

Signify Classified - Internal  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



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

Test Report Prepared for  
Cooper Lighting Solutions

Brand: STREETWORKS

Report Number: P364023

Luminaire Tested: NVN-SA5B-727-U-SLR-HSS

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-2019  
Report Number: P364023  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-28)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: STREETWORKS  
Catalog Number: NVN-SA5B-727-U-SLR-HSS  
Description: NAVION ROADWAY AND AREA LUMINAIRE  
(5) 70 CRI, 2700K, 800mA LIGHTSQUARES WITH 16 LEDS EACH AND SPILL LIGHT  
ELIMINATOR RIGHT OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 17987 lumens  
Efficiency: N/A  
Efficacy: 85.7 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 1.5' x H: 0')  
IES Classification: Type IV - Medium  
BUG Rating: B2 - U0 - G3

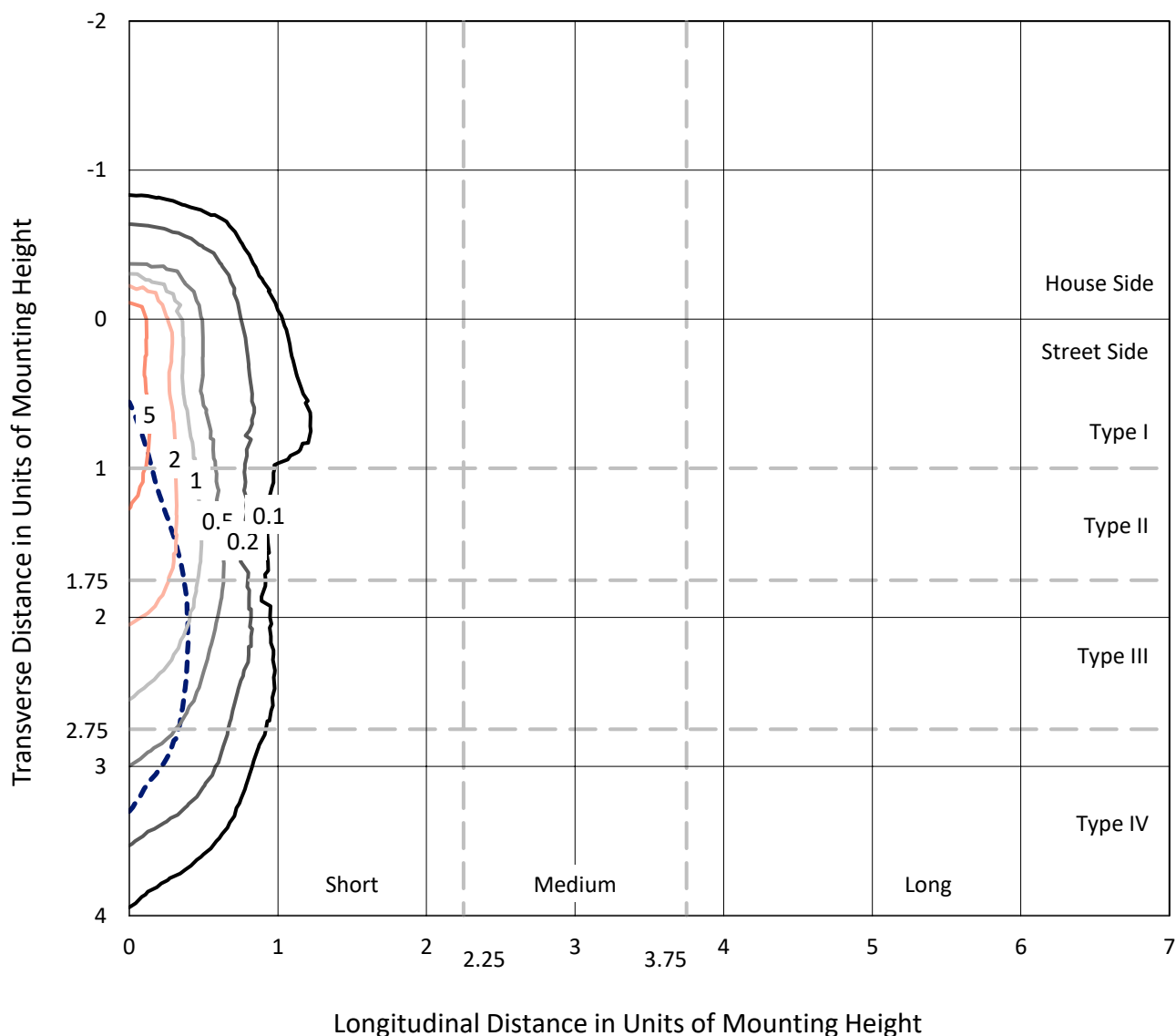
Input Watts (W): 210  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT



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## Iso-Footcandle Lines of Horizontal Illumination

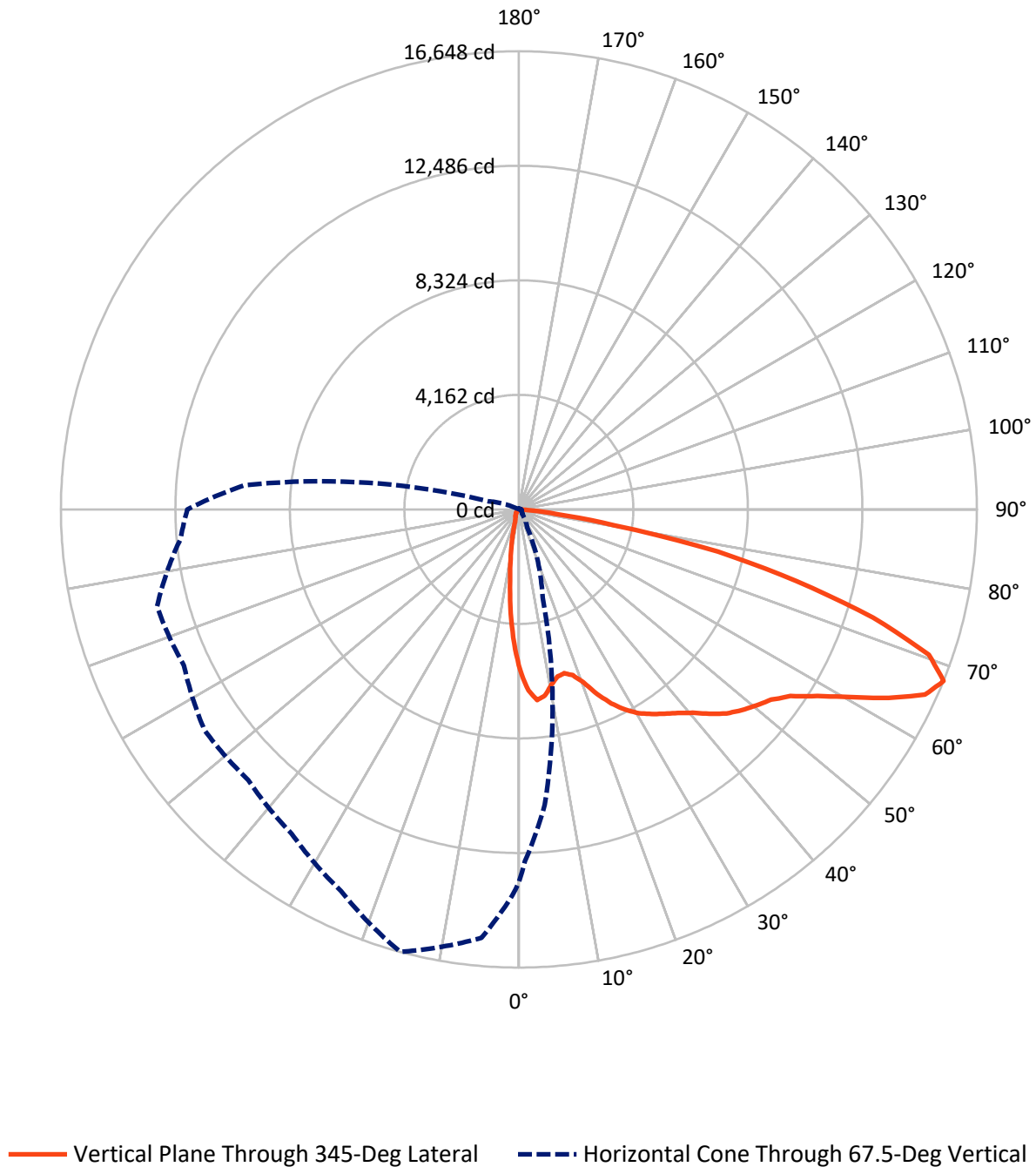
× Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 9.4 fc  
 Type IV - Medium - N/A

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## Luminous Intensity Polar Plot



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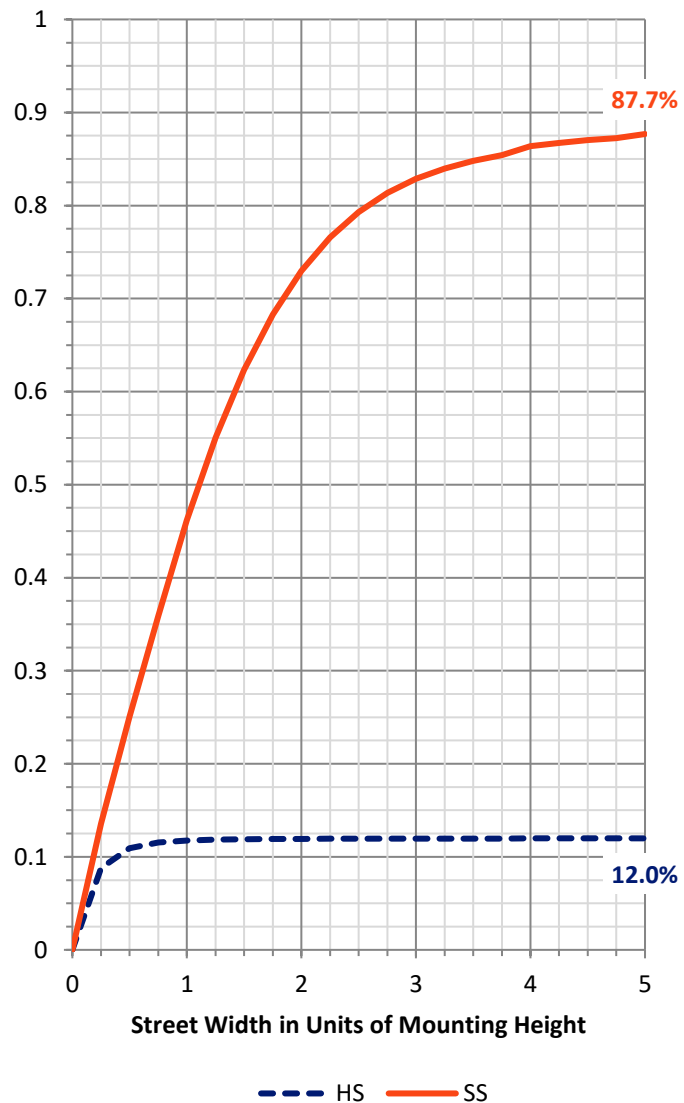
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 2177.0   | 0.0    | 2177.0  |
|                    | % Fixture | 12.1     | 0.0    | 12.1    |
| <b>Street Side</b> | Lumens    | 15810.0  | 0.0    | 15810.0 |
|                    | % Fixture | 87.9     | 0.0    | 87.9    |
| <b>Total</b>       | Lumens    | 17987.0  | 0.0    | 17987.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 449.7   | 2.5       |
| 10°-20°   | 895.1   | 5.0       |
| 20°-30°   | 1271.0  | 7.1       |
| 30°-40°   | 1877.4  | 10.4      |
| 40°-50°   | 2707.6  | 15.1      |
| 50°-60°   | 3800.9  | 21.1      |
| 60°-70°   | 4430.8  | 24.6      |
| 70°-80°   | 2265.1  | 12.6      |
| 80°-90°   | 289.3   | 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°    | 17987.0 | 100.0     |
| 0°-180°   | 17987.0 | 100.0     |

**Coefficient of Utilization**



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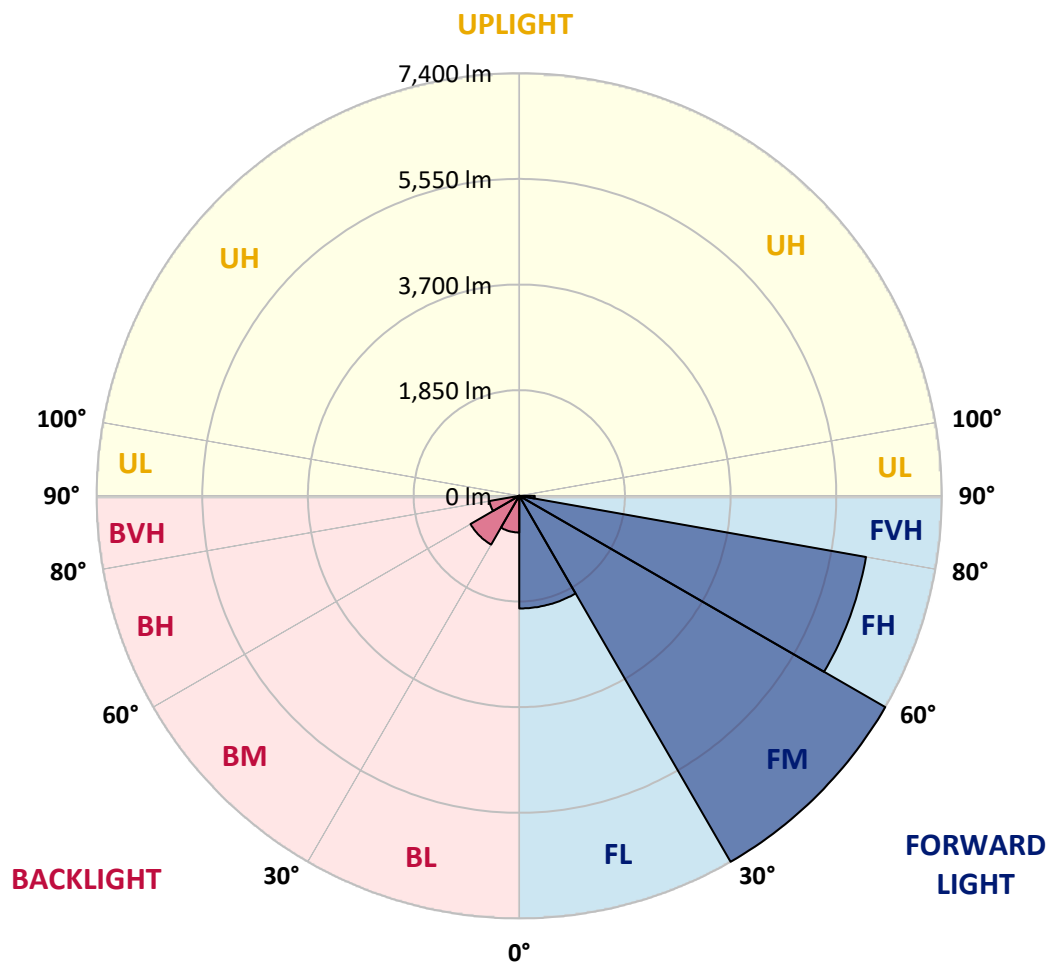
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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 1972.8 | 11.0      |                         |      |         |
| FM   | (30°-60°)   | 7400.1 | 41.1      |                         |      |         |
| FH   | (60°-80°)   | 6165.3 | 34.3      |                         |      | G3/7500 |
| FVH  | (80°-90°)   | 271.7  | 1.5       |                         |      | G3/500  |
| BL   | (0°-30°)    | 643.0  | 3.6       | B2/1000                 |      |         |
| BM   | (30°-60°)   | 985.8  | 5.5       | B1/1000                 |      |         |
| BH   | (60°-80°)   | 530.6  | 2.9       | B2/1000                 |      | G2/1000 |
| BVH  | (80°-90°)   | 17.6   | 0.1       |                         |      | G1/100  |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B2-U0-G3**

Type IV Medium





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 1°      | 5°      | 15°    | 25°    | 35°    | 45°    | 55°    | 65°    | 75°    | 85°    |
|-------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 5859.2  | 5859.2  | 5859.2  | 5859.2 | 5859.2 | 5859.2 | 5859.2 | 5859.2 | 5859.2 | 5859.2 | 5859.2 |
| 2.5°  | 6415.7  | 6366.2  | 6311.7  | 6133.6 | 5968.3 | 5779.1 | 5624.9 | 5517.5 | 5382.9 | 5208.2 | 5163.9 |
| 5°    | 6369.7  | 6316.8  | 6145.5  | 5749.3 | 5402.5 | 5065.0 | 4739.5 | 4548.7 | 4311.8 | 4071.5 | 4011.8 |
| 7.5°  | 5907.0  | 5851.6  | 5604.4  | 5061.6 | 4594.7 | 4107.3 | 3684.6 | 3423.0 | 3155.4 | 2935.6 | 2818.8 |
| 10°   | 5425.5  | 5365.0  | 5087.2  | 4428.5 | 3853.3 | 3412.8 | 3102.6 | 2852.9 | 2599.8 | 2364.7 | 2177.2 |
| 12.5° | 5094.0  | 5014.8  | 4713.1  | 3966.7 | 3465.6 | 3166.5 | 2876.8 | 2577.7 | 2235.1 | 1982.9 | 1776.7 |
| 15°   | 4955.1  | 4864.8  | 4546.1  | 3788.6 | 3328.4 | 2977.3 | 2599.8 | 2232.6 | 1831.2 | 1542.4 | 1353.2 |
| 17.5° | 5062.5  | 4944.9  | 4603.2  | 3776.6 | 3156.3 | 2678.2 | 2201.0 | 1769.9 | 1334.4 | 1042.2 | 907.5  |
| 20°   | 5427.2  | 5273.0  | 4839.2  | 3773.2 | 2947.5 | 2322.9 | 1717.9 | 1230.5 | 879.4  | 707.3  | 636.5  |
| 22.5° | 6001.5  | 5797.9  | 5178.4  | 3800.5 | 2731.9 | 1949.7 | 1240.7 | 835.9  | 660.4  | 570.9  | 529.2  |
| 25°   | 6695.2  | 6459.1  | 5666.7  | 3896.8 | 2542.7 | 1586.7 | 901.6  | 660.4  | 557.3  | 491.7  | 456.7  |
| 27.5° | 7354.7  | 7163.0  | 6283.6  | 4035.7 | 2396.2 | 1293.5 | 732.0  | 559.8  | 476.3  | 432.9  | 404.8  |
| 30°   | 8013.4  | 7772.3  | 6916.7  | 4201.0 | 2219.8 | 1095.0 | 643.4  | 510.4  | 426.9  | 380.9  | 363.0  |
| 32.5° | 8492.3  | 8292.1  | 7412.7  | 4320.3 | 2031.5 | 965.5  | 575.2  | 467.0  | 398.8  | 351.9  | 325.5  |
| 35°   | 9055.6  | 8828.9  | 7837.9  | 4346.7 | 1910.5 | 883.7  | 517.2  | 420.1  | 346.0  | 304.2  | 276.1  |
| 37.5° | 9664.0  | 9381.9  | 8328.7  | 4288.8 | 1815.9 | 843.6  | 473.8  | 398.8  | 323.0  | 280.4  | 250.5  |
| 40°   | 10337.2 | 10018.5 | 8799.9  | 4205.3 | 1723.0 | 830.0  | 440.6  | 382.6  | 305.1  | 261.6  | 230.9  |
| 42.5° | 11046.1 | 10670.3 | 9208.1  | 4117.5 | 1664.2 | 783.1  | 437.1  | 366.4  | 291.4  | 244.6  | 213.9  |
| 45°   | 11641.8 | 11260.9 | 9627.3  | 4088.5 | 1622.5 | 732.0  | 451.6  | 355.3  | 282.1  | 230.9  | 201.1  |
| 47.5° | 12116.4 | 11756.0 | 10056.8 | 4153.3 | 1598.6 | 685.1  | 411.6  | 369.8  | 276.9  | 219.0  | 190.0  |
| 50°   | 12683.1 | 12274.9 | 10661.8 | 4346.7 | 1563.7 | 638.2  | 372.4  | 423.5  | 276.9  | 211.3  | 180.7  |
| 52.5° | 13393.7 | 12989.8 | 11336.7 | 4646.7 | 1493.8 | 573.5  | 334.9  | 424.4  | 279.5  | 201.1  | 168.7  |
| 55°   | 14287.6 | 13994.5 | 12300.5 | 4975.6 | 1382.2 | 478.0  | 289.7  | 364.7  | 269.3  | 182.4  | 157.6  |
| 57.5° | 15144.9 | 14905.4 | 13179.0 | 5200.5 | 1233.0 | 373.2  | 252.2  | 294.0  | 246.3  | 160.2  | 140.6  |
| 59°   | 15379.2 | 15117.6 | 13501.1 | 5210.8 | 1121.4 | 325.5  | 233.5  | 242.9  | 241.2  | 150.0  | 130.4  |
| 60°   | 15379.2 | 15101.4 | 13594.0 | 5156.2 | 1040.4 | 299.1  | 221.6  | 216.4  | 251.4  | 143.2  | 124.4  |
| 62.5° | 15100.6 | 14710.3 | 13292.3 | 4787.3 | 848.7  | 254.8  | 193.4  | 178.9  | 225.8  | 128.7  | 109.9  |
| 65°   | 14521.1 | 13952.7 | 12264.7 | 4120.0 | 756.7  | 233.5  | 167.0  | 146.6  | 156.8  | 113.3  | 96.3   |
| 67.5° | 13554.8 | 12784.5 | 10782.8 | 3328.4 | 720.0  | 227.5  | 144.0  | 124.4  | 118.4  | 97.1   | 84.4   |
| 70°   | 11853.1 | 10998.4 | 8984.0  | 2616.9 | 688.5  | 225.0  | 121.0  | 104.8  | 95.4   | 81.8   | 71.6   |
| 72.5° | 8626.9  | 7735.6  | 6378.2  | 2046.0 | 669.8  | 230.1  | 97.1   | 87.8   | 78.4   | 63.9   | 55.4   |
| 75°   | 4934.7  | 4351.0  | 3584.9  | 1351.5 | 570.9  | 219.8  | 75.0   | 73.3   | 56.2   | 46.0   | 38.3   |
| 77.5° | 2549.6  | 2472.0  | 2148.2  | 518.9  | 273.5  | 96.3   | 49.4   | 42.6   | 33.2   | 28.1   | 23.0   |
| 80°   | 1100.1  | 1088.2  | 941.6   | 150.0  | 72.4   | 53.7   | 28.1   | 17.9   | 15.3   | 11.9   | 9.4    |
| 82.5° | 380.0   | 380.0   | 334.9   | 50.3   | 32.4   | 26.4   | 3.4    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 76.7    | 86.1    | 60.5    | 0.0    | 11.1   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 0.0     | 0.0     | 0.0     | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 90°   | 0.0     | 0.0     | 0.0     | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |



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**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 5859.2 | 5859.2 | 5859.2 | 5859.2 | 5859.2 | 5859.2 | 5859.2 | 5859.2 | 5859.2 | 5859.2 | 5859.2 |
| 2.5°  | 5110.2 | 5007.1 | 5000.3 | 4935.5 | 4854.6 | 4817.9 | 4796.6 | 4834.1 | 4880.1 | 4885.2 | 4954.3 |
| 5°    | 3966.7 | 3858.4 | 3903.6 | 3788.6 | 3811.6 | 3788.6 | 3751.1 | 3757.9 | 3778.3 | 3714.4 | 3793.7 |
| 7.5°  | 2785.6 | 2703.8 | 2755.8 | 2725.1 | 2766.0 | 2782.2 | 2759.2 | 2725.1 | 2624.6 | 2612.6 | 2681.6 |
| 10°   | 2099.6 | 2006.8 | 1951.4 | 1893.4 | 1906.2 | 1932.6 | 1924.1 | 1899.4 | 1835.5 | 1838.9 | 1905.4 |
| 12.5° | 1687.2 | 1583.3 | 1473.3 | 1331.0 | 1296.1 | 1315.7 | 1296.1 | 1281.6 | 1220.2 | 1225.4 | 1284.2 |
| 15°   | 1279.9 | 1194.7 | 1079.6 | 965.5  | 903.3  | 909.2  | 854.7  | 816.3  | 778.0  | 732.0  | 767.8  |
| 17.5° | 864.1  | 812.1  | 778.0  | 743.9  | 669.8  | 652.7  | 583.7  | 509.6  | 480.6  | 459.3  | 474.6  |
| 20°   | 611.8  | 583.7  | 570.1  | 568.4  | 525.8  | 504.5  | 437.1  | 391.1  | 376.6  | 372.4  | 381.8  |
| 22.5° | 511.3  | 490.8  | 471.2  | 460.1  | 438.8  | 414.1  | 363.0  | 340.0  | 329.8  | 324.7  | 331.5  |
| 25°   | 444.8  | 429.5  | 409.0  | 390.3  | 381.8  | 355.3  | 318.7  | 301.7  | 294.8  | 289.7  | 293.1  |
| 27.5° | 395.4  | 381.8  | 357.9  | 346.0  | 339.1  | 316.1  | 284.6  | 271.0  | 265.0  | 263.3  | 262.5  |
| 30°   | 356.2  | 343.4  | 321.3  | 307.6  | 295.7  | 275.2  | 256.5  | 242.9  | 236.9  | 235.2  | 233.5  |
| 32.5° | 317.0  | 306.8  | 292.3  | 278.6  | 265.9  | 247.1  | 230.9  | 219.8  | 210.5  | 208.8  | 207.9  |
| 35°   | 267.6  | 257.3  | 249.7  | 248.8  | 236.9  | 219.0  | 207.1  | 192.6  | 184.9  | 182.4  | 183.2  |
| 37.5° | 237.7  | 224.1  | 207.1  | 213.0  | 209.6  | 196.8  | 180.7  | 166.2  | 158.5  | 156.8  | 156.8  |
| 40°   | 219.0  | 204.5  | 184.9  | 174.7  | 184.9  | 182.4  | 156.8  | 142.3  | 134.6  | 133.8  | 132.1  |
| 42.5° | 201.1  | 186.6  | 164.5  | 147.4  | 152.5  | 160.2  | 135.5  | 121.9  | 114.2  | 112.5  | 109.9  |
| 45°   | 188.3  | 173.0  | 148.3  | 128.7  | 118.4  | 134.6  | 115.9  | 98.8   | 94.6   | 91.2   | 89.5   |
| 47.5° | 176.4  | 161.9  | 133.8  | 111.6  | 94.6   | 97.1   | 92.9   | 81.0   | 75.8   | 72.4   | 71.6   |
| 50°   | 166.2  | 150.8  | 121.0  | 95.4   | 78.4   | 71.6   | 75.0   | 63.9   | 59.6   | 56.2   | 54.5   |
| 52.5° | 154.2  | 139.7  | 107.4  | 82.7   | 65.6   | 56.2   | 57.1   | 50.3   | 46.0   | 43.5   | 42.6   |
| 55°   | 144.9  | 130.4  | 96.3   | 72.4   | 57.9   | 46.0   | 40.9   | 39.2   | 36.6   | 34.9   | 34.1   |
| 57.5° | 132.1  | 118.4  | 85.2   | 61.4   | 49.4   | 37.5   | 31.5   | 31.5   | 30.7   | 29.0   | 28.1   |
| 59°   | 124.4  | 112.5  | 78.4   | 55.4   | 45.2   | 32.4   | 28.1   | 29.0   | 28.1   | 26.4   | 25.6   |
| 60°   | 118.4  | 107.4  | 73.3   | 51.1   | 42.6   | 29.8   | 25.6   | 27.3   | 26.4   | 24.7   | 23.9   |
| 62.5° | 104.8  | 97.1   | 63.1   | 42.6   | 37.5   | 23.9   | 21.3   | 23.0   | 23.0   | 22.2   | 21.3   |
| 65°   | 92.0   | 83.5   | 53.7   | 35.8   | 34.9   | 20.5   | 17.0   | 20.5   | 21.3   | 19.6   | 17.9   |
| 67.5° | 80.1   | 71.6   | 46.9   | 29.0   | 32.4   | 16.2   | 12.8   | 17.0   | 23.0   | 17.9   | 16.2   |
| 70°   | 68.2   | 59.6   | 36.6   | 23.0   | 34.1   | 11.1   | 10.2   | 15.3   | 27.3   | 19.6   | 15.3   |
| 72.5° | 52.8   | 46.0   | 25.6   | 17.0   | 36.6   | 7.7    | 7.7    | 12.8   | 30.7   | 21.3   | 14.5   |
| 75°   | 36.6   | 29.8   | 15.3   | 10.2   | 29.8   | 5.1    | 5.1    | 11.9   | 29.0   | 19.6   | 13.6   |
| 77.5° | 21.3   | 16.2   | 5.1    | 0.9    | 15.3   | 0.0    | 0.9    | 8.5    | 20.5   | 11.9   | 6.0    |
| 80°   | 7.7    | 3.4    | 0.0    | 0.0    | 9.4    | 0.0    | 0.0    | 0.0    | 1.7    | 0.0    | 0.0    |
| 82.5° | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |



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**CANDELA DISTRIBUTION (continued):**

|       | 185°   | 195°   | 205°   | 215°   | 225°   | 235°   | 245°   | 255°   | 265°    | 270°    | 275°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|
| 0°    | 5859.2 | 5859.2 | 5859.2 | 5859.2 | 5859.2 | 5859.2 | 5859.2 | 5859.2 | 5859.2  | 5859.2  | 5859.2  |
| 2.5°  | 4972.2 | 5087.2 | 5190.3 | 5346.3 | 5531.2 | 5744.2 | 5927.4 | 6124.2 | 6309.2  | 6385.8  | 6438.7  |
| 5°    | 3809.9 | 3952.2 | 4118.3 | 4347.6 | 4652.6 | 5028.4 | 5380.3 | 5778.3 | 6206.0  | 6419.9  | 6621.0  |
| 7.5°  | 2693.6 | 2838.4 | 3044.7 | 3288.4 | 3657.3 | 4104.7 | 4564.8 | 5114.5 | 5693.9  | 6032.2  | 6365.4  |
| 10°   | 1936.9 | 2115.0 | 2307.6 | 2640.7 | 3015.7 | 3440.0 | 3913.8 | 4527.4 | 5173.3  | 5548.2  | 5949.6  |
| 12.5° | 1318.2 | 1521.0 | 1812.5 | 2185.7 | 2626.3 | 3042.1 | 3453.7 | 4039.1 | 4789.0  | 5160.5  | 5590.8  |
| 15°   | 790.8  | 903.3  | 1211.7 | 1643.8 | 2184.0 | 2702.1 | 3152.9 | 3740.0 | 4539.3  | 4994.3  | 5441.7  |
| 17.5° | 487.4  | 539.4  | 707.3  | 1061.8 | 1629.3 | 2284.6 | 2902.3 | 3638.6 | 4575.1  | 5129.0  | 5607.9  |
| 20°   | 388.6  | 409.0  | 462.7  | 627.2  | 1079.6 | 1824.4 | 2620.3 | 3618.1 | 4867.4  | 5549.1  | 6062.9  |
| 22.5° | 337.4  | 357.0  | 392.8  | 455.9  | 679.1  | 1366.0 | 2352.7 | 3636.9 | 5286.6  | 6178.8  | 6778.7  |
| 25°   | 297.4  | 314.4  | 348.5  | 400.5  | 497.6  | 962.1  | 2066.4 | 3720.4 | 5832.8  | 6960.2  | 7597.6  |
| 27.5° | 265.9  | 280.4  | 311.9  | 359.6  | 426.9  | 671.5  | 1741.7 | 3821.8 | 6480.4  | 7759.5  | 8388.3  |
| 30°   | 236.9  | 249.7  | 277.8  | 322.1  | 370.7  | 516.4  | 1385.6 | 3890.8 | 7128.9  | 8388.3  | 8953.3  |
| 32.5° | 212.2  | 221.6  | 247.1  | 284.6  | 322.1  | 411.6  | 1053.2 | 3879.7 | 7610.4  | 8911.6  | 9359.8  |
| 35°   | 186.6  | 196.0  | 218.1  | 250.5  | 280.4  | 340.0  | 828.3  | 3672.7 | 8029.6  | 9454.4  | 9825.0  |
| 37.5° | 158.5  | 170.4  | 191.7  | 220.7  | 241.2  | 299.1  | 669.8  | 3423.0 | 8454.8  | 10074.7 | 10344.0 |
| 40°   | 134.6  | 146.6  | 165.3  | 196.8  | 209.6  | 283.8  | 514.7  | 3118.8 | 8932.9  | 10768.3 | 10913.2 |
| 42.5° | 111.6  | 122.7  | 142.3  | 169.6  | 197.7  | 244.6  | 380.9  | 2771.1 | 9392.2  | 11361.4 | 11432.1 |
| 45°   | 90.3   | 101.4  | 121.9  | 149.1  | 211.3  | 202.8  | 294.8  | 2398.7 | 9762.8  | 11854.8 | 11877.8 |
| 47.5° | 71.6   | 81.8   | 103.1  | 140.6  | 196.8  | 161.9  | 210.5  | 2106.5 | 10073.9 | 12240.0 | 12179.5 |
| 50°   | 55.4   | 63.9   | 86.1   | 161.1  | 172.1  | 133.8  | 159.3  | 2009.3 | 10352.5 | 12478.6 | 12321.8 |
| 52.5° | 43.5   | 51.1   | 70.7   | 150.8  | 133.8  | 110.8  | 133.8  | 2100.5 | 10734.3 | 12676.3 | 12401.9 |
| 55°   | 34.9   | 42.6   | 55.4   | 86.1   | 91.2   | 93.7   | 114.2  | 2185.7 | 11393.0 | 13139.8 | 12874.8 |
| 57.5° | 29.0   | 36.6   | 45.2   | 60.5   | 69.0   | 79.2   | 101.4  | 2195.1 | 12169.2 | 13910.1 | 13659.6 |
| 59°   | 26.4   | 33.2   | 40.9   | 53.7   | 60.5   | 72.4   | 95.4   | 2144.0 | 12442.8 | 14190.5 | 14065.2 |
| 60°   | 24.7   | 31.5   | 38.3   | 49.4   | 56.2   | 68.2   | 92.0   | 2095.4 | 12454.7 | 14180.3 | 14238.2 |
| 62.5° | 21.3   | 28.1   | 34.1   | 41.8   | 47.7   | 57.9   | 82.7   | 1915.6 | 11950.2 | 13715.9 | 14134.2 |
| 65°   | 18.7   | 24.7   | 30.7   | 35.8   | 40.9   | 52.0   | 75.0   | 1587.5 | 11088.7 | 12966.8 | 13422.7 |
| 67.5° | 17.0   | 21.3   | 28.1   | 31.5   | 36.6   | 46.0   | 66.5   | 1131.6 | 10012.5 | 12050.8 | 12346.5 |
| 70°   | 15.3   | 20.5   | 25.6   | 29.0   | 33.2   | 40.1   | 57.1   | 650.2  | 8454.8  | 10709.5 | 10920.0 |
| 72.5° | 14.5   | 19.6   | 23.0   | 27.3   | 29.8   | 35.8   | 52.0   | 305.9  | 6190.7  | 8579.2  | 9128.8  |
| 75°   | 12.8   | 17.9   | 21.3   | 25.6   | 28.1   | 32.4   | 44.3   | 146.6  | 4117.5  | 6208.6  | 6833.2  |
| 77.5° | 7.7    | 14.5   | 19.6   | 23.0   | 24.7   | 28.1   | 36.6   | 84.4   | 2628.0  | 4297.3  | 5061.6  |
| 80°   | 0.0    | 5.1    | 14.5   | 19.6   | 21.3   | 23.9   | 28.1   | 66.5   | 1406.0  | 2455.0  | 2946.7  |
| 82.5° | 0.0    | 0.0    | 10.2   | 15.3   | 14.5   | 16.2   | 21.3   | 41.8   | 634.0   | 1604.6  | 1808.2  |
| 85°   | 0.0    | 0.0    | 3.4    | 11.9   | 10.2   | 7.7    | 14.5   | 14.5   | 138.9   | 812.1   | 1013.2  |
| 87.5° | 0.0    | 0.0    | 0.0    | 0.9    | 5.1    | 3.4    | 6.0    | 1.7    | 0.9     | 60.5    | 245.4   |
| 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: P364023

CATALOG NUMBER: NVN-SA5B-727-U-SLR-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 285°    | 295°    | 305°    | 315°    | 325°    | 335°    | 345°    | 355°    | 359°    | 360°    |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 5859.2  | 5859.2  | 5859.2  | 5859.2  | 5859.2  | 5859.2  | 5859.2  | 5859.2  | 5859.2  | 5859.2  |
| 2.5°  | 6623.6  | 6686.6  | 6793.2  | 6843.4  | 6818.7  | 6713.9  | 6588.7  | 6460.8  | 6385.8  | 6415.7  |
| 5°    | 7030.9  | 7355.6  | 7543.0  | 7605.2  | 7501.3  | 7266.1  | 6958.5  | 6552.9  | 6408.9  | 6369.7  |
| 7.5°  | 7030.9  | 7641.9  | 8028.7  | 8096.9  | 7865.1  | 7404.1  | 6827.2  | 6194.1  | 5983.6  | 5907.0  |
| 10°   | 6783.8  | 7615.5  | 8154.9  | 8263.1  | 7939.3  | 7249.9  | 6477.0  | 5754.4  | 5504.7  | 5425.5  |
| 12.5° | 6505.1  | 7400.7  | 7969.1  | 8118.2  | 7852.4  | 7096.5  | 6234.2  | 5457.0  | 5163.0  | 5094.0  |
| 15°   | 6333.9  | 7136.6  | 7606.9  | 7715.2  | 7602.7  | 7007.0  | 6176.2  | 5367.6  | 5021.6  | 4955.1  |
| 17.5° | 6395.2  | 6932.1  | 7101.6  | 7164.7  | 7240.5  | 6975.5  | 6333.9  | 5563.5  | 5125.5  | 5062.5  |
| 20°   | 6626.1  | 6716.5  | 6628.7  | 6708.0  | 6912.5  | 7006.2  | 6709.7  | 6037.3  | 5511.6  | 5427.2  |
| 22.5° | 7018.1  | 6604.8  | 6358.6  | 6390.1  | 6638.9  | 7107.6  | 7284.0  | 6713.9  | 6107.2  | 6001.5  |
| 25°   | 7474.9  | 6695.2  | 6208.6  | 6180.5  | 6436.1  | 7241.4  | 7808.9  | 7450.2  | 6811.9  | 6695.2  |
| 27.5° | 8049.2  | 6898.0  | 6177.9  | 6149.8  | 6365.4  | 7366.6  | 8245.2  | 8177.9  | 7554.1  | 7354.7  |
| 30°   | 8492.3  | 7097.4  | 6269.1  | 6204.3  | 6436.1  | 7453.6  | 8595.4  | 8795.7  | 8145.5  | 8013.4  |
| 32.5° | 8810.2  | 7332.6  | 6417.4  | 6323.6  | 6635.5  | 7603.5  | 8865.5  | 9361.5  | 8692.6  | 8492.3  |
| 35°   | 9052.2  | 7588.2  | 6656.8  | 6502.6  | 6909.9  | 7831.1  | 9118.6  | 9963.9  | 9274.6  | 9055.6  |
| 37.5° | 9278.8  | 7946.9  | 7030.9  | 6846.8  | 7340.2  | 8197.5  | 9386.2  | 10647.3 | 9925.6  | 9664.0  |
| 40°   | 9595.0  | 8353.4  | 7607.8  | 7444.2  | 8063.7  | 8696.8  | 9720.2  | 11359.7 | 10666.1 | 10337.2 |
| 42.5° | 9911.1  | 8789.7  | 8198.3  | 8242.6  | 8966.1  | 9303.5  | 10151.4 | 12113.0 | 11397.2 | 11046.1 |
| 45°   | 10200.0 | 9239.6  | 9039.4  | 9243.9  | 9803.7  | 9969.0  | 10580.0 | 12548.4 | 11980.9 | 11641.8 |
| 47.5° | 10457.3 | 9802.0  | 9875.3  | 10419.8 | 10756.4 | 10571.5 | 10900.4 | 12924.2 | 12415.5 | 12116.4 |
| 50°   | 10756.4 | 10529.7 | 10977.1 | 11747.4 | 11853.1 | 11116.9 | 11191.8 | 13369.0 | 12923.4 | 12683.1 |
| 52.5° | 11083.6 | 11296.7 | 12197.4 | 12876.5 | 12842.4 | 11709.1 | 11485.0 | 13867.5 | 13619.6 | 13393.7 |
| 55°   | 11455.2 | 11916.2 | 13271.9 | 13933.1 | 13904.2 | 12370.3 | 11970.7 | 14483.6 | 14492.1 | 14287.6 |
| 57.5° | 12006.5 | 12449.6 | 14001.3 | 14787.8 | 14836.4 | 13133.8 | 12793.8 | 15173.8 | 15281.2 | 15144.9 |
| 59°   | 12401.9 | 12795.6 | 14290.2 | 15144.9 | 15342.6 | 13724.4 | 13395.5 | 15574.3 | 15503.6 | 15379.2 |
| 60°   | 12695.0 | 13015.4 | 14433.3 | 15331.5 | 15636.5 | 14124.9 | 13839.4 | 15809.5 | 15530.0 | 15379.2 |
| 62.5° | 13420.2 | 13494.3 | 14691.5 | 15542.8 | 15974.8 | 15014.5 | 15088.6 | 16210.0 | 15346.8 | 15100.6 |
| 65°   | 13758.5 | 13796.8 | 14688.1 | 15164.5 | 15647.6 | 15707.3 | 16222.0 | 16222.0 | 14899.5 | 14521.1 |
| 67.5° | 13617.0 | 13432.1 | 13959.6 | 13910.1 | 14392.4 | 15295.7 | 16648.0 | 15627.2 | 14043.9 | 13554.8 |
| 70°   | 12466.6 | 11755.1 | 11520.8 | 11542.1 | 11911.0 | 13304.3 | 15804.4 | 13876.9 | 12424.9 | 11853.1 |
| 72.5° | 10373.0 | 8666.1  | 8087.5  | 8747.9  | 8844.2  | 10224.7 | 13468.7 | 10450.5 | 9162.9  | 8626.9  |
| 75°   | 8343.2  | 6108.9  | 5168.2  | 5865.2  | 6028.8  | 7482.5  | 10419.0 | 6508.6  | 5352.2  | 4934.7  |
| 77.5° | 5993.9  | 4385.1  | 3708.5  | 3659.9  | 3871.2  | 4745.5  | 7393.1  | 3275.6  | 2731.9  | 2549.6  |
| 80°   | 3405.1  | 2886.2  | 3107.7  | 2932.2  | 3038.7  | 2967.1  | 3512.5  | 1436.7  | 1176.8  | 1100.1  |
| 82.5° | 2055.3  | 1706.0  | 1847.4  | 1538.1  | 1946.3  | 1694.9  | 1353.2  | 460.1   | 399.6   | 380.0   |
| 85°   | 1337.0  | 932.2   | 485.7   | 325.5   | 670.6   | 1083.1  | 302.5   | 125.3   | 96.3    | 76.7    |
| 87.5° | 461.0   | 237.7   | 23.9    | 10.2    | 71.6    | 202.0   | 11.1    | 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     |

Signify Classified - Internal  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



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

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

Report Number: SP1-1908-441-1-R4

Test Date: 08/20/2019

Luminaire Tested: SA1C-727-U-5WQ

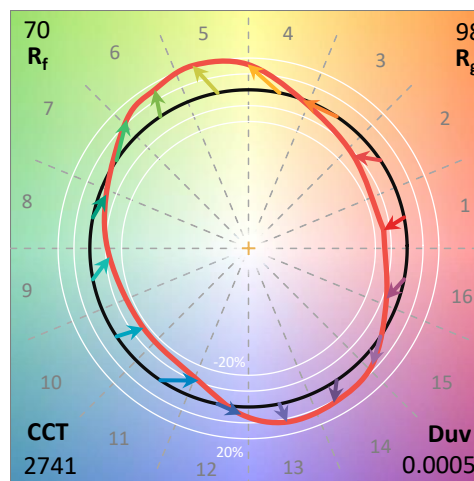
### Test Information

Test Method: LM-79-2008  
 Report Number: SP1-1908-441-1-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-727-U-5WQ**  
 Description: MCGRAW EDISON ROADWAY AND AREA LUMINAIRE

\*\*\*THIS IS A REVISION OF SP1-1908-441-1-R3. TO UPDATE THE CATALOG NUMBER.\*\*\*TESTED IN SITU. (1) 70 CRI, 2700K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

### Spectral Parameters

|                           |        |           |      |      |       |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K):                  | 2741   | CRI (Ra): | 71.5 |      |       |
| CIE u':                   | 0.2605 | R1:       | 69.2 | R9:  | -16.1 |
| CIE v':                   | 0.5272 | R2:       | 79.4 | R10: | 51.4  |
| Duv:                      | 0.0005 | R3:       | 87.8 | R11: | 63.1  |
| CIE x:                    | 0.4573 | R4:       | 69.4 | R12: | 42.0  |
| CIE y:                    | 0.4113 | R5:       | 66.4 | R13: | 70.2  |
| CIE z:                    | 0.1313 | R6:       | 69.8 | R14: | 92.4  |
| Peak Wavelength (nm):     | 602    | R7:       | 79.8 |      |       |
| Dominant Wavelength (nm): | 583    | R8:       | 50.1 |      |       |
| Purity:                   | 61.2   |           |      |      |       |
| Rf:                       | 69.9   |           |      |      |       |
| Rg:                       | 98.3   |           |      |      |       |



### Test Conditions

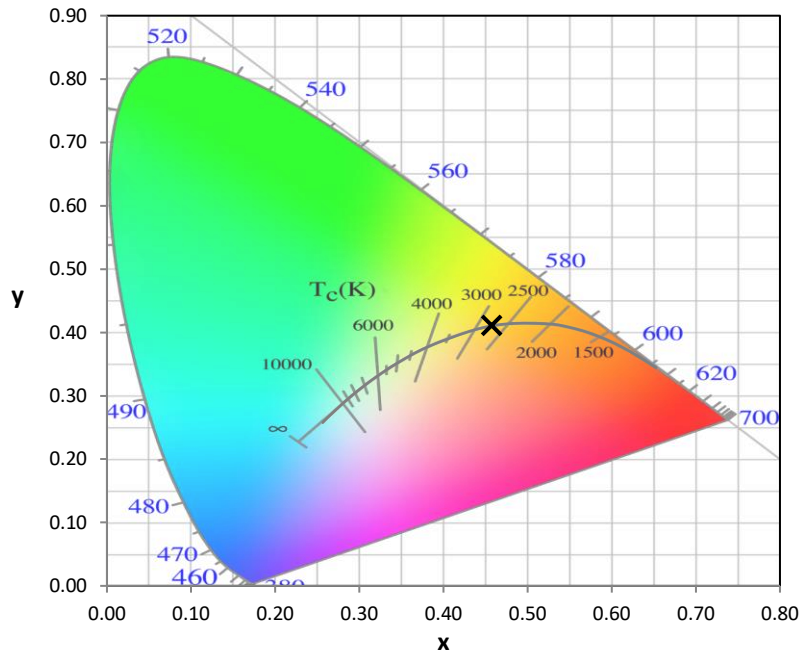
Stabilization Time: 56M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.3./42%  
 Sphere Temperature (°C): 25.7

REPORT NUMBER: SP1-1908-441-1-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            |

REPORT NUMBER: SP1-1908-441-1-R4

CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 2700K 4-step quadrangle

REPORT NUMBER: SP1-1908-441-1-R4

**Photopic Flux vs. Wavelength**



**Photopic Lumens: 6211.7**

| 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       | 2044             | 0.0              | 490       | 7179             | 1.0              | 620       | 118034           | 30.7             | 750       | 8362             | 0.0              | 880       | 3128             | 0.0              |
| 365       | 2016             | 0.0              | 495       | 10476            | 1.9              | 625       | 111884           | 24.7             | 755       | 7635             | 0.0              | 885       | 3110             | 0.0              |
| 370       | 2020             | 0.0              | 500       | 15549            | 3.4              | 630       | 106119           | 19.2             | 760       | 6582             | 0.0              | 890       | 2632             | 0.0              |
| 375       | 2137             | 0.0              | 505       | 22477            | 6.3              | 635       | 99706            | 15.0             | 765       | 5777             | 0.0              | 895       | 2709             | 0.0              |
| 380       | 2046             | 0.0              | 510       | 30417            | 10.4             | 640       | 92142            | 11.0             | 770       | 5474             | 0.0              | 900       | 2016             | 0.0              |
| 385       | 1925             | 0.0              | 515       | 39274            | 16.3             | 645       | 84987            | 8.2              | 775       | 4977             | 0.0              | 905       | 1748             | 0.0              |
| 390       | 1893             | 0.0              | 520       | 47282            | 22.9             | 650       | 78016            | 5.7              | 780       | 4723             | 0.0              | 910       | 2046             | 0.0              |
| 395       | 1695             | 0.0              | 525       | 55413            | 29.7             | 655       | 71541            | 4.1              | 785       | 4219             | 0.0              | 915       | 1844             | 0.0              |
| 400       | 1633             | 0.0              | 530       | 62377            | 36.7             | 660       | 64863            | 2.7              | 790       | 3969             | 0.0              | 920       | 2734             | 0.0              |
| 405       | 2065             | 0.0              | 535       | 68520            | 42.5             | 665       | 58485            | 1.9              | 795       | 4122             | 0.0              | 925       | 2307             | 0.0              |
| 410       | 3449             | 0.0              | 540       | 73435            | 47.8             | 670       | 51641            | 1.1              | 800       | 2864             | 0.0              | 930       | 2039             | 0.0              |
| 415       | 7117             | 0.0              | 545       | 78677            | 52.4             | 675       | 46030            | 0.8              | 805       | 3151             | 0.0              | 935       | 1784             | 0.0              |
| 420       | 13992            | 0.0              | 550       | 83331            | 56.6             | 680       | 40590            | 0.5              | 810       | 3022             | 0.0              | 940       | 2464             | 0.0              |
| 425       | 25176            | 0.1              | 555       | 89120            | 60.9             | 685       | 35691            | 0.3              | 815       | 3471             | 0.0              | 945       | 2794             | 0.0              |
| 430       | 38151            | 0.3              | 560       | 94613            | 64.3             | 690       | 31631            | 0.2              | 820       | 2749             | 0.0              | 950       | 3090             | 0.0              |
| 435       | 49673            | 0.6              | 565       | 99818            | 66.4             | 695       | 27437            | 0.1              | 825       | 2729             | 0.0              | 955       | 1866             | 0.0              |
| 440       | 57273            | 0.9              | 570       | 106526           | 69.3             | 700       | 24589            | 0.1              | 830       | 2282             | 0.0              | 960       | 3110             | 0.0              |
| 445       | 54802            | 1.1              | 575       | 111610           | 69.4             | 705       | 21832            | 0.0              | 835       | 3140             | 0.0              | 965       | 3880             | 0.0              |
| 450       | 39184            | 1.0              | 580       | 117163           | 69.6             | 710       | 19500            | 0.0              | 840       | 2365             | 0.0              | 970       | 3243             | 0.0              |
| 455       | 22506            | 0.8              | 585       | 122201           | 67.9             | 715       | 17870            | 0.0              | 845       | 3024             | 0.0              | 975       | 2014             | 0.0              |
| 460       | 13692            | 0.6              | 590       | 125662           | 65.0             | 720       | 15924            | 0.0              | 850       | 2510             | 0.0              | 980       | 1688             | 0.0              |
| 465       | 9446             | 0.5              | 595       | 127415           | 60.4             | 725       | 14268            | 0.0              | 855       | 2739             | 0.0              | 985       | 2827             | 0.0              |
| 470       | 6698             | 0.4              | 600       | 129155           | 55.7             | 730       | 12438            | 0.0              | 860       | 3515             | 0.0              | 990       | 4172             | 0.0              |
| 475       | 5328             | 0.4              | 605       | 128057           | 49.6             | 735       | 11255            | 0.0              | 865       | 3600             | 0.0              | 995       | 3177             | 0.0              |
| 480       | 5081             | 0.5              | 610       | 126031           | 43.3             | 740       | 9951             | 0.0              | 870       | 3609             | 0.0              | 1000      | 3241             | 0.0              |
| 485       | 5579             | 0.7              | 615       | 123059           | 37.1             | 745       | 8870             | 0.0              | 875       | 3208             | 0.0              |           |                  |                  |

REPORT NUMBER: SP1-1908-441-1-R4

Scotopic Flux vs. Wavelength



Scotopic Lumens: 6474.3

S/P: 1.04

| $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|
| 360               | 2044                          | 0.0                            | 490               | 7179                          | 6.0                            | 620               | 118034                        | 0.1                            | 750               | 8362                          | 0.0                            | 880               | 3128                          | 0.0                            |
| 365               | 2016                          | 0.0                            | 495               | 10476                         | 8.6                            | 625               | 111884                        | 0.1                            | 755               | 7635                          | 0.0                            | 885               | 3110                          | 0.0                            |
| 370               | 2020                          | 0.0                            | 500               | 15549                         | 12.5                           | 630               | 106119                        | 0.0                            | 760               | 6582                          | 0.0                            | 890               | 2632                          | 0.0                            |
| 375               | 2137                          | 0.0                            | 505               | 22477                         | 17.3                           | 635               | 99706                         | 0.0                            | 765               | 5777                          | 0.0                            | 895               | 2709                          | 0.0                            |
| 380               | 2046                          | 0.0                            | 510               | 30417                         | 21.8                           | 640               | 92142                         | 0.0                            | 770               | 5474                          | 0.0                            | 900               | 2016                          | 0.0                            |
| 385               | 1925                          | 0.0                            | 515               | 39274                         | 25.7                           | 645               | 84987                         | 0.0                            | 775               | 4977                          | 0.0                            | 905               | 1748                          | 0.0                            |
| 390               | 1893                          | 0.0                            | 520               | 47282                         | 27.5                           | 650               | 78016                         | 0.0                            | 780               | 4723                          | 0.0                            | 910               | 2046                          | 0.0                            |
| 395               | 1695                          | 0.0                            | 525               | 55413                         | 28.1                           | 655               | 71541                         | 0.0                            | 785               | 4219                          | 0.0                            | 915               | 1844                          | 0.0                            |
| 400               | 1633                          | 0.0                            | 530               | 62377                         | 27.0                           | 660               | 64863                         | 0.0                            | 790               | 3969                          | 0.0                            | 920               | 2734                          | 0.0                            |
| 405               | 2065                          | 0.0                            | 535               | 68520                         | 24.7                           | 665               | 58485                         | 0.0                            | 795               | 4122                          | 0.0                            | 925               | 2307                          | 0.0                            |
| 410               | 3449                          | 0.1                            | 540               | 73435                         | 21.5                           | 670               | 51641                         | 0.0                            | 800               | 2864                          | 0.0                            | 930               | 2039                          | 0.0                            |
| 415               | 7117                          | 0.5                            | 545               | 78677                         | 18.3                           | 675               | 46030                         | 0.0                            | 805               | 3151                          | 0.0                            | 935               | 1784                          | 0.0                            |
| 420               | 13992                         | 1.6                            | 550               | 83331                         | 15.0                           | 680               | 40590                         | 0.0                            | 810               | 3022                          | 0.0                            | 940               | 2464                          | 0.0                            |
| 425               | 25176                         | 3.9                            | 555               | 89120                         | 12.0                           | 685               | 35691                         | 0.0                            | 815               | 3471                          | 0.0                            | 945               | 2794                          | 0.0                            |
| 430               | 38151                         | 8.1                            | 560               | 94613                         | 9.3                            | 690               | 31631                         | 0.0                            | 820               | 2749                          | 0.0                            | 950               | 3090                          | 0.0                            |
| 435               | 49673                         | 13.3                           | 565               | 99818                         | 7.0                            | 695               | 27437                         | 0.0                            | 825               | 2729                          | 0.0                            | 955               | 1866                          | 0.0                            |
| 440               | 57273                         | 19.1                           | 570               | 106526                        | 5.2                            | 700               | 24589                         | 0.0                            | 830               | 2282                          | 0.0                            | 960               | 3110                          | 0.0                            |
| 445               | 54802                         | 21.6                           | 575               | 111610                        | 3.7                            | 705               | 21832                         | 0.0                            | 835               | 3140                          | 0.0                            | 965               | 3880                          | 0.0                            |
| 450               | 39184                         | 18.1                           | 580               | 117163                        | 2.6                            | 710               | 19500                         | 0.0                            | 840               | 2365                          | 0.0                            | 970               | 3243                          | 0.0                            |
| 455               | 22506                         | 11.8                           | 585               | 122201                        | 1.8                            | 715               | 17870                         | 0.0                            | 845               | 3024                          | 0.0                            | 975               | 2014                          | 0.0                            |
| 460               | 13692                         | 8.1                            | 590               | 125662                        | 1.2                            | 720               | 15924                         | 0.0                            | 850               | 2510                          | 0.0                            | 980               | 1688                          | 0.0                            |
| 465               | 9446                          | 6.2                            | 595               | 127415                        | 0.8                            | 725               | 14268                         | 0.0                            | 855               | 2739                          | 0.0                            | 985               | 2827                          | 0.0                            |
| 470               | 6698                          | 4.8                            | 600               | 129155                        | 0.5                            | 730               | 12438                         | 0.0                            | 860               | 3515                          | 0.0                            | 990               | 4172                          | 0.0                            |
| 475               | 5328                          | 4.1                            | 605               | 128057                        | 0.4                            | 735               | 11255                         | 0.0                            | 865               | 3600                          | 0.0                            | 995               | 3177                          | 0.0                            |
| 480               | 5081                          | 4.1                            | 610               | 126031                        | 0.2                            | 740               | 9951                          | 0.0                            | 870               | 3609                          | 0.0                            | 1000              | 3241                          | 0.0                            |
| 485               | 5579                          | 4.6                            | 615               | 123059                        | 0.1                            | 745               | 8870                          | 0.0                            | 875               | 3208                          | 0.0                            |                   |                               |                                |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 2145.7 M/P: 0.35**

| 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       | 2044             | 0.0              | 490       | 7179             | 11.1             | 620       | 118034           | 1.5              | 750       | 8362             | 0.0              | 880       | 3128             | 0.0              |
| 365       | 2016             | 0.0              | 495       | 10476            | 16.9             | 625       | 111884           | 0.9              | 755       | 7635             | 0.0              | 885       | 3110             | 0.0              |
| 370       | 2020             | 0.0              | 500       | 15549            | 26.0             | 630       | 106119           | 0.6              | 760       | 6582             | 0.0              | 890       | 2632             | 0.0              |
| 375       | 2137             | 0.0              | 505       | 22477            | 38.2             | 635       | 99706            | 0.4              | 765       | 5777             | 0.0              | 895       | 2709             | 0.0              |
| 380       | 2046             | 0.0              | 510       | 30417            | 51.6             | 640       | 92142            | 0.2              | 770       | 5474             | 0.0              | 900       | 2016             | 0.0              |
| 385       | 1925             | 0.0              | 515       | 39274            | 65.1             | 645       | 84987            | 0.1              | 775       | 4977             | 0.0              | 905       | 1748             | 0.0              |
| 390       | 1893             | 0.0              | 520       | 47282            | 75.2             | 650       | 78016            | 0.1              | 780       | 4723             | 0.0              | 910       | 2046             | 0.0              |
| 395       | 1695             | 0.0              | 525       | 55413            | 82.9             | 655       | 71541            | 0.1              | 785       | 4219             | 0.0              | 915       | 1844             | 0.0              |
| 400       | 1633             | 0.0              | 530       | 62377            | 86.0             | 660       | 64863            | 0.0              | 790       | 3969             | 0.0              | 920       | 2734             | 0.0              |
| 405       | 2065             | 0.1              | 535       | 68520            | 85.4             | 665       | 58485            | 0.0              | 795       | 4122             | 0.0              | 925       | 2307             | 0.0              |
| 410       | 3449             | 0.2              | 540       | 73435            | 81.1             | 670       | 51641            | 0.0              | 800       | 2864             | 0.0              | 930       | 2039             | 0.0              |
| 415       | 7117             | 0.7              | 545       | 78677            | 75.4             | 675       | 46030            | 0.0              | 805       | 3151             | 0.0              | 935       | 1784             | 0.0              |
| 420       | 13992            | 2.3              | 550       | 83331            | 68.1             | 680       | 40590            | 0.0              | 810       | 3022             | 0.0              | 940       | 2464             | 0.0              |
| 425       | 25176            | 6.2              | 555       | 89120            | 60.9             | 685       | 35691            | 0.0              | 815       | 3471             | 0.0              | 945       | 2794             | 0.0              |
| 430       | 38151            | 13.0             | 560       | 94613            | 52.9             | 690       | 31631            | 0.0              | 820       | 2749             | 0.0              | 950       | 3090             | 0.0              |
| 435       | 49673            | 22.2             | 565       | 99818            | 44.8             | 695       | 27437            | 0.0              | 825       | 2729             | 0.0              | 955       | 1866             | 0.0              |
| 440       | 57273            | 32.0             | 570       | 106526           | 37.6             | 700       | 24589            | 0.0              | 830       | 2282             | 0.0              | 960       | 3110             | 0.0              |
| 445       | 54802            | 36.7             | 575       | 111610           | 30.4             | 705       | 21832            | 0.0              | 835       | 3140             | 0.0              | 965       | 3880             | 0.0              |
| 450       | 39184            | 30.4             | 580       | 117163           | 24.1             | 710       | 19500            | 0.0              | 840       | 2365             | 0.0              | 970       | 3243             | 0.0              |
| 455       | 22506            | 19.7             | 585       | 122201           | 18.7             | 715       | 17870            | 0.0              | 845       | 3024             | 0.0              | 975       | 2014             | 0.0              |
| 460       | 13692            | 13.2             | 590       | 125662           | 14.0             | 720       | 15924            | 0.0              | 850       | 2510             | 0.0              | 980       | 1688             | 0.0              |
| 465       | 9446             | 10.0             | 595       | 127415           | 10.2             | 725       | 14268            | 0.0              | 855       | 2739             | 0.0              | 985       | 2827             | 0.0              |
| 470       | 6698             | 7.7              | 600       | 129155           | 7.3              | 730       | 12438            | 0.0              | 860       | 3515             | 0.0              | 990       | 4172             | 0.0              |
| 475       | 5328             | 6.7              | 605       | 128057           | 5.0              | 735       | 11255            | 0.0              | 865       | 3600             | 0.0              | 995       | 3177             | 0.0              |
| 480       | 5081             | 6.9              | 610       | 126031           | 3.4              | 740       | 9951             | 0.0              | 870       | 3609             | 0.0              | 1000      | 3241             | 0.0              |
| 485       | 5579             | 8.1              | 615       | 123059           | 2.3              | 745       | 8870             | 0.0              | 875       | 3208             | 0.0              |           |                  |                  |

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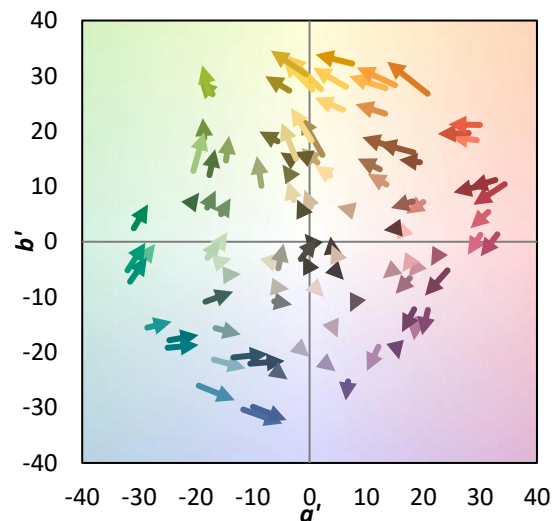
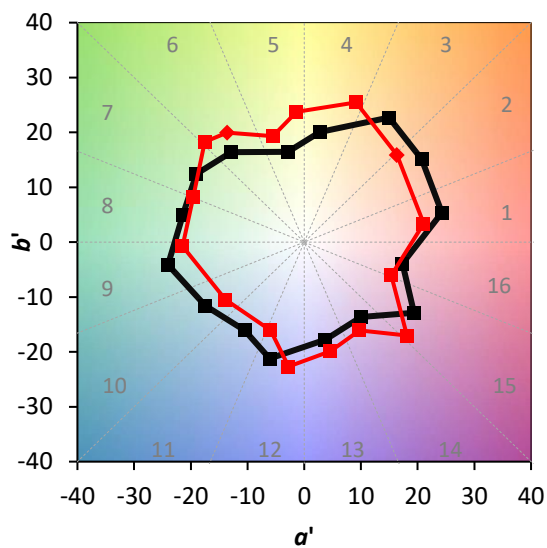
**TM-30-18**

### Summary

$R_f = 69.9$   
 $R_g = 98.3$   
 $CIE R_a = 71.5$   
 $R_g = -16.1$



### Color Vector Graphics



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

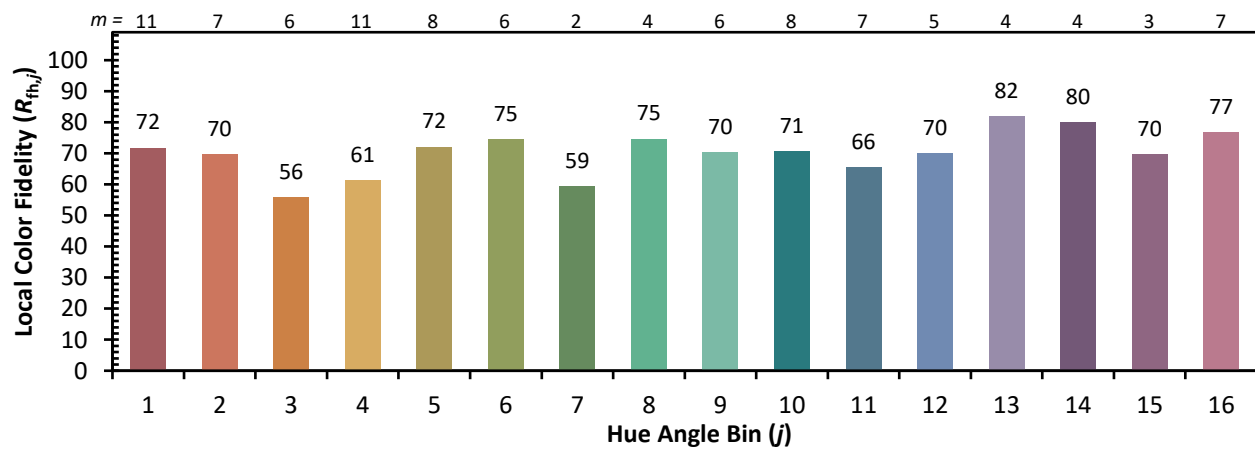
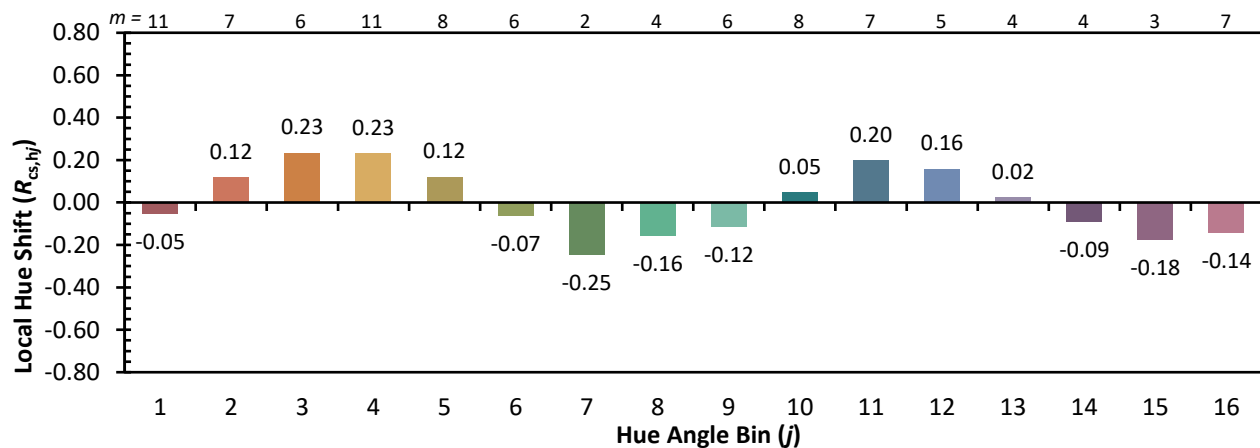
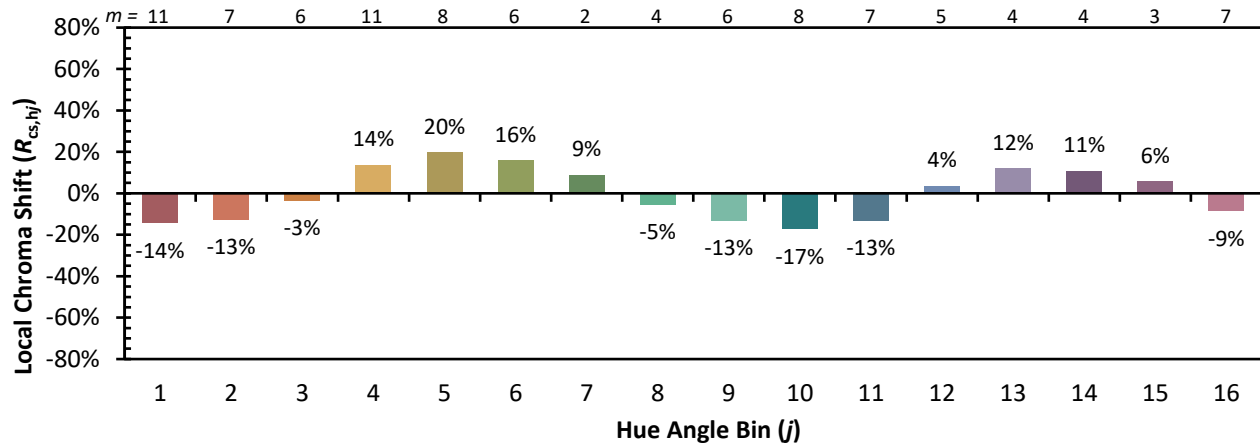
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| CES02 = 63 | CES27 = 74 | CES52 = 80 | CES77 = 75 |
| CES03 = 31 | CES28 = 80 | CES53 = 66 | CES78 = 56 |
| CES04 = 71 | CES29 = 44 | CES54 = 77 | CES79 = 81 |
| CES05 = 50 | CES30 = 46 | CES55 = 74 | CES80 = 80 |
| CES06 = 52 | CES31 = 50 | CES56 = 63 | CES81 = 73 |
| CES07 = 42 | CES32 = 49 | CES57 = 60 | CES82 = 91 |
| CES08 = 41 | CES33 = 53 | CES58 = 63 | CES83 = 84 |
| CES09 = 29 | CES34 = 66 | CES59 = 85 | CES84 = 90 |
| CES10 = 77 | CES35 = 82 | CES60 = 89 | CES85 = 87 |
| CES11 = 60 | CES36 = 78 | CES61 = 85 | CES86 = 65 |
| CES12 = 66 | CES37 = 75 | CES62 = 69 | CES87 = 78 |
| CES13 = 43 | CES38 = 53 | CES63 = 68 | CES88 = 73 |
| CES14 = 74 | CES39 = 91 | CES64 = 68 | CES89 = 68 |
| CES15 = 71 | CES40 = 85 | CES65 = 65 | CES90 = 68 |
| CES16 = 48 | CES41 = 76 | CES66 = 62 | CES91 = 91 |
| CES17 = 50 | CES42 = 76 | CES67 = 60 | CES92 = 71 |
| CES18 = 57 | CES43 = 65 | CES68 = 68 | CES93 = 82 |
| CES19 = 73 | CES44 = 98 | CES69 = 77 | CES94 = 57 |
| CES20 = 67 | CES45 = 75 | CES70 = 60 | CES95 = 78 |
| CES21 = 88 | CES46 = 70 | CES71 = 57 | CES96 = 80 |
| CES22 = 80 | CES47 = 63 | CES72 = 86 | CES97 = 79 |
| CES23 = 92 | CES48 = 51 | CES73 = 52 | CES98 = 71 |
| CES24 = 91 | CES49 = 68 | CES74 = 90 | CES99 = 64 |
| CES25 = 73 | CES50 = 77 | CES75 = 58 |            |



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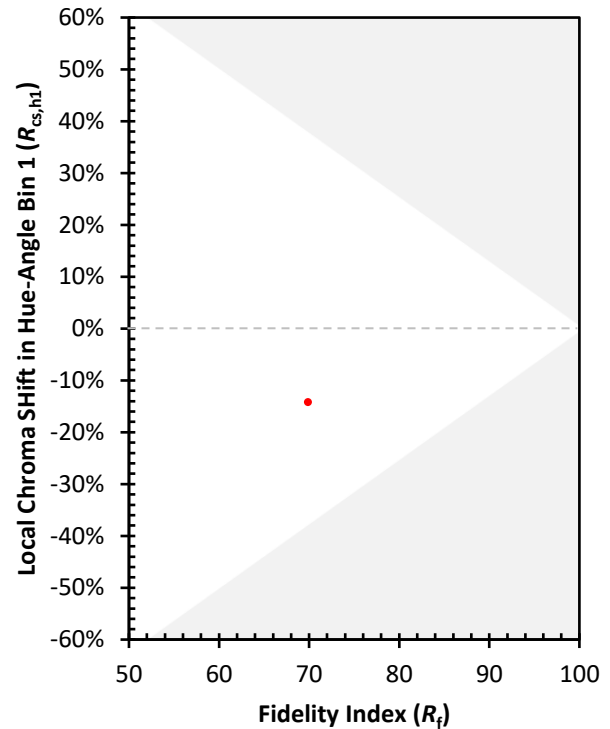
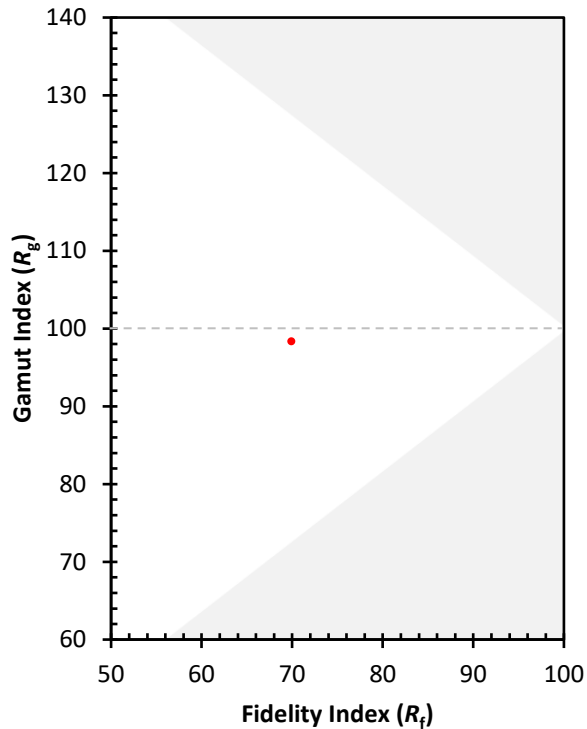
Color Rendition by Hue-Angle Bin



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**Measure Comparisons**



(END OF REPORT)