

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: P709161

Luminaire Tested: **4APN-20-22L830-UNV**

Issue Date: 09/12/2023



Test Information

Test Method: LM-79-08
Report Number: P709161
Test Lab: INNOVATION CENTER(G2)
Issue Date: 09/12/2023
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: 4APN-20-22L830-UNV
Description: ArcMed Patient Recessed 4 FT x6 IN Fixture Ambient and Exam Light
Light Source: 3000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

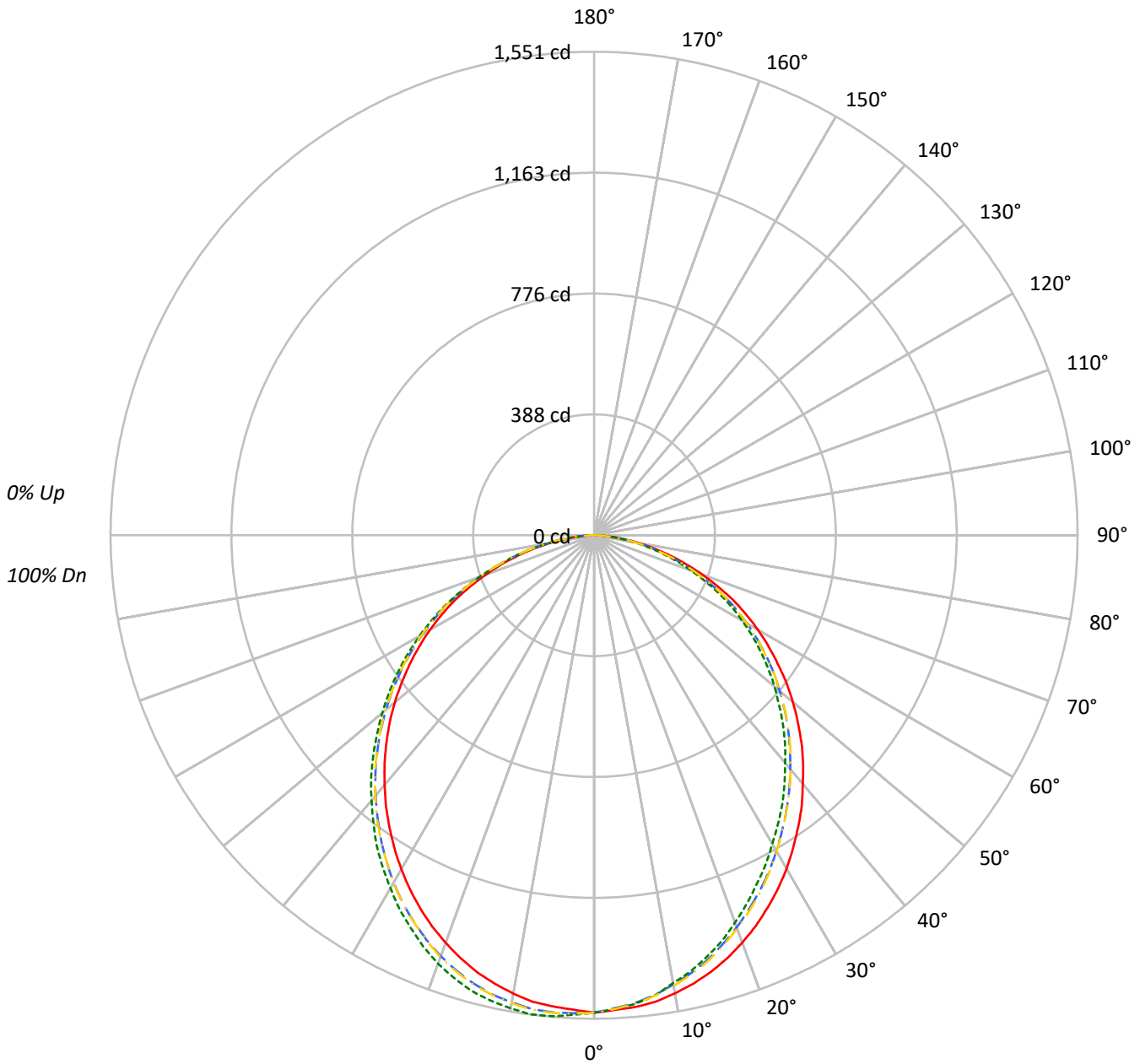
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 4048.8 lumens
Efficiency: N/A
Efficacy: 84.4 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): 48
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°	14132	14132	14132	14132
5°	14069	13977	14052	14344
10°	13979	13667	13987	14434
15°	13848	13368	13857	14458
20°	13652	12981	13661	14358
25°	13413	12571	13441	14155
30°	13156	12178	13175	13922
35°	12856	11862	12885	13696
40°	12544	11483	12587	13378
45°	12275	11172	12287	13073
50°	11955	10844	11981	12729
55°	11573	10489	11617	12370
60°	11202	10123	11219	11917
65°	10741	9680	10741	11389
70°	9973	8953	9949	10577
75°	9040	8113	8976	9521
80°	7789	6976	7646	8172
85°	6002	5335	5812	6574



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	144.7	3.6
10°-20°	409.5	10.1
20°-30°	606.3	15.0
30°-40°	711.4	17.6
40°-50°	721.0	17.8
50°-60°	639.9	15.8
60°-70°	480.4	11.9
70°-80°	266.8	6.6
80°-90°	68.9	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°	1160.5	28.7
0°-40°	1871.9	46.2
0°-60°	3232.8	79.8
0°-90°	4048.8	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4048.8	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	1532	1532	1532	1532	1532	
5°	1519	1509	1517	1549	1519	144
15°	1450	1400	1451	1514	1450	409
25°	1318	1235	1320	1390	1318	607
35°	1141	1053	1144	1216	1141	714
45°	941	856	942	1002	941	725
55°	720	652	722	769	720	644
65°	492	443	492	522	492	485
75°	254	228	252	267	254	270
85°	57	50	55	62	57	68
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°	1531.7	1531.7	1531.7	1531.7	1531.7	1531.7	1531.7	1531.7	1531.7	1531.7	1531.7
2.5°	1524.5	1528.1	1532.6	1528.1	1520.9	1517.3	1517.3	1516.4	1519.1	1520.0	1519.1
5°	1519.1	1520.9	1521.8	1516.4	1508.3	1503.8	1502.0	1501.1	1504.7	1509.2	1504.7
7.5°	1509.2	1508.3	1507.4	1500.2	1491.2	1484.9	1482.2	1481.3	1484.9	1489.4	1485.8
10°	1492.1	1491.2	1488.5	1479.5	1467.8	1459.7	1457.0	1454.3	1457.0	1458.8	1457.0
12.5°	1473.2	1469.6	1466.0	1456.1	1443.6	1434.6	1430.1	1426.5	1430.1	1432.8	1431.0
15°	1449.8	1444.5	1438.2	1427.4	1414.8	1404.9	1399.5	1395.9	1398.6	1399.5	1399.5
17.5°	1422.0	1415.7	1409.4	1395.9	1380.6	1369.8	1363.5	1359.0	1362.6	1364.4	1364.4
20°	1390.5	1383.3	1375.2	1360.8	1344.6	1332.9	1325.7	1320.3	1321.2	1322.1	1322.1
22.5°	1356.3	1347.3	1337.4	1322.1	1305.0	1292.5	1285.3	1279.0	1279.0	1279.9	1279.9
25°	1317.6	1307.7	1297.8	1282.6	1264.6	1251.1	1242.1	1235.8	1235.8	1234.9	1236.7
27.5°	1278.1	1267.3	1257.4	1241.2	1222.3	1208.8	1199.8	1193.5	1192.6	1191.7	1193.5
30°	1234.9	1222.3	1211.5	1194.4	1176.4	1162.9	1153.9	1146.7	1144.9	1143.1	1144.9
32.5°	1189.0	1177.3	1165.6	1147.6	1129.7	1116.2	1107.2	1100.0	1099.1	1098.2	1100.0
35°	1141.4	1128.8	1118.0	1100.9	1082.9	1069.4	1059.5	1053.2	1053.2	1053.2	1053.2
37.5°	1094.6	1082.0	1070.3	1053.2	1035.2	1021.7	1011.8	1005.5	1003.7	1002.8	1003.7
40°	1041.5	1030.7	1019.9	1003.7	985.8	972.3	964.2	957.0	955.2	953.4	956.1
42.5°	992.9	982.2	970.5	955.2	937.2	923.7	914.7	908.4	907.5	906.6	907.5
45°	940.8	928.2	916.5	902.1	885.9	873.3	864.3	858.0	857.1	856.2	857.1
47.5°	885.9	876.0	866.1	851.7	835.6	823.0	814.9	807.7	805.9	804.1	805.9
50°	832.9	822.1	812.2	798.7	783.4	771.7	764.5	758.2	756.4	755.5	756.4
52.5°	777.1	767.2	758.2	744.7	732.1	720.4	712.3	706.9	706.0	705.1	706.0
55°	719.5	710.5	702.4	691.6	679.1	668.3	661.1	654.8	653.9	652.1	653.9
57.5°	663.8	656.6	648.5	636.8	625.1	615.2	608.9	603.5	602.6	601.7	602.6
60°	607.1	599.9	592.7	582.8	571.1	561.2	555.8	551.3	549.5	548.6	549.5
62.5°	550.4	543.2	537.8	528.0	517.2	509.1	503.7	499.2	497.4	496.5	497.4
65°	492.0	485.7	479.4	470.4	462.3	456.0	450.6	446.1	444.3	443.4	443.4
67.5°	429.9	424.5	420.0	411.9	402.9	396.6	391.2	387.6	385.8	384.9	385.8
70°	369.7	365.2	360.7	354.4	347.2	341.8	338.2	334.6	332.8	331.9	331.9
72.5°	312.1	308.5	304.0	298.6	293.2	287.8	284.2	281.5	279.7	278.8	278.8
75°	253.6	250.0	248.2	243.7	238.3	234.7	231.1	229.3	227.6	227.6	227.6
77.5°	198.8	197.0	195.2	190.7	187.1	183.5	180.8	179.9	178.1	178.1	178.1
80°	146.6	145.7	144.8	142.1	138.5	134.9	133.1	132.2	131.3	131.3	131.3
82.5°	98.9	98.9	98.0	95.3	92.6	91.7	89.9	89.0	89.0	89.0	89.0
85°	56.7	56.7	56.7	55.8	54.0	54.0	52.2	51.3	50.4	50.4	50.4
87.5°	22.5	23.4	24.3	23.4	21.6	21.6	21.6	21.6	21.6	21.6	21.6
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):

	110°	120°	130°	140°	150°	160°	170°	180°	190°	200°	210°
0°	1531.7	1531.7	1531.7	1531.7	1531.7	1531.7	1531.7	1531.7	1531.7	1531.7	1531.7
2.5°	1516.4	1518.2	1519.1	1523.6	1529.0	1532.6	1528.1	1523.6	1530.8	1538.9	1538.9
5°	1501.1	1502.9	1505.6	1511.0	1518.2	1522.7	1520.9	1517.3	1528.1	1537.1	1538.0
7.5°	1482.2	1484.0	1487.6	1493.0	1502.0	1508.3	1508.3	1509.2	1519.1	1529.9	1532.6
10°	1454.3	1458.8	1464.2	1472.3	1481.3	1489.4	1492.1	1493.0	1505.6	1517.3	1520.9
12.5°	1428.3	1432.8	1438.2	1447.1	1457.9	1466.9	1469.6	1473.2	1486.7	1500.2	1505.6
15°	1398.6	1403.1	1409.4	1418.4	1430.1	1440.0	1445.4	1450.7	1464.2	1478.6	1484.9
17.5°	1363.5	1368.0	1374.3	1385.1	1398.6	1410.3	1416.6	1422.9	1438.2	1453.4	1459.7
20°	1322.1	1328.4	1337.4	1348.2	1363.5	1377.0	1384.2	1391.4	1407.6	1422.9	1430.1
22.5°	1279.9	1287.1	1296.9	1309.5	1325.7	1340.1	1349.1	1358.1	1374.3	1389.6	1397.7
25°	1237.6	1245.7	1255.6	1269.1	1284.4	1298.7	1309.5	1320.3	1336.5	1352.7	1360.8
27.5°	1194.4	1201.6	1211.5	1225.0	1242.1	1257.4	1268.2	1279.9	1296.0	1313.1	1321.2
30°	1146.7	1154.8	1163.8	1177.3	1196.2	1213.3	1224.1	1236.7	1252.9	1270.0	1278.1
32.5°	1100.9	1108.1	1117.1	1130.6	1149.4	1167.4	1179.1	1191.7	1207.9	1225.0	1232.2
35°	1053.2	1060.4	1070.3	1083.8	1102.7	1119.8	1131.5	1144.0	1159.3	1175.5	1183.6
37.5°	1006.4	1013.6	1023.5	1037.0	1055.0	1072.1	1083.8	1096.4	1111.7	1127.0	1134.2
40°	957.9	965.1	973.2	986.7	1004.6	1021.7	1032.5	1045.1	1060.4	1076.6	1083.8
42.5°	908.4	915.6	925.5	939.0	956.1	971.4	983.1	994.7	1009.1	1023.5	1030.7
45°	858.9	865.2	875.1	887.7	903.9	918.3	930.0	941.7	955.2	968.7	975.9
47.5°	807.7	814.9	823.0	835.6	851.7	867.0	878.7	889.5	902.1	915.6	921.9
50°	758.2	764.5	772.6	784.3	799.6	814.0	823.9	834.7	846.3	858.9	864.3
52.5°	706.9	713.2	721.3	733.0	745.6	759.1	768.1	778.0	789.7	801.4	806.8
55°	654.8	659.3	666.5	677.3	690.7	703.3	712.3	722.2	732.1	742.0	748.3
57.5°	603.5	608.9	616.1	626.0	637.7	649.4	657.5	665.6	675.5	685.3	689.8
60°	551.3	555.8	561.2	570.2	581.9	591.8	599.9	608.0	616.1	625.1	629.6
62.5°	498.3	502.8	508.2	517.2	527.1	536.0	543.2	550.4	557.6	565.7	570.2
65°	445.2	449.7	455.1	461.4	469.5	477.6	484.8	492.0	497.4	502.8	507.3
67.5°	387.6	392.1	397.5	402.9	410.1	418.2	423.6	429.9	435.3	441.6	444.3
70°	333.7	337.3	342.7	347.2	353.5	358.9	363.4	368.8	372.4	377.8	382.2
72.5°	280.6	284.2	288.7	293.2	296.8	301.3	306.7	311.2	315.7	321.1	322.9
75°	229.3	231.1	234.7	238.3	241.9	245.5	248.2	251.8	255.4	259.0	261.7
77.5°	179.0	180.8	184.4	187.1	189.8	192.5	194.3	196.1	199.7	202.4	205.1
80°	131.3	133.1	135.8	138.5	141.2	143.9	143.9	143.9	148.4	152.0	152.9
82.5°	89.0	89.9	91.7	93.5	95.3	97.1	97.1	96.2	98.9	101.6	103.4
85°	51.3	52.2	54.0	54.0	54.9	54.9	54.9	54.9	56.7	59.4	61.2
87.5°	20.7	20.7	21.6	21.6	22.5	22.5	21.6	20.7	22.5	25.2	26.1
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°	1531.7	1531.7	1531.7	1531.7	1531.7	1531.7	1531.7	1531.7	1531.7	1531.7	1531.7
2.5°	1535.3	1534.4	1537.1	1538.0	1539.8	1539.8	1540.7	1540.7	1538.9	1536.2	1537.1
5°	1536.2	1536.2	1538.9	1541.6	1545.2	1548.8	1546.1	1543.4	1541.6	1538.9	1538.0
7.5°	1531.7	1533.5	1536.2	1540.7	1545.2	1550.6	1547.0	1543.4	1538.9	1535.3	1533.5
10°	1520.9	1522.7	1527.2	1531.7	1536.2	1540.7	1537.1	1533.5	1529.9	1525.4	1523.6
12.5°	1507.4	1510.1	1515.5	1520.0	1524.5	1529.9	1525.4	1520.9	1516.4	1511.9	1509.2
15°	1487.6	1491.2	1497.5	1502.9	1509.2	1513.7	1510.1	1506.5	1501.1	1494.8	1490.3
17.5°	1462.4	1467.8	1474.1	1480.4	1485.8	1490.3	1487.6	1484.0	1477.7	1470.5	1465.1
20°	1434.6	1440.0	1445.4	1451.6	1457.9	1462.4	1458.8	1454.3	1448.0	1442.7	1437.3
22.5°	1402.2	1407.6	1413.9	1419.3	1424.7	1429.2	1424.7	1419.3	1413.9	1408.5	1403.1
25°	1365.3	1370.7	1377.9	1383.3	1386.9	1390.5	1386.9	1382.4	1377.0	1371.6	1366.2
27.5°	1326.6	1332.0	1339.2	1344.6	1348.2	1351.8	1348.2	1343.7	1338.3	1332.9	1327.5
30°	1283.5	1288.9	1296.0	1301.4	1304.1	1306.8	1303.2	1299.6	1295.1	1289.8	1284.4
32.5°	1237.6	1243.0	1248.4	1253.8	1258.3	1261.9	1258.3	1254.7	1249.3	1242.1	1236.7
35°	1189.0	1194.4	1200.7	1206.1	1211.5	1216.0	1210.6	1204.3	1199.8	1195.3	1190.8
37.5°	1137.8	1144.0	1151.2	1157.5	1159.3	1162.9	1159.3	1155.7	1151.2	1146.7	1141.4
40°	1087.4	1092.8	1099.1	1105.4	1108.1	1110.8	1107.2	1103.6	1098.2	1093.7	1088.3
42.5°	1035.2	1040.6	1046.0	1051.4	1055.0	1058.6	1055.0	1049.6	1046.0	1042.4	1037.9
45°	981.3	986.7	991.1	996.5	999.2	1001.9	998.3	993.8	990.2	987.6	983.1
47.5°	926.4	930.9	935.4	939.9	941.7	944.4	940.8	938.1	935.4	932.7	929.1
50°	868.8	873.3	878.7	883.2	884.1	886.8	883.2	880.5	877.8	875.1	872.4
52.5°	812.2	815.8	820.3	824.8	826.6	828.4	824.8	821.2	818.5	816.7	814.0
55°	752.8	756.4	760.9	764.5	767.2	769.0	765.4	761.8	759.1	758.2	755.5
57.5°	693.4	697.0	701.5	705.1	706.9	708.7	705.1	701.5	699.7	697.9	696.1
60°	633.2	636.8	640.4	643.1	644.9	645.8	642.2	639.5	638.6	637.7	635.9
62.5°	573.8	575.6	579.2	581.0	582.8	583.7	581.0	579.2	578.3	577.4	576.5
65°	511.8	516.3	519.0	520.8	520.8	521.7	519.0	518.1	517.2	516.3	514.5
67.5°	447.9	451.5	453.3	455.1	455.1	455.1	455.1	455.1	454.2	452.4	450.6
70°	386.7	389.4	391.2	392.1	392.1	392.1	390.3	389.4	390.3	390.3	389.4
72.5°	324.7	326.5	327.4	328.3	327.4	327.4	327.4	329.2	329.2	328.3	326.5
75°	264.4	266.2	267.1	268.0	267.1	267.1	267.1	268.9	268.0	268.0	267.1
77.5°	207.8	208.7	208.7	209.6	208.7	208.7	209.6	211.4	210.5	210.5	210.5
80°	153.8	153.8	153.8	154.7	153.8	153.8	154.7	156.5	155.6	155.6	155.6
82.5°	104.3	105.2	105.2	105.2	106.1	107.0	107.0	107.0	107.0	107.0	106.1
85°	62.1	63.0	62.1	62.1	62.1	62.1	63.0	63.9	63.9	63.9	63.9
87.5°	27.0	27.9	27.0	26.1	25.2	25.2	27.0	28.8	28.8	27.9	27.9
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: P709161
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CANDELA DISTRIBUTION (continued):

	330°	340°	350°	360°
0°	1531.7	1531.7	1531.7	1531.7
2.5°	1540.7	1540.7	1532.6	1524.5
5°	1539.8	1538.0	1529.0	1519.1
7.5°	1534.4	1531.7	1520.0	1509.2
10°	1521.8	1518.2	1505.6	1492.1
12.5°	1506.5	1501.1	1486.7	1473.2
15°	1486.7	1480.4	1465.1	1449.8
17.5°	1460.6	1453.4	1438.2	1422.0
20°	1432.8	1424.7	1407.6	1390.5
22.5°	1398.6	1391.4	1373.4	1356.3
25°	1361.7	1353.6	1335.6	1317.6
27.5°	1322.1	1313.1	1295.1	1278.1
30°	1279.0	1270.0	1252.0	1234.9
32.5°	1233.1	1225.9	1207.9	1189.0
35°	1186.3	1177.3	1159.3	1141.4
37.5°	1136.9	1128.8	1111.7	1094.6
40°	1084.7	1076.6	1058.6	1041.5
42.5°	1033.4	1026.2	1009.1	992.9
45°	978.6	971.4	955.2	940.8
47.5°	923.7	916.5	901.2	885.9
50°	867.9	860.7	846.3	832.9
52.5°	809.5	804.1	790.6	777.1
55°	751.0	744.7	731.2	719.5
57.5°	692.5	688.0	675.5	663.8
60°	632.3	626.9	617.0	607.1
62.5°	573.8	569.3	559.4	550.4
65°	511.8	508.2	500.1	492.0
67.5°	447.9	445.2	437.1	429.9
70°	386.7	382.2	376.0	369.7
72.5°	324.7	322.9	317.5	312.1
75°	265.3	263.5	258.1	253.6
77.5°	209.6	207.8	203.3	198.8
80°	154.7	153.8	150.2	146.6
82.5°	106.1	105.2	102.5	98.9
85°	63.9	62.1	59.4	56.7
87.5°	27.9	27.0	24.3	22.5
90°	0.0	0.0	0.0	0.0

(END OF REPORT)