

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: FAIL-SAFE

Report Number: P709168

Luminaire Tested: **4APN-39-42L840-UNV**

Issue Date: 09/12/2023



Test Information

Test Method: LM-79-08
Report Number: P709168
Test Lab: INNOVATION CENTER(G2)
Issue Date: 09/12/2023
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: 4APN-39-42L840-UNV
Description: ArcMed Patient Recessed 4 FT x6 IN Fixture Ambient and Exam Light
Light Source: 4000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

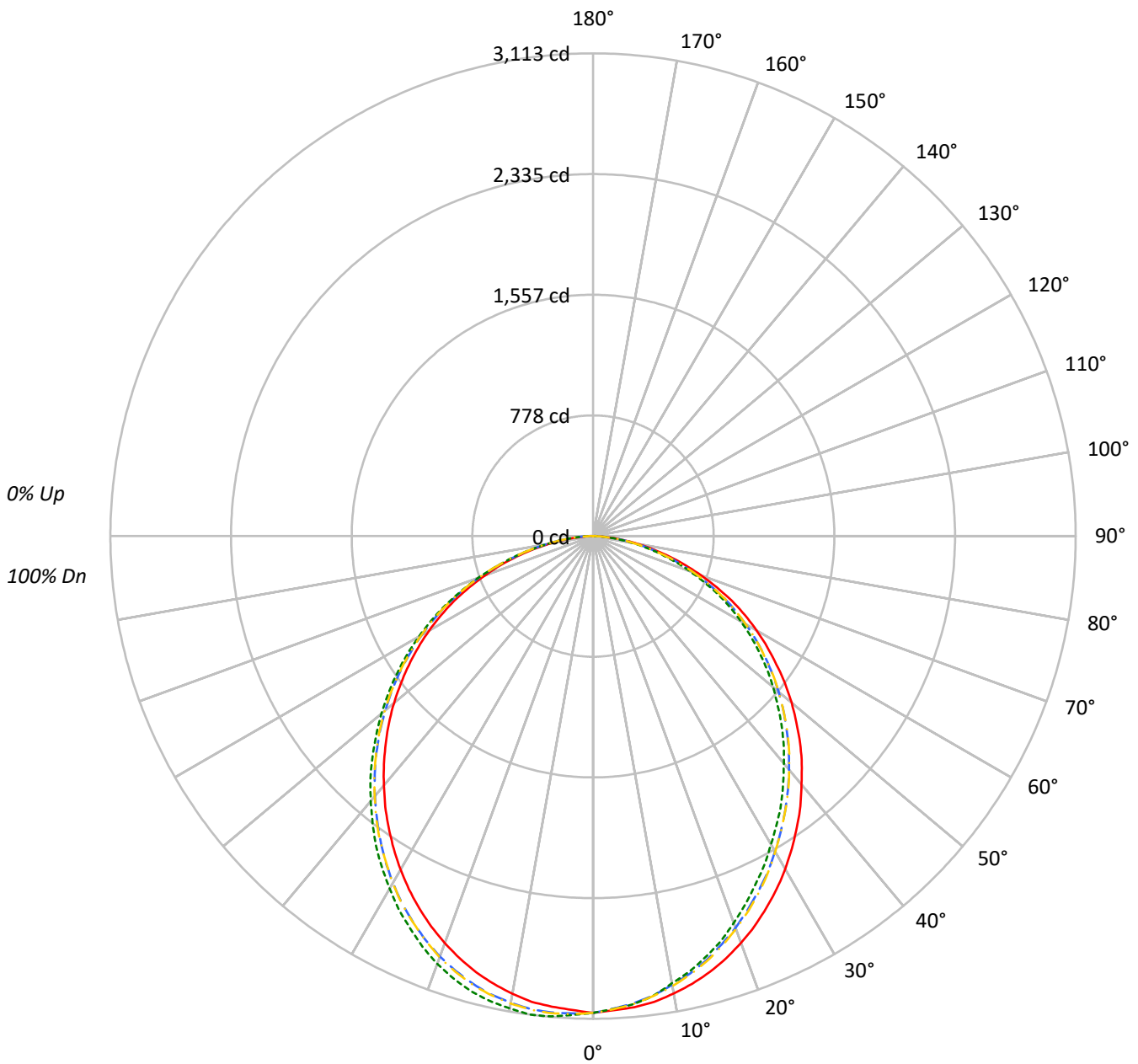
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 8128.4 lumens
Efficiency: N/A
Efficacy: 88.4 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.19 / 1.32
Luminous Opening: Rectangular (W 0.29' x L: 4' x H: 0')
CIE Type: Direct

Input Watts (W): 92
Input Voltage (V): 120
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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Luminous Intensity Polar Plot



— 0°-180° - - 45°-225° - - - 90°-270° - · - 135°-315°



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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20				20				20				20				20				
RC	80				70				50				30				10			0	
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																					
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	102	102	102	100
1	109	104	100	96	106	102	98	95	98	95	92	94	91	89	90	88	86	86	86	86	84
2	99	91	84	79	97	89	83	78	86	80	76	82	78	74	79	76	72	72	72	72	70
3	90	80	72	66	88	78	71	65	75	69	64	73	67	63	70	66	62	62	62	62	59
4	83	71	62	56	81	70	62	55	67	60	54	65	59	54	63	57	53	53	53	53	51
5	76	64	55	48	74	62	54	48	60	53	47	58	52	47	56	51	46	46	46	46	44
6	71	57	48	42	69	56	48	42	55	47	41	53	46	41	51	45	41	41	41	41	39
7	65	52	43	37	64	51	43	37	50	42	37	48	41	36	47	41	36	36	36	36	34
8	61	48	39	33	59	47	39	33	45	38	33	44	38	33	43	37	32	32	32	32	31
9	57	44	35	30	56	43	35	30	42	35	30	41	34	30	40	34	29	29	29	29	28
10	53	40	32	27	52	40	32	27	39	32	27	38	31	27	37	31	27	27	27	27	25

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	28371	28371	28371	28371
5°	28245	28061	28211	28797
10°	28064	27439	28081	28978
15°	27802	26836	27819	29027
20°	27408	26061	27426	28827
25°	26929	25237	26984	28417
30°	26411	24450	26451	27951
35°	25808	23815	25869	27496
40°	25183	23052	25271	26858
45°	24643	22429	24667	26246
50°	23999	21770	24051	25555
55°	23235	21057	23322	24833
60°	22490	20323	22523	23924
65°	21563	19434	21563	22864
70°	20019	17974	19970	21238
75°	18152	16284	18023	19118
80°	15637	14005	15350	16407
85°	12047	10702	11655	13190



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	290.4	3.6
10°-20°	822.2	10.1
20°-30°	1217.3	15.0
30°-40°	1428.2	17.6
40°-50°	1447.4	17.8
50°-60°	1284.6	15.8
60°-70°	964.4	11.9
70°-80°	535.5	6.6
80°-90°	138.3	1.7
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°-30°	2329.9	28.7
0°-40°	3758.1	46.2
0°-60°	6490.1	79.8
0°-90°	8128.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	8128.4	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	3075	3075	3075	3075	3075	
5°	3050	3030	3046	3109	3050	289
15°	2911	2810	2912	3039	2911	820
25°	2645	2479	2651	2792	2645	1219
35°	2291	2114	2297	2441	2291	1434
45°	1889	1719	1890	2012	1889	1456
55°	1444	1309	1450	1544	1444	1293
65°	988	890	988	1047	988	974
75°	509	457	506	536	509	541
85°	114	101	110	125	114	137
90°	0	0	0	0	0	



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CANDELA DISTRIBUTION (FULL):

	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°
0°	3075.0	3075.0	3075.0	3075.0	3075.0	3075.0	3075.0	3075.0	3075.0	3075.0	3075.0
2.5°	3060.6	3067.8	3076.8	3067.8	3053.3	3046.1	3046.1	3044.3	3049.7	3051.5	3049.7
5°	3049.7	3053.3	3055.1	3044.3	3028.1	3019.0	3015.4	3013.6	3020.8	3029.9	3020.8
7.5°	3029.9	3028.1	3026.3	3011.8	2993.8	2981.1	2975.7	2973.9	2981.1	2990.1	2982.9
10°	2995.6	2993.8	2988.3	2970.3	2946.8	2930.6	2925.1	2919.7	2925.1	2928.8	2925.1
12.5°	2957.6	2950.4	2943.2	2923.3	2898.1	2880.0	2871.0	2863.7	2871.0	2876.4	2872.8
15°	2910.7	2899.9	2887.2	2865.6	2840.3	2820.4	2809.6	2802.4	2807.8	2809.6	2809.6
17.5°	2854.7	2842.1	2829.4	2802.4	2771.7	2750.0	2737.4	2728.3	2735.5	2739.2	2739.2
20°	2791.5	2777.1	2760.8	2731.9	2699.4	2676.0	2661.5	2650.7	2652.5	2654.3	2654.3
22.5°	2722.9	2704.9	2685.0	2654.3	2620.0	2594.7	2580.3	2567.6	2567.6	2569.4	2569.4
25°	2645.3	2625.4	2605.5	2574.8	2538.7	2511.6	2493.6	2481.0	2481.0	2479.1	2482.8
27.5°	2565.8	2544.1	2524.3	2491.8	2453.9	2426.8	2408.7	2396.1	2394.3	2392.5	2396.1
30°	2479.1	2453.9	2432.2	2397.9	2361.8	2334.7	2316.6	2302.2	2298.6	2295.0	2298.6
32.5°	2387.1	2363.6	2340.1	2304.0	2267.9	2240.8	2222.7	2208.3	2206.5	2204.7	2208.3
35°	2291.4	2266.1	2244.4	2210.1	2174.0	2146.9	2127.0	2114.4	2114.4	2114.4	2114.4
37.5°	2197.5	2172.2	2148.7	2114.4	2078.3	2051.2	2031.3	2018.7	2015.1	2013.3	2015.1
40°	2090.9	2069.3	2047.6	2015.1	1979.0	1951.9	1935.6	1921.2	1917.6	1914.0	1919.4
42.5°	1993.4	1971.8	1948.3	1917.6	1881.5	1854.4	1836.3	1823.7	1821.9	1820.1	1821.9
45°	1888.7	1863.4	1839.9	1811.1	1778.6	1753.3	1735.2	1722.6	1720.8	1719.0	1720.8
47.5°	1778.6	1758.7	1738.8	1709.9	1677.4	1652.2	1635.9	1621.5	1617.9	1614.2	1617.9
50°	1672.0	1650.4	1630.5	1603.4	1572.7	1549.2	1534.8	1522.2	1518.5	1516.7	1518.5
52.5°	1560.1	1540.2	1522.2	1495.1	1469.8	1446.3	1430.1	1419.2	1417.4	1415.6	1417.4
55°	1444.5	1426.5	1410.2	1388.5	1363.3	1341.6	1327.1	1314.5	1312.7	1309.1	1312.7
57.5°	1332.6	1318.1	1301.9	1278.4	1254.9	1235.1	1222.4	1211.6	1209.8	1208.0	1209.8
60°	1218.8	1204.4	1189.9	1170.1	1146.6	1126.7	1115.9	1106.9	1103.2	1101.4	1103.2
62.5°	1105.1	1090.6	1079.8	1059.9	1038.2	1022.0	1011.2	1002.1	998.5	996.7	998.5
65°	987.7	975.0	962.4	944.4	928.1	915.5	904.6	895.6	892.0	890.2	890.2
67.5°	863.1	852.3	843.2	827.0	808.9	796.3	785.5	778.2	774.6	772.8	774.6
70°	742.1	733.1	724.1	711.4	697.0	686.1	678.9	671.7	668.1	666.3	666.3
72.5°	626.6	619.3	610.3	599.5	588.6	577.8	570.6	565.2	561.6	559.7	559.7
75°	509.2	502.0	498.4	489.3	478.5	471.3	464.0	460.4	456.8	456.8	456.8
77.5°	399.0	395.4	391.8	382.8	375.6	368.4	362.9	361.1	357.5	357.5	357.5
80°	294.3	292.5	290.7	285.3	278.1	270.8	267.2	265.4	263.6	263.6	263.6
82.5°	198.6	198.6	196.8	191.4	186.0	184.2	180.6	178.8	178.8	178.8	178.8
85°	113.8	113.8	113.8	111.9	108.3	108.3	104.7	102.9	101.1	101.1	101.1
87.5°	45.1	46.9	48.8	46.9	43.3	43.3	43.3	43.3	43.3	43.3	43.3
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):

	110°	120°	130°	140°	150°	160°	170°	180°	190°	200°	210°
0°	3075.0	3075.0	3075.0	3075.0	3075.0	3075.0	3075.0	3075.0	3075.0	3075.0	3075.0
2.5°	3044.3	3047.9	3049.7	3058.8	3069.6	3076.8	3067.8	3058.8	3073.2	3089.5	3089.5
5°	3013.6	3017.2	3022.6	3033.5	3047.9	3057.0	3053.3	3046.1	3067.8	3085.8	3087.6
7.5°	2975.7	2979.3	2986.5	2997.4	3015.4	3028.1	3028.1	3029.9	3049.7	3071.4	3076.8
10°	2919.7	2928.8	2939.6	2955.8	2973.9	2990.1	2995.6	2997.4	3022.6	3046.1	3053.3
12.5°	2867.4	2876.4	2887.2	2905.3	2926.9	2945.0	2950.4	2957.6	2984.7	3011.8	3022.6
15°	2807.8	2816.8	2829.4	2847.5	2871.0	2890.8	2901.7	2912.5	2939.6	2968.5	2981.1
17.5°	2737.4	2746.4	2759.0	2780.7	2807.8	2831.2	2843.9	2856.5	2887.2	2917.9	2930.6
20°	2654.3	2666.9	2685.0	2706.7	2737.4	2764.4	2778.9	2793.3	2825.8	2856.5	2871.0
22.5°	2569.4	2583.9	2603.7	2629.0	2661.5	2690.4	2708.5	2726.5	2759.0	2789.7	2806.0
25°	2484.6	2500.8	2520.7	2547.8	2578.5	2607.3	2629.0	2650.7	2683.2	2715.7	2731.9
27.5°	2397.9	2412.3	2432.2	2459.3	2493.6	2524.3	2546.0	2569.4	2601.9	2636.2	2652.5
30°	2302.2	2318.4	2336.5	2363.6	2401.5	2435.8	2457.5	2482.8	2515.3	2549.6	2565.8
32.5°	2210.1	2224.6	2242.6	2269.7	2307.6	2343.7	2367.2	2392.5	2425.0	2459.3	2473.7
35°	2114.4	2128.9	2148.7	2175.8	2213.7	2248.0	2271.5	2296.8	2327.5	2360.0	2376.2
37.5°	2020.5	2035.0	2054.8	2081.9	2118.0	2152.3	2175.8	2201.1	2231.8	2262.5	2276.9
40°	1923.0	1937.5	1953.7	1980.8	2016.9	2051.2	2072.9	2098.2	2128.9	2161.4	2175.8
42.5°	1823.7	1838.1	1858.0	1885.1	1919.4	1950.1	1973.6	1997.0	2025.9	2054.8	2069.3
45°	1724.4	1737.0	1756.9	1782.2	1814.7	1843.6	1867.0	1890.5	1917.6	1944.7	1959.1
47.5°	1621.5	1635.9	1652.2	1677.4	1709.9	1740.6	1764.1	1785.8	1811.1	1838.1	1850.8
50°	1522.2	1534.8	1551.0	1574.5	1605.2	1634.1	1654.0	1675.6	1699.1	1724.4	1735.2
52.5°	1419.2	1431.9	1448.1	1471.6	1496.9	1524.0	1542.0	1561.9	1585.4	1608.8	1619.7
55°	1314.5	1323.5	1338.0	1359.6	1386.7	1412.0	1430.1	1449.9	1469.8	1489.7	1502.3
57.5°	1211.6	1222.4	1236.9	1256.7	1280.2	1303.7	1319.9	1336.2	1356.0	1375.9	1384.9
60°	1106.9	1115.9	1126.7	1144.8	1168.3	1188.1	1204.4	1220.6	1236.9	1254.9	1263.9
62.5°	1000.3	1009.4	1020.2	1038.2	1058.1	1076.2	1090.6	1105.1	1119.5	1135.7	1144.8
65°	893.8	902.8	913.7	926.3	942.5	958.8	973.2	987.7	998.5	1009.4	1018.4
67.5°	778.2	787.3	798.1	808.9	823.4	839.6	850.5	863.1	873.9	886.6	892.0
70°	669.9	677.1	687.9	697.0	709.6	720.5	729.5	740.3	747.5	758.4	767.4
72.5°	563.4	570.6	579.6	588.6	595.9	604.9	615.7	624.8	633.8	644.6	648.2
75°	460.4	464.0	471.3	478.5	485.7	492.9	498.4	505.6	512.8	520.0	525.4
77.5°	359.3	362.9	370.2	375.6	381.0	386.4	390.0	393.6	400.9	406.3	411.7
80°	263.6	267.2	272.7	278.1	283.5	288.9	288.9	288.9	297.9	305.2	307.0
82.5°	178.8	180.6	184.2	187.8	191.4	195.0	195.0	193.2	198.6	204.0	207.6
85°	102.9	104.7	108.3	108.3	110.1	110.1	110.1	110.1	113.8	119.2	122.8
87.5°	41.5	41.5	43.3	43.3	45.1	45.1	43.3	41.5	45.1	50.6	52.4
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):

	220°	230°	240°	250°	260°	270°	280°	290°	300°	310°	320°
0°	3075.0	3075.0	3075.0	3075.0	3075.0	3075.0	3075.0	3075.0	3075.0	3075.0	3075.0
2.5°	3082.2	3080.4	3085.8	3087.6	3091.3	3091.3	3093.1	3093.1	3089.5	3084.0	3085.8
5°	3084.0	3084.0	3089.5	3094.9	3102.1	3109.3	3103.9	3098.5	3094.9	3089.5	3087.6
7.5°	3075.0	3078.6	3084.0	3093.1	3102.1	3112.9	3105.7	3098.5	3089.5	3082.2	3078.6
10°	3053.3	3057.0	3066.0	3075.0	3084.0	3093.1	3085.8	3078.6	3071.4	3062.4	3058.8
12.5°	3026.3	3031.7	3042.5	3051.5	3060.6	3071.4	3062.4	3053.3	3044.3	3035.3	3029.9
15°	2986.5	2993.8	3006.4	3017.2	3029.9	3038.9	3031.7	3024.5	3013.6	3001.0	2991.9
17.5°	2936.0	2946.8	2959.4	2972.1	2982.9	2991.9	2986.5	2979.3	2966.7	2952.2	2941.4
20°	2880.0	2890.8	2901.7	2914.3	2926.9	2936.0	2928.8	2919.7	2907.1	2896.2	2885.4
22.5°	2815.0	2825.8	2838.5	2849.3	2860.1	2869.2	2860.1	2849.3	2838.5	2827.6	2816.8
25°	2741.0	2751.8	2766.2	2777.1	2784.3	2791.5	2784.3	2775.3	2764.4	2753.6	2742.8
27.5°	2663.3	2674.2	2688.6	2699.4	2706.7	2713.9	2706.7	2697.6	2686.8	2676.0	2665.1
30°	2576.7	2587.5	2601.9	2612.8	2618.2	2623.6	2616.4	2609.2	2600.1	2589.3	2578.5
32.5°	2484.6	2495.4	2506.2	2517.1	2526.1	2533.3	2526.1	2518.9	2508.0	2493.6	2482.8
35°	2387.1	2397.9	2410.5	2421.4	2432.2	2441.2	2430.4	2417.8	2408.7	2399.7	2390.7
37.5°	2284.1	2296.8	2311.2	2323.9	2327.5	2334.7	2327.5	2320.2	2311.2	2302.2	2291.4
40°	2183.0	2193.9	2206.5	2219.1	2224.6	2230.0	2222.7	2215.5	2204.7	2195.7	2184.8
42.5°	2078.3	2089.1	2100.0	2110.8	2118.0	2125.2	2118.0	2107.2	2100.0	2092.7	2083.7
45°	1970.0	1980.8	1989.8	2000.7	2006.1	2011.5	2004.3	1995.2	1988.0	1982.6	1973.6
47.5°	1859.8	1868.8	1877.9	1886.9	1890.5	1895.9	1888.7	1883.3	1877.9	1872.5	1865.2
50°	1744.3	1753.3	1764.1	1773.1	1774.9	1780.4	1773.1	1767.7	1762.3	1756.9	1751.5
52.5°	1630.5	1637.7	1646.7	1655.8	1659.4	1663.0	1655.8	1648.6	1643.1	1639.5	1634.1
55°	1511.3	1518.5	1527.6	1534.8	1540.2	1543.8	1536.6	1529.4	1524.0	1522.2	1516.7
57.5°	1392.1	1399.4	1408.4	1415.6	1419.2	1422.8	1415.6	1408.4	1404.8	1401.2	1397.6
60°	1271.2	1278.4	1285.6	1291.0	1294.6	1296.5	1289.2	1283.8	1282.0	1280.2	1276.6
62.5°	1152.0	1155.6	1162.8	1166.4	1170.1	1171.9	1166.4	1162.8	1161.0	1159.2	1157.4
65°	1027.4	1036.4	1041.9	1045.5	1045.5	1047.3	1041.9	1040.0	1038.2	1036.4	1032.8
67.5°	899.2	906.4	910.0	913.7	913.7	913.7	913.7	913.7	911.8	908.2	904.6
70°	776.4	781.8	785.5	787.3	787.3	787.3	783.6	781.8	783.6	783.6	781.8
72.5°	651.8	655.4	657.3	659.1	657.3	657.3	657.3	660.9	660.9	659.1	655.4
75°	530.9	534.5	536.3	538.1	536.3	536.3	536.3	539.9	538.1	538.1	536.3
77.5°	417.1	418.9	418.9	420.7	418.9	418.9	420.7	424.3	422.5	422.5	422.5
80°	308.8	308.8	308.8	310.6	308.8	308.8	310.6	314.2	312.4	312.4	312.4
82.5°	209.5	211.3	211.3	211.3	213.1	214.9	214.9	214.9	214.9	214.9	213.1
85°	124.6	126.4	124.6	124.6	124.6	124.6	126.4	128.2	128.2	128.2	128.2
87.5°	54.2	56.0	54.2	52.4	50.6	50.6	54.2	57.8	57.8	56.0	56.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P709168
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CANDELA DISTRIBUTION (continued):

	330°	340°	350°	360°
0°	3075.0	3075.0	3075.0	3075.0
2.5°	3093.1	3093.1	3076.8	3060.6
5°	3091.3	3087.6	3069.6	3049.7
7.5°	3080.4	3075.0	3051.5	3029.9
10°	3055.1	3047.9	3022.6	2995.6
12.5°	3024.5	3013.6	2984.7	2957.6
15°	2984.7	2972.1	2941.4	2910.7
17.5°	2932.4	2917.9	2887.2	2854.7
20°	2876.4	2860.1	2825.8	2791.5
22.5°	2807.8	2793.3	2757.2	2722.9
25°	2733.7	2717.5	2681.4	2645.3
27.5°	2654.3	2636.2	2600.1	2565.8
30°	2567.6	2549.6	2513.5	2479.1
32.5°	2475.5	2461.1	2425.0	2387.1
35°	2381.6	2363.6	2327.5	2291.4
37.5°	2282.3	2266.1	2231.8	2197.5
40°	2177.6	2161.4	2125.2	2090.9
42.5°	2074.7	2060.2	2025.9	1993.4
45°	1964.5	1950.1	1917.6	1888.7
47.5°	1854.4	1839.9	1809.3	1778.6
50°	1742.4	1728.0	1699.1	1672.0
52.5°	1625.1	1614.2	1587.2	1560.1
55°	1507.7	1495.1	1468.0	1444.5
57.5°	1390.3	1381.3	1356.0	1332.6
60°	1269.4	1258.5	1238.7	1218.8
62.5°	1152.0	1143.0	1123.1	1105.1
65°	1027.4	1020.2	1003.9	987.7
67.5°	899.2	893.8	877.5	863.1
70°	776.4	767.4	754.8	742.1
72.5°	651.8	648.2	637.4	626.6
75°	532.7	529.1	518.2	509.2
77.5°	420.7	417.1	408.1	399.0
80°	310.6	308.8	301.5	294.3
82.5°	213.1	211.3	205.8	198.6
85°	128.2	124.6	119.2	113.8
87.5°	56.0	54.2	48.8	45.1
90°	0.0	0.0	0.0	0.0

(END OF REPORT)