

Scaled data based on original data using  
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions

Brand: STREETWORKS

Report Number: P360886

Luminaire Tested: NVN-SA6C-750-U-T2R

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-2019  
Report Number: P360886  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-8)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: STREETWORKS  
Catalog Number: NVN-SA6C-750-U-T2R  
Description: NAVION ROADWAY AND AREA LUMINAIRE  
(6) 70 CRI, 5000K, 1050mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II  
ROADWAY OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 44855 lumens  
Efficiency: N/A  
Efficacy: 134.7 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 1.5' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B3 - U0 - G4

Input Watts (W): 333  
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: 28.75 FT

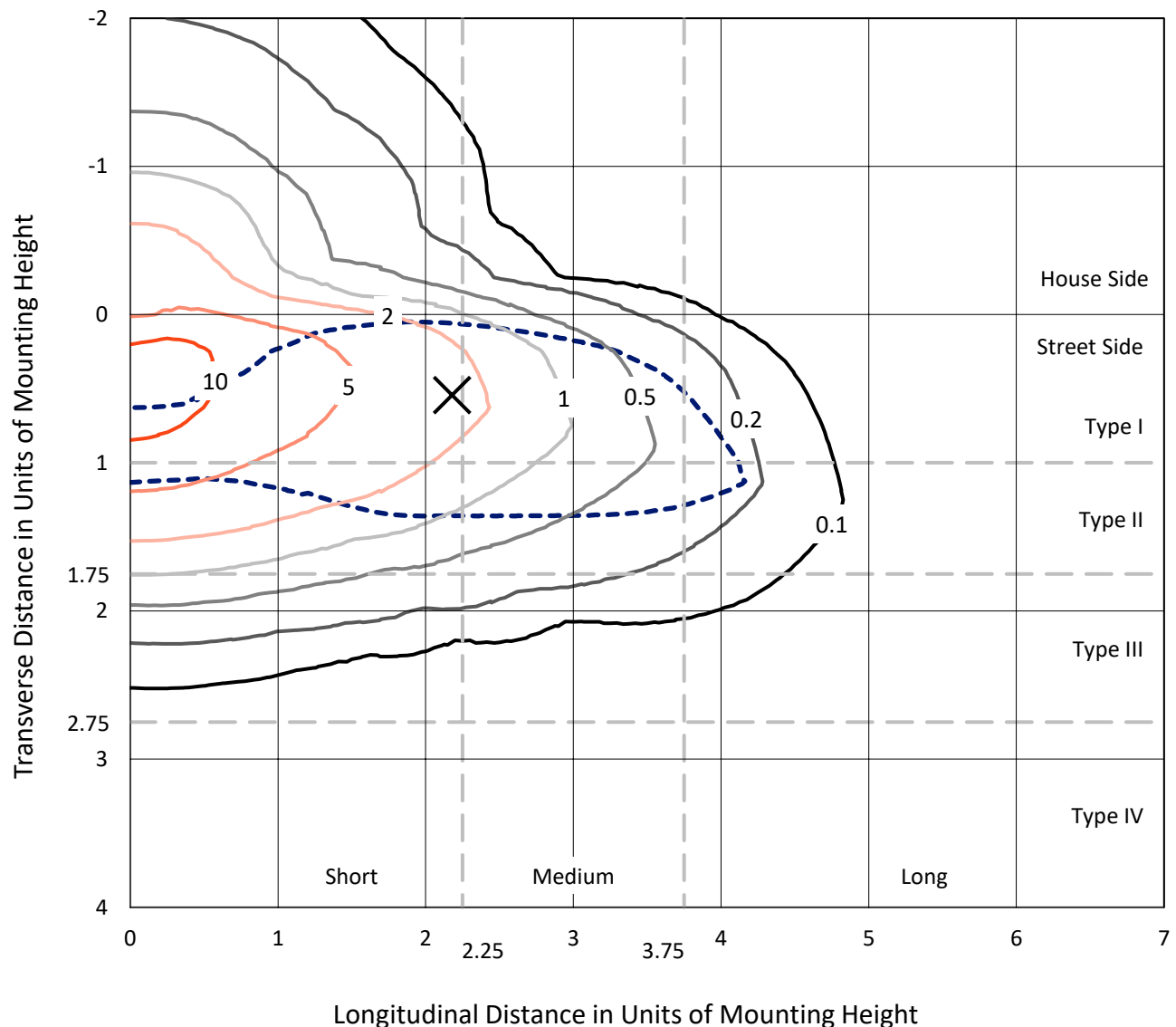


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## Iso-Footcandle Lines of Horizontal Illumination

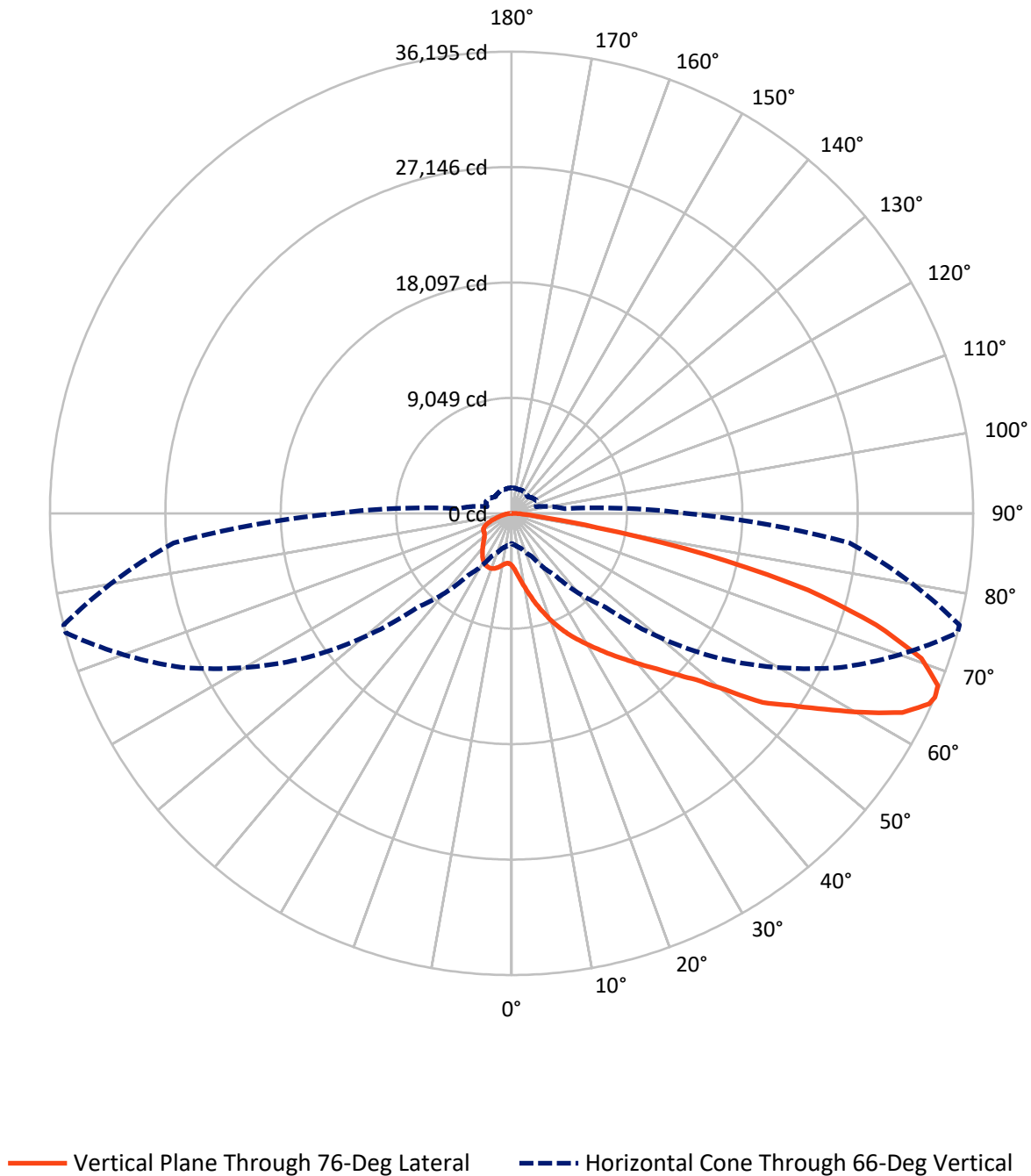
✕ Max cd  
 - - - 1/2 Max cd



Based on 30 foot mounting height. Maximum calculated value = 12.1 fc  
 Type II - Short - N/A

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## Luminous Intensity Polar Plot



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CATALOG NUMBER: NVN-SA6C-750-U-T2R

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 7547.5   | 0.0    | 7547.5  |
|                    | % Fixture | 16.8     | 0.0    | 16.8    |
| <b>Street Side</b> | Lumens    | 37307.4  | 0.0    | 37307.4 |
|                    | % Fixture | 83.2     | 0.0    | 83.2    |
| <b>Total</b>       | Lumens    | 44855.0  | 0.0    | 44855.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 495.3   | 1.1       |
| 10°-20°   | 1956.1  | 4.4       |
| 20°-30°   | 3801.2  | 8.5       |
| 30°-40°   | 6204.4  | 13.8      |
| 40°-50°   | 8476.7  | 18.9      |
| 50°-60°   | 9873.6  | 22.0      |
| 60°-70°   | 8851.9  | 19.7      |
| 70°-80°   | 4473.4  | 10.0      |
| 80°-90°   | 722.4   | 1.6       |
| 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°    | 44855.0 | 100.0     |
| 0°-180°   | 44855.0 | 100.0     |

**Coefficient of Utilization**



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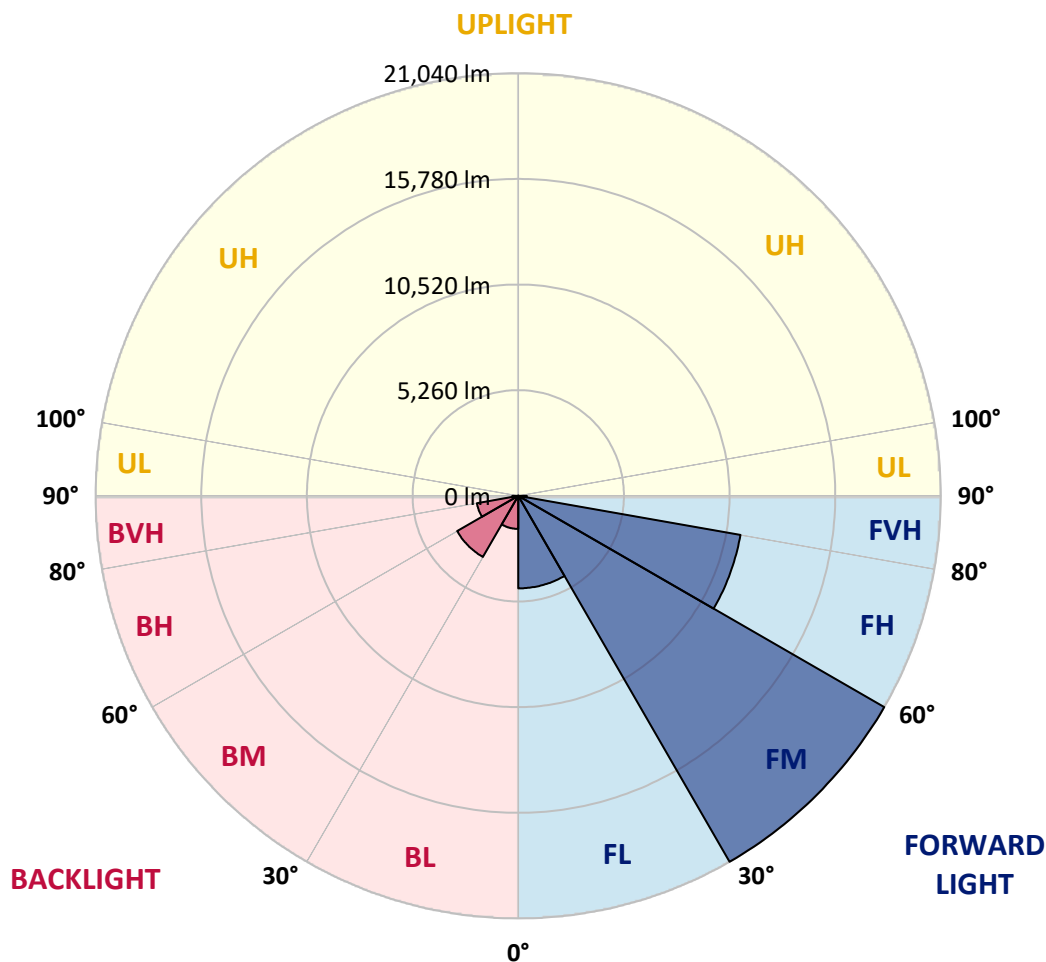
CATALOG NUMBER: NVN-SA6C-750-U-T2R

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |          |
|------|-------------|---------|-----------|-------------------------|------|----------|
|      |             |         |           | B                       | U    | G        |
| FL   | (0°-30°)    | 4606.5  | 10.3      |                         |      |          |
| FM   | (30°-60°)   | 21040.1 | 46.9      |                         |      |          |
| FH   | (60°-80°)   | 11234.2 | 25.0      |                         |      | G4/12000 |
| FVH  | (80°-90°)   | 426.6   | 1.0       |                         |      | G3/500   |
| BL   | (0°-30°)    | 1646.2  | 3.7       | B3/2500                 |      |          |
| BM   | (30°-60°)   | 3514.6  | 7.8       | B3/5000                 |      |          |
| BH   | (60°-80°)   | 2091.0  | 4.7       | B3/2500                 |      | G3/2500  |
| BVH  | (80°-90°)   | 295.8   | 0.7       |                         |      | G3/500   |
| UL   | (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |          |
| UH   | (100°-180°) | 0.0     | 0.0       |                         | U0/0 |          |

**BUG Rating: B3-U0-G4**

Type II Short



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 65°     | 75°     | 76°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 4096.3  | 4096.3  | 4096.3  | 4096.3  | 4096.3  | 4096.3  | 4096.3  | 4096.3  | 4096.3  | 4096.3  | 4096.3  |
| 2.5°  | 5437.8  | 5355.6  | 5348.0  | 5227.7  | 5200.3  | 4970.3  | 4801.3  | 4624.7  | 4423.7  | 4384.1  | 4225.7  |
| 5°    | 6985.0  | 6977.4  | 6872.3  | 6675.9  | 6522.1  | 6129.2  | 5740.9  | 5329.7  | 4879.0  | 4805.9  | 4449.6  |
| 7.5°  | 8376.8  | 8364.6  | 8283.9  | 8072.2  | 7849.9  | 7367.2  | 6812.9  | 6182.5  | 5451.5  | 5343.4  | 4752.6  |
| 10°   | 9433.6  | 9429.0  | 9401.6  | 9246.3  | 9057.5  | 8594.6  | 7982.4  | 7122.0  | 6117.0  | 5969.3  | 5131.8  |
| 12.5° | 10249.8 | 10259.0 | 10277.2 | 10222.4 | 10132.6 | 9738.2  | 9110.8  | 8117.9  | 6826.6  | 6680.4  | 5553.6  |
| 15°   | 10802.6 | 10830.0 | 10924.4 | 11002.1 | 11049.3 | 10807.2 | 10199.6 | 9136.7  | 7621.5  | 7446.4  | 6021.1  |
| 17.5° | 11081.3 | 11111.7 | 11274.6 | 11509.2 | 11725.4 | 11701.0 | 11218.3 | 10108.2 | 8384.4  | 8215.4  | 6523.6  |
| 20°   | 11321.9 | 11344.7 | 11527.4 | 11809.1 | 12191.4 | 12360.4 | 12089.3 | 11043.2 | 9220.4  | 9019.4  | 7056.6  |
| 22.5° | 12019.3 | 12048.2 | 12103.0 | 12262.9 | 12601.0 | 12911.6 | 12780.7 | 11927.9 | 9986.4  | 9799.1  | 7562.1  |
| 25°   | 13365.4 | 13400.4 | 13281.7 | 13146.1 | 13210.1 | 13426.3 | 13450.7 | 12735.0 | 10763.0 | 10551.3 | 8105.7  |
| 27.5° | 14987.2 | 15037.4 | 14834.9 | 14486.2 | 14181.6 | 14097.9 | 14068.9 | 13395.9 | 11504.6 | 11259.4 | 8643.3  |
| 30°   | 16575.4 | 16662.2 | 16398.8 | 15946.5 | 15387.7 | 14994.8 | 14703.9 | 14043.1 | 12235.5 | 12001.0 | 9150.4  |
| 32.5° | 18127.2 | 18092.1 | 17709.9 | 17268.3 | 16613.5 | 16121.7 | 15418.1 | 14737.4 | 13057.8 | 12788.3 | 9654.4  |
| 35°   | 19190.0 | 19202.2 | 18847.4 | 18323.6 | 17699.3 | 17321.6 | 16374.4 | 15486.7 | 13896.9 | 13648.7 | 10227.0 |
| 37.5° | 20094.6 | 20038.2 | 19636.2 | 19147.4 | 18609.9 | 18448.5 | 17493.7 | 16312.0 | 14806.0 | 14534.9 | 10836.1 |
| 40°   | 20396.1 | 20330.6 | 20067.2 | 19715.4 | 19284.5 | 19270.8 | 18728.6 | 17247.0 | 15833.8 | 15565.8 | 11522.9 |
| 42.5° | 20213.4 | 20129.6 | 20021.5 | 19925.6 | 19793.1 | 19854.0 | 19889.0 | 18343.4 | 16963.7 | 16663.8 | 12317.8 |
| 45°   | 19538.8 | 19412.4 | 19488.5 | 19697.1 | 19984.9 | 20329.1 | 20936.7 | 19557.0 | 18229.2 | 17977.9 | 13251.2 |
| 47.5° | 18501.8 | 18387.5 | 18625.1 | 19071.3 | 19854.0 | 20725.0 | 21928.0 | 20897.1 | 19739.8 | 19490.0 | 14580.6 |
| 50°   | 17042.9 | 17076.4 | 17416.0 | 18227.7 | 19410.9 | 20907.7 | 23149.3 | 22671.1 | 21935.6 | 21702.6 | 16394.2 |
| 52.5° | 14649.1 | 14655.2 | 15611.5 | 16944.0 | 18625.1 | 20813.3 | 23826.9 | 24938.5 | 24934.0 | 24652.3 | 18121.1 |
| 55°   | 12425.9 | 12561.4 | 13318.2 | 15089.2 | 17352.1 | 20435.7 | 24300.5 | 26041.0 | 26902.9 | 26572.5 | 19730.6 |
| 57.5° | 10254.4 | 10333.6 | 11050.8 | 12829.4 | 15535.4 | 19429.1 | 24786.3 | 27364.3 | 29171.9 | 28963.2 | 21731.6 |
| 60°   | 7784.4  | 7906.3  | 8647.9  | 10290.9 | 13211.6 | 17642.9 | 24831.9 | 28745.5 | 31883.9 | 31673.8 | 23965.5 |
| 62.5° | 5052.6  | 5262.7  | 5957.1  | 7496.6  | 10400.6 | 15074.0 | 23772.1 | 29648.5 | 34454.4 | 34379.8 | 25948.1 |
| 65°   | 2903.9  | 3062.3  | 3545.0  | 4732.8  | 7175.3  | 11848.7 | 21251.9 | 29301.3 | 36036.5 | 35993.9 | 26689.7 |
| 66°   | 2372.5  | 2471.5  | 2841.5  | 3698.8  | 5920.6  | 10405.1 | 19787.0 | 28568.8 | 36193.4 | 36194.9 | 26604.5 |
| 67.5° | 1897.4  | 1941.5  | 2107.5  | 2648.1  | 4368.9  | 8247.4  | 17169.3 | 26953.2 | 35998.5 | 36051.8 | 26054.7 |
| 70°   | 1570.0  | 1592.8  | 1644.6  | 1775.6  | 2384.7  | 4973.4  | 12186.8 | 22754.9 | 34041.7 | 34082.8 | 23909.1 |
| 72.5° | 1408.6  | 1422.3  | 1442.1  | 1460.3  | 1682.7  | 2779.1  | 7443.3  | 18203.3 | 29846.5 | 29899.7 | 20639.7 |
| 75°   | 1276.1  | 1283.7  | 1280.7  | 1282.2  | 1411.6  | 1771.0  | 3846.5  | 13590.8 | 24133.0 | 24026.4 | 15811.0 |
| 77.5° | 1120.8  | 1128.4  | 1113.2  | 1116.2  | 1248.7  | 1361.4  | 1914.1  | 9514.3  | 16286.1 | 15533.9 | 8908.3  |
| 80°   | 947.2   | 953.3   | 947.2   | 957.8   | 1087.3  | 1027.9  | 1113.2  | 5352.6  | 7201.2  | 6811.4  | 3167.4  |
| 82.5° | 715.7   | 741.6   | 759.9   | 802.5   | 895.4   | 730.9   | 744.6   | 2084.7  | 2192.8  | 2087.7  | 971.5   |
| 85°   | 313.7   | 382.2   | 572.6   | 613.7   | 673.1   | 438.6   | 488.8   | 849.7   | 892.3   | 864.9   | 353.3   |
| 87.5° | 82.2    | 89.8    | 283.2   | 356.3   | 373.1   | 198.0   | 254.3   | 386.8   | 408.1   | 386.8   | 117.3   |
| 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: NVN-SA6C-750-U-T2R

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 4096.3  | 4096.3 | 4096.3 | 4096.3 | 4096.3 | 4096.3 | 4096.3 | 4096.3 | 4096.3 | 4096.3 | 4096.3 |
| 2.5°  | 4142.0  | 4067.3 | 3933.3 | 3814.6 | 3724.7 | 3663.8 | 3602.9 | 3572.4 | 3554.2 | 3535.9 | 3538.9 |
| 5°    | 4274.4  | 4123.7 | 3893.7 | 3730.8 | 3639.4 | 3581.6 | 3551.1 | 3538.9 | 3531.3 | 3513.0 | 3513.0 |
| 7.5°  | 4473.9  | 4260.7 | 3944.0 | 3776.5 | 3704.9 | 3660.8 | 3642.5 | 3636.4 | 3627.3 | 3605.9 | 3609.0 |
| 10°   | 4725.2  | 4426.7 | 4049.1 | 3886.1 | 3820.7 | 3771.9 | 3746.0 | 3736.9 | 3720.1 | 3695.8 | 3698.8 |
| 12.5° | 5020.6  | 4632.3 | 4187.6 | 4017.1 | 3937.9 | 3872.4 | 3829.8 | 3803.9 | 3775.0 | 3743.0 | 3744.5 |
| 15°   | 5343.4  | 4856.1 | 4336.9 | 4134.3 | 4026.2 | 3934.9 | 3866.3 | 3822.2 | 3776.5 | 3736.9 | 3735.4 |
| 17.5° | 5670.8  | 5072.4 | 4451.1 | 4198.3 | 4052.1 | 3931.8 | 3838.9 | 3770.4 | 3714.1 | 3665.3 | 3660.8 |
| 20°   | 6024.1  | 5267.3 | 4515.0 | 4192.2 | 4003.4 | 3860.2 | 3736.9 | 3651.6 | 3589.2 | 3540.5 | 3532.8 |
| 22.5° | 6383.5  | 5450.0 | 4525.7 | 4129.8 | 3895.3 | 3720.1 | 3590.7 | 3496.3 | 3432.3 | 3382.1 | 3363.8 |
| 25°   | 6712.4  | 5591.6 | 4481.5 | 4009.5 | 3744.5 | 3555.7 | 3429.3 | 3333.4 | 3281.6 | 3222.2 | 3203.9 |
| 27.5° | 7012.4  | 5690.6 | 4393.2 | 3855.7 | 3575.5 | 3389.7 | 3270.9 | 3188.7 | 3132.4 | 3086.7 | 3071.4 |
| 30°   | 7281.9  | 5743.9 | 4248.6 | 3672.9 | 3401.9 | 3232.9 | 3132.4 | 3076.0 | 3027.3 | 2969.4 | 2958.8 |
| 32.5° | 7537.8  | 5743.9 | 4062.8 | 3473.5 | 3229.8 | 3094.3 | 3034.9 | 2999.9 | 2945.1 | 2888.7 | 2873.5 |
| 35°   | 7793.6  | 5708.9 | 3843.5 | 3264.8 | 3071.4 | 2995.3 | 2992.3 | 2951.1 | 2867.4 | 2791.3 | 2771.5 |
| 37.5° | 8063.1  | 5637.3 | 3596.8 | 3069.9 | 2942.0 | 2951.1 | 2977.0 | 2885.7 | 2766.9 | 2658.8 | 2629.8 |
| 40°   | 8367.7  | 5538.3 | 3341.0 | 2900.9 | 2833.9 | 2931.3 | 2935.9 | 2791.3 | 2559.8 | 2460.8 | 2434.9 |
| 42.5° | 8725.5  | 5439.4 | 3103.4 | 2751.7 | 2748.6 | 2872.0 | 2858.3 | 2587.2 | 2448.6 | 2398.4 | 2384.7 |
| 45°   | 9196.1  | 5383.0 | 2878.1 | 2610.0 | 2681.6 | 2776.0 | 2725.8 | 2474.5 | 2416.6 | 2387.7 | 2375.5 |
| 47.5° | 9937.7  | 5412.0 | 2671.0 | 2497.4 | 2614.6 | 2680.1 | 2479.1 | 2428.8 | 2387.7 | 2352.7 | 2340.5 |
| 50°   | 10866.5 | 5395.2 | 2503.4 | 2419.7 | 2538.5 | 2579.6 | 2367.9 | 2369.4 | 2348.1 | 2308.5 | 2290.3 |
| 52.5° | 11565.5 | 5264.2 | 2395.3 | 2375.5 | 2471.5 | 2401.4 | 2297.9 | 2311.6 | 2300.9 | 2243.1 | 2223.3 |
| 55°   | 12240.1 | 5151.6 | 2340.5 | 2358.8 | 2422.7 | 2179.1 | 2215.6 | 2249.1 | 2238.5 | 2182.1 | 2173.0 |
| 57.5° | 13079.1 | 5130.2 | 2307.0 | 2363.4 | 2381.6 | 2067.9 | 2136.5 | 2180.6 | 2173.0 | 2148.6 | 2144.1 |
| 60°   | 14107.0 | 5136.3 | 2276.6 | 2371.0 | 2335.9 | 1985.7 | 2061.8 | 2118.2 | 2122.8 | 2118.2 | 2115.1 |
| 62.5° | 14672.0 | 4970.3 | 2200.4 | 2349.6 | 2255.2 | 1914.1 | 1984.2 | 2066.4 | 2067.9 | 2077.1 | 2075.5 |
| 65°   | 14192.3 | 4473.9 | 2058.8 | 2275.0 | 2119.7 | 1854.7 | 1917.2 | 2007.0 | 1984.2 | 2025.3 | 2025.3 |
| 66°   | 13726.3 | 4187.6 | 1988.7 | 2226.3 | 2061.8 | 1831.9 | 1895.9 | 1976.6 | 1947.6 | 2004.0 | 2004.0 |
| 67.5° | 12774.6 | 3704.9 | 1862.4 | 2122.8 | 1979.6 | 1799.9 | 1871.5 | 1926.3 | 1886.7 | 1970.5 | 1964.4 |
| 70°   | 11035.6 | 2865.9 | 1608.1 | 1888.2 | 1844.1 | 1752.7 | 1838.0 | 1825.8 | 1767.9 | 1895.9 | 1871.5 |
| 72.5° | 9304.2  | 2177.6 | 1291.3 | 1580.6 | 1638.5 | 1693.3 | 1790.8 | 1697.9 | 1624.8 | 1714.6 | 1661.4 |
| 75°   | 7219.5  | 1637.0 | 1020.3 | 1228.9 | 1384.2 | 1600.4 | 1734.4 | 1550.2 | 1445.1 | 1436.0 | 1407.0 |
| 77.5° | 3902.9  | 1123.8 | 808.6  | 938.0  | 1099.4 | 1484.7 | 1696.4 | 1391.8 | 1233.5 | 1196.9 | 1174.1 |
| 80°   | 1545.6  | 730.9  | 587.8  | 711.1  | 769.0  | 1317.2 | 1605.0 | 1207.6 | 1017.2 | 980.7  | 945.6  |
| 82.5° | 638.0   | 432.5  | 379.2  | 476.6  | 501.0  | 1126.9 | 1440.5 | 989.8  | 785.8  | 1087.3 | 1154.3 |
| 85°   | 274.1   | 237.6  | 225.4  | 246.7  | 283.2  | 790.3  | 1146.7 | 755.3  | 848.2  | 756.8  | 601.5  |
| 87.5° | 82.2    | 100.5  | 95.9   | 94.4   | 103.5  | 188.8  | 610.6  | 420.3  | 622.8  | 236.0  | 176.6  |
| 90°   | 0.0     | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

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

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

Report Number: SP1-1908-441-4-R4

Test Date: 10/02/2019

Luminaire Tested: SA1C-750-U-5WQ

Data in this report applies to families of products SA1C-760-U-5WQ .

### Test Information

Test Method: LM-79-2008  
 Report Number: SP1-1908-441-4-R4  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 10/28/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: MCGRAW-EDISON  
 Catalog Number: **SA1C-750-U-5WQ**  
 Description: MCGRAW EDISON ROADWAY AND AREA LUMINAIRE

\*\*\*THIS IS A REVISION OF SP1-1908-441-4-R3. TO UPDATE THE CATALOG INFORMATION.\*\*\*TESTED IN SITU. ROADWAY AND AREA LUMINAIRE. (1) 70 CRI, 5000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

### Spectral Parameters

|                           |        |           |      |      |       |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K):                  | 4884   | CRI (Ra): | 73.5 |      |       |
| CIE u':                   | 0.2101 | R1:       | 70.5 | R9:  | -28.4 |
| CIE v':                   | 0.4904 | R2:       | 77.7 | R10: | 48.6  |
| Duv:                      | 0.0037 | R3:       | 84.6 | R11: | 73.2  |
| CIE x:                    | 0.3493 | R4:       | 74.7 | R12: | 50.7  |
| CIE y:                    | 0.3624 | R5:       | 71.9 | R13: | 71.2  |
| CIE z:                    | 0.2884 | R6:       | 70.7 | R14: | 91.4  |
| Peak Wavelength (nm):     | 444    | R7:       | 81.2 |      |       |
| Dominant Wavelength (nm): | 571    | R8:       | 56.9 |      |       |
| Purity:                   | 13.7   |           |      |      |       |
| Rf:                       | 74.9   |           |      |      |       |
| Rg:                       | 96.3   |           |      |      |       |



### Test Conditions

Stabilization Time: 240M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.0./44%  
 Sphere Temperature (°C): 25.7

REPORT NUMBER: SP1-1908-441-4-R4

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 6/28/2019        | 12/28/2019           |
| Power Meter                    | IN0071                | 12/5/2018        | 12/5/2019            |
| AC Power Source                | IN0063                | 12/5/2018        | 12/5/2019            |
| DC Power Source                | IN0208                | 12/5/2018        | 12/5/2019            |
| Sphere Thermometer             | IN0085                | 12/5/2018        | 12/5/2019            |
| Room Thermometer               | IN0046                | 12/5/2018        | 12/5/2019            |

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CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 5000K 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       | 2945             | NR               | 490       | 37941            | NR               | 620       | 88803            | NR               | 750       | 3908             | NR               | 880       | 2997             | NR               |
| 365       | 2596             | NR               | 495       | 48525            | NR               | 625       | 80578            | NR               | 755       | 3988             | NR               | 885       | 2927             | NR               |
| 370       | 2732             | NR               | 500       | 60609            | NR               | 630       | 73127            | NR               | 760       | 3335             | NR               | 890       | 2649             | NR               |
| 375       | 2894             | NR               | 505       | 72036            | NR               | 635       | 66244            | NR               | 765       | 3438             | NR               | 895       | 2828             | NR               |
| 380       | 2822             | NR               | 510       | 82168            | NR               | 640       | 59440            | NR               | 770       | 3427             | NR               | 900       | 1407             | NR               |
| 385       | 2394             | NR               | 515       | 90898            | NR               | 645       | 52864            | NR               | 775       | 2759             | NR               | 905       | 2224             | NR               |
| 390       | 2370             | NR               | 520       | 97142            | NR               | 650       | 47085            | NR               | 780       | 2340             | NR               | 910       | 2905             | NR               |
| 395       | 2267             | NR               | 525       | 103255           | NR               | 655       | 41789            | NR               | 785       | 2412             | NR               | 915       | 3350             | NR               |
| 400       | 2262             | NR               | 530       | 106697           | NR               | 660       | 37064            | NR               | 790       | 1999             | NR               | 920       | 3114             | NR               |
| 405       | 3000             | NR               | 535       | 110081           | NR               | 665       | 32299            | NR               | 795       | 2054             | NR               | 925       | 2834             | NR               |
| 410       | 5324             | NR               | 540       | 112494           | NR               | 670       | 28142            | NR               | 800       | 2331             | NR               | 930       | 2271             | NR               |
| 415       | 10725            | NR               | 545       | 115513           | NR               | 675       | 24505            | NR               | 805       | 2648             | NR               | 935       | 2228             | NR               |
| 420       | 22128            | NR               | 550       | 117203           | NR               | 680       | 21162            | NR               | 810       | 2485             | NR               | 940       | 2833             | NR               |
| 425       | 44095            | NR               | 555       | 119753           | NR               | 685       | 18400            | NR               | 815       | 2409             | NR               | 945       | 2941             | NR               |
| 430       | 77002            | NR               | 560       | 122602           | NR               | 690       | 16065            | NR               | 820       | 2221             | NR               | 950       | 2323             | NR               |
| 435       | 119881           | NR               | 565       | 124314           | NR               | 695       | 13860            | NR               | 825       | 1562             | NR               | 955       | 1667             | NR               |
| 440       | 164454           | NR               | 570       | 126775           | NR               | 700       | 12177            | NR               | 830       | 2249             | NR               | 960       | 749              | NR               |
| 445       | 179997           | NR               | 575       | 127511           | NR               | 705       | 10757            | NR               | 835       | 2573             | NR               | 965       | 2669             | NR               |
| 450       | 142822           | NR               | 580       | 127577           | NR               | 710       | 9601             | NR               | 840       | 2764             | NR               | 970       | 3968             | NR               |
| 455       | 90008            | NR               | 585       | 126153           | NR               | 715       | 8944             | NR               | 845       | 3109             | NR               | 975       | 3886             | NR               |
| 460       | 60557            | NR               | 590       | 123678           | NR               | 720       | 7947             | NR               | 850       | 2963             | NR               | 980       | 2788             | NR               |
| 465       | 43305            | NR               | 595       | 119774           | NR               | 725       | 7062             | NR               | 855       | 2336             | NR               | 985       | 3496             | NR               |
| 470       | 31089            | NR               | 600       | 115733           | NR               | 730       | 6004             | NR               | 860       | 2118             | NR               | 990       | 2913             | NR               |
| 475       | 26278            | NR               | 605       | 109231           | NR               | 735       | 5594             | NR               | 865       | 3144             | NR               | 995       | 4659             | NR               |
| 480       | 27060            | NR               | 610       | 102408           | NR               | 740       | 5165             | NR               | 870       | 3069             | NR               | 1000      | 1308             | NR               |
| 485       | 30698            | NR               | 615       | 96015            | NR               | 745       | 4687             | NR               | 875       | 3311             | NR               |           |                  |                  |

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Scotopic Flux vs. Wavelength



Scotopic Lumens: 13493.5

S/P: 1.77

| 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       | 2945             | NR               | 490       | 37941            | NR               | 620       | 88803            | NR               | 750       | 3908             | NR               | 880       | 2997             | NR               |
| 365       | 2596             | NR               | 495       | 48525            | NR               | 625       | 80578            | NR               | 755       | 3988             | NR               | 885       | 2927             | NR               |
| 370       | 2732             | NR               | 500       | 60609            | NR               | 630       | 73127            | NR               | 760       | 3335             | NR               | 890       | 2649             | NR               |
| 375       | 2894             | NR               | 505       | 72036            | NR               | 635       | 66244            | NR               | 765       | 3438             | NR               | 895       | 2828             | NR               |
| 380       | 2822             | NR               | 510       | 82168            | NR               | 640       | 59440            | NR               | 770       | 3427             | NR               | 900       | 1407             | NR               |
| 385       | 2394             | NR               | 515       | 90898            | NR               | 645       | 52864            | NR               | 775       | 2759             | NR               | 905       | 2224             | NR               |
| 390       | 2370             | NR               | 520       | 97142            | NR               | 650       | 47085            | NR               | 780       | 2340             | NR               | 910       | 2905             | NR               |
| 395       | 2267             | NR               | 525       | 103255           | NR               | 655       | 41789            | NR               | 785       | 2412             | NR               | 915       | 3350             | NR               |
| 400       | 2262             | NR               | 530       | 106697           | NR               | 660       | 37064            | NR               | 790       | 1999             | NR               | 920       | 3114             | NR               |
| 405       | 3000             | NR               | 535       | 110081           | NR               | 665       | 32299            | NR               | 795       | 2054             | NR               | 925       | 2834             | NR               |
| 410       | 5324             | NR               | 540       | 112494           | NR               | 670       | 28142            | NR               | 800       | 2331             | NR               | 930       | 2271             | NR               |
| 415       | 10725            | NR               | 545       | 115513           | NR               | 675       | 24505            | NR               | 805       | 2648             | NR               | 935       | 2228             | NR               |
| 420       | 22128            | NR               | 550       | 117203           | NR               | 680       | 21162            | NR               | 810       | 2485             | NR               | 940       | 2833             | NR               |
| 425       | 44095            | NR               | 555       | 119753           | NR               | 685       | 18400            | NR               | 815       | 2409             | NR               | 945       | 2941             | NR               |
| 430       | 77002            | NR               | 560       | 122602           | NR               | 690       | 16065            | NR               | 820       | 2221             | NR               | 950       | 2323             | NR               |
| 435       | 119881           | NR               | 565       | 124314           | NR               | 695       | 13860            | NR               | 825       | 1562             | NR               | 955       | 1667             | NR               |
| 440       | 164454           | NR               | 570       | 126775           | NR               | 700       | 12177            | NR               | 830       | 2249             | NR               | 960       | 749              | NR               |
| 445       | 179997           | NR               | 575       | 127511           | NR               | 705       | 10757            | NR               | 835       | 2573             | NR               | 965       | 2669             | NR               |
| 450       | 142822           | NR               | 580       | 127577           | NR               | 710       | 9601             | NR               | 840       | 2764             | NR               | 970       | 3968             | NR               |
| 455       | 90008            | NR               | 585       | 126153           | NR               | 715       | 8944             | NR               | 845       | 3109             | NR               | 975       | 3886             | NR               |
| 460       | 60557            | NR               | 590       | 123678           | NR               | 720       | 7947             | NR               | 850       | 2963             | NR               | 980       | 2788             | NR               |
| 465       | 43305            | NR               | 595       | 119774           | NR               | 725       | 7062             | NR               | 855       | 2336             | NR               | 985       | 3496             | NR               |
| 470       | 31089            | NR               | 600       | 115733           | NR               | 730       | 6004             | NR               | 860       | 2118             | NR               | 990       | 2913             | NR               |
| 475       | 26278            | NR               | 605       | 109231           | NR               | 735       | 5594             | NR               | 865       | 3144             | NR               | 995       | 4659             | NR               |
| 480       | 27060            | NR               | 610       | 102408           | NR               | 740       | 5165             | NR               | 870       | 3069             | NR               | 1000      | 1308             | NR               |
| 485       | 30698            | NR               | 615       | 96015            | NR               | 745       | 4687             | NR               | 875       | 3311             | NR               |           |                  |                  |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 5378.9**

**M/P: 0.71**

| 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       | 2945             | NR               | 490       | 37941            | NR               | 620       | 88803            | NR               | 750       | 3908             | NR               | 880       | 2997             | NR               |
| 365       | 2596             | NR               | 495       | 48525            | NR               | 625       | 80578            | NR               | 755       | 3988             | NR               | 885       | 2927             | NR               |
| 370       | 2732             | NR               | 500       | 60609            | NR               | 630       | 73127            | NR               | 760       | 3335             | NR               | 890       | 2649             | NR               |
| 375       | 2894             | NR               | 505       | 72036            | NR               | 635       | 66244            | NR               | 765       | 3438             | NR               | 895       | 2828             | NR               |
| 380       | 2822             | NR               | 510       | 82168            | NR               | 640       | 59440            | NR               | 770       | 3427             | NR               | 900       | 1407             | NR               |
| 385       | 2394             | NR               | 515       | 90898            | NR               | 645       | 52864            | NR               | 775       | 2759             | NR               | 905       | 2224             | NR               |
| 390       | 2370             | NR               | 520       | 97142            | NR               | 650       | 47085            | NR               | 780       | 2340             | NR               | 910       | 2905             | NR               |
| 395       | 2267             | NR               | 525       | 103255           | NR               | 655       | 41789            | NR               | 785       | 2412             | NR               | 915       | 3350             | NR               |
| 400       | 2262             | NR               | 530       | 106697           | NR               | 660       | 37064            | NR               | 790       | 1999             | NR               | 920       | 3114             | NR               |
| 405       | 3000             | NR               | 535       | 110081           | NR               | 665       | 32299            | NR               | 795       | 2054             | NR               | 925       | 2834             | NR               |
| 410       | 5324             | NR               | 540       | 112494           | NR               | 670       | 28142            | NR               | 800       | 2331             | NR               | 930       | 2271             | NR               |
| 415       | 10725            | NR               | 545       | 115513           | NR               | 675       | 24505            | NR               | 805       | 2648             | NR               | 935       | 2228             | NR               |
| 420       | 22128            | NR               | 550       | 117203           | NR               | 680       | 21162            | NR               | 810       | 2485             | NR               | 940       | 2833             | NR               |
| 425       | 44095            | NR               | 555       | 119753           | NR               | 685       | 18400            | NR               | 815       | 2409             | NR               | 945       | 2941             | NR               |
| 430       | 77002            | NR               | 560       | 122602           | NR               | 690       | 16065            | NR               | 820       | 2221             | NR               | 950       | 2323             | NR               |
| 435       | 119881           | NR               | 565       | 124314           | NR               | 695       | 13860            | NR               | 825       | 1562             | NR               | 955       | 1667             | NR               |
| 440       | 164454           | NR               | 570       | 126775           | NR               | 700       | 12177            | NR               | 830       | 2249             | NR               | 960       | 749              | NR               |
| 445       | 179997           | NR               | 575       | 127511           | NR               | 705       | 10757            | NR               | 835       | 2573             | NR               | 965       | 2669             | NR               |
| 450       | 142822           | NR               | 580       | 127577           | NR               | 710       | 9601             | NR               | 840       | 2764             | NR               | 970       | 3968             | NR               |
| 455       | 90008            | NR               | 585       | 126153           | NR               | 715       | 8944             | NR               | 845       | 3109             | NR               | 975       | 3886             | NR               |
| 460       | 60557            | NR               | 590       | 123678           | NR               | 720       | 7947             | NR               | 850       | 2963             | NR               | 980       | 2788             | NR               |
| 465       | 43305            | NR               | 595       | 119774           | NR               | 725       | 7062             | NR               | 855       | 2336             | NR               | 985       | 3496             | NR               |
| 470       | 31089            | NR               | 600       | 115733           | NR               | 730       | 6004             | NR               | 860       | 2118             | NR               | 990       | 2913             | NR               |
| 475       | 26278            | NR               | 605       | 109231           | NR               | 735       | 5594             | NR               | 865       | 3144             | NR               | 995       | 4659             | NR               |
| 480       | 27060            | NR               | 610       | 102408           | NR               | 740       | 5165             | NR               | 870       | 3069             | NR               | 1000      | 1308             | NR               |
| 485       | 30698            | NR               | 615       | 96015            | NR               | 745       | 4687             | NR               | 875       | 3311             | NR               |           |                  |                  |

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**Summary**

$R_f = 74.9$   
 $R_g = 96.3$   
 CIE  $R_a = 73.5$   
 $R_g = -28.4$

**Spectral Power Distribution Comparison**



**Color Vector Graphics**



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 61 | CES51 = 90 | CES76 = 52 |
| CES02 = 60 | CES27 = 84 | CES52 = 91 | CES77 = 71 |
| CES03 = 30 | CES28 = 81 | CES53 = 79 | CES78 = 54 |
| CES04 = 69 | CES29 = 58 | CES54 = 83 | CES79 = 80 |
| CES05 = 46 | CES30 = 67 | CES55 = 83 | CES80 = 77 |
| CES06 = 50 | CES31 = 63 | CES56 = 73 | CES81 = 77 |
| CES07 = 39 | CES32 = 59 | CES57 = 72 | CES82 = 90 |
| CES08 = 38 | CES33 = 69 | CES58 = 73 | CES83 = 86 |
| CES09 = 29 | CES34 = 69 | CES59 = 88 | CES84 = 88 |
| CES10 = 73 | CES35 = 83 | CES60 = 93 | CES85 = 84 |
| CES11 = 56 | CES36 = 95 | CES61 = 88 | CES86 = 75 |
| CES12 = 61 | CES37 = 78 | CES62 = 85 | CES87 = 78 |
| CES13 = 41 | CES38 = 76 | CES63 = 77 | CES88 = 79 |
| CES14 = 74 | CES39 = 93 | CES64 = 74 | CES89 = 75 |
| CES15 = 70 | CES40 = 86 | CES65 = 67 | CES90 = 77 |
| CES16 = 46 | CES41 = 87 | CES66 = 69 | CES91 = 89 |
| CES17 = 49 | CES42 = 78 | CES67 = 67 | CES92 = 66 |
| CES18 = 55 | CES43 = 75 | CES68 = 73 | CES93 = 80 |
| CES19 = 71 | CES44 = 99 | CES69 = 81 | CES94 = 57 |
| CES20 = 64 | CES45 = 83 | CES70 = 63 | CES95 = 71 |
| CES21 = 85 | CES46 = 81 | CES71 = 60 | CES96 = 78 |
| CES22 = 77 | CES47 = 80 | CES72 = 86 | CES97 = 85 |
| CES23 = 91 | CES48 = 72 | CES73 = 53 | CES98 = 75 |
| CES24 = 90 | CES49 = 81 | CES74 = 96 | CES99 = 62 |
| CES25 = 71 | CES50 = 89 | CES75 = 58 |            |



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Color Rendition by Hue-Angle Bin



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**Measure Comparisons**



(END OF REPORT)