

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: P196198

Luminaire Tested: **NAV-AF-04-D-UNV-SL4-1200**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P196198
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P24284)
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-SL4-1200
Description: NAVION ROADWAY AND AREA LUMINAIRE
(4) 70 CRI, 4000K, 1200mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE IV
SPILL LIGHT ELIMINATOR OPTICS
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 26118 lumens
Efficiency: N/A
Efficacy: 101.2 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 1' x H: 0')
IES Classification: Type IV - Short - Non-Cutoff
BUG Rating: B2 - U0 - G5

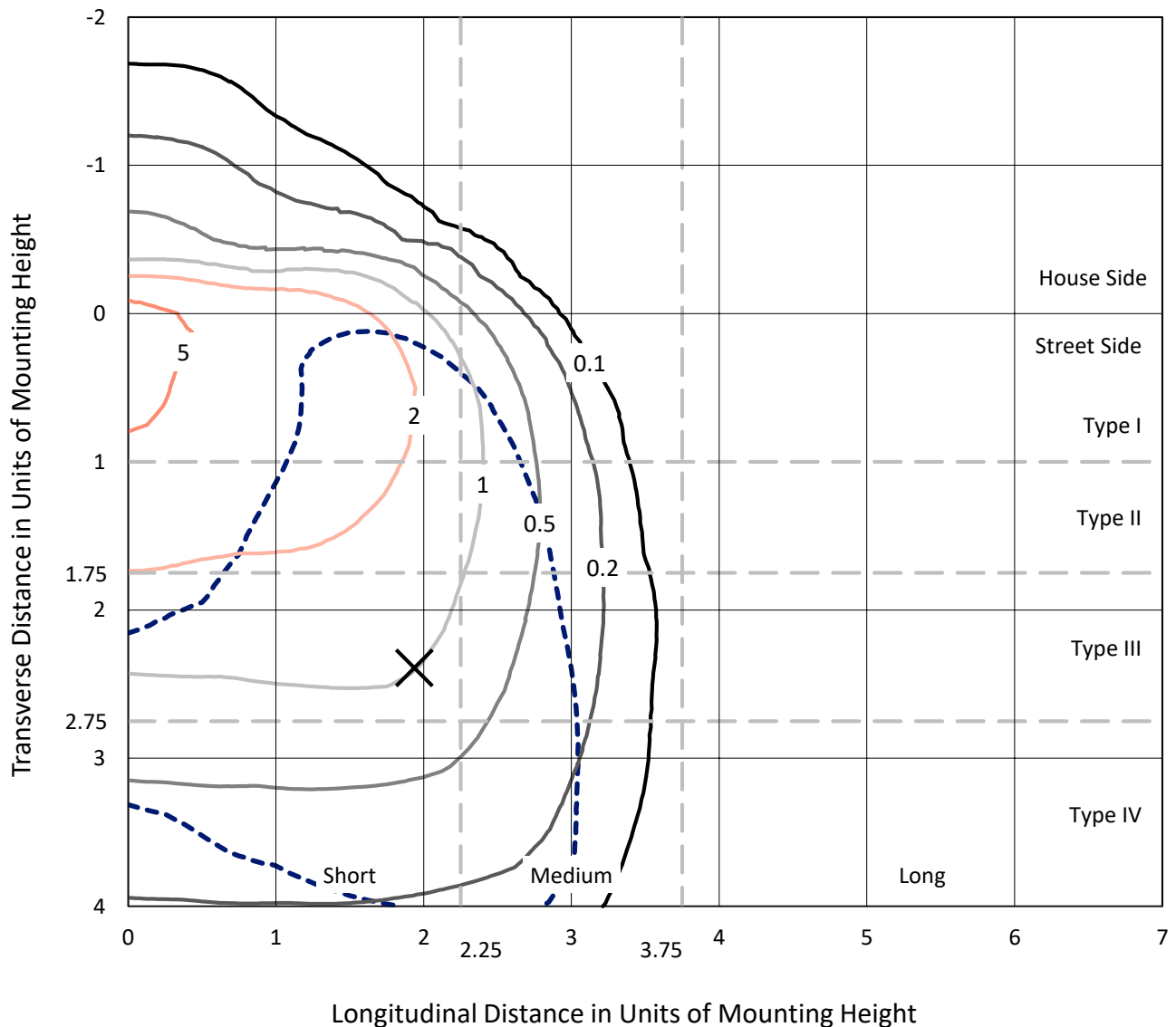
Input Watts (W): 258
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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Iso-Footcandle Lines of Horizontal Illumination

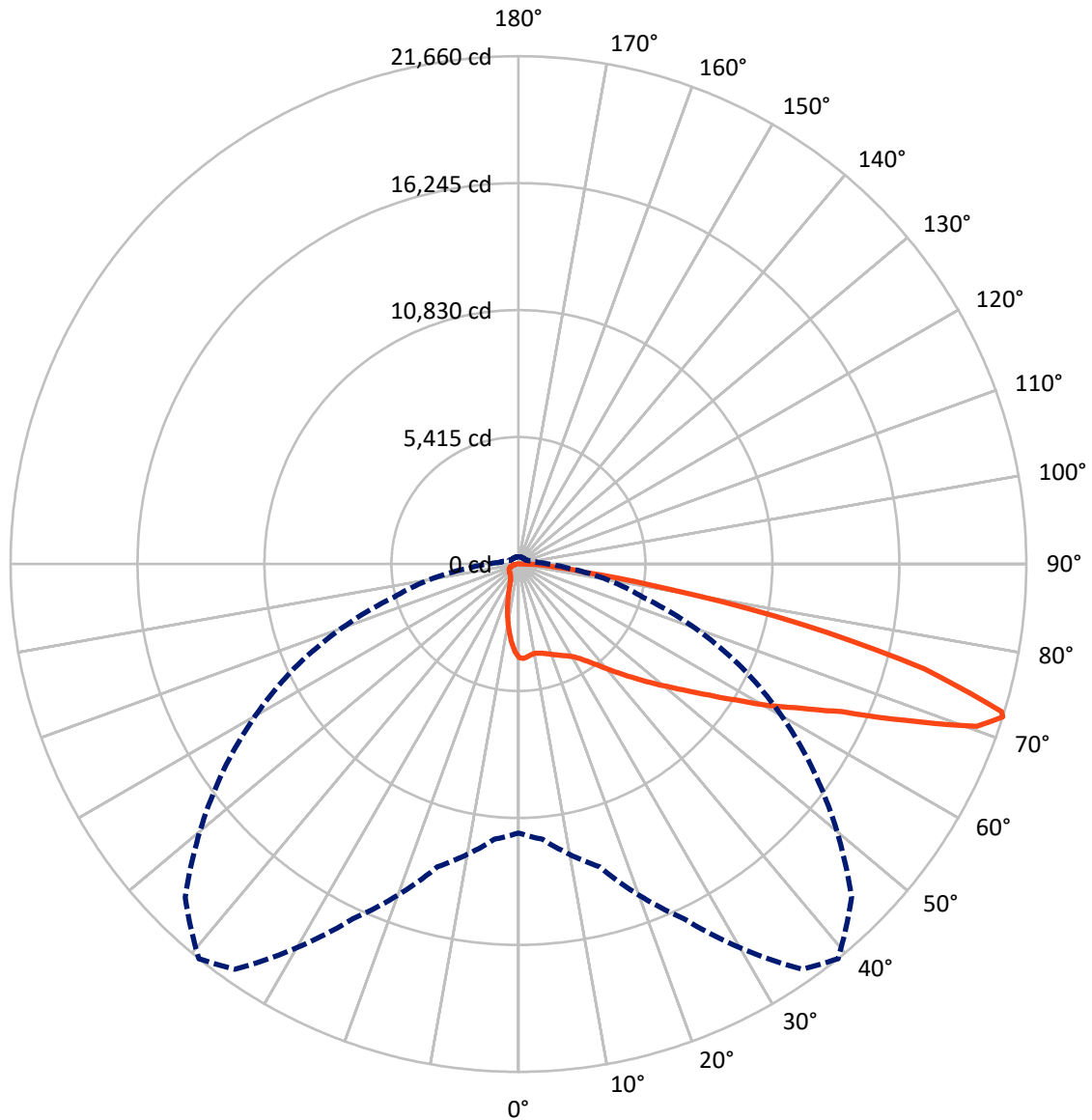
× Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 6.4 fc
 Type IV - Short - Non-Cutoff

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Luminous Intensity Polar Plot



— Vertical Plane Through 39-Deg Lateral - - - Horizontal Cone Through 72-Deg Vertical

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FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 2994.8 | 0.0 | 2994.8 |
| | % Fixture | 11.5 | 0.0 | 11.5 |
| Street Side | Lumens | 23123.2 | 0.0 | 23123.2 |
| | % Fixture | 88.5 | 0.0 | 88.5 |
| Total | Lumens | 26118.0 | 0.0 | 26118.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 342.8 | 1.3 |
| 10°-20° | 861.3 | 3.3 |
| 20°-30° | 1342.3 | 5.1 |
| 30°-40° | 2066.7 | 7.9 |
| 40°-50° | 3369.1 | 12.9 |
| 50°-60° | 5235.3 | 20.0 |
| 60°-70° | 7007.2 | 26.8 |
| 70°-80° | 5039.2 | 19.3 |
| 80°-90° | 854.3 | 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° | 26118.0 | 100.0 |
| 0°-180° | 26118.0 | 100.0 |

Coefficient of Utilization



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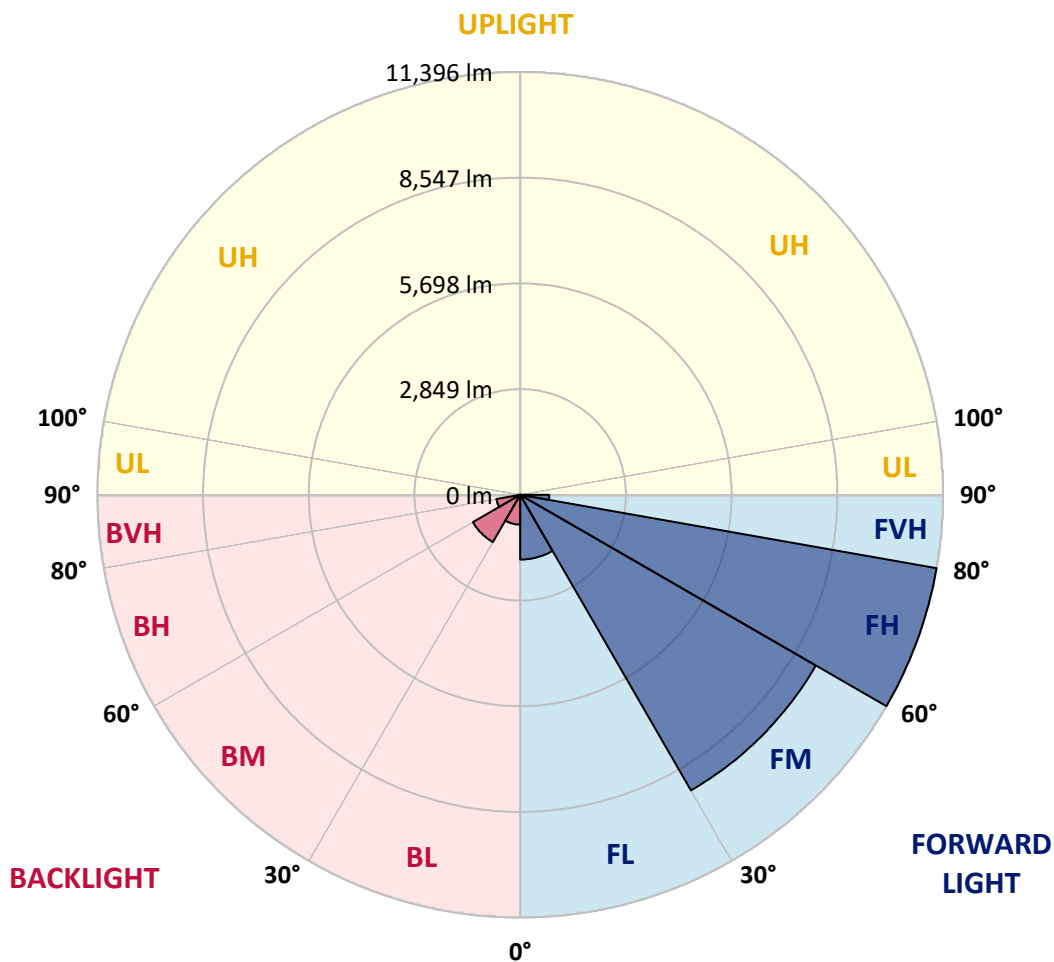
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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|------|-------------|---------|-----------|-------------------------|------|----------|
| | | | | B | U | G |
| FL | (0°-30°) | 1744.6 | 6.7 | | | |
| FM | (30°-60°) | 9199.3 | 35.2 | | | |
| FH | (60°-80°) | 11395.7 | 43.6 | | | G4/12000 |
| FVH | (80°-90°) | 783.6 | 3.0 | | | G5 |
| BL | (0°-30°) | 801.7 | 3.1 | B2/1000 | | |
| BM | (30°-60°) | 1471.8 | 5.6 | B2/2500 | | |
| BH | (60°-80°) | 650.7 | 2.5 | B2/1000 | | G2/1000 |
| BVH | (80°-90°) | 70.6 | 0.3 | | | G1/100 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B2-U0-G5

Type IV Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 39° | 45° | 55° | 65° | 75° | 85° |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0° | 3988.7 | 3988.7 | 3988.7 | 3988.7 | 3988.7 | 3988.7 | 3988.7 | 3988.7 | 3988.7 | 3988.7 | 3988.7 |
| 2.5° | 4074.6 | 4076.4 | 4071.0 | 4055.3 | 4041.3 | 4034.3 | 4022.0 | 4001.0 | 3972.9 | 3953.6 | 3937.8 |
| 5° | 4036.1 | 4041.3 | 4037.8 | 4011.5 | 3987.0 | 3972.9 | 3953.6 | 3923.8 | 3887.0 | 3871.3 | 3834.4 |
| 7.5° | 4006.2 | 4009.8 | 3999.2 | 3969.4 | 3922.1 | 3904.5 | 3869.4 | 3830.8 | 3797.6 | 3774.8 | 3730.9 |
| 10° | 3985.2 | 3988.7 | 3979.9 | 3950.1 | 3897.5 | 3876.5 | 3834.4 | 3792.3 | 3748.5 | 3720.5 | 3671.4 |
| 12.5° | 3955.3 | 3962.4 | 3962.4 | 3948.4 | 3913.3 | 3899.3 | 3857.1 | 3811.6 | 3771.3 | 3741.4 | 3680.1 |
| 15° | 3950.1 | 3958.9 | 3974.7 | 3972.9 | 3962.4 | 3951.9 | 3918.5 | 3873.0 | 3837.9 | 3802.8 | 3727.4 |
| 17.5° | 3993.9 | 4013.2 | 4044.7 | 4055.3 | 4048.3 | 4025.5 | 3987.0 | 3944.8 | 3906.2 | 3873.0 | 3780.0 |
| 20° | 4104.4 | 4114.9 | 4162.3 | 4183.3 | 4148.3 | 4114.9 | 4064.1 | 4009.8 | 3974.7 | 3948.4 | 3829.1 |
| 22.5° | 4270.9 | 4284.9 | 4323.6 | 4325.3 | 4251.7 | 4211.4 | 4146.4 | 4079.8 | 4046.6 | 4036.1 | 3895.8 |
| 25° | 4537.5 | 4533.9 | 4544.5 | 4500.7 | 4367.4 | 4320.0 | 4241.2 | 4164.0 | 4141.2 | 4162.3 | 3993.9 |
| 27.5° | 4856.6 | 4847.8 | 4814.5 | 4700.6 | 4498.8 | 4437.6 | 4342.8 | 4274.5 | 4274.5 | 4323.6 | 4127.2 |
| 30° | 5224.7 | 5215.9 | 5107.3 | 4916.2 | 4654.9 | 4584.8 | 4484.8 | 4413.0 | 4449.8 | 4544.5 | 4307.7 |
| 32.5° | 5614.0 | 5582.4 | 5429.8 | 5173.9 | 4877.6 | 4800.4 | 4704.0 | 4630.4 | 4700.6 | 4861.8 | 4567.3 |
| 35° | 5980.4 | 5962.9 | 5775.3 | 5472.0 | 5165.1 | 5100.2 | 5033.6 | 4942.5 | 5054.7 | 5305.4 | 4933.7 |
| 37.5° | 6359.1 | 6345.1 | 6115.4 | 5792.8 | 5515.8 | 5472.0 | 5415.8 | 5352.7 | 5533.3 | 5862.9 | 5429.8 |
| 40° | 6781.7 | 6753.6 | 6464.3 | 6141.7 | 5924.3 | 5903.2 | 5873.5 | 5855.9 | 6146.9 | 6637.8 | 6057.5 |
| 42.5° | 7260.3 | 7206.0 | 6832.5 | 6525.7 | 6369.6 | 6387.2 | 6371.3 | 6441.5 | 6886.8 | 7532.1 | 6804.5 |
| 45° | 7807.3 | 7698.6 | 7198.9 | 6934.2 | 6862.3 | 6932.4 | 6965.8 | 7144.6 | 7761.7 | 8564.8 | 7639.0 |
| 47.5° | 8319.2 | 8179.0 | 7600.4 | 7377.7 | 7418.0 | 7539.0 | 7633.8 | 7949.4 | 8720.8 | 9585.2 | 8491.1 |
| 50° | 8790.9 | 8633.1 | 8030.0 | 7837.1 | 8033.4 | 8205.3 | 8401.7 | 8847.0 | 9741.2 | 10635.3 | 9273.0 |
| 52.5° | 9139.8 | 9025.8 | 8459.5 | 8338.6 | 8740.1 | 8968.0 | 9281.8 | 9844.6 | 10772.1 | 11636.5 | 9970.8 |
| 55° | 9409.8 | 9348.4 | 8878.6 | 8913.6 | 9539.5 | 9865.6 | 10246.1 | 10893.1 | 11862.6 | 12534.1 | 10531.9 |
| 57.5° | 9721.9 | 9676.3 | 9357.2 | 9607.9 | 10531.9 | 10942.1 | 11391.0 | 12109.8 | 12900.5 | 13324.9 | 10972.0 |
| 60° | 10051.5 | 10051.5 | 9890.2 | 10444.2 | 11773.2 | 12243.1 | 12690.1 | 13249.5 | 13934.9 | 14036.6 | 11150.8 |
| 62.5° | 10300.4 | 10365.4 | 10423.2 | 11334.9 | 12951.4 | 13535.3 | 14026.2 | 14562.6 | 15006.2 | 14387.3 | 10730.0 |
| 65° | 10661.6 | 10800.1 | 11126.2 | 12364.0 | 14410.1 | 15174.6 | 15837.2 | 16287.8 | 15874.0 | 14108.5 | 9357.2 |
| 67.5° | 11282.3 | 11487.4 | 12181.7 | 13896.4 | 16643.8 | 17788.7 | 18432.1 | 17653.7 | 15704.0 | 12353.6 | 7167.4 |
| 70° | 11841.6 | 12130.9 | 13317.8 | 15840.8 | 19547.2 | 20735.9 | 20439.6 | 17336.4 | 13677.3 | 9055.7 | 4409.4 |
| 72° | 11469.8 | 11785.4 | 13370.4 | 16687.6 | 21098.9 | 21659.9 | 20097.7 | 15363.9 | 10568.7 | 5526.3 | 2174.1 |
| 72.5° | 11226.2 | 11554.0 | 13200.4 | 16666.5 | 21140.9 | 21542.4 | 19622.5 | 14580.2 | 9593.8 | 4835.5 | 1758.6 |
| 75° | 9378.2 | 9658.8 | 11350.7 | 14771.3 | 18630.2 | 17893.9 | 15313.1 | 9436.1 | 4409.4 | 1562.1 | 904.7 |
| 77.5° | 6124.2 | 6338.1 | 7826.6 | 10233.8 | 13049.6 | 12341.3 | 9320.4 | 4418.2 | 1653.3 | 948.5 | 680.3 |
| 80° | 3077.0 | 3229.6 | 4188.6 | 5380.8 | 7042.9 | 6480.1 | 4302.5 | 2137.3 | 1106.3 | 685.5 | 534.7 |
| 82.5° | 2140.7 | 2281.0 | 2884.1 | 2747.3 | 2943.7 | 2849.0 | 2023.3 | 1783.1 | 827.6 | 433.0 | 280.5 |
| 85° | 1795.4 | 1940.8 | 2386.2 | 1958.4 | 1602.5 | 1460.5 | 1449.9 | 1684.9 | 547.0 | 213.9 | 236.7 |
| 87.5° | 1565.6 | 1786.6 | 1968.9 | 1430.7 | 1099.3 | 969.6 | 1067.8 | 1544.7 | 173.6 | 117.4 | 71.9 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |



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CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 3988.7 | 3988.7 | 3988.7 | 3988.7 | 3988.7 | 3988.7 | 3988.7 | 3988.7 | 3988.7 | 3988.7 | 3988.7 |
| 2.5° | 3911.6 | 3906.2 | 3880.0 | 3839.6 | 3809.9 | 3790.5 | 3753.7 | 3752.0 | 3755.5 | 3724.0 | 3736.2 |
| 5° | 3801.1 | 3780.0 | 3711.7 | 3618.8 | 3543.4 | 3471.5 | 3392.6 | 3366.2 | 3343.5 | 3296.2 | 3301.4 |
| 7.5° | 3685.4 | 3648.6 | 3529.3 | 3376.8 | 3231.3 | 3098.0 | 2966.6 | 2901.7 | 2852.6 | 2791.2 | 2791.2 |
| 10° | 3616.9 | 3559.2 | 3376.8 | 3154.2 | 2922.7 | 2728.1 | 2531.7 | 2414.3 | 2328.3 | 2249.5 | 2244.1 |
| 12.5° | 3613.5 | 3525.8 | 3271.6 | 2964.8 | 2647.4 | 2374.0 | 2105.6 | 1925.1 | 1797.1 | 1704.1 | 1695.4 |
| 15° | 3641.5 | 3518.8 | 3183.9 | 2787.7 | 2388.0 | 2032.0 | 1700.7 | 1471.0 | 1307.9 | 1204.5 | 1194.0 |
| 17.5° | 3666.1 | 3510.1 | 3089.2 | 2601.9 | 2135.5 | 1702.4 | 1334.2 | 1095.8 | 941.5 | 857.3 | 848.5 |
| 20° | 3688.9 | 3490.7 | 2968.3 | 2405.5 | 1856.8 | 1393.9 | 1043.2 | 850.4 | 748.6 | 701.3 | 696.0 |
| 22.5° | 3722.2 | 3473.2 | 2842.1 | 2184.6 | 1583.2 | 1134.4 | 860.8 | 722.3 | 668.0 | 645.2 | 641.7 |
| 25° | 3776.5 | 3475.0 | 2719.3 | 1958.4 | 1332.5 | 945.0 | 745.1 | 659.2 | 629.4 | 613.7 | 613.7 |
| 27.5° | 3855.4 | 3496.0 | 2598.3 | 1728.7 | 1120.3 | 815.3 | 676.8 | 625.9 | 606.6 | 594.3 | 590.9 |
| 30° | 3971.2 | 3534.6 | 2470.3 | 1511.3 | 952.1 | 725.9 | 636.5 | 604.9 | 589.1 | 578.6 | 576.8 |
| 32.5° | 4139.5 | 3602.9 | 2335.4 | 1313.2 | 824.0 | 662.8 | 606.6 | 587.4 | 575.1 | 566.3 | 564.6 |
| 35° | 4390.2 | 3724.0 | 2203.8 | 1144.9 | 732.8 | 617.1 | 582.1 | 566.3 | 559.2 | 555.8 | 554.0 |
| 37.5° | 4758.4 | 3918.5 | 2079.4 | 1013.4 | 673.2 | 587.4 | 557.5 | 548.8 | 545.2 | 545.2 | 545.2 |
| 40° | 5221.2 | 4174.6 | 1967.1 | 920.5 | 640.0 | 564.6 | 540.0 | 533.0 | 533.0 | 534.7 | 534.7 |
| 42.5° | 5784.1 | 4495.4 | 1870.8 | 857.3 | 620.6 | 548.8 | 527.7 | 524.3 | 522.5 | 522.5 | 524.3 |
| 45° | 6438.0 | 4874.1 | 1811.1 | 808.2 | 606.6 | 540.0 | 518.9 | 517.2 | 510.2 | 506.7 | 506.7 |
| 47.5° | 7095.5 | 5279.0 | 1807.7 | 780.2 | 589.1 | 529.5 | 510.2 | 510.2 | 496.1 | 489.2 | 490.9 |
| 50° | 7709.2 | 5642.0 | 1846.2 | 773.1 | 578.6 | 513.7 | 501.5 | 503.2 | 483.9 | 475.2 | 473.4 |
| 52.5° | 8203.6 | 5919.0 | 1893.5 | 781.9 | 578.6 | 499.7 | 485.7 | 494.4 | 473.4 | 462.9 | 461.1 |
| 55° | 8585.7 | 6111.9 | 1911.1 | 801.3 | 585.6 | 487.4 | 471.6 | 485.7 | 469.8 | 455.8 | 455.8 |
| 57.5° | 8859.3 | 6173.3 | 1835.7 | 810.0 | 596.1 | 485.7 | 457.6 | 483.9 | 475.2 | 457.6 | 457.6 |
| 60° | 8759.3 | 5817.3 | 1555.2 | 776.7 | 594.3 | 482.1 | 447.1 | 487.4 | 492.7 | 473.4 | 473.4 |
| 62.5° | 7979.1 | 4867.1 | 1248.3 | 701.3 | 564.6 | 469.8 | 434.9 | 483.9 | 504.9 | 498.0 | 494.4 |
| 65° | 6495.8 | 3569.7 | 967.8 | 611.9 | 513.7 | 443.6 | 408.5 | 452.3 | 476.9 | 483.9 | 485.7 |
| 67.5° | 4577.8 | 2260.0 | 752.2 | 520.7 | 450.6 | 405.0 | 378.7 | 399.8 | 408.5 | 412.0 | 419.0 |
| 70° | 2503.7 | 1223.8 | 597.9 | 438.3 | 385.8 | 366.4 | 347.2 | 348.9 | 345.3 | 341.9 | 345.3 |
| 72° | 1257.1 | 799.5 | 504.9 | 380.4 | 341.9 | 329.6 | 320.8 | 315.6 | 315.6 | 310.4 | 312.1 |
| 72.5° | 1081.8 | 743.4 | 487.4 | 366.4 | 331.3 | 320.8 | 313.8 | 308.6 | 306.8 | 303.3 | 305.0 |
| 75° | 720.6 | 589.1 | 406.7 | 306.8 | 282.2 | 275.3 | 278.8 | 273.5 | 275.3 | 271.8 | 273.5 |
| 77.5° | 582.1 | 506.7 | 345.3 | 259.5 | 241.9 | 231.4 | 238.4 | 240.2 | 243.7 | 240.2 | 238.4 |
| 80° | 487.4 | 431.3 | 289.3 | 213.9 | 201.6 | 192.8 | 196.4 | 208.7 | 210.4 | 199.9 | 198.1 |
| 82.5° | 315.6 | 347.2 | 227.9 | 166.5 | 154.3 | 150.8 | 159.6 | 171.9 | 175.3 | 161.3 | 157.8 |
| 85° | 264.7 | 278.8 | 164.8 | 114.0 | 101.7 | 98.2 | 115.7 | 128.0 | 136.8 | 122.8 | 119.2 |
| 87.5° | 73.7 | 136.8 | 80.6 | 54.3 | 45.6 | 45.6 | 56.1 | 66.6 | 78.9 | 80.6 | 80.6 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)