

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: P196287

Luminaire Tested: **NAV-AF-03-D-UNV-T2R**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P196287
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P24459)
Test Lab: INNOVATION CENTER P2
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: LUMARK
Catalog Number: NAV-AF-03-D-UNV-T2R
Description: NAVION ROADWAY AND AREA LUMINAIRE
(3) 70 CRI, 4000K, 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: 19417.6 lumens
Efficiency: N/A
Efficacy: 117.0 lumens/watt
Luminous Opening: Rectangular (W 0.5' x L: 1.5' x H: 0')
IES Classification: Type II - Short - Semi-Cutoff
BUG Rating: B2 - U0 - G3

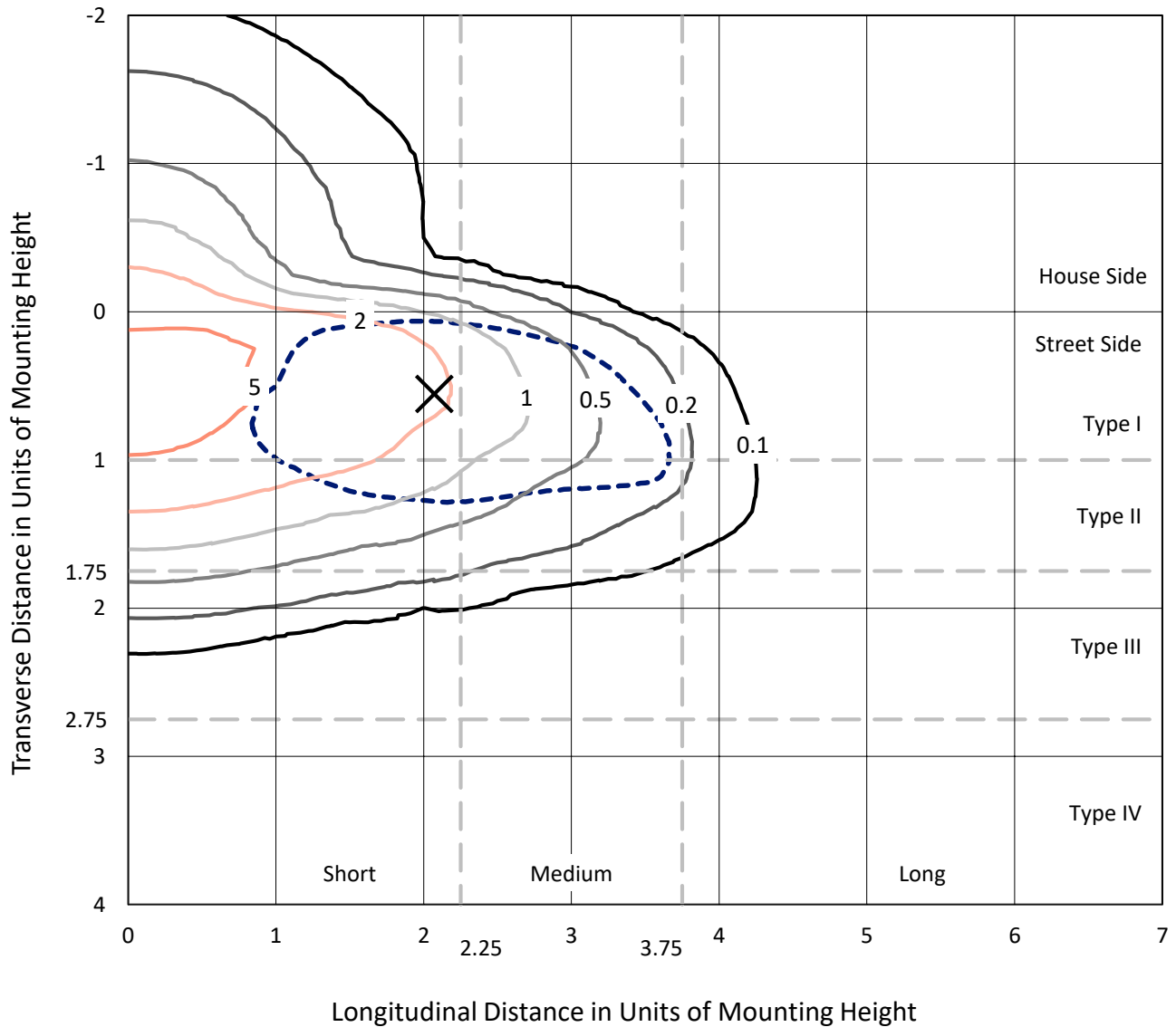
Input Watts (W): 166
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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Iso-Footcandle Lines of Horizontal Illumination

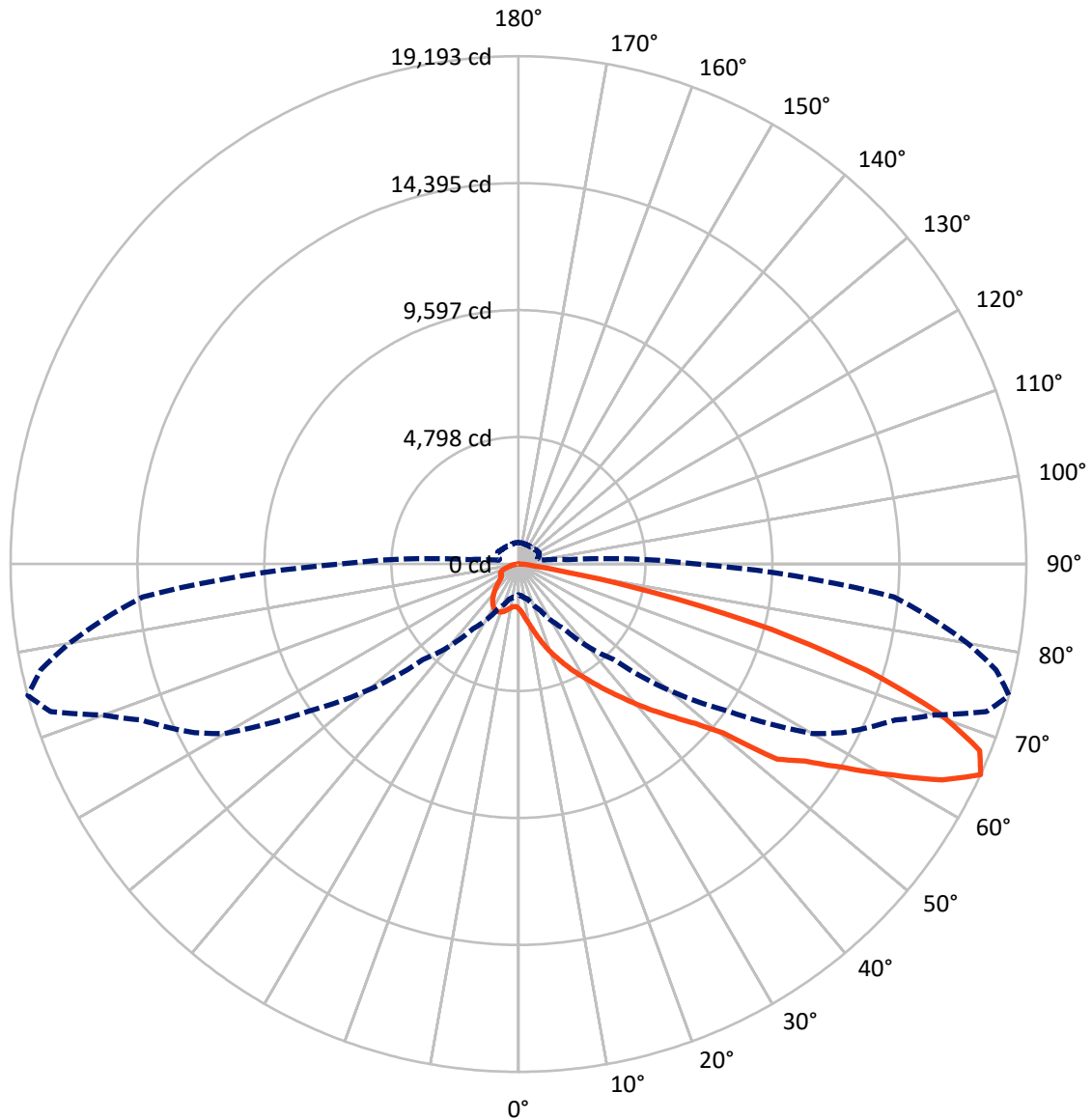
✕ Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 7.7 fc
 Type II - Short - Semi-Cutoff

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Luminous Intensity Polar Plot



— Vertical Plane Through 75-Deg Lateral - - - Horizontal Cone Through 65-Deg Vertical

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FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	2917.8	0.0	2917.8
	% Fixture	15.0	0.0	15.0
Street Side	Lumens	16499.9	0.0	16499.9
	% Fixture	85.0	0.0	85.0
Total	Lumens	19417.6	0.0	19417.6
	% Fixture	100.0	0.0	100.0

Coefficient of Utilization

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	198.6	1.0
10°-20°	758.6	3.9
20°-30°	1531.0	7.9
30°-40°	2600.1	13.4
40°-50°	3626.5	18.7
50°-60°	4444.7	22.9
60°-70°	4181.8	21.5
70°-80°	1833.7	9.4
80°-90°	242.6	1.2
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°	19417.6	100.0
0°-180°	19417.6	100.0



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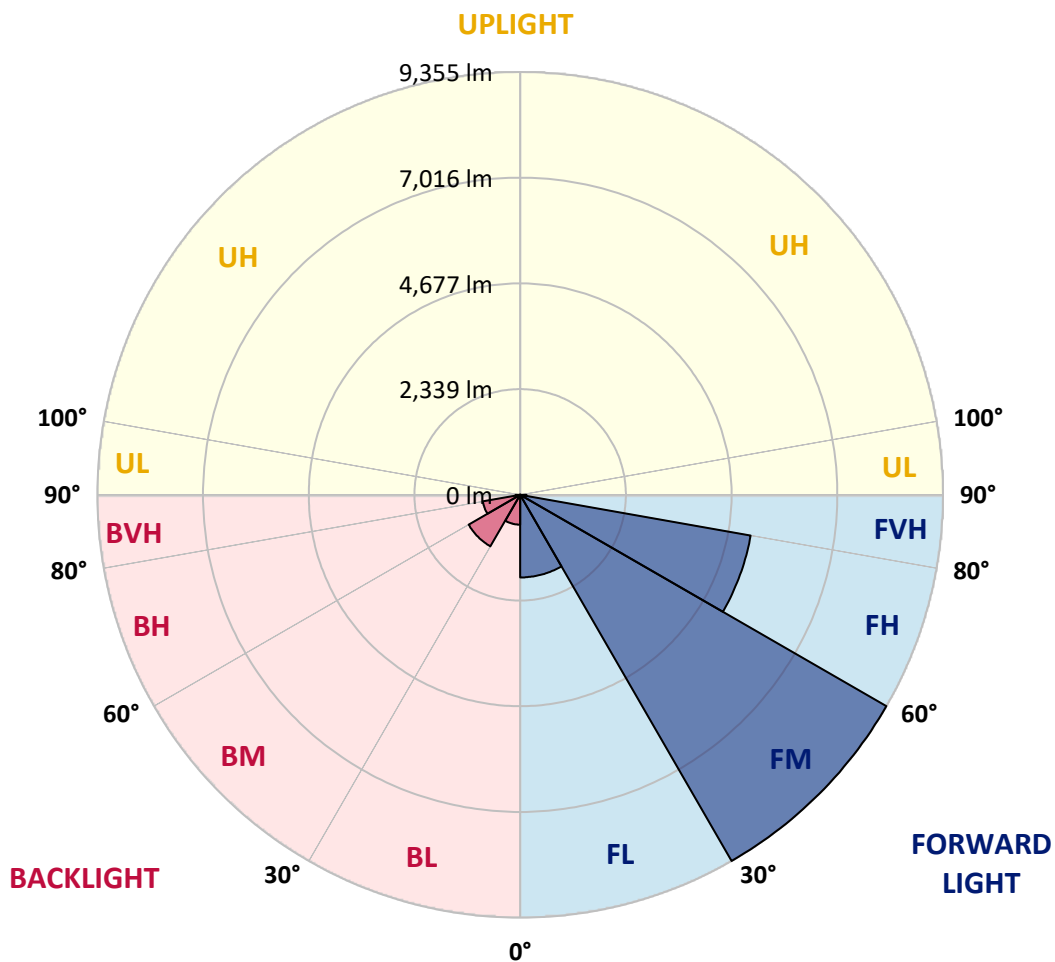
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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	1827.7	9.4			
FM (30°-60°)	9354.6	48.2			
FH (60°-80°)	5176.9	26.7			G3/7500
FVH (80°-90°)	140.7	0.7			G2/225
BL (0°-30°)	660.5	3.4	B2/1000		
BM (30°-60°)	1316.7	6.8	B2/2500		
BH (60°-80°)	838.6	4.3	B2/1000		G2/1000
BVH (80°-90°)	102.0	0.5			G2/225
UL (90°-100°)	0.0	0.0		U0/0	
UH (100°-180°)	0.0	0.0		U0/0	

BUG Rating: B2-U0-G3

Type II Short





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CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	57.5°	60°	62.5°	65°
0°	1682.4	1682.4	1682.4	1682.4	1682.4	1682.4	1682.4	1682.4	1682.4	1682.4	1682.4
2.5°	2118.4	2093.8	2096.2	2061.7	2011.0	1955.4	1909.7	1885.0	1864.0	1857.8	1823.2
5°	2770.7	2739.8	2728.7	2649.6	2531.1	2390.2	2250.6	2196.3	2151.8	2124.7	2058.0
7.5°	3304.3	3288.3	3273.4	3200.5	3083.2	2902.8	2678.1	2597.8	2523.6	2442.1	2361.8
10°	3667.5	3661.3	3655.1	3604.5	3506.9	3350.1	3107.9	3020.2	2927.6	2823.8	2718.8
12.5°	3941.7	3941.7	3946.6	3904.6	3845.4	3724.3	3504.4	3422.9	3329.0	3220.4	3100.5
15°	4125.8	4130.7	4156.7	4169.0	4138.1	4060.3	3867.6	3796.0	3707.0	3599.6	3481.0
17.5°	4248.0	4257.9	4296.2	4337.0	4376.5	4349.4	4206.1	4139.4	4059.1	3960.3	3849.1
20°	4532.2	4519.8	4521.0	4508.7	4566.8	4587.7	4508.7	4453.1	4388.9	4298.7	4197.4
22.5°	5128.8	5105.3	5044.8	4890.4	4819.9	4812.6	4765.6	4736.0	4686.5	4629.8	4528.5
25°	5907.0	5879.8	5760.0	5505.5	5295.5	5101.7	5015.1	4996.6	4964.5	4926.2	4853.3
27.5°	6711.2	6681.5	6527.1	6205.9	5931.7	5540.1	5270.9	5246.1	5216.5	5200.5	5165.8
30°	7419.0	7386.8	7234.9	6908.8	6577.8	6110.8	5615.5	5529.0	5478.4	5483.3	5463.6
32.5°	8040.3	8011.9	7841.4	7509.2	7173.1	6719.8	6062.6	5928.0	5814.4	5772.4	5787.1
35°	8561.6	8535.6	8349.1	8014.3	7675.9	7299.2	6638.2	6435.7	6250.4	6134.3	6120.7
37.5°	8868.0	8853.1	8722.2	8438.0	8102.1	7825.4	7283.1	7058.3	6785.2	6616.0	6542.0
40°	8850.6	8866.6	8844.4	8716.0	8455.3	8254.0	7955.1	7732.7	7465.9	7214.0	7063.2
42.5°	8598.6	8620.8	8721.0	8787.7	8717.2	8594.9	8541.8	8376.3	8136.7	7869.9	7661.1
45°	8252.8	8272.5	8402.2	8643.1	8844.4	8879.0	9055.7	8972.9	8770.4	8543.1	8313.3
47.5°	7722.9	7761.1	7911.8	8294.8	8774.1	9107.5	9486.7	9525.1	9407.8	9220.0	9005.0
50°	6955.8	7006.4	7217.6	7762.4	8507.3	9342.3	10127.8	10273.6	10226.7	10036.5	9819.1
52.5°	6170.1	6220.8	6502.4	7081.7	8077.3	9438.6	10759.1	11132.2	11401.4	11597.8	11636.2
55°	5352.4	5409.2	5718.0	6385.1	7504.2	9316.3	11210.0	11633.6	11906.6	12111.7	12194.5
57.5°	4429.7	4493.8	4792.8	5467.3	6693.9	8824.7	11711.5	12311.8	12718.2	13034.4	13212.3
60°	3371.0	3451.3	3761.4	4440.7	5629.1	7883.4	11935.1	12823.2	13469.3	13943.6	14225.3
62.5°	2137.0	2218.5	2540.9	3246.2	4417.3	6597.5	11302.6	12598.4	13700.3	14401.8	14918.2
65°	1166.1	1201.9	1381.0	1912.2	2978.2	5118.9	9699.2	11227.3	12814.6	13808.9	14602.0
67.5°	874.5	879.5	898.0	1027.8	1586.1	3456.2	7583.2	8982.8	10745.5	12025.2	12972.7
70°	765.9	765.9	768.3	769.6	861.0	1872.6	5137.5	6425.8	8041.5	9336.1	10513.3
72.5°	686.8	679.3	676.9	662.1	674.4	959.8	2796.6	3954.0	5316.6	6769.2	7867.3
75°	592.9	591.7	591.7	576.8	584.3	675.7	1213.0	1897.4	2953.5	4306.1	5387.0
77.5°	512.6	504.0	505.2	496.5	520.1	517.6	575.6	781.9	1286.0	2261.7	3158.6
80°	422.5	416.2	420.0	415.0	452.1	382.9	387.9	478.0	638.6	992.0	1398.3
82.5°	312.5	315.0	338.5	336.0	380.4	258.2	284.1	357.0	429.8	494.1	537.4
85°	182.8	186.5	243.4	255.7	279.2	135.8	174.2	212.5	239.7	265.6	276.7
87.5°	19.7	26.0	135.8	139.6	124.8	40.7	70.4	88.9	95.1	101.3	88.9
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):

	67.5°	70°	72.5°	75°	77.5°	80°	85°	90°	95°	100°	102.5°
0°	1682.4	1682.4	1682.4	1682.4	1682.4	1682.4	1682.4	1682.4	1682.4	1682.4	1682.4
2.5°	1812.2	1796.1	1778.8	1768.9	1751.6	1736.8	1709.6	1687.4	1662.7	1645.3	1637.9
5°	2024.6	1986.3	1945.6	1915.9	1878.9	1846.7	1784.9	1710.8	1687.4	1637.9	1625.6
7.5°	2301.3	2232.1	2162.9	2106.2	2041.9	1988.7	1885.0	1751.6	1734.3	1655.2	1637.9
10°	2626.1	2524.8	2422.3	2334.7	2240.8	2159.2	2006.1	1818.3	1799.8	1698.5	1681.2
12.5°	2989.4	2865.8	2733.6	2602.7	2491.5	2376.6	2167.8	1922.0	1892.5	1772.6	1749.1
15°	3363.6	3230.2	3077.0	2918.9	2781.8	2629.9	2366.8	2058.0	2003.6	1862.8	1830.7
17.5°	3733.0	3588.4	3427.8	3251.2	3090.6	2909.1	2581.7	2209.9	2116.0	1951.7	1911.0
20°	4090.0	3943.0	3773.7	3600.8	3400.7	3193.1	2801.6	2359.3	2216.0	2025.9	1972.7
22.5°	4414.9	4288.8	4119.6	3920.7	3718.1	3484.7	3025.2	2508.8	2303.8	2082.6	2014.7
25°	4756.9	4642.0	4474.1	4282.7	4046.7	3787.3	3256.2	2650.9	2374.2	2113.5	2029.5
27.5°	5102.9	5004.1	4845.9	4644.6	4391.3	4103.6	3490.8	2781.8	2430.9	2123.4	2022.1
30°	5472.2	5395.6	5249.9	5025.0	4769.3	4450.7	3746.6	2910.3	2466.8	2109.8	1988.7
32.5°	5821.8	5819.3	5689.6	5456.1	5180.6	4829.9	4015.8	3040.0	2485.4	2071.6	1930.7
35°	6185.0	6235.6	6138.0	5915.6	5625.4	5236.3	4313.5	3178.3	2486.6	2003.6	1855.3
37.5°	6597.5	6687.6	6644.5	6433.2	6128.1	5699.5	4663.1	3334.0	2479.1	1909.7	1745.5
40°	7067.0	7190.4	7189.2	7011.3	6685.2	6218.3	5069.5	3508.1	2461.8	1792.3	1615.8
42.5°	7604.2	7751.2	7792.0	7616.6	7286.8	6785.2	5535.2	3699.6	2434.7	1676.2	1478.6
45°	8219.4	8349.1	8425.7	8262.7	7931.6	7402.9	6070.1	3917.0	2401.4	1526.8	1321.8
47.5°	8877.8	9028.5	9143.3	9003.8	8650.5	8107.0	6703.7	4197.4	2389.0	1356.3	1152.5
50°	9694.3	9850.0	10098.3	10035.2	9841.3	9404.0	8044.0	4859.5	2393.9	1194.5	1010.5
52.5°	11720.2	12077.2	12390.9	12251.3	11790.5	11040.7	9133.5	5227.6	2290.2	1062.3	911.7
55°	12331.6	12736.8	13200.0	13142.0	12699.7	11943.7	9994.4	5535.2	2190.1	966.0	847.4
57.5°	13401.3	13879.4	14526.6	14514.2	13972.0	13120.9	11102.5	5903.3	2146.9	910.4	815.3
60°	14534.1	15143.0	16037.3	16176.9	15587.7	14702.1	12411.9	6355.4	2153.0	879.5	796.8
62.5°	15361.7	16254.8	17555.5	17973.0	17278.8	16303.0	13770.7	6807.5	2116.0	843.7	774.5
65°	15412.3	16698.2	18543.6	19193.4	18490.6	17236.8	14249.9	6718.5	1893.7	795.5	738.7
67.5°	14177.1	15852.1	18094.1	18806.7	18087.9	16661.1	13410.0	5873.7	1539.1	711.5	676.9
70°	11807.8	13752.1	16079.4	16873.6	16279.4	14835.4	11670.7	4691.6	1150.0	600.4	584.3
72.5°	9124.8	10938.2	13051.7	13786.7	13332.1	12062.3	9205.1	3419.2	821.4	486.7	474.3
75°	6523.4	8067.5	9601.6	9882.0	9433.7	8267.6	5972.5	2135.7	575.6	399.0	381.7
77.5°	4039.3	5043.6	5594.5	5233.8	4661.9	3875.0	2430.9	1054.9	382.9	324.9	307.6
80°	1792.3	2103.6	1964.1	1750.4	1382.2	1136.4	742.4	468.2	247.0	250.7	240.9
82.5°	602.8	637.4	620.1	616.4	555.9	486.7	315.0	202.5	138.3	160.6	156.9
85°	294.0	307.6	308.8	320.0	277.9	216.1	85.2	80.3	59.3	86.4	90.2
87.5°	88.9	90.2	81.5	88.9	71.6	49.4	16.1	22.2	11.2	21.0	21.0
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):

	105°	107.5°	110°	112.5°	115°	117.5°	120°	122.5°	125°	127.5°	130°
0°	1682.4	1682.4	1682.4	1682.4	1682.4	1682.4	1682.4	1682.4	1682.4	1682.4	1682.4
2.5°	1624.3	1619.4	1610.7	1600.9	1598.5	1586.1	1582.4	1576.2	1572.5	1566.3	1561.3
5°	1609.5	1600.9	1591.0	1579.8	1579.8	1562.6	1555.2	1547.8	1547.8	1536.7	1531.8
7.5°	1624.3	1613.3	1602.1	1592.2	1595.9	1576.2	1568.8	1561.3	1560.1	1549.1	1544.0
10°	1666.4	1655.2	1641.6	1631.8	1628.0	1612.0	1603.4	1592.2	1584.9	1577.4	1570.0
12.5°	1730.6	1715.8	1698.5	1677.4	1668.8	1655.2	1641.6	1626.8	1609.5	1602.1	1591.0
15°	1807.1	1782.5	1759.0	1733.1	1709.6	1696.1	1677.4	1654.0	1630.6	1620.7	1605.8
17.5°	1870.2	1844.3	1810.9	1780.0	1738.0	1726.8	1701.0	1672.5	1634.3	1630.6	1608.3
20°	1923.2	1883.8	1843.1	1805.9	1741.7	1735.5	1703.4	1670.1	1615.8	1615.8	1588.5
22.5°	1952.9	1898.6	1850.4	1801.0	1720.7	1715.8	1678.8	1639.2	1572.5	1574.9	1541.6
25°	1957.9	1892.5	1831.9	1772.6	1680.0	1671.3	1624.3	1581.2	1508.2	1503.3	1468.8
27.5°	1938.1	1861.6	1791.1	1719.5	1619.4	1600.9	1549.1	1497.1	1425.5	1413.1	1376.1
30°	1892.5	1802.2	1723.2	1640.4	1535.4	1505.8	1451.5	1398.3	1325.4	1309.4	1274.8
32.5°	1819.5	1717.0	1629.3	1546.5	1430.4	1393.4	1339.0	1286.0	1215.5	1203.1	1171.1
35°	1723.2	1608.3	1515.7	1427.9	1311.8	1273.6	1221.7	1174.8	1110.5	1105.6	1083.3
37.5°	1602.1	1482.4	1383.4	1299.5	1189.6	1169.7	1116.7	1082.1	1029.0	1033.9	1022.7
40°	1465.0	1342.7	1248.8	1174.8	1079.6	1062.3	1030.2	1004.2	958.6	972.1	973.3
42.5°	1326.7	1204.4	1119.1	1052.4	970.9	959.8	937.5	922.7	888.1	915.3	926.5
45°	1169.7	1056.1	983.3	932.6	872.1	872.1	861.0	859.8	836.3	874.5	885.7
47.5°	1017.8	928.9	878.3	847.4	805.4	825.1	821.4	831.4	814.1	853.6	863.5
50°	903.0	841.2	810.3	795.5	765.9	796.8	804.1	817.7	802.9	837.5	845.0
52.5°	830.1	789.3	772.0	768.3	747.4	785.6	798.0	810.3	793.0	825.1	823.9
55°	789.3	762.2	756.0	763.4	747.4	784.4	796.8	805.4	790.5	812.8	811.6
57.5°	774.5	759.6	763.4	774.5	763.4	794.3	800.5	810.3	795.5	805.4	810.3
60°	773.2	773.2	788.1	802.9	795.5	817.7	821.4	820.2	806.6	807.8	810.3
62.5°	765.9	784.4	809.1	832.6	830.1	857.2	859.8	843.7	832.6	820.2	816.5
65°	742.4	773.2	809.1	841.2	846.2	888.1	893.1	877.1	869.6	848.6	832.6
67.5°	690.5	730.1	772.0	811.6	820.2	877.1	888.1	894.4	898.0	884.4	863.5
70°	602.8	643.5	686.8	732.5	744.8	807.8	831.4	859.8	882.0	901.7	894.4
72.5°	490.4	527.4	564.5	606.5	625.0	690.5	721.4	770.8	805.4	856.0	877.1
75°	389.1	411.3	433.5	459.5	474.3	538.6	576.8	636.2	683.1	753.5	800.5
77.5°	306.4	317.4	328.6	339.7	345.9	381.7	412.6	471.9	526.2	615.2	684.4
80°	235.9	242.1	243.4	247.0	244.6	261.9	273.0	308.8	355.8	443.4	525.0
82.5°	151.9	156.9	159.4	165.5	153.1	175.4	182.8	186.5	211.2	275.5	333.5
85°	85.2	86.4	87.7	90.2	72.8	95.1	96.4	90.2	87.7	113.6	128.5
87.5°	21.0	19.7	21.0	21.0	8.7	19.7	19.7	13.6	9.9	18.5	14.8
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):

	135°	145°	155°	165°	175°	180°
0°	1682.4	1682.4	1682.4	1682.4	1682.4	1682.4
2.5°	1550.3	1547.8	1549.1	1542.8	1540.4	1541.6
5°	1525.5	1520.6	1520.6	1516.9	1511.9	1511.9
7.5°	1536.7	1526.8	1523.1	1515.7	1508.2	1509.5
10°	1554.0	1536.7	1524.3	1513.1	1504.6	1504.6
12.5°	1565.1	1534.2	1515.7	1500.9	1491.0	1491.0
15°	1567.6	1520.6	1493.4	1477.3	1467.5	1467.5
17.5°	1552.7	1493.4	1458.8	1437.9	1426.7	1429.2
20°	1515.7	1442.8	1402.1	1379.8	1368.7	1369.9
22.5°	1457.6	1373.6	1326.7	1300.7	1289.6	1289.6
25°	1378.5	1287.2	1236.5	1215.5	1205.6	1205.6
27.5°	1288.4	1194.5	1150.0	1133.9	1127.8	1127.8
30°	1187.0	1109.3	1077.2	1066.0	1056.1	1056.1
32.5°	1101.8	1046.3	1035.1	1020.3	994.4	993.2
35°	1033.9	1027.8	1019.1	974.7	937.5	932.6
37.5°	996.9	1033.9	979.6	903.0	873.3	872.1
40°	977.1	1011.7	917.8	880.8	877.1	877.1
42.5°	930.2	954.8	914.1	893.1	893.1	894.4
45°	880.8	901.7	922.7	904.2	910.4	911.7
47.5°	846.2	888.1	922.7	906.6	919.0	926.5
50°	814.1	875.7	904.2	904.2	917.8	919.0
52.5°	806.6	858.5	886.9	900.5	901.7	895.6
55°	807.8	845.0	873.3	890.6	883.2	883.2
57.5°	806.6	837.5	862.2	868.4	872.1	872.1
60°	807.8	827.7	847.4	845.0	857.2	857.2
62.5°	811.6	814.1	823.9	821.4	839.9	839.9
65°	820.2	796.8	790.5	793.0	815.3	814.1
67.5°	836.3	773.2	753.5	754.7	786.9	781.9
70°	859.8	741.1	711.5	704.1	758.4	749.8
72.5°	867.2	704.1	657.1	649.8	681.9	657.1
75°	832.6	674.4	599.1	574.4	560.8	553.4
77.5°	742.4	655.9	538.6	486.7	465.6	460.7
80°	615.2	617.7	459.5	397.7	462.0	460.7
82.5°	464.4	533.7	368.1	344.6	334.7	279.2
85°	224.8	401.5	282.8	237.1	142.1	134.6
87.5°	19.7	168.0	163.1	106.2	48.2	45.7
90°	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)