCGRAW-EDISON  
 Catalog Number: **GFLD-SA1-A-935-U-WR-X-BK**  
 Description: MCGRAW EDISON

N6, BLACK

**Spectral Parameters**

CCT (K): 3364  
 CIE u': 0.2376  
 CIE v': 0.5188  
 Duv: 0.0036  
 CIE x: 0.4173  
 CIE y: 0.4050  
 CIE z: 0.1777  
 Peak Wavelength (nm): 622  
 Dominant Wavelength (nm): 580  
 Purity: 46.9  
 Rf: 92.6  
 Rg: 98.3

CRI (Ra): 92.0  
 R1: 91.7  
 R2: 94.0  
 R3: 95.5  
 R4: 93.0  
 R5: 90.9  
 R6: 92.2  
 R7: 94.8  
 R8: 84.1  
 R9: 59.7  
 R10: 85.2  
 R11: 92.8  
 R12: 78.2  
 R13: 92.0  
 R14: 96.9



**Test Conditions**

Stabilization Time: 76M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 24.8/44%  
 Sphere Temperature (°C): 24.9

REPORT NUMBER: SP1-2106-271-3

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | 76INCH SPHERE IN0058  | 1/31/2021        | 7/31/2021            |
| Power Meter                    | XITRON 2801 IN0071    | 12/1/2020        | 12/1/2021            |
| AC Power Source                | CHROMA 61603 IN0063   | 12/1/2020        | 12/1/2021            |
| DC Power Source                | AGILENT E3634A IN0208 | 12/1/2020        | 12/1/2021            |
| Sphere Thermometer             | ONSET IN0085          | 12/1/2020        | 12/1/2021            |
| Room Thermometer               | ONSET 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 (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    | 792           | NR            | 490    | 14205         | NR            | 620    | 36151         | NR            | 750    | 3427          | NR            | 880    | 712           | NR            |
| 365    | 640           | NR            | 495    | 15647         | NR            | 625    | 36077         | NR            | 755    | 3047          | NR            | 885    | 942           | NR            |
| 370    | 630           | NR            | 500    | 17088         | NR            | 630    | 35451         | NR            | 760    | 2790          | NR            | 890    | 952           | NR            |
| 375    | 684           | NR            | 505    | 18475         | NR            | 635    | 34417         | NR            | 765    | 2433          | NR            | 895    | 764           | NR            |
| 380    | 731           | NR            | 510    | 19780         | NR            | 640    | 33166         | NR            | 770    | 2178          | NR            | 900    | 743           | NR            |
| 385    | 664           | NR            | 515    | 21055         | NR            | 645    | 32124         | NR            | 775    | 1893          | NR            | 905    | 776           | NR            |
| 390    | 595           | NR            | 520    | 22268         | NR            | 650    | 30559         | NR            | 780    | 1724          | NR            | 910    | 659           | NR            |
| 395    | 520           | NR            | 525    | 23497         | NR            | 655    | 28656         | NR            | 785    | 1549          | NR            | 915    | 701           | NR            |
| 400    | 491           | NR            | 530    | 24653         | NR            | 660    | 27033         | NR            | 790    | 1451          | NR            | 920    | 728           | NR            |
| 405    | 489           | NR            | 535    | 25661         | NR            | 665    | 25030         | NR            | 795    | 1317          | NR            | 925    | 793           | NR            |
| 410    | 585           | NR            | 540    | 26289         | NR            | 670    | 22820         | NR            | 800    | 1124          | NR            | 930    | 877           | NR            |
| 415    | 826           | NR            | 545    | 26945         | NR            | 675    | 20678         | NR            | 805    | 1116          | NR            | 935    | 923           | NR            |
| 420    | 1336          | NR            | 550    | 27713         | NR            | 680    | 18748         | NR            | 810    | 1105          | NR            | 940    | 1001          | NR            |
| 425    | 2406          | NR            | 555    | 28230         | NR            | 685    | 16904         | NR            | 815    | 1073          | NR            | 945    | 604           | NR            |
| 430    | 4355          | NR            | 560    | 28678         | NR            | 690    | 15203         | NR            | 820    | 977           | NR            | 950    | 424           | NR            |
| 435    | 7911          | NR            | 565    | 29242         | NR            | 695    | 13356         | NR            | 825    | 882           | NR            | 955    | 550           | NR            |
| 440    | 13821         | NR            | 570    | 29806         | NR            | 700    | 11948         | NR            | 830    | 875           | NR            | 960    | 709           | NR            |
| 445    | 19836         | NR            | 575    | 30322         | NR            | 705    | 10482         | NR            | 835    | 944           | NR            | 965    | 755           | NR            |
| 450    | 19902         | NR            | 580    | 31125         | NR            | 710    | 9351          | NR            | 840    | 956           | NR            | 970    | 426           | NR            |
| 455    | 15697         | NR            | 585    | 31838         | NR            | 715    | 8217          | NR            | 845    | 875           | NR            | 975    | 556           | NR            |
| 460    | 13589         | NR            | 590    | 32845         | NR            | 720    | 7313          | NR            | 850    | 801           | NR            | 980    | 1040          | NR            |
| 465    | 11857         | NR            | 595    | 33487         | NR            | 725    | 6460          | NR            | 855    | 890           | NR            | 985    | 833           | NR            |
| 470    | 10336         | NR            | 600    | 34359         | NR            | 730    | 5680          | NR            | 860    | 706           | NR            | 990    | 964           | NR            |
| 475    | 10504         | NR            | 605    | 35281         | NR            | 735    | 4904          | NR            | 865    | 902           | NR            | 995    | 953           | NR            |
| 480    | 11526         | NR            | 610    | 35679         | NR            | 740    | 4372          | NR            | 870    | 879           | NR            | 1000   | 950           | NR            |
| 485    | 12831         | NR            | 615    | 36113         | NR            | 745    | 3858          | NR            | 875    | 769           | NR            |        |               |               |

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**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: 3109.5**

**S/P: 1.54**

| 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    | 792           | NR            | 490    | 14205         | NR            | 620    | 36151         | NR            | 750    | 3427          | NR            | 880    | 712           | NR            |
| 365    | 640           | NR            | 495    | 15647         | NR            | 625    | 36077         | NR            | 755    | 3047          | NR            | 885    | 942           | NR            |
| 370    | 630           | NR            | 500    | 17088         | NR            | 630    | 35451         | NR            | 760    | 2790          | NR            | 890    | 952           | NR            |
| 375    | 684           | NR            | 505    | 18475         | NR            | 635    | 34417         | NR            | 765    | 2433          | NR            | 895    | 764           | NR            |
| 380    | 731           | NR            | 510    | 19780         | NR            | 640    | 33166         | NR            | 770    | 2178          | NR            | 900    | 743           | NR            |
| 385    | 664           | NR            | 515    | 21055         | NR            | 645    | 32124         | NR            | 775    | 1893          | NR            | 905    | 776           | NR            |
| 390    | 595           | NR            | 520    | 22268         | NR            | 650    | 30559         | NR            | 780    | 1724          | NR            | 910    | 659           | NR            |
| 395    | 520           | NR            | 525    | 23497         | NR            | 655    | 28656         | NR            | 785    | 1549          | NR            | 915    | 701           | NR            |
| 400    | 491           | NR            | 530    | 24653         | NR            | 660    | 27033         | NR            | 790    | 1451          | NR            | 920    | 728           | NR            |
| 405    | 489           | NR            | 535    | 25661         | NR            | 665    | 25030         | NR            | 795    | 1317          | NR            | 925    | 793           | NR            |
| 410    | 585           | NR            | 540    | 26289         | NR            | 670    | 22820         | NR            | 800    | 1124          | NR            | 930    | 877           | NR            |
| 415    | 826           | NR            | 545    | 26945         | NR            | 675    | 20678         | NR            | 805    | 1116          | NR            | 935    | 923           | NR            |
| 420    | 1336          | NR            | 550    | 27713         | NR            | 680    | 18748         | NR            | 810    | 1105          | NR            | 940    | 1001          | NR            |
| 425    | 2406          | NR            | 555    | 28230         | NR            | 685    | 16904         | NR            | 815    | 1073          | NR            | 945    | 604           | NR            |
| 430    | 4355          | NR            | 560    | 28678         | NR            | 690    | 15203         | NR            | 820    | 977           | NR            | 950    | 424           | NR            |
| 435    | 7911          | NR            | 565    | 29242         | NR            | 695    | 13356         | NR            | 825    | 882           | NR            | 955    | 550           | NR            |
| 440    | 13821         | NR            | 570    | 29806         | NR            | 700    | 11948         | NR            | 830    | 875           | NR            | 960    | 709           | NR            |
| 445    | 19836         | NR            | 575    | 30322         | NR            | 705    | 10482         | NR            | 835    | 944           | NR            | 965    | 755           | NR            |
| 450    | 19902         | NR            | 580    | 31125         | NR            | 710    | 9351          | NR            | 840    | 956           | NR            | 970    | 426           | NR            |
| 455    | 15697         | NR            | 585    | 31838         | NR            | 715    | 8217          | NR            | 845    | 875           | NR            | 975    | 556           | NR            |
| 460    | 13589         | NR            | 590    | 32845         | NR            | 720    | 7313          | NR            | 850    | 801           | NR            | 980    | 1040          | NR            |
| 465    | 11857         | NR            | 595    | 33487         | NR            | 725    | 6460          | NR            | 855    | 890           | NR            | 985    | 833           | NR            |
| 470    | 10336         | NR            | 600    | 34359         | NR            | 730    | 5680          | NR            | 860    | 706           | NR            | 990    | 964           | NR            |
| 475    | 10504         | NR            | 605    | 35281         | NR            | 735    | 4904          | NR            | 865    | 902           | NR            | 995    | 953           | NR            |
| 480    | 11526         | NR            | 610    | 35679         | NR            | 740    | 4372          | NR            | 870    | 879           | NR            | 1000   | 950           | NR            |
| 485    | 12831         | NR            | 615    | 36113         | NR            | 745    | 3858          | NR            | 875    | 769           | NR            |        |               |               |

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Melanopic Flux vs. Wavelength



Melanopic Lumens: 1210.8 S/P: 0.6

| 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    | 792           | NR            | 490    | 14205         | NR            | 620    | 36151         | NR            | 750    | 3427          | NR            | 880    | 712           | NR            |
| 365    | 640           | NR            | 495    | 15647         | NR            | 625    | 36077         | NR            | 755    | 3047          | NR            | 885    | 942           | NR            |
| 370    | 630           | NR            | 500    | 17088         | NR            | 630    | 35451         | NR            | 760    | 2790          | NR            | 890    | 952           | NR            |
| 375    | 684           | NR            | 505    | 18475         | NR            | 635    | 34417         | NR            | 765    | 2433          | NR            | 895    | 764           | NR            |
| 380    | 731           | NR            | 510    | 19780         | NR            | 640    | 33166         | NR            | 770    | 2178          | NR            | 900    | 743           | NR            |
| 385    | 664           | NR            | 515    | 21055         | NR            | 645    | 32124         | NR            | 775    | 1893          | NR            | 905    | 776           | NR            |
| 390    | 595           | NR            | 520    | 22268         | NR            | 650    | 30559         | NR            | 780    | 1724          | NR            | 910    | 659           | NR            |
| 395    | 520           | NR            | 525    | 23497         | NR            | 655    | 28656         | NR            | 785    | 1549          | NR            | 915    | 701           | NR            |
| 400    | 491           | NR            | 530    | 24653         | NR            | 660    | 27033         | NR            | 790    | 1451          | NR            | 920    | 728           | NR            |
| 405    | 489           | NR            | 535    | 25661         | NR            | 665    | 25030         | NR            | 795    | 1317          | NR            | 925    | 793           | NR            |
| 410    | 585           | NR            | 540    | 26289         | NR            | 670    | 22820         | NR            | 800    | 1124          | NR            | 930    | 877           | NR            |
| 415    | 826           | NR            | 545    | 26945         | NR            | 675    | 20678         | NR            | 805    | 1116          | NR            | 935    | 923           | NR            |
| 420    | 1336          | NR            | 550    | 27713         | NR            | 680    | 18748         | NR            | 810    | 1105          | NR            | 940    | 1001          | NR            |
| 425    | 2406          | NR            | 555    | 28230         | NR            | 685    | 16904         | NR            | 815    | 1073          | NR            | 945    | 604           | NR            |
| 430    | 4355          | NR            | 560    | 28678         | NR            | 690    | 15203         | NR            | 820    | 977           | NR            | 950    | 424           | NR            |
| 435    | 7911          | NR            | 565    | 29242         | NR            | 695    | 13356         | NR            | 825    | 882           | NR            | 955    | 550           | NR            |
| 440    | 13821         | NR            | 570    | 29806         | NR            | 700    | 11948         | NR            | 830    | 875           | NR            | 960    | 709           | NR            |
| 445    | 19836         | NR            | 575    | 30322         | NR            | 705    | 10482         | NR            | 835    | 944           | NR            | 965    | 755           | NR            |
| 450    | 19902         | NR            | 580    | 31125         | NR            | 710    | 9351          | NR            | 840    | 956           | NR            | 970    | 426           | NR            |
| 455    | 15697         | NR            | 585    | 31838         | NR            | 715    | 8217          | NR            | 845    | 875           | NR            | 975    | 556           | NR            |
| 460    | 13589         | NR            | 590    | 32845         | NR            | 720    | 7313          | NR            | 850    | 801           | NR            | 980    | 1040          | NR            |
| 465    | 11857         | NR            | 595    | 33487         | NR            | 725    | 6460          | NR            | 855    | 890           | NR            | 985    | 833           | NR            |
| 470    | 10336         | NR            | 600    | 34359         | NR            | 730    | 5680          | NR            | 860    | 706           | NR            | 990    | 964           | NR            |
| 475    | 10504         | NR            | 605    | 35281         | NR            | 735    | 4904          | NR            | 865    | 902           | NR            | 995    | 953           | NR            |
| 480    | 11526         | NR            | 610    | 35679         | NR            | 740    | 4372          | NR            | 870    | 879           | NR            | 1000   | 950           | NR            |
| 485    | 12831         | NR            | 615    | 36113         | NR            | 745    | 3858          | NR            | 875    | 769           | NR            |        |               |               |

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**Summary**

$R_f = 92.6$   
 $R_g = 98.3$   
 CIE  $R_a = 92.0$   
 $R_9 = 59.7$

**Spectral Power Distribution Comparison**



**Color Vector Graphics**



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 94 | CES51 = 97 | CES76 = 88 |
| CES02 = 62 | CES27 = 93 | CES52 = 98 | CES77 = 91 |
| CES03 = 31 | CES28 = 96 | CES53 = 96 | CES78 = 87 |
| CES04 = 70 | CES29 = 96 | CES54 = 95 | CES79 = 96 |
| CES05 = 50 | CES30 = 97 | CES55 = 94 | CES80 = 95 |
| CES06 = 51 | CES31 = 96 | CES56 = 94 | CES81 = 88 |
| CES07 = 42 | CES32 = 92 | CES57 = 93 | CES82 = 98 |
| CES08 = 41 | CES33 = 98 | CES58 = 94 | CES83 = 97 |
| CES09 = 29 | CES34 = 95 | CES59 = 96 | CES84 = 95 |
| CES10 = 75 | CES35 = 97 | CES60 = 94 | CES85 = 86 |
| CES11 = 58 | CES36 = 87 | CES61 = 93 | CES86 = 87 |
| CES12 = 64 | CES37 = 95 | CES62 = 91 | CES87 = 92 |
| CES13 = 43 | CES38 = 92 | CES63 = 93 | CES88 = 96 |
| CES14 = 74 | CES39 = 99 | CES64 = 91 | CES89 = 87 |
| CES15 = 71 | CES40 = 98 | CES65 = 89 | CES90 = 96 |
| CES16 = 48 | CES41 = 98 | CES66 = 89 | CES91 = 80 |
| CES17 = 49 | CES42 = 96 | CES67 = 88 | CES92 = 82 |
| CES18 = 56 | CES43 = 97 | CES68 = 90 | CES93 = 89 |
| CES19 = 71 | CES44 = 99 | CES69 = 91 | CES94 = 82 |
| CES20 = 66 | CES45 = 98 | CES70 = 88 | CES95 = 85 |
| CES21 = 86 | CES46 = 97 | CES71 = 85 | CES96 = 92 |
| CES22 = 78 | CES47 = 97 | CES72 = 95 | CES97 = 96 |
| CES23 = 91 | CES48 = 93 | CES73 = 84 | CES98 = 94 |
| CES24 = 90 | CES49 = 97 | CES74 = 94 | CES99 = 91 |
| CES25 = 71 | CES50 = 98 | CES75 = 86 |            |



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Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)