

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: P196276

Luminaire Tested: **NAV-AF-04-D-UNV-T2R-600**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P196276
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-04-D-UNV-T2R-600
Description: NAVION ROADWAY AND AREA LUMINAIRE
(4) 70 CRI, 4000K, 615mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II
ROADWAY OPTICS
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 17231.6 lumens
Efficiency: N/A
Efficacy: 133.6 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 1' x H: 0')
IES Classification: Type II - Short - Semi-Cutoff
BUG Rating: B2 - U0 - G2

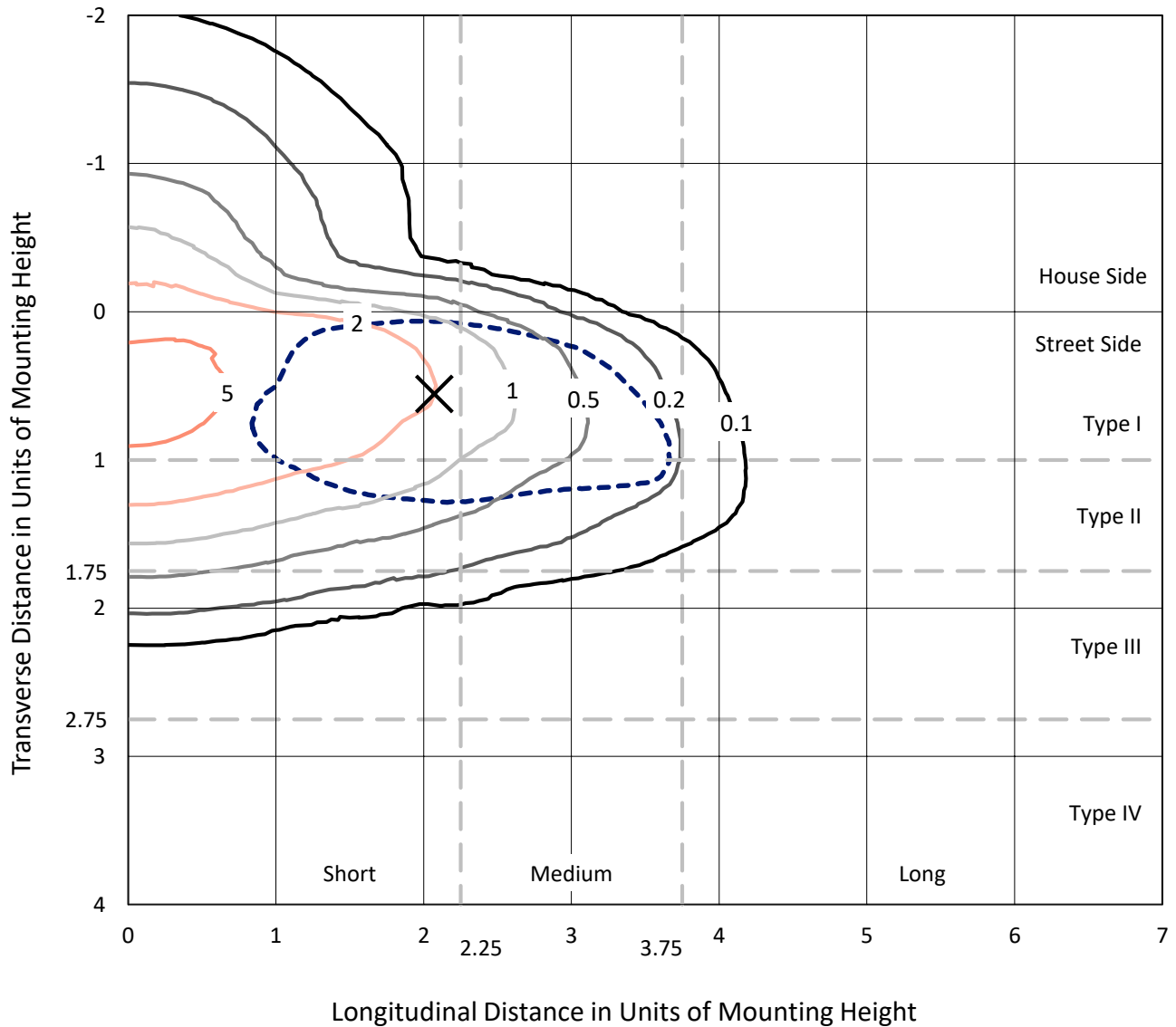
Input Watts (W): 129
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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Iso-Footcandle Lines of Horizontal Illumination

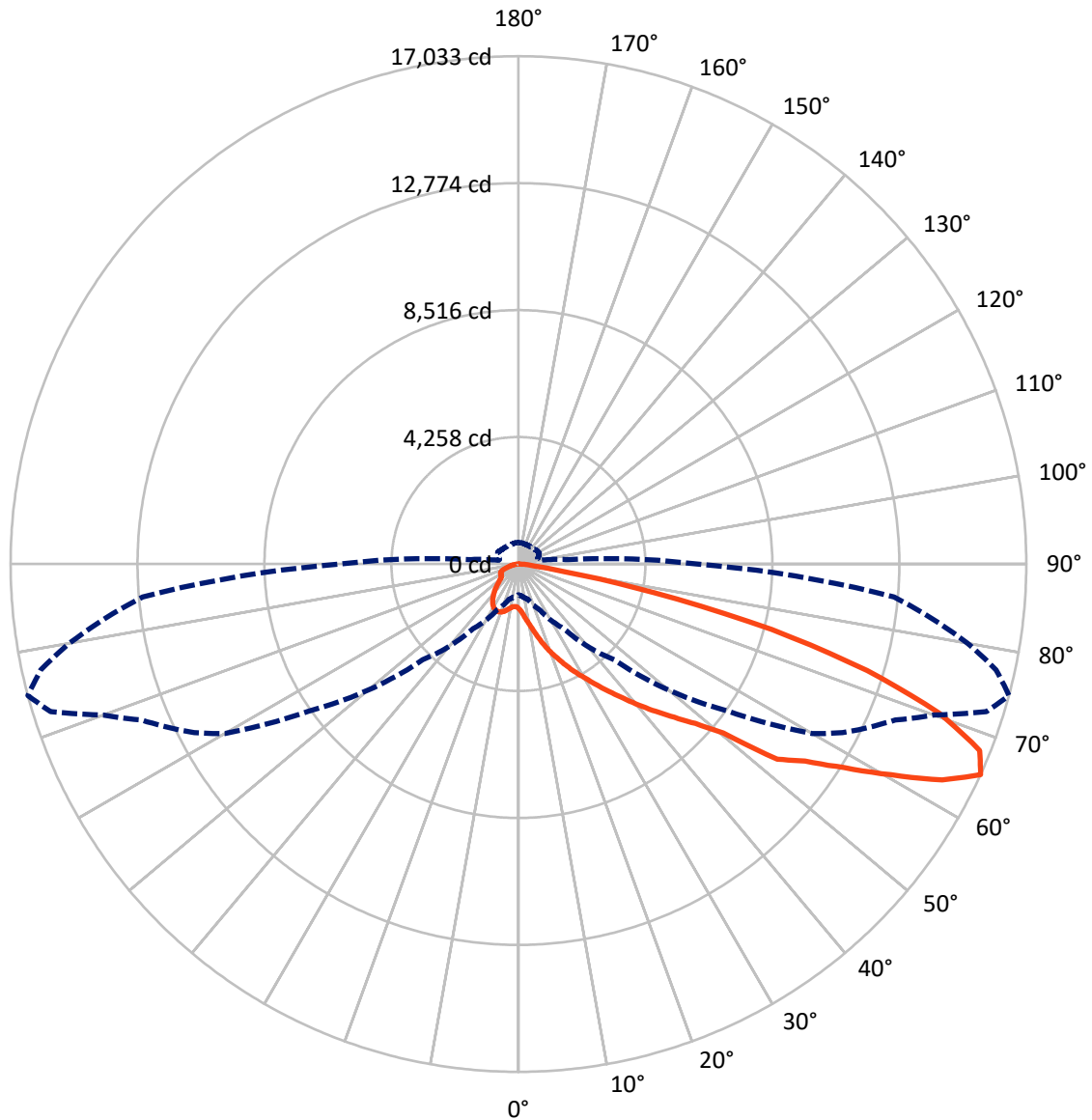
✕ Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 6.9 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	2589.3	0.0	2589.3
	% Fixture	15.0	0.0	15.0
Street Side	Lumens	14642.3	0.0	14642.3
	% Fixture	85.0	0.0	85.0
Total	Lumens	17231.6	0.0	17231.6
	% Fixture	100.0	0.0	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	176.3	1.0
10°-20°	673.2	3.9
20°-30°	1358.6	7.9
30°-40°	2307.3	13.4
40°-50°	3218.2	18.7
50°-60°	3944.3	22.9
60°-70°	3711.0	21.5
70°-80°	1627.3	9.4
80°-90°	215.3	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°	17231.6	100.0
0°-180°	17231.6	100.0

Coefficient of Utilization



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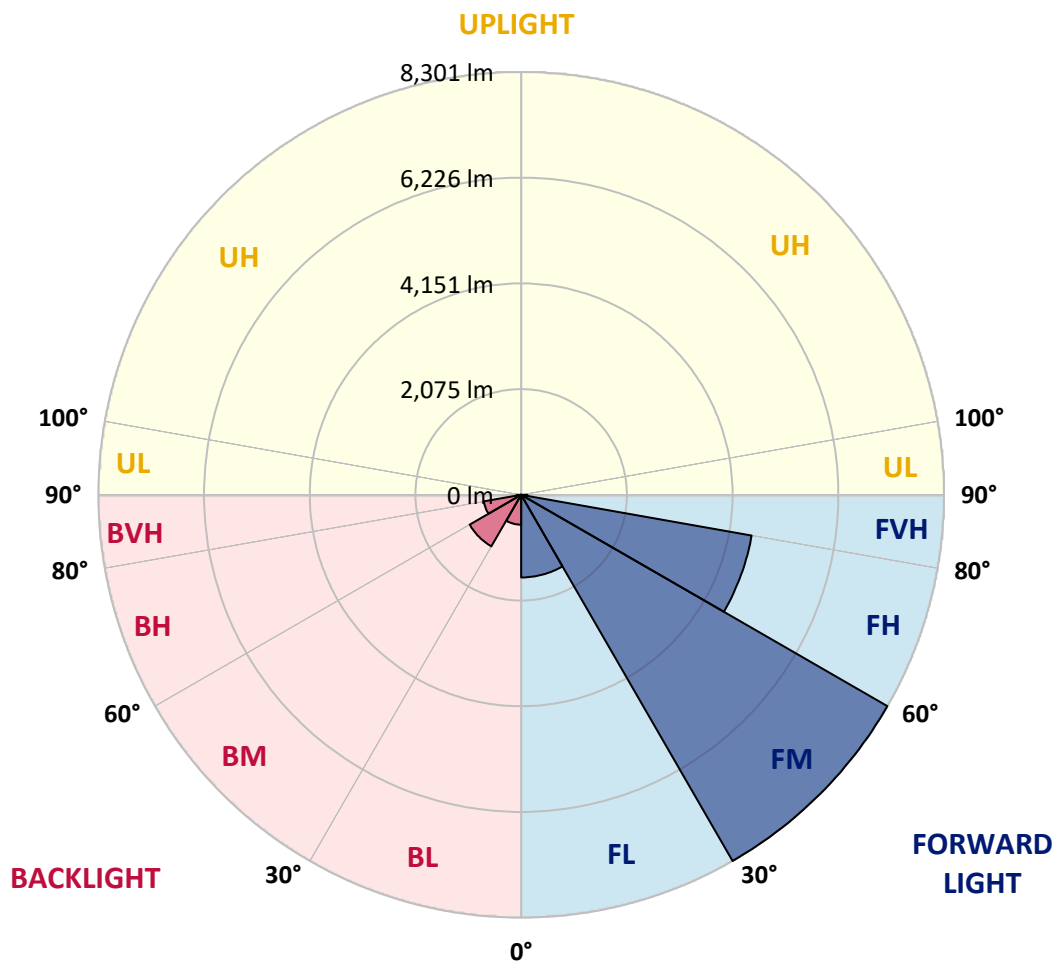
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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	1622.0	9.4			
FM (30°-60°)	8301.4	48.2			
FH (60°-80°)	4594.1	26.7			G2/5000
FVH (80°-90°)	124.8	0.7			G2/225
BL (0°-30°)	586.2	3.4	B2/1000		
BM (30°-60°)	1168.4	6.8	B2/2500		
BH (60°-80°)	744.2	4.3	B2/1000		G2/1000
BVH (80°-90°)	90.5	0.5			G1/100
UL (90°-100°)	0.0	0.0		U0/0	
UH (100°-180°)	0.0	0.0		U0/0	

BUG Rating: B2-U0-G2

Type II Short





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CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	57.5°	60°	62.5°	65°
0°	1493.0	1493.0	1493.0	1493.0	1493.0	1493.0	1493.0	1493.0	1493.0	1493.0	1493.0
2.5°	1880.0	1858.1	1860.2	1829.5	1784.6	1735.2	1694.7	1672.8	1654.1	1648.7	1618.0
5°	2458.8	2431.3	2421.5	2351.4	2246.1	2121.1	1997.3	1949.0	1909.5	1885.4	1826.3
7.5°	2932.3	2918.1	2904.9	2840.2	2736.1	2576.1	2376.5	2305.3	2239.5	2167.1	2095.9
10°	3254.6	3249.1	3243.7	3198.7	3112.1	2972.9	2758.0	2680.2	2598.0	2505.9	2412.7
12.5°	3498.0	3498.0	3502.4	3465.0	3412.5	3305.1	3109.9	3037.6	2954.3	2857.8	2751.4
15°	3661.2	3665.6	3688.7	3699.6	3672.3	3603.1	3432.2	3368.6	3289.7	3194.3	3089.1
17.5°	3769.8	3778.6	3812.5	3848.8	3883.8	3859.7	3732.5	3673.3	3602.1	3514.3	3415.7
20°	4021.9	4011.0	4012.0	4001.1	4052.6	4071.2	4001.1	3951.8	3894.8	3814.8	3724.9
22.5°	4551.4	4530.5	4476.8	4339.9	4277.4	4270.7	4229.1	4202.8	4158.9	4108.5	4018.7
25°	5242.0	5217.9	5111.6	4885.7	4699.3	4527.3	4450.6	4434.1	4405.6	4371.6	4306.9
27.5°	5955.6	5929.3	5792.3	5507.3	5263.9	4916.4	4677.4	4655.6	4629.3	4614.9	4584.3
30°	6583.7	6555.3	6420.3	6131.0	5837.3	5422.9	4983.3	4906.6	4861.6	4866.0	4848.5
32.5°	7135.1	7109.9	6958.6	6663.7	6365.6	5963.3	5380.1	5260.6	5159.8	5122.5	5135.6
35°	7597.7	7574.6	7409.1	7112.1	6811.7	6477.4	5891.0	5711.1	5546.7	5443.7	5431.7
37.5°	7869.6	7856.4	7740.3	7488.1	7189.9	6944.4	6463.1	6263.6	6021.4	5871.2	5805.5
40°	7854.2	7868.4	7848.7	7734.7	7503.4	7324.7	7059.5	6862.2	6625.3	6401.7	6268.0
42.5°	7630.6	7650.3	7739.1	7798.3	7735.9	7627.3	7580.2	7433.3	7220.6	6983.8	6798.5
45°	7323.6	7341.2	7456.3	7670.1	7848.7	7879.4	8036.2	7962.8	7782.9	7581.3	7377.4
47.5°	6853.4	6887.3	7021.1	7360.9	7786.3	8082.2	8418.8	8452.7	8348.6	8182.0	7991.2
50°	6172.7	6217.6	6405.0	6888.4	7549.5	8290.5	8987.6	9117.0	9075.4	8906.5	8713.6
52.5°	5475.4	5520.5	5770.4	6284.5	7168.0	8376.0	9547.8	9878.8	10117.8	10292.1	10326.2
55°	4749.8	4800.2	5074.2	5666.2	6659.4	8267.5	9948.0	10323.9	10566.2	10748.1	10821.6
57.5°	3930.9	3988.0	4253.2	4851.8	5940.3	7831.2	10393.0	10925.7	11286.4	11567.0	11724.9
60°	2991.5	3062.7	3337.9	3940.8	4995.4	6995.9	10591.4	11379.6	11952.9	12373.8	12623.7
62.5°	1896.4	1968.8	2254.9	2880.8	3919.9	5854.8	10030.1	11180.0	12157.9	12780.5	13238.7
65°	1034.8	1066.6	1225.5	1696.9	2642.9	4542.6	8607.3	9963.3	11371.9	12254.3	12958.1
67.5°	776.1	780.5	797.0	912.1	1407.5	3067.1	6729.5	7971.5	9535.7	10671.4	11512.2
70°	679.6	679.6	681.8	682.9	764.0	1661.8	4559.1	5702.4	7136.2	8285.0	9329.7
72.5°	609.5	602.9	600.7	587.6	598.5	851.7	2481.8	3508.9	4718.1	6007.2	6981.6
75°	526.2	525.1	525.1	511.9	518.5	599.7	1076.5	1683.8	2621.0	3821.3	4780.5
77.5°	454.9	447.2	448.4	440.7	461.5	459.3	510.9	693.9	1141.1	2007.1	2803.0
80°	374.9	369.4	372.7	368.4	401.2	339.8	344.2	424.2	566.7	880.2	1240.8
82.5°	277.3	279.6	300.3	298.2	337.7	229.1	252.2	316.8	381.5	438.4	476.8
85°	162.2	165.5	215.9	226.9	247.8	120.6	154.6	188.5	212.7	235.7	245.5
87.5°	17.5	23.0	120.6	123.9	110.7	36.2	62.5	79.0	84.4	89.9	79.0
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):

	67.5°	70°	72.5°	75°	77.5°	80°	85°	90°	95°	100°	102.5°
0°	1493.0	1493.0	1493.0	1493.0	1493.0	1493.0	1493.0	1493.0	1493.0	1493.0	1493.0
2.5°	1608.1	1593.9	1578.5	1569.7	1554.4	1541.3	1517.1	1497.4	1475.5	1460.2	1453.5
5°	1796.6	1762.6	1726.5	1700.1	1667.3	1638.8	1584.0	1518.3	1497.4	1453.5	1442.6
7.5°	2042.2	1980.8	1919.5	1869.0	1812.1	1764.9	1672.8	1554.4	1539.0	1468.9	1453.5
10°	2330.5	2240.6	2149.6	2071.8	1988.5	1916.2	1780.2	1613.6	1597.1	1507.2	1491.9
12.5°	2652.8	2543.2	2425.8	2309.7	2211.0	2109.1	1923.9	1705.7	1679.4	1573.0	1552.2
15°	2985.0	2866.5	2730.7	2590.3	2468.6	2333.8	2100.3	1826.3	1778.0	1653.1	1624.5
17.5°	3312.7	3184.4	3041.9	2885.1	2742.6	2581.5	2291.0	1961.1	1877.7	1732.0	1695.8
20°	3629.5	3499.0	3348.8	3195.4	3017.8	2833.7	2486.2	2093.8	1966.5	1797.7	1750.6
22.5°	3917.8	3806.0	3655.8	3479.4	3299.5	3092.4	2684.5	2226.4	2044.4	1848.2	1787.9
25°	4221.4	4119.5	3970.4	3800.5	3591.2	3360.9	2889.5	2352.4	2106.9	1875.6	1801.0
27.5°	4528.4	4440.6	4300.4	4121.7	3896.9	3641.5	3097.8	2468.6	2157.3	1884.4	1794.5
30°	4856.2	4788.1	4658.8	4459.3	4232.4	3949.6	3324.8	2582.6	2189.1	1872.3	1764.9
32.5°	5166.3	5164.2	5049.1	4841.8	4597.4	4286.1	3563.8	2697.7	2205.6	1838.3	1713.3
35°	5488.6	5533.6	5447.0	5249.7	4992.1	4646.8	3827.9	2820.5	2206.6	1778.0	1646.4
37.5°	5854.8	5934.8	5896.4	5709.0	5438.2	5057.9	4138.1	2958.6	2200.1	1694.7	1549.0
40°	6271.3	6381.0	6379.8	6222.0	5932.6	5518.2	4498.7	3113.1	2184.7	1590.6	1433.8
42.5°	6748.2	6878.6	6914.7	6759.1	6466.5	6021.4	4912.0	3283.1	2160.6	1487.6	1312.1
45°	7294.0	7409.1	7477.2	7332.4	7038.6	6569.5	5386.7	3476.0	2131.0	1354.9	1172.9
47.5°	7878.4	8012.1	8114.0	7990.2	7676.6	7194.3	5949.1	3724.9	2120.1	1203.6	1022.7
50°	8602.9	8741.0	8961.4	8905.5	8733.3	8345.3	7138.4	4312.5	2124.5	1060.0	896.7
52.5°	10400.6	10717.5	10995.9	10872.0	10463.2	9797.7	8105.2	4639.1	2032.3	942.8	808.9
55°	10943.3	11302.8	11713.9	11662.4	11270.0	10599.1	8869.3	4912.0	1943.5	857.2	752.0
57.5°	11892.6	12316.8	12891.2	12880.3	12399.0	11643.7	9852.6	5238.7	1905.1	807.9	723.5
60°	12897.8	13438.2	14231.9	14355.7	13832.9	13046.9	11014.5	5639.9	1910.7	780.5	707.1
62.5°	13632.3	14424.8	15579.0	15949.5	15333.5	14467.5	12220.4	6041.1	1877.7	748.7	687.3
65°	13677.2	14818.4	16456.0	17032.6	16408.8	15296.3	12645.7	5962.2	1680.5	705.9	655.5
67.5°	12581.0	14067.4	16057.1	16689.5	16051.5	14785.4	11900.3	5212.3	1365.8	631.4	600.7
70°	10478.5	12203.9	14269.1	14974.0	14446.7	13165.3	10356.9	4163.3	1020.6	532.8	518.5
72.5°	8097.6	9706.8	11582.4	12234.6	11831.2	10704.4	8168.8	3034.3	729.0	431.9	420.9
75°	5789.0	7159.2	8520.7	8769.6	8371.6	7336.8	5300.1	1895.3	510.9	354.0	338.7
77.5°	3584.5	4475.7	4964.7	4644.6	4137.0	3438.8	2157.3	936.1	339.8	288.3	272.9
80°	1590.6	1866.8	1742.9	1553.4	1226.6	1008.5	658.8	415.4	219.2	222.5	213.8
82.5°	534.9	565.6	550.2	547.0	493.3	431.9	279.6	179.7	122.8	142.5	139.2
85°	260.9	272.9	274.0	283.9	246.6	191.8	75.6	71.3	52.6	76.7	80.0
87.5°	79.0	80.0	72.3	79.0	63.6	43.9	14.2	19.7	9.8	18.6	18.6
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):

	105°	107.5°	110°	112.5°	115°	117.5°	120°	122.5°	125°	127.5°	130°
0°	1493.0	1493.0	1493.0	1493.0	1493.0	1493.0	1493.0	1493.0	1493.0	1493.0	1493.0
2.5°	1441.5	1437.1	1429.5	1420.7	1418.4	1407.5	1404.2	1398.8	1395.4	1390.0	1385.6
5°	1428.3	1420.7	1411.9	1402.1	1402.1	1386.7	1380.1	1373.5	1373.5	1363.7	1359.3
7.5°	1441.5	1431.6	1421.8	1413.0	1416.3	1398.8	1392.1	1385.6	1384.5	1374.6	1370.2
10°	1478.8	1468.9	1456.9	1448.1	1444.8	1430.5	1422.8	1413.0	1406.5	1399.8	1393.3
12.5°	1535.8	1522.6	1507.2	1488.6	1480.9	1468.9	1456.9	1443.7	1428.3	1421.8	1411.9
15°	1603.7	1581.8	1561.0	1538.0	1517.1	1505.1	1488.6	1467.8	1447.0	1438.2	1425.1
17.5°	1659.6	1636.6	1607.1	1579.6	1542.3	1532.5	1509.5	1484.2	1450.2	1447.0	1427.2
20°	1706.8	1671.7	1635.5	1602.7	1545.7	1540.2	1511.6	1482.1	1433.8	1433.8	1409.7
22.5°	1733.1	1684.8	1642.1	1598.3	1527.0	1522.6	1489.7	1454.6	1395.4	1397.7	1368.1
25°	1737.5	1679.4	1625.7	1573.0	1490.8	1483.2	1441.5	1403.1	1338.4	1334.0	1303.3
27.5°	1719.9	1652.0	1589.5	1525.9	1437.1	1420.7	1374.6	1328.6	1265.0	1254.0	1221.2
30°	1679.4	1599.4	1529.2	1455.8	1362.6	1336.3	1288.0	1240.8	1176.2	1162.0	1131.3
32.5°	1614.7	1523.7	1445.8	1372.4	1269.4	1236.5	1188.3	1141.1	1078.7	1067.7	1039.2
35°	1529.2	1427.2	1345.1	1267.2	1164.1	1130.2	1084.1	1042.5	985.5	981.1	961.4
37.5°	1421.8	1315.4	1227.7	1153.2	1055.6	1038.1	990.9	960.2	913.1	917.5	907.7
40°	1300.1	1191.5	1108.3	1042.5	958.1	942.8	914.2	891.2	850.7	862.7	863.8
42.5°	1177.3	1068.8	993.2	934.0	861.6	851.7	832.0	818.9	788.2	812.3	822.1
45°	1038.1	937.2	872.6	827.7	773.9	773.9	764.0	762.9	742.2	776.1	785.9
47.5°	903.3	824.3	779.4	752.0	714.7	732.2	729.0	737.8	722.4	757.5	766.2
50°	801.3	746.5	719.1	705.9	679.6	707.1	713.6	725.7	712.5	743.2	749.8
52.5°	736.6	700.5	685.1	681.8	663.2	697.1	708.2	719.1	703.8	732.2	731.2
55°	700.5	676.4	670.9	677.4	663.2	696.1	707.1	714.7	701.5	721.3	720.2
57.5°	687.3	674.1	677.4	687.3	677.4	704.8	710.3	719.1	705.9	714.7	719.1
60°	686.2	686.2	699.4	712.5	705.9	725.7	729.0	727.8	715.9	716.9	719.1
62.5°	679.6	696.1	718.0	738.9	736.6	760.8	762.9	748.7	738.9	727.8	724.6
65°	658.8	686.2	718.0	746.5	750.8	788.2	792.6	778.3	771.7	753.1	738.9
67.5°	612.7	647.8	685.1	720.2	727.8	778.3	788.2	793.6	797.0	784.9	766.2
70°	534.9	571.1	609.5	650.1	661.0	716.9	737.8	762.9	782.7	800.3	793.6
72.5°	435.2	468.1	500.9	538.3	554.6	612.7	640.2	684.0	714.7	759.6	778.3
75°	345.3	365.0	384.7	407.7	420.9	477.9	511.9	564.6	606.2	668.7	710.3
77.5°	271.9	281.7	291.5	301.5	306.9	338.7	366.1	418.8	467.0	545.9	607.3
80°	209.4	214.8	215.9	219.2	217.1	232.4	242.2	274.0	315.7	393.5	465.9
82.5°	134.8	139.2	141.4	146.9	136.0	155.7	162.2	165.5	187.4	244.5	295.9
85°	75.6	76.7	77.8	80.0	64.7	84.4	85.5	80.0	77.8	100.9	114.0
87.5°	18.6	17.5	18.6	18.6	7.7	17.5	17.5	12.1	8.8	16.5	13.2
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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CANDELA DISTRIBUTION (continued):

	135°	145°	155°	165°	175°	180°
0°	1493.0	1493.0	1493.0	1493.0	1493.0	1493.0
2.5°	1375.8	1373.5	1374.6	1369.1	1367.0	1368.1
5°	1353.8	1349.4	1349.4	1346.1	1341.7	1341.7
7.5°	1363.7	1354.9	1351.6	1345.1	1338.4	1339.6
10°	1379.0	1363.7	1352.8	1342.8	1335.2	1335.2
12.5°	1388.9	1361.4	1345.1	1331.9	1323.1	1323.1
15°	1391.1	1349.4	1325.3	1311.0	1302.3	1302.3
17.5°	1377.9	1325.3	1294.6	1275.9	1266.1	1268.3
20°	1345.1	1280.3	1244.2	1224.5	1214.5	1215.7
22.5°	1293.5	1218.9	1177.3	1154.3	1144.4	1144.4
25°	1223.3	1142.2	1097.3	1078.7	1069.9	1069.9
27.5°	1143.4	1060.0	1020.6	1006.3	1000.9	1000.9
30°	1053.4	984.4	955.8	946.0	937.2	937.2
32.5°	977.8	928.4	918.6	905.4	882.4	881.4
35°	917.5	912.1	904.4	864.9	832.0	827.7
37.5°	884.6	917.5	869.3	801.3	775.0	773.9
40°	867.1	897.7	814.5	781.5	778.3	778.3
42.5°	825.4	847.3	811.2	792.6	792.6	793.6
45°	781.5	800.3	818.9	802.4	807.9	808.9
47.5°	750.8	788.2	818.9	804.7	815.6	822.1
50°	722.4	777.2	802.4	802.4	814.5	815.6
52.5°	715.9	761.9	787.1	799.1	800.3	794.7
55°	716.9	749.8	775.0	790.3	783.8	783.8
57.5°	715.9	743.2	765.2	770.6	773.9	773.9
60°	716.9	734.5	752.0	749.8	760.8	760.8
62.5°	720.2	722.4	731.2	729.0	745.4	745.4
65°	727.8	707.1	701.5	703.8	723.5	722.4
67.5°	742.2	686.2	668.7	669.7	698.3	693.9
70°	762.9	657.8	631.4	624.8	673.1	665.4
72.5°	769.6	624.8	583.2	576.6	605.1	583.2
75°	738.9	598.5	531.6	509.7	497.7	491.1
77.5°	658.8	582.1	477.9	431.9	413.3	408.9
80°	545.9	548.1	407.7	353.0	410.0	408.9
82.5°	412.1	473.5	326.6	305.9	297.1	247.8
85°	199.5	356.3	251.0	210.4	126.0	119.5
87.5°	17.5	149.0	144.7	94.3	42.8	40.5
90°	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)