

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: P196289

Luminaire Tested: **NAV-AF-05-D-UNV-T2R**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P196289
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-05-D-UNV-T2R
Description: NAVION ROADWAY AND AREA LUMINAIRE
(5) 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: 32233.2 lumens
Efficiency: N/A
Efficacy: 115.5 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 1.5' x H: 0')
IES Classification: Type II - Short - Semi-Cutoff
BUG Rating: B3 - U0 - G4

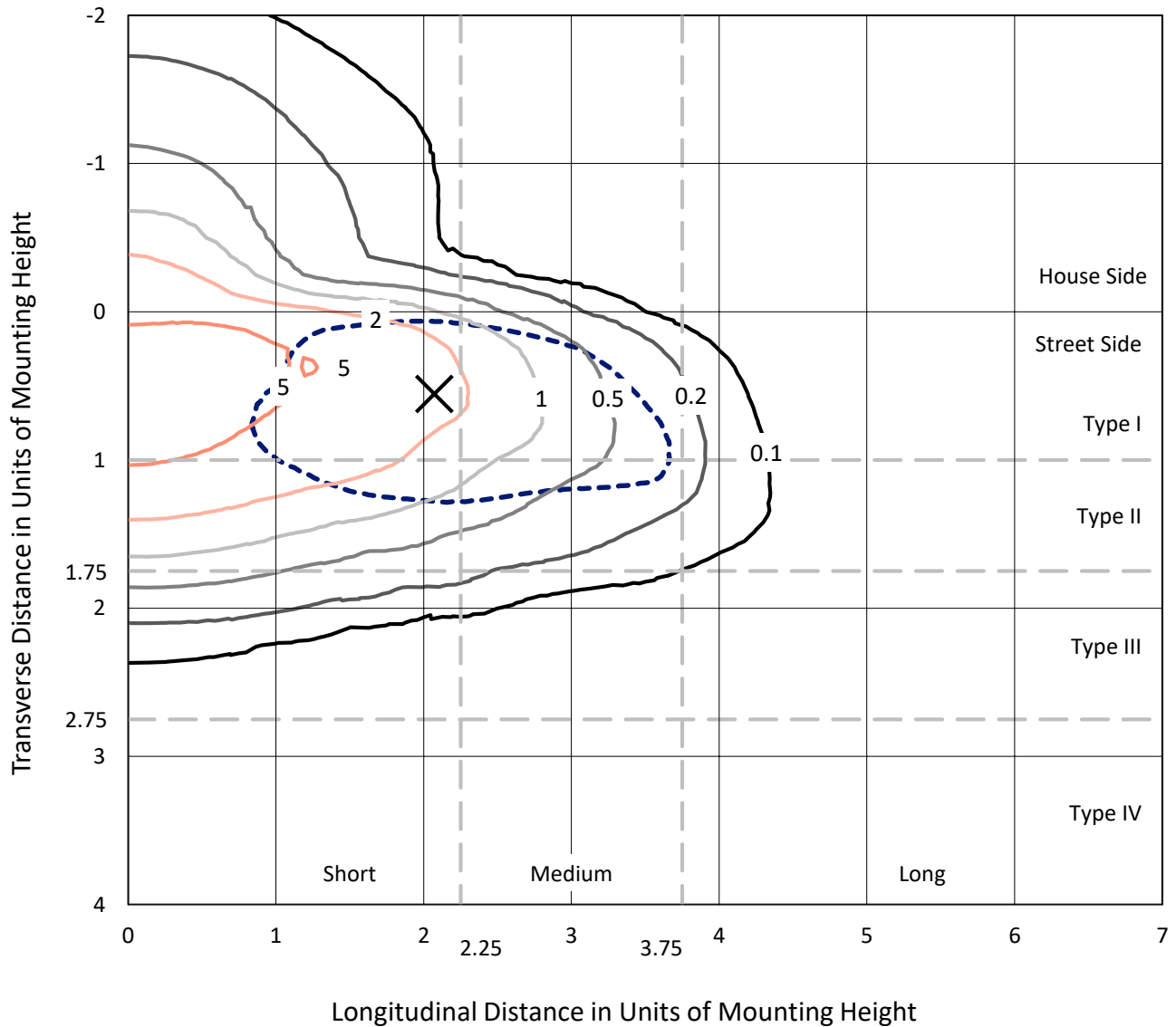
Input Watts (W): 279
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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Iso-Footcandle Lines of Horizontal Illumination

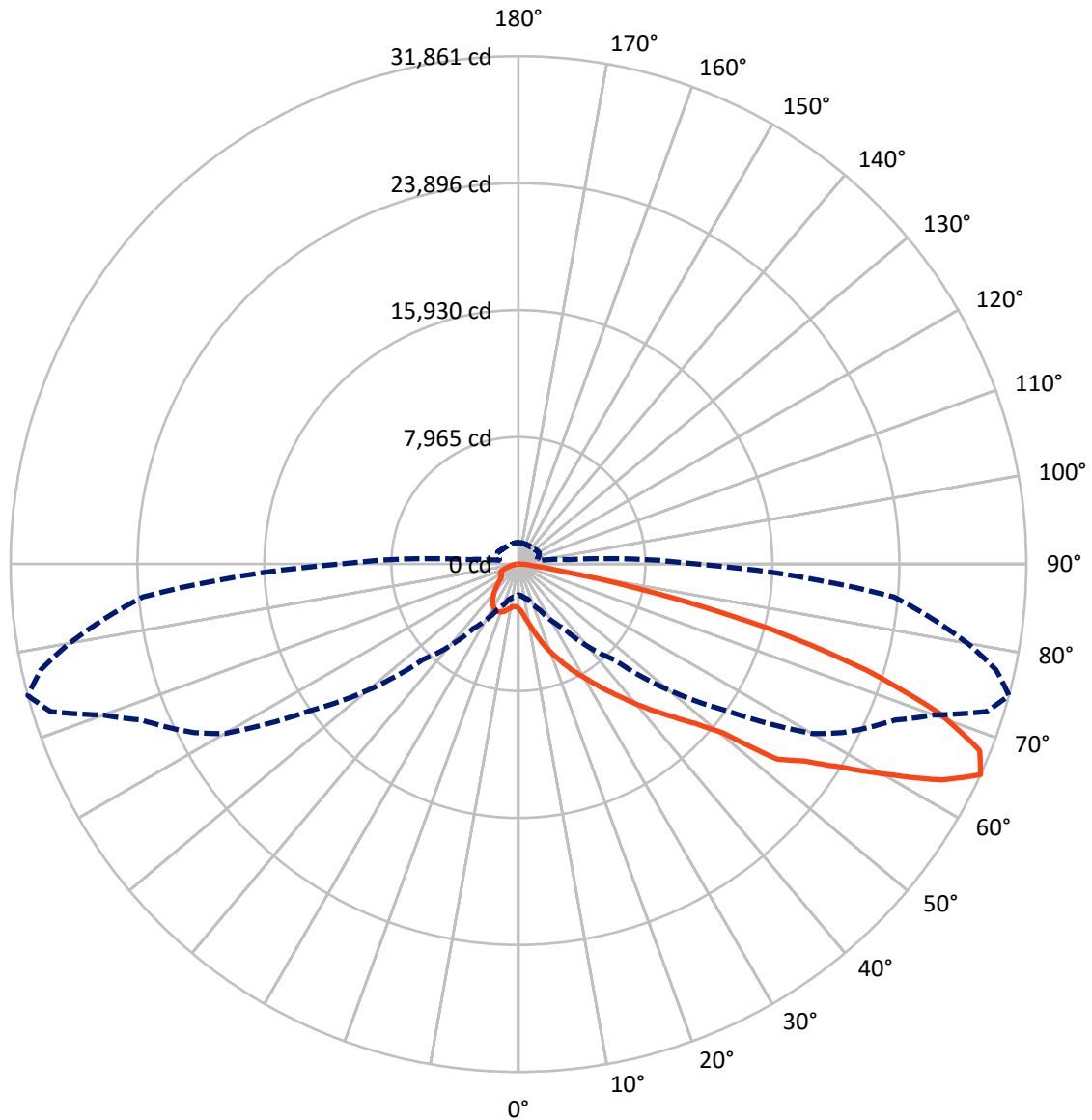
× Max cd
 - - - 1/2 Max cd



Based on 30 foot mounting height. Maximum calculated value = 8.9 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	4843.5	0.0	4843.5
	% Fixture	15.0	0.0	15.0
Street Side	Lumens	27389.6	0.0	27389.6
	% Fixture	85.0	0.0	85.0
Total	Lumens	32233.2	0.0	32233.2
	% Fixture	100.0	0.0	100.0

Coefficient of Utilization

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	329.7	1.0
10°-20°	1259.3	3.9
20°-30°	2541.5	7.9
30°-40°	4316.1	13.4
40°-50°	6019.9	18.7
50°-60°	7378.2	22.9
60°-70°	6941.8	21.5
70°-80°	3043.9	9.4
80°-90°	402.8	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°	32233.2	100.0
0°-180°	32233.2	100.0



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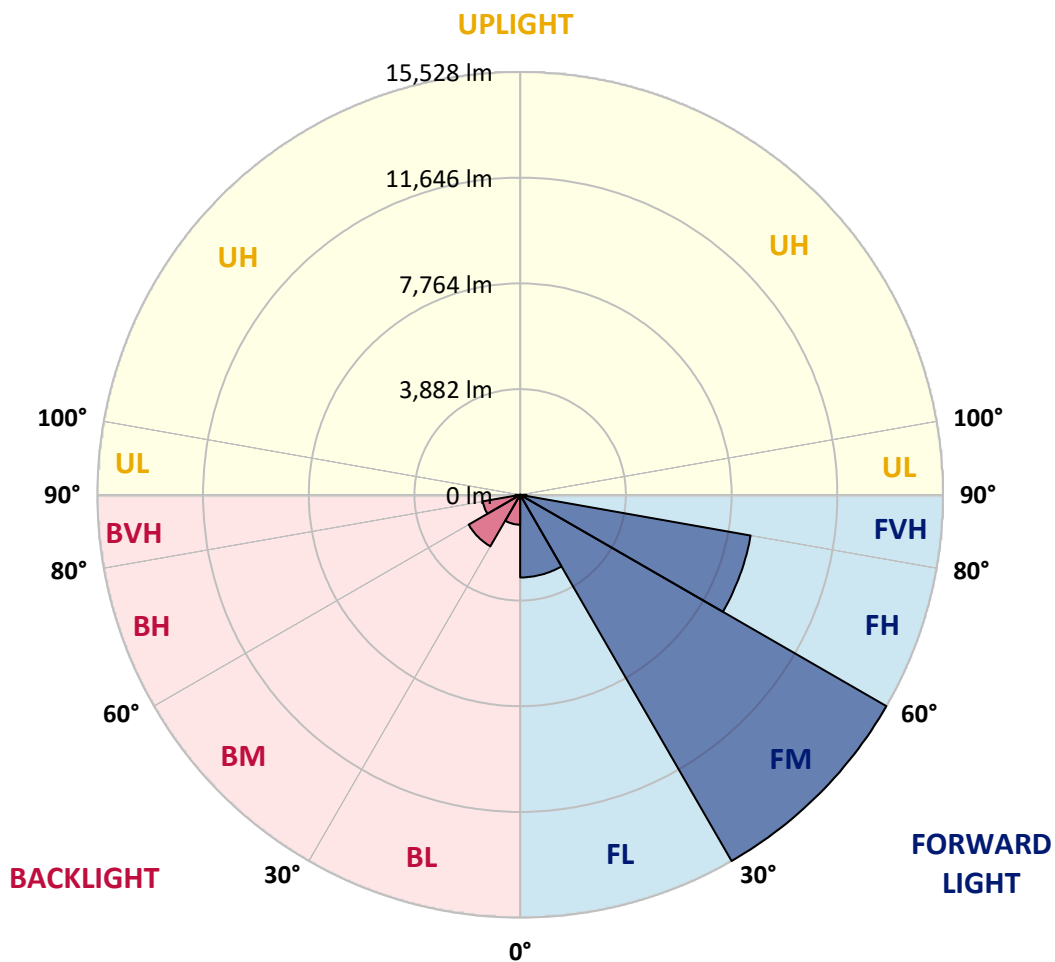
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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone		Lumens	% Fixture	Zone Rating/Lumen Limit		
				B	U	G
FL	(0°-30°)	3034.0	9.4			
FM	(30°-60°)	15528.5	48.2			
FH	(60°-80°)	8593.6	26.7			G4/12000
FVH	(80°-90°)	233.5	0.7			G3/500
BL	(0°-30°)	1096.5	3.4	B3/2500		
BM	(30°-60°)	2185.7	6.8	B2/2500		
BH	(60°-80°)	1392.1	4.3	B3/2500		G3/2500
BVH	(80°-90°)	169.3	0.5			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 II Short





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CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	57.5°	60°	62.5°	65°
0°	2792.8	2792.8	2792.8	2792.8	2792.8	2792.8	2792.8	2792.8	2792.8	2792.8	2792.8
2.5°	3516.6	3475.7	3479.8	3422.3	3338.2	3245.9	3170.1	3129.1	3094.2	3084.0	3026.6
5°	4599.3	4548.0	4529.6	4398.4	4201.6	3967.7	3736.0	3645.8	3572.0	3526.9	3416.1
7.5°	5485.2	5458.5	5433.9	5312.9	5118.1	4818.7	4445.5	4312.2	4189.2	4053.9	3920.6
10°	6088.0	6077.8	6067.5	5983.4	5821.4	5561.0	5159.2	5013.5	4859.7	4687.5	4513.2
12.5°	6543.2	6543.2	6551.4	6481.7	6383.3	6182.3	5817.3	5682.0	5526.2	5345.7	5146.8
15°	6848.8	6856.9	6900.0	6920.5	6869.2	6740.0	6420.1	6301.3	6153.6	5975.3	5778.3
17.5°	7051.7	7068.2	7131.7	7199.4	7265.0	7219.9	6982.0	6871.3	6738.0	6574.0	6389.5
20°	7523.4	7502.8	7504.9	7484.4	7580.8	7615.7	7484.4	7392.1	7285.5	7135.8	6967.6
22.5°	8513.7	8474.8	8374.3	8118.0	8001.1	7988.8	7910.9	7861.7	7779.6	7685.3	7517.3
25°	9805.6	9760.5	9561.6	9139.1	8790.6	8468.6	8325.1	8294.4	8241.0	8177.5	8056.5
27.5°	11140.4	11091.2	10835.0	10301.8	9846.6	9196.5	8749.6	8708.6	8659.4	8632.7	8575.3
30°	12315.4	12262.1	12009.9	11468.5	10919.0	10143.9	9321.6	9178.1	9094.0	9102.2	9069.5
32.5°	13346.8	13299.7	13016.7	12465.1	11907.4	11154.9	10064.0	9840.5	9651.7	9582.1	9606.7
35°	14212.2	14169.1	13859.4	13303.8	12742.0	12116.5	11019.5	10683.2	10375.6	10182.9	10160.4
37.5°	14720.7	14696.1	14478.7	14007.1	13449.3	12990.0	12089.8	11716.7	11263.5	10982.6	10859.5
40°	14691.9	14718.6	14681.7	14468.5	14035.8	13701.6	13205.4	12836.3	12393.4	11975.1	11724.9
42.5°	14273.6	14310.6	14476.7	14587.4	14470.6	14267.5	14179.3	13904.6	13506.7	13063.9	12717.3
45°	13699.6	13732.3	13947.6	14347.5	14681.7	14739.2	15032.4	14895.0	14558.7	14181.4	13800.0
47.5°	12819.8	12883.5	13133.6	13769.2	14564.9	15118.5	15748.0	15811.5	15616.8	15305.1	14948.3
50°	11546.5	11630.5	11981.2	12885.5	14121.9	15508.0	16812.2	17054.1	16976.3	16660.5	16299.6
52.5°	10242.3	10326.4	10794.0	11755.6	13408.3	15668.0	17860.0	18479.3	18926.3	19252.3	19315.9
55°	8884.9	8979.3	9491.9	10599.1	12456.9	15465.0	18608.5	19311.8	19764.9	20105.4	20242.8
57.5°	7353.2	7459.8	7956.0	9075.6	11111.8	14649.0	19441.0	20437.5	21112.2	21637.0	21932.4
60°	5595.8	5729.1	6243.8	7371.6	9344.2	13086.4	19812.1	21286.5	22358.8	23146.3	23613.8
62.5°	3547.4	3682.7	4217.9	5388.8	7332.6	10951.8	18762.2	20913.2	22742.3	23907.0	24764.1
65°	1935.7	1995.2	2292.4	3174.2	4943.8	8497.3	16100.6	18637.1	21272.1	22922.8	24239.2
67.5°	1451.8	1460.0	1490.7	1706.1	2632.9	5737.3	12588.1	14911.3	17837.5	19961.8	21534.5
70°	1271.3	1271.3	1275.4	1277.5	1429.2	3108.5	8528.1	10666.8	13348.9	15497.8	17452.0
72.5°	1140.1	1127.8	1123.7	1099.1	1119.6	1593.2	4642.4	6563.8	8825.4	11236.8	13059.8
75°	984.3	982.2	982.2	957.6	969.9	1121.7	2013.6	3149.6	4902.8	7148.1	8942.3
77.5°	851.0	836.6	838.6	824.3	863.3	859.2	955.5	1298.0	2134.6	3754.5	5243.1
80°	701.2	691.0	697.1	689.0	750.5	635.7	643.8	793.5	1060.1	1646.5	2321.2
82.5°	518.7	522.9	561.8	557.7	631.6	428.5	471.6	592.6	713.6	820.2	892.0
85°	303.5	309.6	404.0	424.4	463.4	225.6	289.1	352.7	397.8	440.9	459.3
87.5°	32.8	43.1	225.6	231.7	207.1	67.6	116.9	147.6	157.8	168.2	147.6
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):

	67.5°	70°	72.5°	75°	77.5°	80°	85°	90°	95°	100°	102.5°
0°	2792.8	2792.8	2792.8	2792.8	2792.8	2792.8	2792.8	2792.8	2792.8	2792.8	2792.8
2.5°	3008.1	2981.5	2952.7	2936.4	2907.6	2883.0	2837.9	2801.0	2760.0	2731.3	2719.0
5°	3360.8	3297.3	3229.6	3180.4	3118.9	3065.5	2963.0	2840.0	2801.0	2719.0	2698.4
7.5°	3820.1	3705.3	3590.5	3496.1	3389.5	3301.4	3129.1	2907.6	2878.9	2747.6	2719.0
10°	4359.4	4191.2	4021.1	3875.4	3719.7	3584.3	3330.0	3018.3	2987.6	2819.5	2790.7
12.5°	4962.2	4757.2	4537.8	4320.4	4135.9	3945.2	3598.6	3190.6	3141.4	2942.5	2903.5
15°	5583.6	5362.1	5107.8	4845.4	4617.8	4365.5	3928.7	3416.1	3325.9	3092.2	3038.9
17.5°	6196.6	5956.7	5690.2	5397.0	5130.4	4828.9	4285.6	3668.4	3512.5	3239.8	3172.2
20°	6789.2	6545.2	6264.3	5977.3	5645.1	5300.6	4650.5	3916.5	3678.6	3362.8	3274.7
22.5°	7328.5	7119.4	6838.5	6508.3	6172.1	5784.5	5021.8	4164.6	3824.2	3457.2	3344.4
25°	7896.6	7705.9	7427.0	7109.2	6717.5	6286.9	5405.2	4400.4	3941.1	3508.4	3369.0
27.5°	8470.6	8306.7	8044.2	7710.0	7289.5	6811.8	5794.8	4617.8	4035.4	3524.9	3356.7
30°	9083.8	8956.7	8714.7	8341.6	7917.0	7388.1	6219.2	4831.0	4094.9	3502.3	3301.4
32.5°	9664.1	9660.0	9444.7	9057.1	8599.8	8017.6	6666.3	5046.3	4125.7	3438.8	3205.0
35°	10266.9	10351.0	10189.0	9819.9	9338.1	8692.1	7160.5	5276.0	4127.7	3325.9	3079.9
37.5°	10951.8	11101.5	11029.8	10679.1	10172.6	9461.1	7740.7	5534.4	4115.4	3170.1	2897.4
40°	11731.0	11936.1	11934.1	11638.7	11097.4	10322.3	8415.3	5823.5	4086.7	2975.4	2682.1
42.5°	12623.0	12867.0	12934.7	12643.5	12096.0	11263.5	9188.3	6141.3	4041.6	2782.5	2454.5
45°	13644.1	13859.4	13986.6	13715.9	13166.4	12288.8	10076.3	6502.2	3986.2	2534.5	2194.0
47.5°	14737.0	14987.3	15177.9	14946.2	14359.8	13457.5	11128.2	6967.6	3965.7	2251.5	1913.1
50°	16092.4	16350.8	16763.0	16658.4	16336.5	15610.6	13353.0	8066.8	3973.9	1982.9	1677.3
52.5°	19455.3	20047.9	20568.8	20337.1	19572.2	18327.6	15161.6	8677.8	3801.7	1763.5	1513.3
55°	20470.4	21142.9	21911.8	21815.4	21081.4	19826.5	16590.7	9188.3	3635.6	1603.5	1406.7
57.5°	22246.1	23039.6	24114.1	24093.6	23193.5	21780.7	18430.1	9799.5	3563.8	1511.2	1353.4
60°	24126.4	25137.3	26621.9	26853.6	25875.5	24405.3	20603.7	10549.9	3574.1	1460.0	1322.6
62.5°	25500.2	26982.8	29142.0	29835.1	28682.6	27062.8	22859.2	11300.4	3512.5	1400.5	1285.6
65°	25584.3	27718.9	30782.4	31860.9	30694.3	28613.0	23654.8	11152.8	3143.4	1320.5	1226.2
67.5°	23533.8	26314.3	30036.0	31219.1	30025.8	27657.4	22260.4	9750.3	2554.9	1181.1	1123.7
70°	19601.0	22828.5	26691.7	28010.1	27023.8	24626.7	19373.4	7787.8	1909.0	996.6	969.9
72.5°	15147.1	18157.4	21665.8	22885.9	22131.2	20023.3	15280.4	5675.8	1363.6	807.9	787.4
75°	10828.8	13392.0	15938.7	16404.1	15659.8	13724.1	9914.2	3545.3	955.5	662.4	633.6
77.5°	6705.2	8372.2	9286.8	8688.0	7738.6	6432.5	4035.4	1751.2	635.7	539.3	510.6
80°	2975.4	3492.0	3260.3	2905.6	2294.6	1886.5	1232.3	777.1	410.1	416.2	399.9
82.5°	1000.7	1058.0	1029.4	1023.3	922.7	807.9	522.9	336.2	229.7	266.6	260.4
85°	488.0	510.6	512.6	531.1	461.4	358.9	141.5	133.3	98.4	143.5	149.7
87.5°	147.6	149.7	135.3	147.6	119.0	82.0	26.7	36.9	18.4	34.9	34.9
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):

	105°	107.5°	110°	112.5°	115°	117.5°	120°	122.5°	125°	127.5°	130°
0°	2792.8	2792.8	2792.8	2792.8	2792.8	2792.8	2792.8	2792.8	2792.8	2792.8	2792.8
2.5°	2696.4	2688.2	2673.9	2657.5	2653.3	2632.9	2626.7	2616.5	2610.3	2600.0	2591.9
5°	2671.8	2657.5	2641.1	2622.6	2622.6	2593.9	2581.6	2569.3	2569.3	2550.8	2542.6
7.5°	2696.4	2678.0	2659.6	2643.1	2649.2	2616.5	2604.1	2591.9	2589.8	2571.4	2563.1
10°	2766.2	2747.6	2725.1	2708.8	2702.6	2675.9	2661.6	2643.1	2630.8	2618.5	2606.2
12.5°	2872.8	2848.2	2819.5	2784.6	2770.3	2747.6	2725.1	2700.5	2671.8	2659.6	2641.1
15°	2999.9	2958.9	2919.9	2876.8	2837.9	2815.4	2784.6	2745.6	2706.7	2690.3	2665.7
17.5°	3104.5	3061.4	3006.0	2954.8	2885.1	2866.6	2823.5	2776.4	2712.9	2706.7	2669.8
20°	3192.6	3127.1	3059.3	2997.9	2891.3	2880.9	2827.6	2772.3	2682.1	2682.1	2637.0
22.5°	3241.8	3151.6	3071.7	2989.7	2856.4	2848.2	2786.6	2721.0	2610.3	2614.5	2559.0
25°	3250.1	3141.4	3040.9	2942.5	2788.7	2774.3	2696.4	2624.7	2503.7	2495.5	2438.1
27.5°	3217.3	3090.1	2973.2	2854.3	2688.2	2657.5	2571.4	2485.3	2366.3	2345.8	2284.2
30°	3141.4	2991.7	2860.5	2723.1	2548.8	2499.6	2409.4	2321.2	2200.2	2173.6	2116.2
32.5°	3020.4	2850.2	2704.7	2567.3	2374.5	2313.0	2222.8	2134.6	2017.7	1997.2	1943.9
35°	2860.5	2669.8	2515.9	2370.4	2177.7	2114.1	2028.0	1950.1	1843.5	1835.2	1798.3
37.5°	2659.6	2460.6	2296.6	2157.1	1974.6	1941.9	1853.7	1796.3	1708.1	1716.3	1697.8
40°	2432.0	2228.9	2073.1	1950.1	1792.1	1763.5	1710.2	1667.1	1591.2	1613.8	1615.9
42.5°	2202.2	1999.3	1857.8	1747.0	1611.7	1593.2	1556.3	1531.8	1474.3	1519.4	1537.9
45°	1941.9	1753.2	1632.2	1548.1	1447.7	1447.7	1429.2	1427.1	1388.2	1451.8	1470.2
47.5°	1689.6	1542.0	1457.9	1406.7	1336.9	1369.7	1363.6	1380.0	1351.3	1416.9	1433.4
50°	1498.9	1396.4	1345.2	1320.5	1271.3	1322.6	1334.8	1357.5	1332.8	1390.3	1402.6
52.5°	1377.9	1310.3	1281.6	1275.4	1240.5	1304.2	1324.6	1345.2	1316.4	1369.7	1367.7
55°	1310.3	1265.2	1255.0	1267.2	1240.5	1302.1	1322.6	1336.9	1312.3	1349.3	1347.2
57.5°	1285.6	1261.1	1267.2	1285.6	1267.2	1318.5	1328.7	1345.2	1320.5	1336.9	1345.2
60°	1283.6	1283.6	1308.3	1332.8	1320.5	1357.5	1363.6	1361.5	1338.9	1341.1	1345.2
62.5°	1271.3	1302.1	1343.1	1382.0	1377.9	1423.0	1427.1	1400.5	1382.0	1361.5	1355.4
65°	1232.3	1283.6	1343.1	1396.4	1404.6	1474.3	1482.6	1455.9	1443.6	1408.7	1382.0
67.5°	1146.2	1211.9	1281.6	1347.2	1361.5	1455.9	1474.3	1484.6	1490.7	1468.1	1433.4
70°	1000.7	1068.4	1140.1	1216.0	1236.4	1341.1	1380.0	1427.1	1464.0	1496.9	1484.6
72.5°	814.1	875.5	937.1	1006.8	1037.6	1146.2	1197.5	1279.5	1336.9	1421.0	1455.9
75°	645.9	682.8	719.7	762.8	787.4	894.1	957.6	1056.0	1133.9	1250.9	1328.7
77.5°	508.5	527.0	545.4	563.9	574.2	633.6	684.9	783.3	873.5	1021.1	1136.0
80°	391.7	401.9	404.0	410.1	406.0	434.8	453.2	512.6	590.5	736.1	871.5
82.5°	252.3	260.4	264.5	274.8	254.3	291.1	303.5	309.6	350.7	457.3	553.6
85°	141.5	143.5	145.6	149.7	121.0	157.8	160.0	149.7	145.6	188.6	213.3
87.5°	34.9	32.8	34.9	34.9	14.3	32.8	32.8	22.5	16.4	30.8	24.7
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°	2792.8	2792.8	2792.8	2792.8	2792.8	2792.8
2.5°	2573.4	2569.3	2571.4	2561.1	2557.0	2559.0
5°	2532.4	2524.2	2524.2	2518.0	2509.8	2509.8
7.5°	2550.8	2534.5	2528.3	2515.9	2503.7	2505.7
10°	2579.6	2550.8	2530.4	2511.9	2497.5	2497.5
12.5°	2598.0	2546.7	2515.9	2491.4	2474.9	2474.9
15°	2602.1	2524.2	2479.1	2452.4	2436.1	2436.1
17.5°	2577.5	2479.1	2421.6	2386.9	2368.3	2372.4
20°	2515.9	2395.0	2327.3	2290.4	2272.0	2274.0
22.5°	2419.6	2280.2	2202.2	2159.2	2140.7	2140.7
25°	2288.3	2136.6	2052.6	2017.7	2001.3	2001.3
27.5°	2138.7	1982.9	1909.0	1882.3	1872.1	1872.1
30°	1970.5	1841.4	1788.0	1769.6	1753.2	1753.2
32.5°	1829.0	1736.8	1718.4	1693.7	1650.6	1648.6
35°	1716.3	1706.1	1691.7	1617.9	1556.3	1548.1
37.5°	1654.7	1716.3	1626.1	1498.9	1449.7	1447.7
40°	1622.0	1679.4	1523.6	1462.0	1455.9	1455.9
42.5°	1544.0	1585.1	1517.3	1482.6	1482.6	1484.6
45°	1462.0	1496.9	1531.8	1501.0	1511.2	1513.3
47.5°	1404.6	1474.3	1531.8	1505.1	1525.6	1537.9
50°	1351.3	1453.8	1501.0	1501.0	1523.6	1525.6
52.5°	1338.9	1425.1	1472.2	1494.8	1496.9	1486.7
55°	1341.1	1402.6	1449.7	1478.5	1466.1	1466.1
57.5°	1338.9	1390.3	1431.3	1441.5	1447.7	1447.7
60°	1341.1	1373.8	1406.7	1402.6	1423.0	1423.0
62.5°	1347.2	1351.3	1367.7	1363.6	1394.4	1394.4
65°	1361.5	1322.6	1312.3	1316.4	1353.4	1351.3
67.5°	1388.2	1283.6	1250.9	1252.9	1306.2	1298.0
70°	1427.1	1230.3	1181.1	1168.8	1259.0	1244.6
72.5°	1439.5	1168.8	1090.9	1078.6	1131.9	1090.9
75°	1382.0	1119.6	994.5	953.5	930.9	918.6
77.5°	1232.3	1088.8	894.1	807.9	773.0	764.9
80°	1021.1	1025.3	762.8	660.3	766.9	764.9
82.5°	771.0	885.9	611.0	572.1	555.7	463.4
85°	373.2	666.5	469.5	393.7	235.8	223.5
87.5°	32.8	278.9	270.7	176.4	80.0	75.9
90°	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)