

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: P709177

Luminaire Tested: **4APN-28-30L850-UNV**

Issue Date: 09/12/2023



Test Information

Test Method: LM-79-08
Report Number: P709177
Test Lab: INNOVATION CENTER(G2)
Issue Date: 09/12/2023
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: 4APN-28-30L850-UNV
Description: ArcMed Patient Recessed 4 FT x6 IN Fixture Ambient and Exam Light
Light Source: 5000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

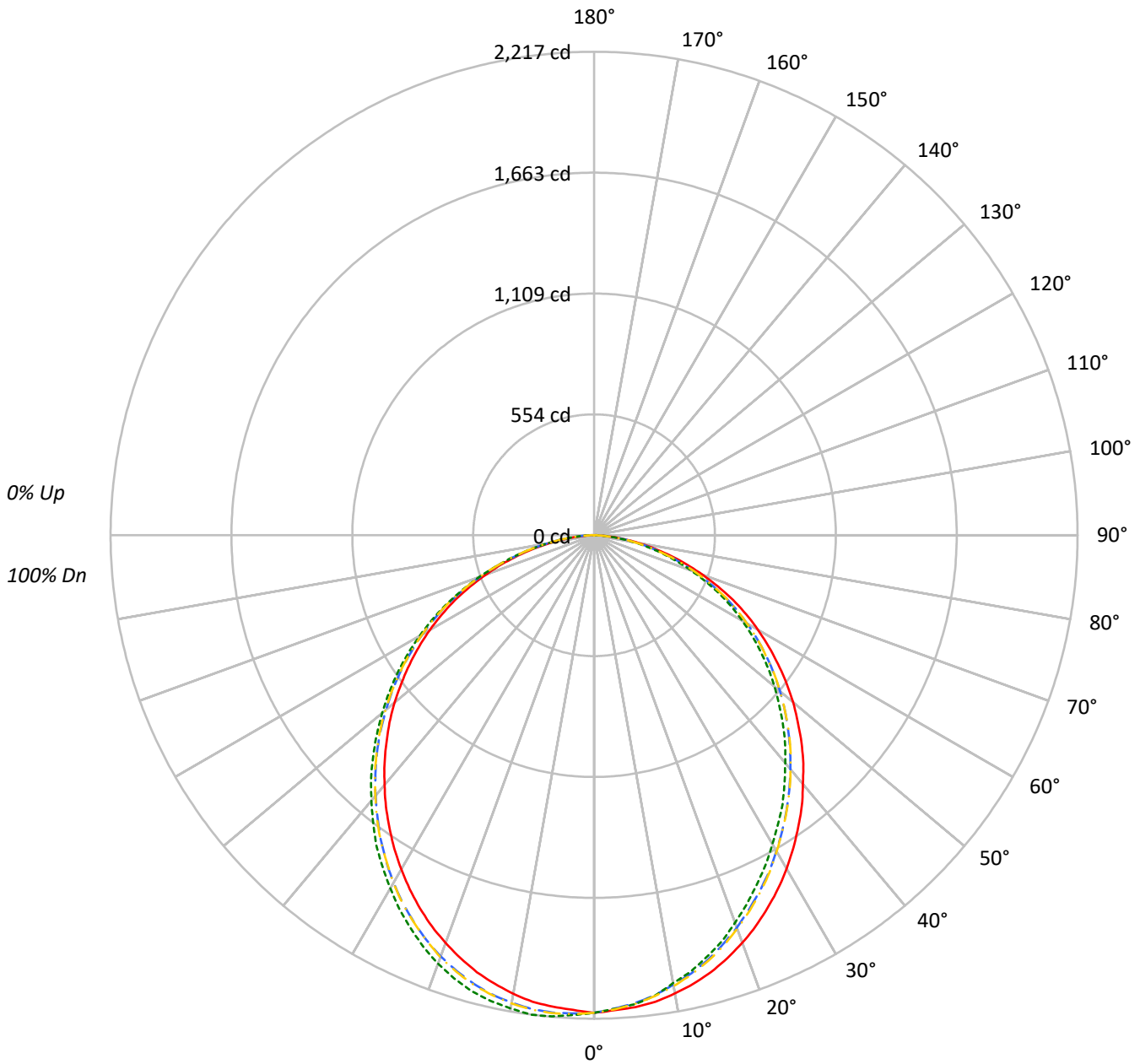
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 5789.8 lumens
Efficiency: N/A
Efficacy: 89.1 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°	20208	20208	20208	20208
5°	20119	19987	20095	20511
10°	19990	19544	20002	20641
15°	19803	19115	19815	20676
20°	19523	18563	19536	20533
25°	19181	17977	19221	20242
30°	18813	17415	18840	19909
35°	18383	16963	18426	19585
40°	17938	16420	18000	19131
45°	17553	15976	17570	18695
50°	17095	15507	17131	18202
55°	16550	15000	16613	17689
60°	16019	14476	16043	17041
65°	15358	13843	15358	16286
70°	14259	12803	14224	15128
75°	12929	11600	12837	13617
80°	11136	9978	10934	11684
85°	8575	7622	8310	9390



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	206.8	3.6
10°-20°	585.6	10.1
20°-30°	867.1	15.0
30°-40°	1017.3	17.6
40°-50°	1031.0	17.8
50°-60°	915.0	15.8
60°-70°	687.0	11.9
70°-80°	381.5	6.6
80°-90°	98.5	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°	1659.6	28.7
0°-40°	2676.8	46.2
0°-60°	4622.8	79.8
0°-90°	5789.8	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	5789.8	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	2190	2190	2190	2190	2190	
5°	2172	2158	2170	2215	2172	206
15°	2073	2001	2074	2165	2073	584
25°	1884	1766	1888	1988	1884	868
35°	1632	1506	1636	1739	1632	1021
45°	1345	1224	1347	1433	1345	1037
55°	1029	932	1033	1100	1029	921
65°	704	634	704	746	704	694
75°	363	325	360	382	363	386
85°	81	72	78	89	81	98
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°	2190.3	2190.3	2190.3	2190.3	2190.3	2190.3	2190.3	2190.3	2190.3	2190.3	2190.3
2.5°	2180.0	2185.2	2191.6	2185.2	2174.9	2169.7	2169.7	2168.4	2172.3	2173.6	2172.3
5°	2172.3	2174.9	2176.2	2168.4	2156.9	2150.4	2147.9	2146.6	2151.7	2158.1	2151.7
7.5°	2158.1	2156.9	2155.6	2145.3	2132.4	2123.4	2119.6	2118.3	2123.4	2129.9	2124.7
10°	2133.7	2132.4	2128.6	2115.7	2099.0	2087.4	2083.6	2079.7	2083.6	2086.1	2083.6
12.5°	2106.7	2101.6	2096.4	2082.3	2064.3	2051.4	2045.0	2039.8	2045.0	2048.8	2046.3
15°	2073.3	2065.5	2056.5	2041.1	2023.1	2009.0	2001.2	1996.1	2000.0	2001.2	2001.2
17.5°	2033.4	2024.4	2015.4	1996.1	1974.2	1958.8	1949.8	1943.4	1948.5	1951.1	1951.1
20°	1988.4	1978.1	1966.5	1945.9	1922.8	1906.1	1895.8	1888.1	1889.3	1890.6	1890.6
22.5°	1939.5	1926.6	1912.5	1890.6	1866.2	1848.2	1837.9	1828.9	1828.9	1830.2	1830.2
25°	1884.2	1870.1	1855.9	1834.0	1808.3	1789.0	1776.2	1767.2	1767.2	1765.9	1768.4
27.5°	1827.6	1812.2	1798.0	1774.9	1747.9	1728.6	1715.7	1706.7	1705.4	1704.1	1706.7
30°	1765.9	1747.9	1732.4	1708.0	1682.3	1663.0	1650.1	1639.8	1637.3	1634.7	1637.3
32.5°	1700.3	1683.6	1666.8	1641.1	1615.4	1596.1	1583.2	1573.0	1571.7	1570.4	1573.0
35°	1632.1	1614.1	1598.7	1574.2	1548.5	1529.2	1515.1	1506.1	1506.1	1506.1	1506.1
37.5°	1565.2	1547.2	1530.5	1506.1	1480.4	1461.1	1446.9	1437.9	1435.3	1434.0	1435.3
40°	1489.4	1473.9	1458.5	1435.3	1409.6	1390.3	1378.7	1368.5	1365.9	1363.3	1367.2
42.5°	1419.9	1404.5	1387.7	1365.9	1340.2	1320.9	1308.0	1299.0	1297.7	1296.4	1297.7
45°	1345.3	1327.3	1310.6	1290.0	1266.9	1248.8	1236.0	1227.0	1225.7	1224.4	1225.7
47.5°	1266.9	1252.7	1238.6	1218.0	1194.8	1176.8	1165.2	1155.0	1152.4	1149.8	1152.4
50°	1191.0	1175.5	1161.4	1142.1	1120.2	1103.5	1093.2	1084.2	1081.6	1080.4	1081.6
52.5°	1111.2	1097.1	1084.2	1064.9	1046.9	1030.2	1018.6	1010.9	1009.6	1008.3	1009.6
55°	1028.9	1016.1	1004.5	989.0	971.0	955.6	945.3	936.3	935.0	932.5	935.0
57.5°	949.2	938.9	927.3	910.6	893.9	879.7	870.7	863.0	861.7	860.4	861.7
60°	868.1	857.9	847.6	833.4	816.7	802.6	794.8	788.4	785.8	784.5	785.8
62.5°	787.1	776.8	769.1	755.0	739.5	728.0	720.2	713.8	711.2	710.0	711.2
65°	703.5	694.5	685.5	672.7	661.1	652.1	644.4	637.9	635.4	634.1	634.1
67.5°	614.8	607.1	600.6	589.1	576.2	567.2	559.5	554.3	551.8	550.5	551.8
70°	528.6	522.2	515.7	506.7	496.5	488.7	483.6	478.4	475.9	474.6	474.6
72.5°	446.3	441.1	434.7	427.0	419.3	411.6	406.4	402.6	400.0	398.7	398.7
75°	362.7	357.5	355.0	348.5	340.8	335.7	330.5	328.0	325.4	325.4	325.4
77.5°	284.2	281.7	279.1	272.7	267.5	262.4	258.5	257.2	254.7	254.7	254.7
80°	209.6	208.4	207.1	203.2	198.1	192.9	190.3	189.1	187.8	187.8	187.8
82.5°	141.5	141.5	140.2	136.3	132.5	131.2	128.6	127.3	127.3	127.3	127.3
85°	81.0	81.0	81.0	79.7	77.2	77.2	74.6	73.3	72.0	72.0	72.0
87.5°	32.2	33.4	34.7	33.4	30.9	30.9	30.9	30.9	30.9	30.9	30.9
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):

	110°	120°	130°	140°	150°	160°	170°	180°	190°	200°	210°
0°	2190.3	2190.3	2190.3	2190.3	2190.3	2190.3	2190.3	2190.3	2190.3	2190.3	2190.3
2.5°	2168.4	2171.0	2172.3	2178.7	2186.4	2191.6	2185.2	2178.7	2189.0	2200.6	2200.6
5°	2146.6	2149.1	2153.0	2160.7	2171.0	2177.4	2174.9	2169.7	2185.2	2198.0	2199.3
7.5°	2119.6	2122.1	2127.3	2135.0	2147.9	2156.9	2156.9	2158.1	2172.3	2187.7	2191.6
10°	2079.7	2086.1	2093.8	2105.4	2118.3	2129.9	2133.7	2135.0	2153.0	2169.7	2174.9
12.5°	2042.4	2048.8	2056.5	2069.4	2084.8	2097.7	2101.6	2106.7	2126.0	2145.3	2153.0
15°	2000.0	2006.4	2015.4	2028.2	2045.0	2059.1	2066.8	2074.5	2093.8	2114.4	2123.4
17.5°	1949.8	1956.2	1965.2	1980.7	2000.0	2016.7	2025.7	2034.7	2056.5	2078.4	2087.4
20°	1890.6	1899.6	1912.5	1927.9	1949.8	1969.1	1979.4	1989.7	2012.8	2034.7	2045.0
22.5°	1830.2	1840.5	1854.6	1872.6	1895.8	1916.4	1929.2	1942.1	1965.2	1987.1	1998.7
25°	1769.7	1781.3	1795.5	1814.7	1836.6	1857.2	1872.6	1888.1	1911.2	1934.4	1945.9
27.5°	1708.0	1718.3	1732.4	1751.7	1776.2	1798.0	1813.5	1830.2	1853.3	1877.8	1889.3
30°	1639.8	1651.4	1664.3	1683.6	1710.6	1735.0	1750.4	1768.4	1791.6	1816.0	1827.6
32.5°	1574.2	1584.5	1597.4	1616.7	1643.7	1669.4	1686.1	1704.1	1727.3	1751.7	1762.0
35°	1506.1	1516.4	1530.5	1549.8	1576.8	1601.2	1618.0	1636.0	1657.8	1681.0	1692.6
37.5°	1439.2	1449.5	1463.6	1482.9	1508.6	1533.1	1549.8	1567.8	1589.7	1611.5	1621.8
40°	1369.7	1380.0	1391.6	1410.9	1436.6	1461.1	1476.5	1494.5	1516.4	1539.5	1549.8
42.5°	1299.0	1309.3	1323.4	1342.7	1367.2	1389.0	1405.8	1422.5	1443.1	1463.6	1473.9
45°	1228.3	1237.3	1251.4	1269.4	1292.6	1313.2	1329.9	1346.6	1365.9	1385.2	1395.5
47.5°	1155.0	1165.2	1176.8	1194.8	1218.0	1239.8	1256.6	1272.0	1290.0	1309.3	1318.3
50°	1084.2	1093.2	1104.8	1121.5	1143.4	1164.0	1178.1	1193.5	1210.3	1228.3	1236.0
52.5°	1010.9	1019.9	1031.5	1048.2	1066.2	1085.5	1098.4	1112.5	1129.2	1146.0	1153.7
55°	936.3	942.7	953.0	968.5	987.8	1005.8	1018.6	1032.8	1046.9	1061.1	1070.1
57.5°	863.0	870.7	881.0	895.2	911.9	928.6	940.2	951.7	965.9	980.0	986.5
60°	788.4	794.8	802.6	815.4	832.1	846.3	857.9	869.4	881.0	893.9	900.3
62.5°	712.5	719.0	726.7	739.5	753.7	766.5	776.8	787.1	797.4	809.0	815.4
65°	636.6	643.1	650.8	659.8	671.4	682.9	693.2	703.5	711.2	719.0	725.4
67.5°	554.3	560.8	568.5	576.2	586.5	598.1	605.8	614.8	622.5	631.5	635.4
70°	477.2	482.3	490.0	496.5	505.5	513.2	519.6	527.3	532.5	540.2	546.6
72.5°	401.3	406.4	412.9	419.3	424.4	430.9	438.6	445.0	451.4	459.2	461.7
75°	328.0	330.5	335.7	340.8	346.0	351.1	355.0	360.1	365.3	370.4	374.3
77.5°	255.9	258.5	263.7	267.5	271.4	275.2	277.8	280.4	285.5	289.4	293.2
80°	187.8	190.3	194.2	198.1	201.9	205.8	205.8	205.8	212.2	217.4	218.6
82.5°	127.3	128.6	131.2	133.8	136.3	138.9	138.9	137.6	141.5	145.3	147.9
85°	73.3	74.6	77.2	77.2	78.5	78.5	78.5	78.5	81.0	84.9	87.5
87.5°	29.6	29.6	30.9	30.9	32.2	32.2	30.9	29.6	32.2	36.0	37.3
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):

	220°	230°	240°	250°	260°	270°	280°	290°	300°	310°	320°
0°	2190.3	2190.3	2190.3	2190.3	2190.3	2190.3	2190.3	2190.3	2190.3	2190.3	2190.3
2.5°	2195.4	2194.2	2198.0	2199.3	2201.9	2201.9	2203.2	2203.2	2200.6	2196.7	2198.0
5°	2196.7	2196.7	2200.6	2204.4	2209.6	2214.7	2210.9	2207.0	2204.4	2200.6	2199.3
7.5°	2190.3	2192.9	2196.7	2203.2	2209.6	2217.3	2212.2	2207.0	2200.6	2195.4	2192.9
10°	2174.9	2177.4	2183.9	2190.3	2196.7	2203.2	2198.0	2192.9	2187.7	2181.3	2178.7
12.5°	2155.6	2159.4	2167.2	2173.6	2180.0	2187.7	2181.3	2174.9	2168.4	2162.0	2158.1
15°	2127.3	2132.4	2141.4	2149.1	2158.1	2164.6	2159.4	2154.3	2146.6	2137.6	2131.1
17.5°	2091.3	2099.0	2108.0	2117.0	2124.7	2131.1	2127.3	2122.1	2113.1	2102.8	2095.1
20°	2051.4	2059.1	2066.8	2075.8	2084.8	2091.3	2086.1	2079.7	2070.7	2063.0	2055.3
22.5°	2005.1	2012.8	2021.8	2029.5	2037.3	2043.7	2037.3	2029.5	2021.8	2014.1	2006.4
25°	1952.4	1960.1	1970.4	1978.1	1983.2	1988.4	1983.2	1976.8	1969.1	1961.4	1953.7
27.5°	1897.1	1904.8	1915.1	1922.8	1927.9	1933.1	1927.9	1921.5	1913.8	1906.1	1898.3
30°	1835.3	1843.0	1853.3	1861.0	1864.9	1868.8	1863.6	1858.5	1852.0	1844.3	1836.6
32.5°	1769.7	1777.5	1785.2	1792.9	1799.3	1804.5	1799.3	1794.2	1786.5	1776.2	1768.4
35°	1700.3	1708.0	1717.0	1724.7	1732.4	1738.9	1731.1	1722.1	1715.7	1709.3	1702.9
37.5°	1627.0	1636.0	1646.3	1655.3	1657.8	1663.0	1657.8	1652.7	1646.3	1639.8	1632.1
40°	1554.9	1562.7	1571.7	1580.7	1584.5	1588.4	1583.2	1578.1	1570.4	1564.0	1556.2
42.5°	1480.4	1488.1	1495.8	1503.5	1508.6	1513.8	1508.6	1500.9	1495.8	1490.6	1484.2
45°	1403.2	1410.9	1417.3	1425.0	1428.9	1432.8	1427.6	1421.2	1416.0	1412.2	1405.8
47.5°	1324.7	1331.2	1337.6	1344.0	1346.6	1350.5	1345.3	1341.4	1337.6	1333.7	1328.6
50°	1242.4	1248.8	1256.6	1263.0	1264.3	1268.1	1263.0	1259.1	1255.3	1251.4	1247.6
52.5°	1161.4	1166.5	1173.0	1179.4	1182.0	1184.5	1179.4	1174.2	1170.4	1167.8	1164.0
55°	1076.5	1081.6	1088.1	1093.2	1097.1	1099.7	1094.5	1089.4	1085.5	1084.2	1080.4
57.5°	991.6	996.8	1003.2	1008.3	1010.9	1013.5	1008.3	1003.2	1000.6	998.0	995.5
60°	905.4	910.6	915.7	919.6	922.2	923.5	918.3	914.4	913.2	911.9	909.3
62.5°	820.6	823.1	828.3	830.8	833.4	834.7	830.8	828.3	827.0	825.7	824.4
65°	731.8	738.2	742.1	744.7	744.7	746.0	742.1	740.8	739.5	738.2	735.7
67.5°	640.5	645.6	648.2	650.8	650.8	650.8	650.8	650.8	649.5	646.9	644.4
70°	553.0	556.9	559.5	560.8	560.8	560.8	558.2	556.9	558.2	558.2	556.9
72.5°	464.3	466.9	468.2	469.4	468.2	468.2	468.2	470.7	470.7	469.4	466.9
75°	378.1	380.7	382.0	383.3	382.0	382.0	382.0	384.6	383.3	383.3	382.0
77.5°	297.1	298.4	298.4	299.7	298.4	298.4	299.7	302.2	301.0	301.0	301.0
80°	219.9	219.9	219.9	221.2	219.9	219.9	221.2	223.8	222.5	222.5	222.5
82.5°	149.2	150.5	150.5	150.5	151.8	153.1	153.1	153.1	153.1	153.1	151.8
85°	88.7	90.0	88.7	88.7	88.7	88.7	90.0	91.3	91.3	91.3	91.3
87.5°	38.6	39.9	38.6	37.3	36.0	36.0	38.6	41.2	41.2	39.9	39.9
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):

	330°	340°	350°	360°
0°	2190.3	2190.3	2190.3	2190.3
2.5°	2203.2	2203.2	2191.6	2180.0
5°	2201.9	2199.3	2186.4	2172.3
7.5°	2194.2	2190.3	2173.6	2158.1
10°	2176.2	2171.0	2153.0	2133.7
12.5°	2154.3	2146.6	2126.0	2106.7
15°	2126.0	2117.0	2095.1	2073.3
17.5°	2088.7	2078.4	2056.5	2033.4
20°	2048.8	2037.3	2012.8	1988.4
22.5°	2000.0	1989.7	1963.9	1939.5
25°	1947.2	1935.6	1909.9	1884.2
27.5°	1890.6	1877.8	1852.0	1827.6
30°	1828.9	1816.0	1790.3	1765.9
32.5°	1763.3	1753.0	1727.3	1700.3
35°	1696.4	1683.6	1657.8	1632.1
37.5°	1625.7	1614.1	1589.7	1565.2
40°	1551.1	1539.5	1513.8	1489.4
42.5°	1477.8	1467.5	1443.1	1419.9
45°	1399.3	1389.0	1365.9	1345.3
47.5°	1320.9	1310.6	1288.7	1266.9
50°	1241.1	1230.8	1210.3	1191.0
52.5°	1157.5	1149.8	1130.5	1111.2
55°	1073.9	1064.9	1045.6	1028.9
57.5°	990.3	983.9	965.9	949.2
60°	904.2	896.4	882.3	868.1
62.5°	820.6	814.1	800.0	787.1
65°	731.8	726.7	715.1	703.5
67.5°	640.5	636.6	625.1	614.8
70°	553.0	546.6	537.6	528.6
72.5°	464.3	461.7	454.0	446.3
75°	379.4	376.8	369.1	362.7
77.5°	299.7	297.1	290.7	284.2
80°	221.2	219.9	214.8	209.6
82.5°	151.8	150.5	146.6	141.5
85°	91.3	88.7	84.9	81.0
87.5°	39.9	38.6	34.7	32.2
90°	0.0	0.0	0.0	0.0

(END OF REPORT)