

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: P709165

Luminaire Tested: **4APN-28-30L835-UNV**

Issue Date: 09/12/2023



**Test Information**

Test Method: LM-79-08  
Report Number: P709165  
Test Lab: INNOVATION CENTER(G2)  
Issue Date: 09/12/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: FAIL-SAFE  
Catalog Number: 4APN-28-30L835-UNV  
Description: ArcMed Patient Recessed 4 FT x6 IN Fixture Ambient and Exam Light  
Light Source: 3500K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

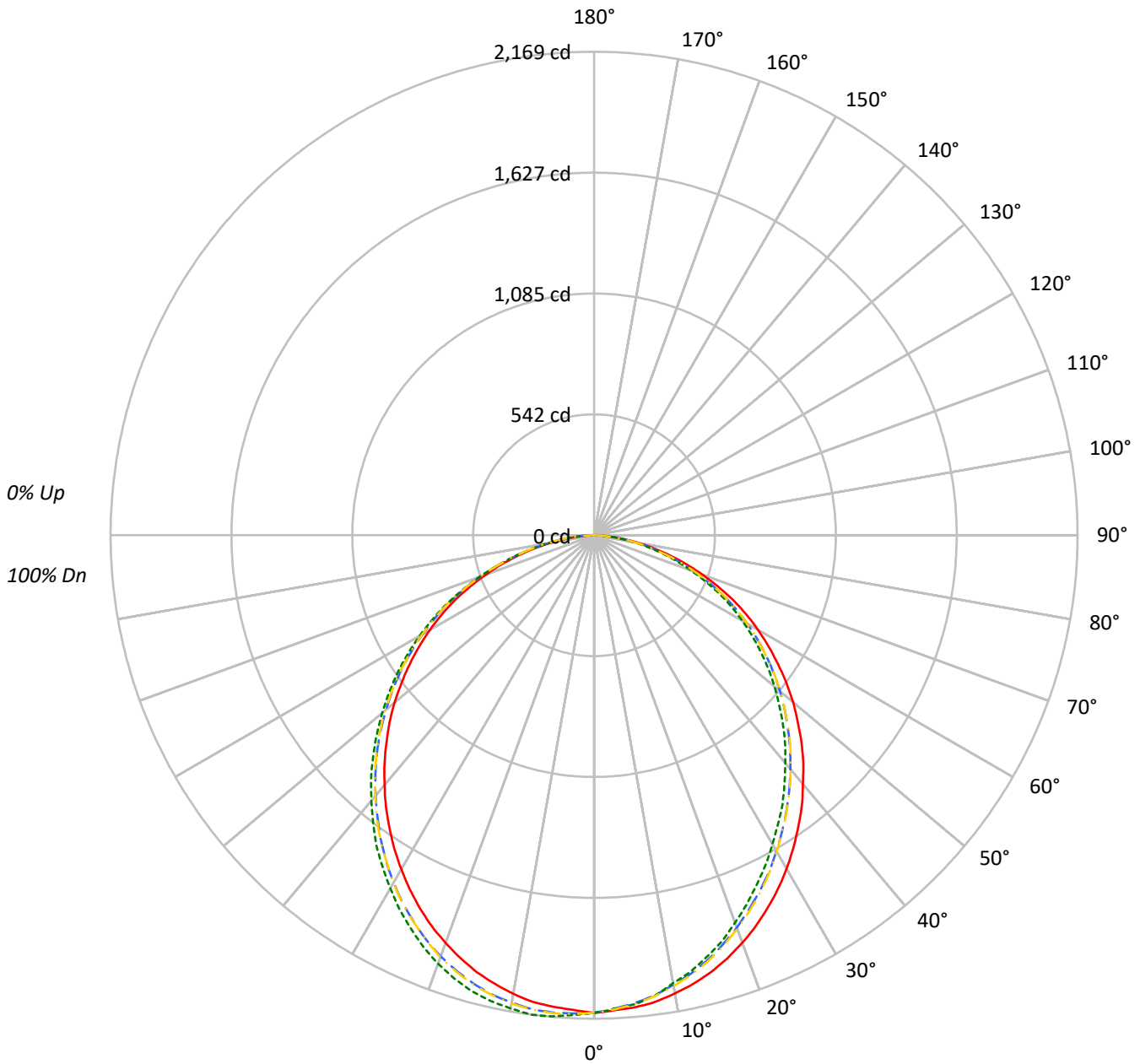
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 5664.6 lumens  
Efficiency: N/A  
Efficacy: 87.1 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 (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°	19772	19772	19772	19772
5°	19684	19556	19660	20069
10°	19558	19121	19570	20195
15°	19376	18702	19387	20229
20°	19101	18162	19113	20089
25°	18767	17588	18805	19804
30°	18406	17039	18433	19479
35°	17985	16596	18028	19162
40°	17550	16065	17611	18718
45°	17174	15630	17191	18290
50°	16725	15172	16760	17808
55°	16193	14675	16254	17306
60°	15673	14164	15696	16672
65°	15026	13544	15026	15932
70°	13952	12525	13917	14799
75°	12651	11350	12559	13321
80°	10897	9760	10695	11434
85°	8395	7463	8130	9189



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	202.4	3.6
10°-20°	573.0	10.1
20°-30°	848.3	15.0
30°-40°	995.3	17.6
40°-50°	1008.7	17.8
50°-60°	895.2	15.8
60°-70°	672.1	11.9
70°-80°	373.2	6.6
80°-90°	96.4	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°	1623.7	28.7
0°-40°	2619.0	46.2
0°-60°	4522.9	79.8
0°-90°	5664.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	5664.6	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	2143	2143	2143	2143	2143	
5°	2125	2112	2123	2167	2125	202
15°	2028	1958	2030	2118	2028	572
25°	1844	1728	1847	1945	1844	849
35°	1597	1474	1601	1701	1597	999
45°	1316	1198	1318	1402	1316	1015
55°	1007	912	1010	1076	1007	901
65°	688	620	688	730	688	679
75°	355	318	352	374	355	377
85°	79	70	77	87	79	96
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°	2143.0	2143.0	2143.0	2143.0	2143.0	2143.0	2143.0	2143.0	2143.0	2143.0	2143.0
2.5°	2132.9	2137.9	2144.2	2137.9	2127.9	2122.8	2122.8	2121.6	2125.4	2126.6	2125.4
5°	2125.4	2127.9	2129.1	2121.6	2110.3	2104.0	2101.4	2100.2	2105.2	2111.5	2105.2
7.5°	2111.5	2110.3	2109.0	2098.9	2086.3	2077.5	2073.8	2072.5	2077.5	2083.8	2078.8
10°	2087.6	2086.3	2082.6	2070.0	2053.6	2042.3	2038.5	2034.8	2038.5	2041.0	2038.5
12.5°	2061.2	2056.1	2051.1	2037.3	2019.7	2007.1	2000.8	1995.7	2000.8	2004.6	2002.0
15°	2028.5	2020.9	2012.1	1997.0	1979.4	1965.5	1958.0	1953.0	1956.7	1958.0	1958.0
17.5°	1989.5	1980.6	1971.8	1953.0	1931.6	1916.5	1907.7	1901.4	1906.4	1908.9	1908.9
20°	1945.4	1935.3	1924.0	1903.9	1881.2	1864.9	1854.8	1847.3	1848.5	1849.8	1849.8
22.5°	1897.6	1885.0	1871.2	1849.8	1825.9	1808.3	1798.2	1789.4	1789.4	1790.6	1790.6
25°	1843.5	1829.6	1815.8	1794.4	1769.2	1750.4	1737.8	1729.0	1729.0	1727.7	1730.2
27.5°	1788.1	1773.0	1759.2	1736.5	1710.1	1691.2	1678.6	1669.8	1668.6	1667.3	1669.8
30°	1727.7	1710.1	1695.0	1671.1	1645.9	1627.0	1614.5	1604.4	1601.9	1599.4	1601.9
32.5°	1663.5	1647.2	1630.8	1605.7	1580.5	1561.6	1549.0	1539.0	1537.7	1536.4	1539.0
35°	1596.8	1579.2	1564.1	1540.2	1515.1	1496.2	1482.3	1473.5	1473.5	1473.5	1473.5
37.5°	1531.4	1513.8	1497.4	1473.5	1448.4	1429.5	1415.6	1406.8	1404.3	1403.1	1404.3
40°	1457.2	1442.1	1427.0	1404.3	1379.2	1360.3	1349.0	1338.9	1336.4	1333.9	1337.6
42.5°	1389.2	1374.1	1357.8	1336.4	1311.2	1292.3	1279.7	1270.9	1269.7	1268.4	1269.7
45°	1316.2	1298.6	1282.3	1262.1	1239.5	1221.9	1209.3	1200.5	1199.2	1197.9	1199.2
47.5°	1239.5	1225.6	1211.8	1191.7	1169.0	1151.4	1140.1	1130.0	1127.5	1125.0	1127.5
50°	1165.2	1150.1	1136.3	1117.4	1096.0	1079.7	1069.6	1060.8	1058.3	1057.0	1058.3
52.5°	1087.2	1073.4	1060.8	1041.9	1024.3	1007.9	996.6	989.1	987.8	986.5	987.8
55°	1006.7	994.1	982.8	967.7	950.1	935.0	924.9	916.1	914.8	912.3	914.8
57.5°	928.7	918.6	907.3	890.9	874.6	860.7	851.9	844.4	843.1	841.8	843.1
60°	849.4	839.3	829.3	815.4	799.1	785.2	777.7	771.4	768.9	767.6	768.9
62.5°	770.1	760.0	752.5	738.7	723.6	712.2	704.7	698.4	695.9	694.6	695.9
65°	688.3	679.5	670.7	658.1	646.8	638.0	630.4	624.1	621.6	620.4	620.4
67.5°	601.5	593.9	587.6	576.3	563.7	554.9	547.4	542.3	539.8	538.6	539.8
70°	517.2	510.9	504.6	495.8	485.7	478.2	473.1	468.1	465.6	464.3	464.3
72.5°	436.6	431.6	425.3	417.8	410.2	402.7	397.6	393.9	391.3	390.1	390.1
75°	354.9	349.8	347.3	341.0	333.5	328.4	323.4	320.9	318.4	318.4	318.4
77.5°	278.1	275.6	273.1	266.8	261.7	256.7	252.9	251.7	249.2	249.2	249.2
80°	205.1	203.9	202.6	198.8	193.8	188.8	186.2	185.0	183.7	183.7	183.7
82.5°	138.4	138.4	137.2	133.4	129.6	128.4	125.8	124.6	124.6	124.6	124.6
85°	79.3	79.3	79.3	78.0	75.5	75.5	73.0	71.7	70.5	70.5	70.5
87.5°	31.5	32.7	34.0	32.7	30.2	30.2	30.2	30.2	30.2	30.2	30.2
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):**

	110°	120°	130°	140°	150°	160°	170°	180°	190°	200°	210°
0°	2143.0	2143.0	2143.0	2143.0	2143.0	2143.0	2143.0	2143.0	2143.0	2143.0	2143.0
2.5°	2121.6	2124.1	2125.4	2131.6	2139.2	2144.2	2137.9	2131.6	2141.7	2153.0	2153.0
5°	2100.2	2102.7	2106.5	2114.0	2124.1	2130.4	2127.9	2122.8	2137.9	2150.5	2151.8
7.5°	2073.8	2076.3	2081.3	2088.9	2101.4	2110.3	2110.3	2111.5	2125.4	2140.5	2144.2
10°	2034.8	2041.0	2048.6	2059.9	2072.5	2083.8	2087.6	2088.9	2106.5	2122.8	2127.9
12.5°	1998.3	2004.6	2012.1	2024.7	2039.8	2052.4	2056.1	2061.2	2080.1	2098.9	2106.5
15°	1956.7	1963.0	1971.8	1984.4	2000.8	2014.6	2022.2	2029.7	2048.6	2068.7	2077.5
17.5°	1907.7	1914.0	1922.8	1937.9	1956.7	1973.1	1981.9	1990.7	2012.1	2033.5	2042.3
20°	1849.8	1858.6	1871.2	1886.3	1907.7	1926.5	1936.6	1946.7	1969.3	1990.7	2000.8
22.5°	1790.6	1800.7	1814.5	1832.2	1854.8	1874.9	1887.5	1900.1	1922.8	1944.2	1955.5
25°	1731.5	1742.8	1756.7	1775.5	1796.9	1817.1	1832.2	1847.3	1869.9	1892.6	1903.9
27.5°	1671.1	1681.2	1695.0	1713.9	1737.8	1759.2	1774.3	1790.6	1813.3	1837.2	1848.5
30°	1604.4	1615.7	1628.3	1647.2	1673.6	1697.5	1712.6	1730.2	1752.9	1776.8	1788.1
32.5°	1540.2	1550.3	1562.9	1581.7	1608.2	1633.3	1649.7	1667.3	1690.0	1713.9	1723.9
35°	1473.5	1483.6	1497.4	1516.3	1542.7	1566.6	1583.0	1600.6	1622.0	1644.7	1656.0
37.5°	1408.1	1418.2	1432.0	1450.9	1476.0	1500.0	1516.3	1533.9	1555.3	1576.7	1586.8
40°	1340.1	1350.2	1361.5	1380.4	1405.6	1429.5	1444.6	1462.2	1483.6	1506.2	1516.3
42.5°	1270.9	1281.0	1294.8	1313.7	1337.6	1359.0	1375.4	1391.7	1411.9	1432.0	1442.1
45°	1201.7	1210.5	1224.4	1242.0	1264.6	1284.8	1301.1	1317.5	1336.4	1355.2	1365.3
47.5°	1130.0	1140.1	1151.4	1169.0	1191.7	1213.1	1229.4	1244.5	1262.1	1281.0	1289.8
50°	1060.8	1069.6	1080.9	1097.3	1118.7	1138.8	1152.6	1167.7	1184.1	1201.7	1209.3
52.5°	989.1	997.9	1009.2	1025.6	1043.2	1062.0	1074.6	1088.5	1104.8	1121.2	1128.7
55°	916.1	922.4	932.4	947.5	966.4	984.0	996.6	1010.5	1024.3	1038.1	1046.9
57.5°	844.4	851.9	862.0	875.8	892.2	908.5	919.9	931.2	945.0	958.9	965.2
60°	771.4	777.7	785.2	797.8	814.2	828.0	839.3	850.6	862.0	874.6	880.8
62.5°	697.1	703.4	711.0	723.6	737.4	750.0	760.0	770.1	780.2	791.5	797.8
65°	622.9	629.2	636.7	645.5	656.9	668.2	678.3	688.3	695.9	703.4	709.7
67.5°	542.3	548.6	556.2	563.7	573.8	585.1	592.7	601.5	609.0	617.9	621.6
70°	466.8	471.9	479.4	485.7	494.5	502.1	508.4	515.9	521.0	528.5	534.8
72.5°	392.6	397.6	403.9	410.2	415.3	421.5	429.1	435.4	441.7	449.2	451.7
75°	320.9	323.4	328.4	333.5	338.5	343.5	347.3	352.3	357.4	362.4	366.2
77.5°	250.4	252.9	258.0	261.7	265.5	269.3	271.8	274.3	279.4	283.1	286.9
80°	183.7	186.2	190.0	193.8	197.6	201.3	201.3	201.3	207.6	212.7	213.9
82.5°	124.6	125.8	128.4	130.9	133.4	135.9	135.9	134.6	138.4	142.2	144.7
85°	71.7	73.0	75.5	75.5	76.8	76.8	76.8	76.8	79.3	83.1	85.6
87.5°	28.9	28.9	30.2	30.2	31.5	31.5	30.2	28.9	31.5	35.2	36.5
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°	2143.0	2143.0	2143.0	2143.0	2143.0	2143.0	2143.0	2143.0	2143.0	2143.0	2143.0
2.5°	2148.0	2146.7	2150.5	2151.8	2154.3	2154.3	2155.6	2155.6	2153.0	2149.3	2150.5
5°	2149.3	2149.3	2153.0	2156.8	2161.8	2166.9	2163.1	2159.3	2156.8	2153.0	2151.8
7.5°	2143.0	2145.5	2149.3	2155.6	2161.8	2169.4	2164.4	2159.3	2153.0	2148.0	2145.5
10°	2127.9	2130.4	2136.7	2143.0	2149.3	2155.6	2150.5	2145.5	2140.5	2134.2	2131.6
12.5°	2109.0	2112.8	2120.3	2126.6	2132.9	2140.5	2134.2	2127.9	2121.6	2115.3	2111.5
15°	2081.3	2086.3	2095.2	2102.7	2111.5	2117.8	2112.8	2107.7	2100.2	2091.4	2085.1
17.5°	2046.1	2053.6	2062.4	2071.2	2078.8	2085.1	2081.3	2076.3	2067.5	2057.4	2049.9
20°	2007.1	2014.6	2022.2	2031.0	2039.8	2046.1	2041.0	2034.8	2025.9	2018.4	2010.8
22.5°	1961.8	1969.3	1978.1	1985.7	1993.2	1999.5	1993.2	1985.7	1978.1	1970.6	1963.0
25°	1910.2	1917.7	1927.8	1935.3	1940.4	1945.4	1940.4	1934.1	1926.5	1919.0	1911.4
27.5°	1856.1	1863.6	1873.7	1881.2	1886.3	1891.3	1886.3	1880.0	1872.4	1864.9	1857.3
30°	1795.7	1803.2	1813.3	1820.8	1824.6	1828.4	1823.4	1818.3	1812.0	1804.5	1796.9
32.5°	1731.5	1739.0	1746.6	1754.1	1760.4	1765.5	1760.4	1755.4	1747.8	1737.8	1730.2
35°	1663.5	1671.1	1679.9	1687.4	1695.0	1701.3	1693.7	1684.9	1678.6	1672.3	1666.1
37.5°	1591.8	1600.6	1610.7	1619.5	1622.0	1627.0	1622.0	1617.0	1610.7	1604.4	1596.8
40°	1521.3	1528.9	1537.7	1546.5	1550.3	1554.1	1549.0	1544.0	1536.4	1530.2	1522.6
42.5°	1448.4	1455.9	1463.5	1471.0	1476.0	1481.1	1476.0	1468.5	1463.5	1458.4	1452.1
45°	1372.9	1380.4	1386.7	1394.3	1398.0	1401.8	1396.8	1390.5	1385.4	1381.7	1375.4
47.5°	1296.1	1302.4	1308.7	1315.0	1317.5	1321.3	1316.2	1312.5	1308.7	1304.9	1299.9
50°	1215.6	1221.9	1229.4	1235.7	1237.0	1240.7	1235.7	1231.9	1228.2	1224.4	1220.6
52.5°	1136.3	1141.3	1147.6	1153.9	1156.4	1158.9	1153.9	1148.9	1145.1	1142.6	1138.8
55°	1053.2	1058.3	1064.6	1069.6	1073.4	1075.9	1070.9	1065.8	1062.0	1060.8	1057.0
57.5°	970.2	975.2	981.5	986.5	989.1	991.6	986.5	981.5	979.0	976.5	974.0
60°	885.9	890.9	895.9	899.7	902.2	903.5	898.5	894.7	893.4	892.2	889.7
62.5°	802.8	805.3	810.4	812.9	815.4	816.7	812.9	810.4	809.1	807.9	806.6
65°	716.0	722.3	726.1	728.6	728.6	729.8	726.1	724.8	723.6	722.3	719.8
67.5°	626.7	631.7	634.2	636.7	636.7	636.7	636.7	636.7	635.5	633.0	630.4
70°	541.1	544.9	547.4	548.6	548.6	548.6	546.1	544.9	546.1	546.1	544.9
72.5°	454.3	456.8	458.0	459.3	458.0	458.0	458.0	460.6	460.6	459.3	456.8
75°	370.0	372.5	373.7	375.0	373.7	373.7	373.7	376.2	375.0	375.0	373.7
77.5°	290.7	291.9	291.9	293.2	291.9	291.9	293.2	295.7	294.5	294.5	294.5
80°	215.2	215.2	215.2	216.4	215.2	215.2	216.4	219.0	217.7	217.7	217.7
82.5°	146.0	147.2	147.2	147.2	148.5	149.7	149.7	149.7	149.7	149.7	148.5
85°	86.8	88.1	86.8	86.8	86.8	86.8	88.1	89.3	89.3	89.3	89.3
87.5°	37.8	39.0	37.8	36.5	35.2	35.2	37.8	40.3	40.3	39.0	39.0
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):**

	330°	340°	350°	360°
0°	2143.0	2143.0	2143.0	2143.0
2.5°	2155.6	2155.6	2144.2	2132.9
5°	2154.3	2151.8	2139.2	2125.4
7.5°	2146.7	2143.0	2126.6	2111.5
10°	2129.1	2124.1	2106.5	2087.6
12.5°	2107.7	2100.2	2080.1	2061.2
15°	2080.1	2071.2	2049.9	2028.5
17.5°	2043.6	2033.5	2012.1	1989.5
20°	2004.6	1993.2	1969.3	1945.4
22.5°	1956.7	1946.7	1921.5	1897.6
25°	1905.1	1893.8	1868.7	1843.5
27.5°	1849.8	1837.2	1812.0	1788.1
30°	1789.4	1776.8	1751.6	1727.7
32.5°	1725.2	1715.1	1690.0	1663.5
35°	1659.8	1647.2	1622.0	1596.8
37.5°	1590.6	1579.2	1555.3	1531.4
40°	1517.6	1506.2	1481.1	1457.2
42.5°	1445.8	1435.8	1411.9	1389.2
45°	1369.1	1359.0	1336.4	1316.2
47.5°	1292.3	1282.3	1260.9	1239.5
50°	1214.3	1204.2	1184.1	1165.2
52.5°	1132.5	1125.0	1106.1	1087.2
55°	1050.7	1041.9	1023.0	1006.7
57.5°	968.9	962.6	945.0	928.7
60°	884.6	877.1	863.2	849.4
62.5°	802.8	796.5	782.7	770.1
65°	716.0	711.0	699.6	688.3
67.5°	626.7	622.9	611.6	601.5
70°	541.1	534.8	526.0	517.2
72.5°	454.3	451.7	444.2	436.6
75°	371.2	368.7	361.1	354.9
77.5°	293.2	290.7	284.4	278.1
80°	216.4	215.2	210.1	205.1
82.5°	148.5	147.2	143.5	138.4
85°	89.3	86.8	83.1	79.3
87.5°	39.0	37.8	34.0	31.5
90°	0.0	0.0	0.0	0.0

(END OF REPORT)