

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: P709171

Luminaire Tested: **4APN-28-30L840-UNV**

Issue Date: 09/12/2023

**Test Information**

Test Method: LM-79-08  
Report Number: P709171  
Test Lab: INNOVATION CENTER(G2)  
Issue Date: 09/12/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: FAIL-SAFE  
Catalog Number: 4APN-28-30L840-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

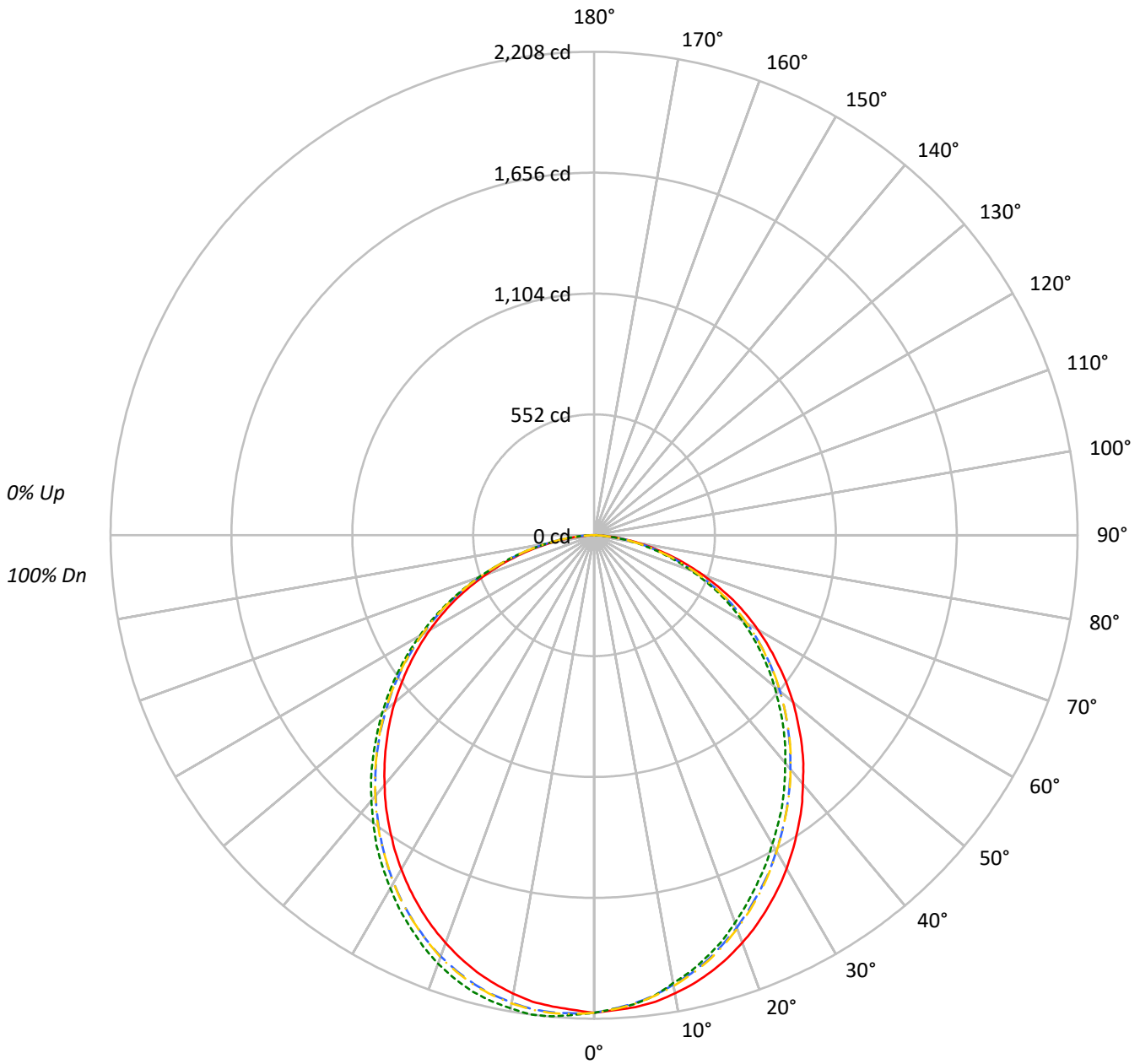
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 5765.5 lumens  
Efficiency: N/A  
Efficacy: 88.7 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): 65  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): 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	100	100	100	100
1	109	104	100	96	106	102	98	95	98	95	92	94	91	89	90	88	86	84	84	84	84
2	99	91	84	79	97	89	83	78	86	80	76	82	78	74	79	76	72	70	70	70	70
3	90	80	72	66	88	78	71	65	75	69	64	73	67	63	70	66	62	59	59	59	59
4	83	71	62	56	81	70	62	55	67	60	54	65	59	54	63	57	53	51	51	51	51
5	76	64	55	48	74	62	54	48	60	53	47	58	52	47	56	51	46	44	44	44	44
6	71	57	48	42	69	56	48	42	55	47	41	53	46	41	51	45	41	39	39	39	39
7	65	52	43	37	64	51	43	37	50	42	37	48	41	36	47	41	36	34	34	34	34
8	61	48	39	33	59	47	39	33	45	38	33	44	38	33	43	37	32	31	31	31	31
9	57	44	35	30	56	43	35	30	42	35	30	41	34	30	40	34	29	28	28	28	28
10	53	40	32	27	52	40	32	27	39	32	27	38	31	27	37	31	27	25	25	25	25

**AVERAGE LUMINANCE (cd/sqm):**

	0°	90°	180°	270°
0°	20123	20123	20123	20123
5°	20034	19904	20010	20426
10°	19906	19462	19918	20554
15°	19720	19036	19733	20589
20°	19441	18485	19453	20447
25°	19101	17902	19140	20157
30°	18734	17343	18762	19826
35°	18306	16892	18349	19503
40°	17862	16351	17924	19050
45°	17480	15909	17497	18617
50°	17023	15441	17059	18126
55°	16481	14937	16544	17615
60°	15952	14417	15976	16969
65°	15295	13784	15295	16216
70°	14200	12749	14165	15063
75°	12876	11550	12783	13560
80°	11094	9936	10887	11636
85°	8543	7590	8268	9358



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	206.0	3.6
10°-20°	583.2	10.1
20°-30°	863.4	15.0
30°-40°	1013.0	17.6
40°-50°	1026.7	17.8
50°-60°	911.2	15.8
60°-70°	684.1	11.9
70°-80°	379.9	6.6
80°-90°	98.1	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°	1652.6	28.7
0°-40°	2665.6	46.2
0°-60°	4603.5	79.8
0°-90°	5765.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	5765.5	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	2181	2181	2181	2181	2181	
5°	2163	2149	2161	2206	2163	205
15°	2065	1993	2066	2156	2065	582
25°	1876	1758	1880	1980	1876	865
35°	1625	1500	1629	1732	1625	1017
45°	1340	1219	1341	1427	1340	1033
55°	1025	929	1028	1095	1025	917
65°	701	631	701	743	701	691
75°	361	324	359	380	361	384
85°	81	72	78	88	81	97
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°	2181.1	2181.1	2181.1	2181.1	2181.1	2181.1	2181.1	2181.1	2181.1	2181.1	2181.1
2.5°	2170.9	2176.0	2182.4	2176.0	2165.8	2160.6	2160.6	2159.4	2163.2	2164.5	2163.2
5°	2163.2	2165.8	2167.1	2159.4	2147.8	2141.4	2138.9	2137.6	2142.7	2149.1	2142.7
7.5°	2149.1	2147.8	2146.6	2136.3	2123.5	2114.5	2110.7	2109.4	2114.5	2120.9	2115.8
10°	2124.8	2123.5	2119.7	2106.9	2090.2	2078.7	2074.8	2071.0	2074.8	2077.4	2074.8
12.5°	2097.9	2092.8	2087.6	2073.6	2055.6	2042.8	2036.4	2031.3	2036.4	2040.3	2037.7
15°	2064.6	2056.9	2047.9	2032.6	2014.6	2000.6	1992.9	1987.7	1991.6	1992.9	1992.9
17.5°	2024.9	2015.9	2007.0	1987.7	1966.0	1950.6	1941.6	1935.2	1940.4	1942.9	1942.9
20°	1980.1	1969.8	1958.3	1937.8	1914.7	1898.1	1887.8	1880.2	1881.4	1882.7	1882.7
22.5°	1931.4	1918.6	1904.5	1882.7	1858.4	1840.5	1830.2	1821.2	1821.2	1822.5	1822.5
25°	1876.3	1862.2	1848.1	1826.4	1800.8	1781.5	1768.7	1759.8	1759.8	1758.5	1761.1
27.5°	1820.0	1804.6	1790.5	1767.5	1740.6	1721.3	1708.5	1699.6	1698.3	1697.0	1699.6
30°	1758.5	1740.6	1725.2	1700.9	1675.2	1656.0	1643.2	1633.0	1630.4	1627.9	1630.4
32.5°	1693.2	1676.5	1659.9	1634.3	1608.6	1589.4	1576.6	1566.4	1565.1	1563.8	1566.4
35°	1625.3	1607.4	1592.0	1567.7	1542.0	1522.8	1508.7	1499.8	1499.8	1499.8	1499.8
37.5°	1558.7	1540.8	1524.1	1499.8	1474.2	1454.9	1440.9	1431.9	1429.3	1428.1	1429.3
40°	1483.1	1467.8	1452.4	1429.3	1403.7	1384.5	1373.0	1362.7	1360.2	1357.6	1361.5
42.5°	1414.0	1398.6	1381.9	1360.2	1334.6	1315.3	1302.5	1293.6	1292.3	1291.0	1292.3
45°	1339.7	1321.7	1305.1	1284.6	1261.6	1243.6	1230.8	1221.8	1220.6	1219.3	1220.6
47.5°	1261.6	1247.5	1233.4	1212.9	1189.8	1171.9	1160.4	1150.1	1147.6	1145.0	1147.6
50°	1186.0	1170.6	1156.5	1137.3	1115.5	1098.9	1088.6	1079.7	1077.1	1075.8	1077.1
52.5°	1106.6	1092.5	1079.7	1060.5	1042.5	1025.9	1014.4	1006.7	1005.4	1004.1	1005.4
55°	1024.6	1011.8	1000.3	984.9	967.0	951.6	941.4	932.4	931.1	928.6	931.1
57.5°	945.2	935.0	923.4	906.8	890.1	876.0	867.1	859.4	858.1	856.8	858.1
60°	864.5	854.3	844.0	829.9	813.3	799.2	791.5	785.1	782.5	781.3	782.5
62.5°	783.8	773.6	765.9	751.8	736.4	724.9	717.2	710.8	708.3	707.0	708.3
65°	700.6	691.6	682.6	669.8	658.3	649.3	641.7	635.3	632.7	631.4	631.4
67.5°	612.2	604.5	598.1	586.6	573.8	564.8	557.1	552.0	549.4	548.2	549.4
70°	526.4	520.0	513.6	504.6	494.4	486.7	481.6	476.4	473.9	472.6	472.6
72.5°	444.4	439.3	432.9	425.2	417.5	409.8	404.7	400.9	398.3	397.0	397.0
75°	361.2	356.1	353.5	347.1	339.4	334.3	329.2	326.6	324.0	324.0	324.0
77.5°	283.0	280.5	277.9	271.5	266.4	261.3	257.4	256.2	253.6	253.6	253.6
80°	208.8	207.5	206.2	202.4	197.2	192.1	189.6	188.3	187.0	187.0	187.0
82.5°	140.9	140.9	139.6	135.8	131.9	130.6	128.1	126.8	126.8	126.8	126.8
85°	80.7	80.7	80.7	79.4	76.8	76.8	74.3	73.0	71.7	71.7	71.7
87.5°	32.0	33.3	34.6	33.3	30.7	30.7	30.7	30.7	30.7	30.7	30.7
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):**

	110°	120°	130°	140°	150°	160°	170°	180°	190°	200°	210°
0°	2181.1	2181.1	2181.1	2181.1	2181.1	2181.1	2181.1	2181.1	2181.1	2181.1	2181.1
2.5°	2159.4	2161.9	2163.2	2169.6	2177.3	2182.4	2176.0	2169.6	2179.9	2191.4	2191.4
5°	2137.6	2140.2	2144.0	2151.7	2161.9	2168.3	2165.8	2160.6	2176.0	2188.8	2190.1
7.5°	2110.7	2113.3	2118.4	2126.1	2138.9	2147.8	2147.8	2149.1	2163.2	2178.6	2182.4
10°	2071.0	2077.4	2085.1	2096.6	2109.4	2120.9	2124.8	2126.1	2144.0	2160.6	2165.8
12.5°	2033.9	2040.3	2047.9	2060.7	2076.1	2088.9	2092.8	2097.9	2117.1	2136.3	2144.0
15°	1991.6	1998.0	2007.0	2019.8	2036.4	2050.5	2058.2	2065.9	2085.1	2105.6	2114.5
17.5°	1941.6	1948.0	1957.0	1972.4	1991.6	2008.2	2017.2	2026.2	2047.9	2069.7	2078.7
20°	1882.7	1891.7	1904.5	1919.9	1941.6	1960.8	1971.1	1981.3	2004.4	2026.2	2036.4
22.5°	1822.5	1832.8	1846.9	1864.8	1887.8	1908.3	1921.1	1934.0	1957.0	1978.8	1990.3
25°	1762.3	1773.9	1787.9	1807.2	1828.9	1849.4	1864.8	1880.2	1903.2	1926.3	1937.8
27.5°	1700.9	1711.1	1725.2	1744.4	1768.7	1790.5	1805.9	1822.5	1845.6	1869.9	1881.4
30°	1633.0	1644.5	1657.3	1676.5	1703.4	1727.8	1743.1	1761.1	1784.1	1808.4	1820.0
32.5°	1567.7	1577.9	1590.7	1609.9	1636.8	1662.4	1679.1	1697.0	1720.1	1744.4	1754.6
35°	1499.8	1510.0	1524.1	1543.3	1570.2	1594.6	1611.2	1629.1	1650.9	1674.0	1685.5
37.5°	1433.2	1443.4	1457.5	1476.7	1502.3	1526.7	1543.3	1561.3	1583.0	1604.8	1615.0
40°	1364.0	1374.3	1385.8	1405.0	1430.6	1454.9	1470.3	1488.2	1510.0	1533.1	1543.3
42.5°	1293.6	1303.8	1317.9	1337.1	1361.5	1383.2	1399.9	1416.5	1437.0	1457.5	1467.8
45°	1223.1	1232.1	1246.2	1264.1	1287.2	1307.7	1324.3	1341.0	1360.2	1379.4	1389.6
47.5°	1150.1	1160.4	1171.9	1189.8	1212.9	1234.7	1251.3	1266.7	1284.6	1303.8	1312.8
50°	1079.7	1088.6	1100.2	1116.8	1138.6	1159.1	1173.2	1188.5	1205.2	1223.1	1230.8
52.5°	1006.7	1015.6	1027.2	1043.8	1061.8	1081.0	1093.8	1107.9	1124.5	1141.2	1148.8
55°	932.4	938.8	949.0	964.4	983.6	1001.6	1014.4	1028.5	1042.5	1056.6	1065.6
57.5°	859.4	867.1	877.3	891.4	908.1	924.7	936.2	947.8	961.9	975.9	982.3
60°	785.1	791.5	799.2	812.0	828.7	842.7	854.3	865.8	877.3	890.1	896.5
62.5°	709.5	715.9	723.6	736.4	750.5	763.3	773.6	783.8	794.1	805.6	812.0
65°	634.0	640.4	648.1	657.0	668.6	680.1	690.3	700.6	708.3	715.9	722.4
67.5°	552.0	558.4	566.1	573.8	584.0	595.6	603.2	612.2	619.9	628.9	632.7
70°	475.2	480.3	488.0	494.4	503.3	511.0	517.4	525.1	530.2	537.9	544.3
72.5°	399.6	404.7	411.1	417.5	422.7	429.1	436.7	443.1	449.5	457.2	459.8
75°	326.6	329.2	334.3	339.4	344.5	349.6	353.5	358.6	363.7	368.9	372.7
77.5°	254.9	257.4	262.6	266.4	270.2	274.1	276.6	279.2	284.3	288.2	292.0
80°	187.0	189.6	193.4	197.2	201.1	204.9	204.9	204.9	211.3	216.4	217.7
82.5°	126.8	128.1	130.6	133.2	135.8	138.3	138.3	137.0	140.9	144.7	147.3
85°	73.0	74.3	76.8	76.8	78.1	78.1	78.1	78.1	80.7	84.5	87.1
87.5°	29.5	29.5	30.7	30.7	32.0	32.0	30.7	29.5	32.0	35.9	37.1
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°	2181.1	2181.1	2181.1	2181.1	2181.1	2181.1	2181.1	2181.1	2181.1	2181.1	2181.1
2.5°	2186.3	2185.0	2188.8	2190.1	2192.7	2192.7	2193.9	2193.9	2191.4	2187.5	2188.8
5°	2187.5	2187.5	2191.4	2195.2	2200.4	2205.5	2201.6	2197.8	2195.2	2191.4	2190.1
7.5°	2181.1	2183.7	2187.5	2193.9	2200.4	2208.0	2202.9	2197.8	2191.4	2186.3	2183.7
10°	2165.8	2168.3	2174.7	2181.1	2187.5	2193.9	2188.8	2183.7	2178.6	2172.2	2169.6
12.5°	2146.6	2150.4	2158.1	2164.5	2170.9	2178.6	2172.2	2165.8	2159.4	2153.0	2149.1
15°	2118.4	2123.5	2132.5	2140.2	2149.1	2155.5	2150.4	2145.3	2137.6	2128.6	2122.2
17.5°	2082.5	2090.2	2099.2	2108.1	2115.8	2122.2	2118.4	2113.3	2104.3	2094.0	2086.4
20°	2042.8	2050.5	2058.2	2067.2	2076.1	2082.5	2077.4	2071.0	2062.0	2054.3	2046.7
22.5°	1996.7	2004.4	2013.4	2021.0	2028.7	2035.1	2028.7	2021.0	2013.4	2005.7	1998.0
25°	1944.2	1951.9	1962.1	1969.8	1974.9	1980.1	1974.9	1968.5	1960.8	1953.2	1945.5
27.5°	1889.1	1896.8	1907.1	1914.7	1919.9	1925.0	1919.9	1913.5	1905.8	1898.1	1890.4
30°	1827.7	1835.3	1845.6	1853.3	1857.1	1861.0	1855.8	1850.7	1844.3	1836.6	1828.9
32.5°	1762.3	1770.0	1777.7	1785.4	1791.8	1796.9	1791.8	1786.7	1779.0	1768.7	1761.1
35°	1693.2	1700.9	1709.8	1717.5	1725.2	1731.6	1723.9	1714.9	1708.5	1702.1	1695.7
37.5°	1620.2	1629.1	1639.4	1648.3	1650.9	1656.0	1650.9	1645.8	1639.4	1633.0	1625.3
40°	1548.4	1556.1	1565.1	1574.1	1577.9	1581.7	1576.6	1571.5	1563.8	1557.4	1549.7
42.5°	1474.2	1481.8	1489.5	1497.2	1502.3	1507.5	1502.3	1494.7	1489.5	1484.4	1478.0
45°	1397.3	1405.0	1411.4	1419.1	1422.9	1426.8	1421.6	1415.2	1410.1	1406.3	1399.9
47.5°	1319.2	1325.6	1332.0	1338.4	1341.0	1344.8	1339.7	1335.8	1332.0	1328.2	1323.0
50°	1237.2	1243.6	1251.3	1257.7	1259.0	1262.8	1257.7	1253.9	1250.0	1246.2	1242.3
52.5°	1156.5	1161.7	1168.1	1174.5	1177.0	1179.6	1174.5	1169.3	1165.5	1162.9	1159.1
55°	1072.0	1077.1	1083.5	1088.6	1092.5	1095.1	1089.9	1084.8	1081.0	1079.7	1075.8
57.5°	987.5	992.6	999.0	1004.1	1006.7	1009.2	1004.1	999.0	996.4	993.9	991.3
60°	901.7	906.8	911.9	915.7	918.3	919.6	914.5	910.6	909.3	908.1	905.5
62.5°	817.1	819.7	824.8	827.4	829.9	831.2	827.4	824.8	823.5	822.3	821.0
65°	728.8	735.2	739.0	741.6	741.6	742.8	739.0	737.7	736.4	735.2	732.6
67.5°	637.8	642.9	645.5	648.1	648.1	648.1	648.1	648.1	646.8	644.2	641.7
70°	550.7	554.6	557.1	558.4	558.4	558.4	555.9	554.6	555.9	555.9	554.6
72.5°	462.4	464.9	466.2	467.5	466.2	466.2	466.2	468.8	468.8	467.5	464.9
75°	376.5	379.1	380.4	381.7	380.4	380.4	380.4	382.9	381.7	381.7	380.4
77.5°	295.9	297.1	297.1	298.4	297.1	297.1	298.4	301.0	299.7	299.7	299.7
80°	219.0	219.0	219.0	220.3	219.0	219.0	220.3	222.9	221.6	221.6	221.6
82.5°	148.6	149.8	149.8	149.8	151.1	152.4	152.4	152.4	152.4	152.4	151.1
85°	88.4	89.7	88.4	88.4	88.4	88.4	89.7	90.9	90.9	90.9	90.9
87.5°	38.4	39.7	38.4	37.1	35.9	35.9	38.4	41.0	41.0	39.7	39.7
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: P709171  
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**CANDELA DISTRIBUTION (continued):**

	330°	340°	350°	360°
0°	2181.1	2181.1	2181.1	2181.1
2.5°	2193.9	2193.9	2182.4	2170.9
5°	2192.7	2190.1	2177.3	2163.2
7.5°	2185.0	2181.1	2164.5	2149.1
10°	2167.1	2161.9	2144.0	2124.8
12.5°	2145.3	2137.6	2117.1	2097.9
15°	2117.1	2108.1	2086.4	2064.6
17.5°	2080.0	2069.7	2047.9	2024.9
20°	2040.3	2028.7	2004.4	1980.1
22.5°	1991.6	1981.3	1955.7	1931.4
25°	1939.1	1927.5	1901.9	1876.3
27.5°	1882.7	1869.9	1844.3	1820.0
30°	1821.2	1808.4	1782.8	1758.5
32.5°	1755.9	1745.7	1720.1	1693.2
35°	1689.3	1676.5	1650.9	1625.3
37.5°	1618.9	1607.4	1583.0	1558.7
40°	1544.6	1533.1	1507.5	1483.1
42.5°	1471.6	1461.4	1437.0	1414.0
45°	1393.5	1383.2	1360.2	1339.7
47.5°	1315.3	1305.1	1283.3	1261.6
50°	1235.9	1225.7	1205.2	1186.0
52.5°	1152.7	1145.0	1125.8	1106.6
55°	1069.4	1060.5	1041.3	1024.6
57.5°	986.2	979.8	961.9	945.2
60°	900.4	892.7	878.6	864.5
62.5°	817.1	810.7	796.6	783.8
65°	728.8	723.6	712.1	700.6
67.5°	637.8	634.0	622.5	612.2
70°	550.7	544.3	535.4	526.4
72.5°	462.4	459.8	452.1	444.4
75°	377.8	375.3	367.6	361.2
77.5°	298.4	295.9	289.5	283.0
80°	220.3	219.0	213.9	208.8
82.5°	151.1	149.8	146.0	140.9
85°	90.9	88.4	84.5	80.7
87.5°	39.7	38.4	34.6	32.0
90°	0.0	0.0	0.0	0.0

(END OF REPORT)