

Scaled data based on original data using  
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions  
(formerly Eaton)

Brand: LUMARK

Report Number: P196216

Luminaire Tested: **NAV-AF-04-D-UNV-SLL**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P196216  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P24264)  
Test Lab: INNOVATION CENTER P2  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: LUMARK  
Catalog Number: NAV-AF-04-D-UNV-SLL  
Description: NAVION ROADWAY AND AREA LUMINAIRE  
(4) 70 CRI, 4000K, 1050mA LIGHTSQUARES WITH 16 LEDS EACH AND SPILL LIGHT  
ELIMINATOR LEFT OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 22042.5 lumens  
Efficiency: N/A  
Efficacy: 98.0 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 1' x H: 0')  
IES Classification: Type IV - Short - Non-Cutoff  
BUG Rating: B3 - U0 - G4

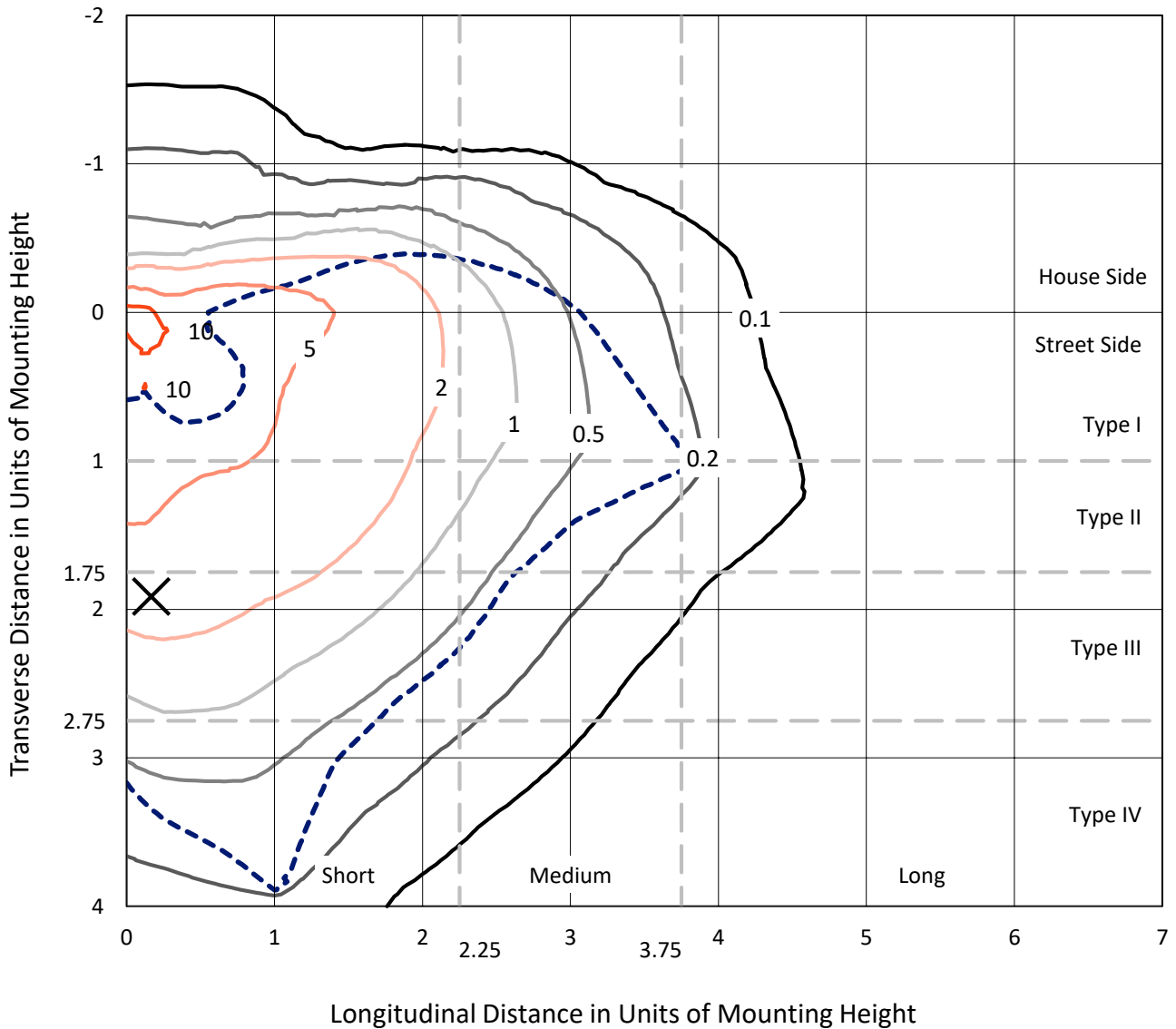
Input Watts (W): 225  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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### Iso-Footcandle Lines of Horizontal Illumination

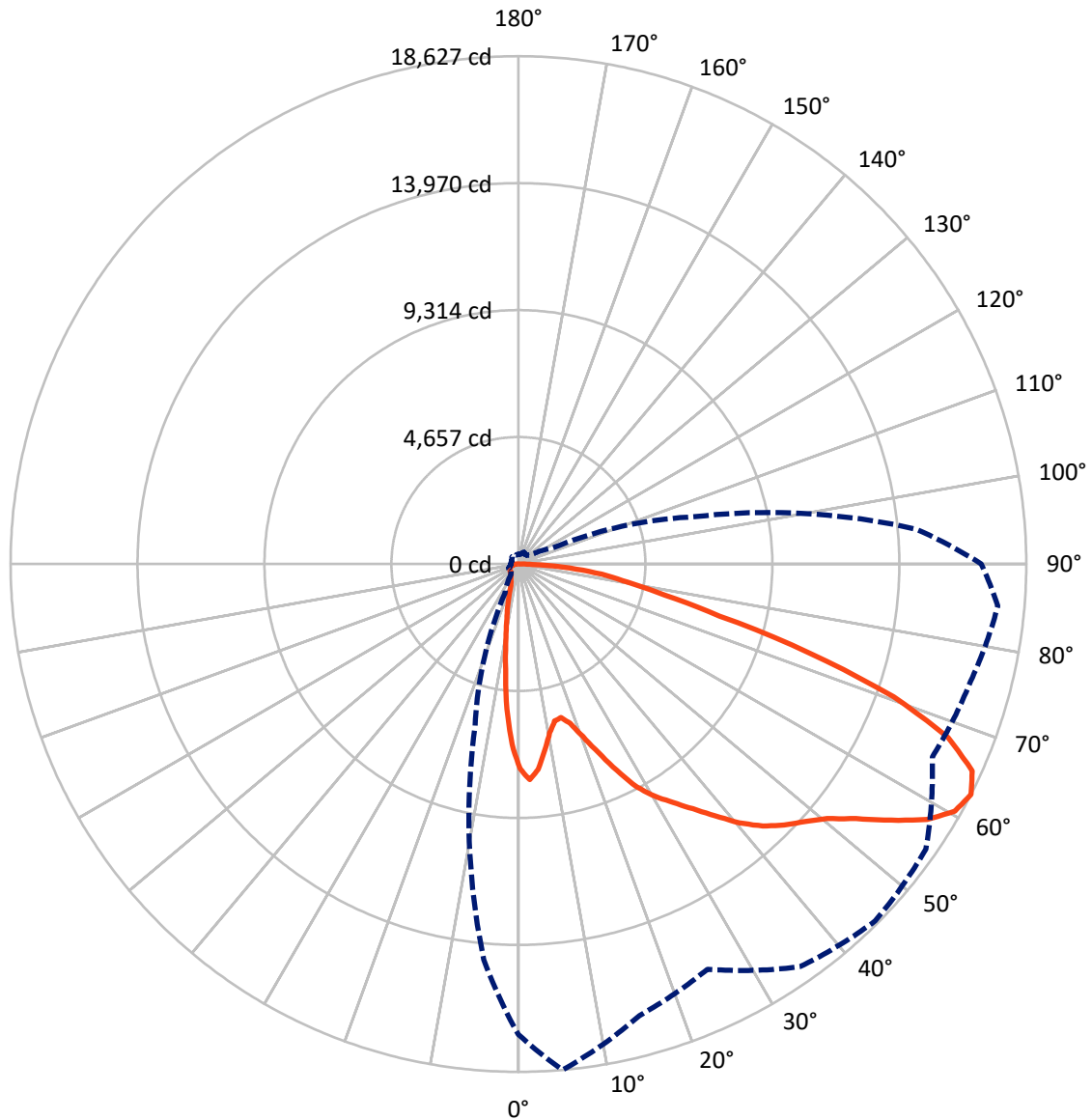
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 13.8 fc  
 Type IV - Short - Non-Cutoff

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### Luminous Intensity Polar Plot



— Vertical Plane Through 5-Deg Lateral      - - - Horizontal Cone Through 62.5-Deg Vertical

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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 3904.9   | 0.0    | 3904.9  |
|                    | % Fixture | 17.7     | 0.0    | 17.7    |
| <b>Street Side</b> | Lumens    | 18137.7  | 0.0    | 18137.7 |
|                    | % Fixture | 82.3     | 0.0    | 82.3    |
| <b>Total</b>       | Lumens    | 22042.5  | 0.0    | 22042.5 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 546.5   | 2.5       |
| 10°-20°   | 998.2   | 4.5       |
| 20°-30°   | 1435.7  | 6.5       |
| 30°-40°   | 2198.9  | 10.0      |
| 40°-50°   | 3214.8  | 14.6      |
| 50°-60°   | 4677.6  | 21.2      |
| 60°-70°   | 5419.6  | 24.6      |
| 70°-80°   | 2825.1  | 12.8      |
| 80°-90°   | 726.2   | 3.3       |
| 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°    | 22042.5 | 100.0     |
| 0°-180°   | 22042.5 | 100.0     |



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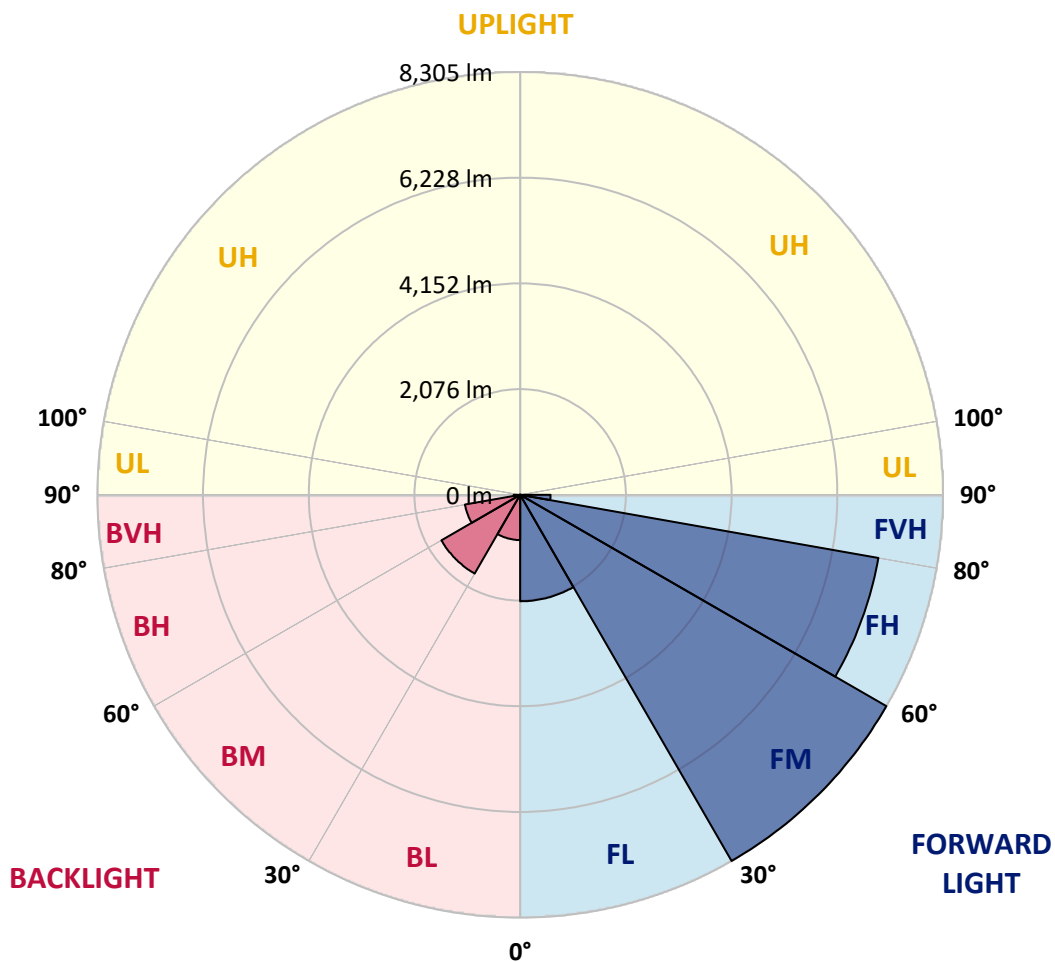
CATALOG NUMBER: NAV-AF-04-D-UNV-SLL

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 2091.9 | 9.5       |                         |      |         |
| FM   | (30°-60°)   | 8304.6 | 37.7      |                         |      |         |
| FH   | (60°-80°)   | 7143.7 | 32.4      |                         |      | G3/7500 |
| FVH  | (80°-90°)   | 597.4  | 2.7       |                         |      | G4/750  |
| BL   | (0°-30°)    | 888.4  | 4.0       | B2/1000                 |      |         |
| BM   | (30°-60°)   | 1786.6 | 8.1       | B2/2500                 |      |         |
| BH   | (60°-80°)   | 1101.1 | 5.0       | B3/2500                 |      | G3/2500 |
| BVH  | (80°-90°)   | 128.8  | 0.6       |                         |      | G2/225  |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

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

Type IV Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 65°     | 75°     | 85°     | 90°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 7514.7  | 7514.7  | 7514.7  | 7514.7  | 7514.7  | 7514.7  | 7514.7  | 7514.7  | 7514.7  | 7514.7  | 7514.7  |
| 2.5°  | 7757.6  | 7922.2  | 8110.9  | 8357.0  | 8524.8  | 8592.0  | 8647.8  | 8553.6  | 8462.5  | 8291.4  | 8230.8  |
| 5°    | 7246.3  | 7562.7  | 8082.1  | 8575.9  | 9010.7  | 9260.0  | 9336.7  | 9162.5  | 8852.4  | 8405.0  | 8168.4  |
| 7.5°  | 6487.1  | 6904.2  | 7634.6  | 8361.8  | 8985.1  | 9400.6  | 9431.0  | 9085.7  | 8475.2  | 7741.7  | 7358.1  |
| 10°   | 5823.9  | 6295.3  | 7140.8  | 7954.3  | 8614.3  | 9039.4  | 8956.3  | 8472.1  | 7735.2  | 6901.0  | 6467.9  |
| 12.5° | 5438.7  | 5910.1  | 6771.6  | 7597.9  | 8219.5  | 8380.9  | 8211.5  | 7804.0  | 7105.6  | 6269.8  | 5833.5  |
| 15°   | 5357.2  | 5843.0  | 6640.5  | 7337.3  | 7722.5  | 7618.6  | 7450.8  | 7244.6  | 6747.6  | 6063.5  | 5641.7  |
| 17.5° | 5603.3  | 6146.7  | 6814.7  | 7196.7  | 7180.7  | 6931.4  | 6790.8  | 6830.8  | 6746.1  | 6287.4  | 5846.3  |
| 20°   | 6109.9  | 6752.4  | 7257.4  | 7158.3  | 6749.2  | 6399.2  | 6317.6  | 6631.0  | 7022.5  | 6848.2  | 6364.1  |
| 22.5° | 6776.3  | 7508.4  | 7861.6  | 7268.6  | 6523.9  | 6146.7  | 6130.7  | 6619.7  | 7526.0  | 7696.9  | 7107.2  |
| 25°   | 7529.1  | 8382.6  | 8470.4  | 7463.6  | 6499.9  | 6124.3  | 6109.9  | 6792.4  | 8131.6  | 8537.5  | 7939.8  |
| 27.5° | 8449.7  | 9264.8  | 8978.6  | 7724.1  | 6605.4  | 6189.9  | 6199.4  | 7086.4  | 8762.9  | 9368.7  | 8878.0  |
| 30°   | 9143.3  | 9891.2  | 9292.0  | 7979.8  | 6774.8  | 6304.9  | 6328.9  | 7404.4  | 9103.3  | 9945.6  | 9627.6  |
| 32.5° | 9792.2  | 10426.6 | 9592.4  | 8232.3  | 7022.5  | 6475.9  | 6559.1  | 7800.8  | 9512.5  | 10441.1 | 10335.6 |
| 35°   | 10509.8 | 11026.0 | 9926.4  | 8502.5  | 7377.3  | 6776.3  | 6896.2  | 8178.0  | 9918.4  | 10936.5 | 11037.1 |
| 37.5° | 11323.2 | 11711.7 | 10289.2 | 8884.4  | 7888.7  | 7332.5  | 7399.7  | 8563.1  | 10201.3 | 11484.7 | 11789.9 |
| 40°   | 12170.4 | 12480.3 | 10685.5 | 9394.3  | 8631.9  | 8083.7  | 8115.7  | 9057.0  | 10423.5 | 12052.0 | 12520.3 |
| 42.5° | 12897.5 | 13138.8 | 11083.6 | 10027.1 | 9485.3  | 8849.2  | 8876.5  | 9589.2  | 10636.0 | 12541.1 | 13105.2 |
| 45°   | 13479.2 | 13656.6 | 11459.1 | 10693.5 | 10396.2 | 9805.0  | 9798.5  | 10131.0 | 10920.5 | 12953.4 | 13554.3 |
| 47.5° | 14021.0 | 14115.3 | 11877.8 | 11342.5 | 11340.8 | 11035.6 | 10807.1 | 10770.2 | 11299.3 | 13300.2 | 13945.9 |
| 50°   | 14641.1 | 14676.3 | 12430.8 | 11997.7 | 12494.7 | 12446.8 | 12024.9 | 11582.2 | 11789.9 | 13690.2 | 14356.6 |
| 52.5° | 15504.1 | 15505.8 | 13116.5 | 12637.0 | 13768.5 | 13920.3 | 13429.7 | 12501.2 | 12515.5 | 14449.4 | 15066.2 |
| 55°   | 16519.0 | 16589.3 | 14009.8 | 13402.5 | 15101.4 | 15360.3 | 14898.5 | 13592.7 | 13557.6 | 15673.6 | 16216.9 |
| 57.5° | 17303.7 | 17676.1 | 15050.3 | 14359.9 | 16346.4 | 16683.6 | 16311.3 | 14724.3 | 14837.7 | 16936.2 | 17166.2 |
| 60°   | 17524.3 | 18395.3 | 16087.5 | 15433.9 | 17399.6 | 17906.2 | 17527.4 | 15946.9 | 16090.7 | 17756.0 | 17439.6 |
| 62.5° | 17260.6 | 18627.0 | 17143.9 | 16396.0 | 18024.5 | 18510.4 | 18238.7 | 16747.5 | 17111.9 | 17650.5 | 16977.7 |
| 65°   | 16479.0 | 18291.4 | 18061.3 | 16805.0 | 17664.9 | 17837.5 | 17765.6 | 16789.1 | 17666.6 | 16653.2 | 15700.8 |
| 67.5° | 14653.9 | 16996.8 | 17652.1 | 15930.8 | 15985.2 | 15799.8 | 15705.6 | 15648.0 | 17043.2 | 15043.8 | 13687.0 |
| 70°   | 11917.8 | 14604.4 | 15700.8 | 13332.2 | 12929.5 | 12750.5 | 12440.4 | 13207.5 | 15318.8 | 12817.6 | 11264.1 |
| 72.5° | 9180.1  | 11173.0 | 12878.3 | 10107.1 | 9269.6  | 9330.3  | 8978.6  | 10099.1 | 12689.7 | 9908.8  | 8599.9  |
| 75°   | 6519.1  | 7618.6  | 10279.6 | 7262.2  | 6153.0  | 6149.9  | 6122.7  | 7268.6  | 10012.7 | 7112.0  | 6292.1  |
| 77.5° | 4698.7  | 5485.1  | 8053.4  | 4860.1  | 4366.3  | 4422.2  | 4332.7  | 4940.0  | 7805.6  | 5115.9  | 4662.0  |
| 80°   | 3747.8  | 4061.0  | 5205.4  | 3241.1  | 3250.7  | 3381.8  | 3362.6  | 3378.6  | 5135.0  | 3704.6  | 3485.7  |
| 82.5° | 2692.9  | 3083.0  | 3979.5  | 2483.6  | 2149.6  | 2288.6  | 2315.8  | 2506.0  | 3623.1  | 2619.5  | 2298.3  |
| 85°   | 1380.9  | 1879.5  | 3661.4  | 2151.2  | 1344.1  | 1114.0  | 1281.8  | 1977.0  | 3146.9  | 1569.4  | 1120.3  |
| 87.5° | 268.5   | 521.0   | 2683.4  | 1195.4  | 604.2   | 305.2   | 503.4   | 837.5   | 1830.0  | 284.5   | 139.0   |
| 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):**

|       | 95°     | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   | 185°   |
|-------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 7514.7  | 7514.7 | 7514.7 | 7514.7 | 7514.7 | 7514.7 | 7514.7 | 7514.7 | 7514.7 | 7514.7 | 7514.7 |
| 2.5°  | 8126.8  | 7922.2 | 7730.5 | 7532.3 | 7378.9 | 7191.9 | 7008.1 | 6848.2 | 6693.3 | 6591.0 | 6623.0 |
| 5°    | 7928.7  | 7430.0 | 6982.6 | 6567.0 | 6324.1 | 6031.6 | 5771.1 | 5552.2 | 5382.8 | 5274.0 | 5339.6 |
| 7.5°  | 7025.7  | 6351.3 | 5761.6 | 5213.4 | 4868.1 | 4489.3 | 4185.7 | 3971.5 | 3840.5 | 3766.9 | 3874.0 |
| 10°   | 6101.9  | 5344.4 | 4682.8 | 4112.2 | 3771.7 | 3450.5 | 3175.6 | 2948.7 | 2772.9 | 2689.7 | 2732.9 |
| 12.5° | 5440.3  | 4598.1 | 3904.4 | 3520.8 | 3228.3 | 2940.7 | 2656.2 | 2390.9 | 2167.1 | 2064.8 | 2044.1 |
| 15°   | 5192.6  | 4196.9 | 3488.9 | 3060.6 | 2769.6 | 2456.4 | 2149.6 | 1865.1 | 1652.6 | 1564.6 | 1545.5 |
| 17.5° | 5301.2  | 4110.5 | 3242.8 | 2736.1 | 2314.2 | 1933.8 | 1588.6 | 1320.1 | 1163.5 | 1114.0 | 1118.7 |
| 20°   | 5683.2  | 4142.5 | 3044.6 | 2402.1 | 1881.1 | 1430.4 | 1085.1 | 899.8  | 832.7  | 821.4  | 834.2  |
| 22.5° | 6207.4  | 4273.6 | 2900.8 | 2114.4 | 1499.1 | 1040.4 | 807.1  | 719.2  | 701.6  | 700.0  | 712.8  |
| 25°   | 6899.4  | 4529.3 | 2804.8 | 1858.7 | 1184.3 | 824.7  | 703.2  | 653.7  | 639.2  | 642.5  | 655.3  |
| 27.5° | 7714.5  | 4853.7 | 2742.5 | 1638.2 | 973.3  | 735.2  | 656.8  | 613.7  | 599.3  | 602.5  | 612.1  |
| 30°   | 8459.3  | 5138.2 | 2649.9 | 1471.9 | 874.2  | 703.2  | 631.3  | 588.1  | 569.0  | 569.0  | 575.3  |
| 32.5° | 9125.7  | 5384.3 | 2541.1 | 1347.3 | 783.1  | 631.3  | 572.1  | 538.6  | 524.2  | 529.0  | 532.2  |
| 35°   | 9717.1  | 5513.8 | 2456.4 | 1273.8 | 709.6  | 581.8  | 522.6  | 487.4  | 468.3  | 471.5  | 476.3  |
| 37.5° | 10298.8 | 5563.3 | 2400.5 | 1233.8 | 656.8  | 551.4  | 497.1  | 468.3  | 447.5  | 444.3  | 442.7  |
| 40°   | 10851.8 | 5552.2 | 2347.8 | 1222.6 | 621.7  | 529.0  | 481.1  | 455.5  | 434.8  | 429.9  | 428.3  |
| 42.5° | 11329.7 | 5515.3 | 2298.3 | 1192.2 | 597.7  | 513.0  | 468.3  | 445.9  | 425.1  | 418.7  | 415.5  |
| 45°   | 11766.0 | 5493.0 | 2243.8 | 1136.3 | 610.5  | 506.7  | 461.9  | 437.9  | 418.7  | 410.7  | 407.5  |
| 47.5° | 12250.2 | 5572.9 | 2183.2 | 1075.6 | 607.3  | 508.2  | 461.9  | 434.8  | 415.5  | 407.5  | 404.4  |
| 50°   | 12827.2 | 5843.0 | 2108.0 | 992.5  | 578.6  | 543.4  | 460.3  | 429.9  | 412.4  | 407.5  | 401.1  |
| 52.5° | 13642.3 | 6280.9 | 2004.2 | 885.4  | 556.2  | 580.1  | 458.7  | 422.0  | 407.5  | 399.6  | 391.6  |
| 55°   | 14759.3 | 6718.8 | 1869.9 | 771.9  | 521.0  | 554.5  | 461.9  | 412.4  | 396.4  | 388.3  | 378.8  |
| 57.5° | 15675.2 | 7051.3 | 1700.5 | 677.6  | 489.1  | 524.2  | 457.1  | 401.1  | 383.6  | 375.6  | 367.5  |
| 60°   | 15616.1 | 7083.2 | 1539.0 | 616.9  | 469.8  | 471.5  | 468.3  | 393.1  | 372.4  | 366.0  | 359.6  |
| 62.5° | 14649.1 | 6688.5 | 1388.9 | 586.6  | 455.5  | 429.9  | 477.8  | 383.6  | 361.2  | 354.8  | 350.1  |
| 65°   | 13039.8 | 5769.5 | 1309.0 | 586.6  | 442.7  | 407.5  | 417.2  | 370.8  | 350.1  | 343.6  | 340.4  |
| 67.5° | 10998.9 | 4636.4 | 1233.8 | 599.3  | 425.1  | 391.6  | 378.8  | 358.0  | 338.8  | 332.5  | 329.2  |
| 70°   | 8815.7  | 3648.7 | 1181.1 | 592.9  | 409.2  | 374.0  | 358.0  | 340.4  | 321.2  | 319.7  | 316.4  |
| 72.5° | 6915.5  | 2931.1 | 1157.1 | 592.9  | 385.1  | 353.2  | 337.3  | 324.5  | 305.2  | 303.6  | 298.9  |
| 75°   | 5540.9  | 2200.7 | 1058.0 | 581.8  | 361.2  | 326.0  | 311.7  | 300.4  | 281.3  | 282.8  | 279.7  |
| 77.5° | 4291.2  | 1556.6 | 883.8  | 524.2  | 330.8  | 295.6  | 284.5  | 276.5  | 254.1  | 255.7  | 255.7  |
| 80°   | 3356.2  | 1013.2 | 685.6  | 434.8  | 295.6  | 260.5  | 252.6  | 246.1  | 222.2  | 225.4  | 225.4  |
| 82.5° | 2299.8  | 602.5  | 497.1  | 350.1  | 254.1  | 222.2  | 220.5  | 210.9  | 185.4  | 187.0  | 190.2  |
| 85°   | 1256.2  | 396.4  | 330.8  | 258.9  | 199.8  | 180.6  | 177.4  | 172.6  | 148.6  | 148.6  | 150.3  |
| 87.5° | 231.7   | 212.6  | 195.0  | 171.0  | 134.2  | 129.4  | 124.7  | 129.4  | 111.9  | 108.6  | 108.6  |
| 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):**

|       | 195°   | 205°   | 215°   | 225°   | 235°   | 245°   | 255°   | 265°   | 270°   | 275°   | 285°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 7514.7 | 7514.7 | 7514.7 | 7514.7 | 7514.7 | 7514.7 | 7514.7 | 7514.7 | 7514.7 | 7514.7 | 7514.7 |
| 2.5°  | 6547.8 | 6437.5 | 6360.8 | 6293.7 | 6132.3 | 6143.5 | 6165.8 | 6197.9 | 6097.1 | 6149.9 | 6215.4 |
| 5°    | 5274.0 | 5183.0 | 5114.2 | 5007.1 | 4781.8 | 4701.9 | 4650.7 | 4628.3 | 4478.2 | 4510.1 | 4580.5 |
| 7.5°  | 3888.4 | 3886.8 | 3862.9 | 3743.0 | 3471.3 | 3306.7 | 3198.1 | 3164.4 | 3071.7 | 3106.9 | 3214.0 |
| 10°   | 2737.7 | 2766.5 | 2755.3 | 2648.2 | 2405.3 | 2287.0 | 2263.1 | 2330.2 | 2331.8 | 2400.5 | 2584.3 |
| 12.5° | 1978.6 | 1962.6 | 1948.2 | 1860.3 | 1678.2 | 1658.9 | 1713.2 | 1805.9 | 1828.3 | 1901.9 | 2093.7 |
| 15°   | 1476.7 | 1438.4 | 1430.4 | 1361.6 | 1241.8 | 1259.4 | 1299.4 | 1347.3 | 1348.9 | 1400.0 | 1558.3 |
| 17.5° | 1107.5 | 1107.5 | 1120.3 | 1075.6 | 989.3  | 981.3  | 960.6  | 947.8  | 928.5  | 949.3  | 1035.6 |
| 20°   | 859.8  | 899.8  | 931.7  | 906.1  | 827.9  | 789.5  | 749.5  | 723.9  | 709.6  | 711.2  | 736.7  |
| 22.5° | 736.7  | 768.7  | 810.3  | 797.5  | 732.0  | 682.4  | 656.8  | 639.2  | 628.1  | 628.1  | 642.5  |
| 25°   | 674.4  | 695.2  | 733.6  | 727.2  | 671.3  | 631.3  | 610.5  | 592.9  | 580.1  | 578.6  | 592.9  |
| 27.5° | 624.9  | 637.7  | 663.3  | 660.0  | 602.5  | 576.9  | 564.2  | 553.0  | 545.0  | 543.4  | 557.8  |
| 30°   | 580.1  | 586.6  | 599.3  | 594.5  | 551.4  | 525.8  | 521.0  | 516.2  | 511.5  | 513.0  | 533.8  |
| 32.5° | 540.2  | 545.0  | 553.0  | 546.6  | 505.0  | 482.6  | 474.6  | 468.3  | 463.5  | 468.3  | 492.2  |
| 35°   | 495.4  | 509.8  | 519.5  | 516.2  | 471.5  | 444.3  | 426.7  | 410.7  | 404.4  | 409.2  | 436.3  |
| 37.5° | 457.1  | 481.1  | 493.9  | 490.6  | 444.3  | 412.4  | 389.9  | 386.8  | 386.8  | 393.1  | 420.3  |
| 40°   | 442.7  | 460.3  | 471.5  | 466.7  | 420.3  | 388.3  | 375.6  | 370.8  | 372.4  | 378.8  | 407.5  |
| 42.5° | 429.9  | 445.9  | 449.1  | 439.5  | 393.1  | 372.4  | 364.4  | 358.0  | 361.2  | 369.2  | 397.9  |
| 45°   | 418.7  | 431.5  | 429.9  | 415.5  | 370.8  | 356.4  | 356.4  | 351.6  | 353.2  | 359.6  | 389.9  |
| 47.5° | 410.7  | 417.2  | 413.9  | 399.6  | 354.8  | 343.6  | 348.4  | 348.4  | 351.6  | 356.4  | 386.8  |
| 50°   | 397.9  | 402.7  | 399.6  | 386.8  | 342.0  | 332.5  | 337.3  | 343.6  | 346.8  | 351.6  | 378.8  |
| 52.5° | 385.1  | 388.3  | 386.8  | 374.0  | 329.2  | 322.8  | 322.8  | 329.2  | 335.6  | 342.0  | 366.0  |
| 55°   | 372.4  | 375.6  | 377.2  | 367.5  | 319.7  | 313.2  | 311.7  | 311.7  | 318.0  | 327.7  | 353.2  |
| 57.5° | 362.8  | 362.8  | 366.0  | 359.6  | 310.1  | 302.1  | 294.1  | 295.6  | 303.6  | 311.7  | 337.3  |
| 60°   | 351.6  | 353.2  | 358.0  | 351.6  | 297.3  | 284.5  | 278.0  | 286.1  | 289.3  | 297.3  | 324.5  |
| 62.5° | 342.0  | 342.0  | 345.2  | 340.4  | 286.1  | 273.3  | 268.5  | 276.5  | 276.5  | 284.5  | 311.7  |
| 65°   | 334.0  | 332.5  | 332.5  | 330.8  | 274.9  | 262.1  | 258.9  | 262.1  | 263.7  | 271.7  | 298.9  |
| 67.5° | 327.7  | 319.7  | 319.7  | 322.8  | 263.7  | 250.9  | 249.3  | 249.3  | 250.9  | 260.5  | 284.5  |
| 70°   | 313.2  | 306.9  | 305.2  | 316.4  | 252.6  | 236.5  | 236.5  | 233.3  | 236.5  | 241.3  | 266.9  |
| 72.5° | 297.3  | 292.5  | 290.8  | 306.9  | 241.3  | 220.5  | 217.4  | 215.7  | 217.4  | 222.2  | 246.1  |
| 75°   | 276.5  | 273.3  | 276.5  | 300.4  | 230.2  | 203.0  | 198.1  | 196.6  | 196.6  | 198.1  | 223.7  |
| 77.5° | 252.6  | 249.3  | 273.3  | 279.7  | 223.7  | 182.2  | 177.4  | 174.2  | 171.0  | 171.0  | 199.8  |
| 80°   | 223.7  | 222.2  | 263.7  | 236.5  | 214.2  | 159.8  | 151.8  | 147.0  | 143.8  | 142.2  | 171.0  |
| 82.5° | 195.0  | 191.8  | 225.4  | 185.4  | 177.4  | 131.0  | 119.9  | 110.3  | 105.5  | 105.5  | 131.0  |
| 85°   | 159.8  | 158.3  | 177.4  | 135.8  | 123.1  | 95.9   | 79.9   | 71.9   | 65.6   | 65.6   | 84.7   |
| 87.5° | 116.7  | 113.4  | 110.3  | 81.5   | 62.3   | 43.2   | 30.4   | 28.7   | 25.6   | 23.9   | 35.2   |
| 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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|       | 295°   | 305°   | 315°   | 325°   | 335°   | 345°   | 355°    | 360°    |
|-------|--------|--------|--------|--------|--------|--------|---------|---------|
| 0°    | 7514.7 | 7514.7 | 7514.7 | 7514.7 | 7514.7 | 7514.7 | 7514.7  | 7514.7  |
| 2.5°  | 6312.9 | 6445.5 | 6696.4 | 6902.7 | 7177.5 | 7398.1 | 7649.0  | 7757.6  |
| 5°    | 4709.9 | 4919.3 | 5302.9 | 5630.4 | 6084.3 | 6504.6 | 6984.1  | 7246.3  |
| 7.5°  | 3378.6 | 3688.7 | 3979.5 | 4388.7 | 4956.0 | 5520.1 | 6140.3  | 6487.1  |
| 10°   | 2795.2 | 3079.7 | 3329.1 | 3619.9 | 4057.8 | 4692.3 | 5432.3  | 5823.9  |
| 12.5° | 2315.8 | 2622.6 | 2886.4 | 3198.1 | 3565.6 | 4139.4 | 4983.2  | 5438.7  |
| 15°   | 1775.6 | 2109.6 | 2426.0 | 2801.7 | 3252.4 | 3907.6 | 4849.0  | 5357.2  |
| 17.5° | 1216.2 | 1574.2 | 1964.2 | 2422.9 | 2966.3 | 3810.1 | 4976.8  | 5603.3  |
| 20°   | 826.2  | 1088.4 | 1511.9 | 2055.3 | 2709.0 | 3763.7 | 5258.1  | 6109.9  |
| 22.5° | 679.2  | 797.5  | 1115.5 | 1710.1 | 2497.9 | 3814.9 | 5715.1  | 6776.3  |
| 25°   | 623.3  | 687.2  | 867.9  | 1406.5 | 2336.5 | 3950.7 | 6333.7  | 7529.1  |
| 27.5° | 588.1  | 642.5  | 760.8  | 1189.1 | 2187.9 | 4136.1 | 7086.4  | 8449.7  |
| 30°   | 567.3  | 618.5  | 717.6  | 1077.2 | 2052.0 | 4296.0 | 7733.7  | 9143.3  |
| 32.5° | 521.0  | 559.3  | 640.9  | 1013.2 | 1954.6 | 4425.4 | 8304.2  | 9792.2  |
| 35°   | 465.0  | 511.5  | 578.6  | 971.7  | 1951.4 | 4486.2 | 8841.3  | 10509.8 |
| 37.5° | 444.3  | 489.1  | 538.6  | 949.3  | 1970.6 | 4537.3 | 9498.1  | 11323.2 |
| 40°   | 431.5  | 471.5  | 511.5  | 946.1  | 1986.6 | 4577.3 | 10140.6 | 12170.4 |
| 42.5° | 420.3  | 460.3  | 506.7  | 923.7  | 1980.1 | 4631.6 | 10709.6 | 12897.5 |
| 45°   | 417.2  | 457.1  | 517.8  | 890.2  | 1978.6 | 4716.3 | 11161.8 | 13479.2 |
| 47.5° | 413.9  | 474.6  | 514.6  | 853.4  | 1972.1 | 4895.3 | 11671.7 | 14021.0 |
| 50°   | 410.7  | 506.7  | 492.2  | 802.3  | 1924.3 | 5200.6 | 12357.2 | 14641.1 |
| 52.5° | 409.2  | 511.5  | 468.3  | 732.0  | 1837.9 | 5652.8 | 13361.0 | 15504.1 |
| 55°   | 402.7  | 485.9  | 426.7  | 639.2  | 1713.2 | 6140.3 | 14436.6 | 16519.0 |
| 57.5° | 388.3  | 433.1  | 402.7  | 548.2  | 1534.3 | 6480.7 | 15230.8 | 17303.7 |
| 60°   | 423.5  | 372.4  | 386.8  | 501.9  | 1320.1 | 6541.5 | 15266.0 | 17524.3 |
| 62.5° | 404.4  | 338.8  | 370.8  | 485.9  | 1169.8 | 6145.1 | 14567.6 | 17260.6 |
| 65°   | 322.8  | 321.2  | 356.4  | 501.9  | 1147.5 | 5258.1 | 13388.2 | 16479.0 |
| 67.5° | 294.1  | 308.4  | 342.0  | 521.0  | 1161.9 | 4142.5 | 11652.5 | 14653.9 |
| 70°   | 274.9  | 292.5  | 322.8  | 538.6  | 1187.4 | 3263.5 | 9381.5  | 11917.8 |
| 72.5° | 255.7  | 270.1  | 303.6  | 556.2  | 1169.8 | 2574.7 | 7508.4  | 9180.1  |
| 75°   | 231.7  | 244.5  | 276.5  | 509.8  | 1003.7 | 1892.3 | 5966.1  | 6519.1  |
| 77.5° | 204.6  | 215.7  | 243.0  | 402.7  | 754.3  | 1316.9 | 4468.6  | 4698.7  |
| 80°   | 175.8  | 180.6  | 201.4  | 294.1  | 492.2  | 787.9  | 3401.0  | 3747.8  |
| 82.5° | 139.0  | 140.7  | 153.4  | 215.7  | 306.9  | 503.4  | 2358.9  | 2692.9  |
| 85°   | 89.5   | 92.7   | 99.1   | 151.8  | 206.1  | 322.8  | 1205.0  | 1380.9  |
| 87.5° | 30.4   | 35.2   | 35.2   | 73.6   | 100.7  | 179.0  | 369.2   | 268.5   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0     | 0.0     |

(END OF REPORT)