

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: NEO-RAY

Report Number: P332833-935

Luminaire Tested: **S124DIW-S1020D1560U935-4F0-1E-UDD-F**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P332833-935  
REPORT IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1807-864-6,  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: NEO-RAY  
Catalog Number: S124DIW-S1020D1560U935-4F0-1E-UDD-F  
Description: DEFINE 4 DIRECT-INDIRECT WALL MOUNT LED LUMINAIRE  
DOWNLIGHT 1020 LUMENS PER FOOT, FLUSH SATIN WHITE DIFFUSER  
UPLIGHT 1560 LUMENS PER FOOT, NO LENS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

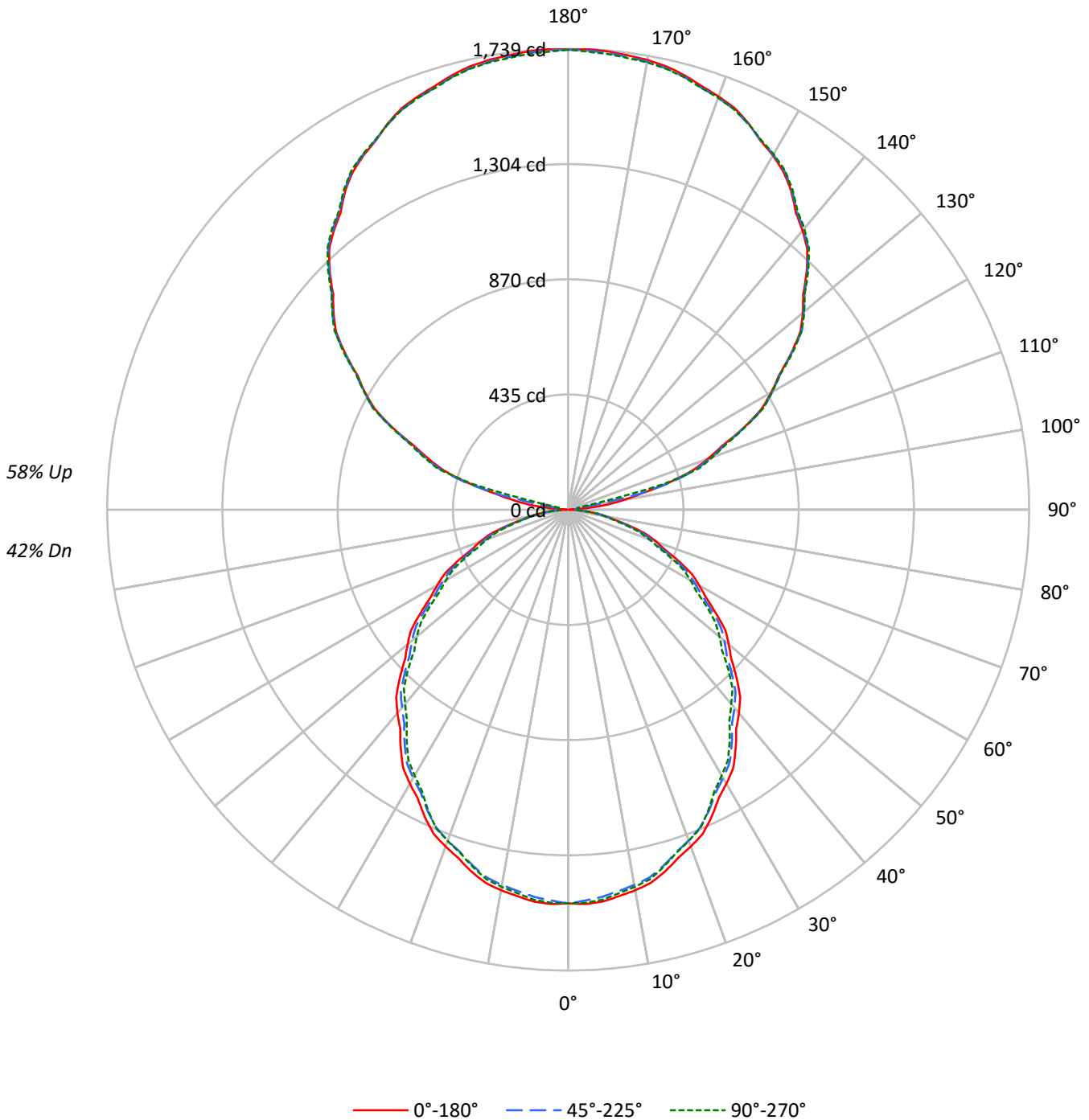
Lumens per Lamp: N/A  
Luminaire Lumens: 9187.4 lumens  
Efficiency: N/A  
Efficacy: 119.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.17 / 1.3  
Luminous Opening: Rectangular (W 0.33' x L: 4' x H: 0')  
CIE Type: General Diffuse  
  
Input Watts (W): 76.6  
Input Voltage (V): 120  
Input Current (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





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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	0
RCR																		
0	105	105	105	105	96	96	96	96	79	79	79	63	63	63	48	48	48	42
1	96	92	88	84	87	84	80	77	69	67	64	55	54	52	43	42	41	35
2	87	80	74	69	79	73	68	63	60	57	53	48	46	44	38	36	34	29
3	80	70	63	57	72	64	58	53	53	49	45	43	40	37	33	31	29	25
4	73	62	54	48	66	57	50	45	47	42	38	38	34	32	30	27	25	21
5	67	55	47	41	61	51	44	38	42	37	33	34	30	27	27	24	22	18
6	61	50	42	36	56	46	38	33	38	33	29	31	27	24	24	21	19	16
7	57	45	37	31	52	41	34	29	34	29	25	28	24	21	22	19	17	14
8	53	40	33	28	48	37	31	26	31	26	22	26	22	19	20	17	15	13
9	49	37	30	25	45	34	27	23	29	23	20	24	20	17	19	16	14	12
10	46	34	27	22	42	31	25	21	26	21	18	22	18	15	17	15	13	11

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

	0°	45°	90°
0°	11994	11994	11994
5°	12030	11885	11972
10°	11954	11788	11847
15°	11810	11621	11651
20°	11618	11413	11424
25°	11399	11176	11144
30°	11130	10897	10797
35°	10852	10606	10465
40°	10564	10275	10086
45°	10261	9949	9758
50°	9928	9658	9359
55°	9568	9282	8981
60°	9206	8861	8591
65°	8800	8458	8118
70°	8344	7924	7615
75°	7648	7277	7093
80°	6811	6527	6365
85°	5956	5734	5622



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	139.9	1.5
10°-20°	394.2	4.3
20°-30°	580.2	6.3
30°-40°	674.5	7.3
40°-50°	674.5	7.3
50°-60°	590.0	6.4
60°-70°	438.2	4.8
70°-80°	248.9	2.7
80°-90°	76.9	0.8
90°-100°	59.4	0.6
100°-110°	378.6	4.1
110°-120°	724.2	7.9
120°-130°	919.3	10.0
130°-140°	983.6	10.7
140°-150°	919.8	10.0
150°-160°	741.8	8.1
160°-170°	478.4	5.2
170°-180°	164.9	1.8
0°-30°	1114.3	12.1
0°-40°	1788.8	19.5
0°-60°	3053.4	33.2
0°-90°	3817.4	41.6
90°-120°	1162.1	12.6
90°-150°	3984.9	43.4
90°-180°	5370.0	58.4
0°-180°	9187.4	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1486	1486	1486	1486	1486	
5°	1484	1479	1467	1479	1477	141
15°	1413	1408	1390	1397	1394	398
25°	1280	1271	1255	1256	1251	588
35°	1101	1092	1076	1068	1062	688
45°	899	890	871	859	855	693
55°	680	675	660	646	638	609
65°	461	454	443	431	425	456
75°	245	239	233	229	227	261
85°	64	64	62	62	61	71
90°	4	18	29	36	39	7
95°	71	30	29	36	38	92
105°	391	399	405	414	370	409
115°	730	733	732	735	735	718
125°	1026	1030	1028	1032	1034	915
135°	1272	1272	1276	1279	1282	980
145°	1467	1471	1471	1472	1475	916
155°	1609	1610	1606	1611	1608	741
165°	1697	1691	1691	1700	1689	479
175°	1736	1729	1730	1740	1726	165
180°	1736	1736	1736	1736	1736	



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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	1485.7	1485.7	1485.7	1485.7	1485.7	1485.7	1485.7	1485.7	1485.7	1485.7	1485.7
2.5°	1489.4	1488.8	1488.2	1487.5	1486.9	1485.4	1483.1	1480.7	1478.4	1476.1	1478.3
5°	1484.5	1483.4	1482.4	1481.3	1480.2	1478.3	1475.3	1472.4	1469.6	1466.6	1469.6
7.5°	1470.7	1469.6	1468.5	1467.5	1466.5	1464.3	1461.0	1457.8	1454.6	1451.4	1453.7
10°	1458.3	1457.2	1456.1	1455.1	1454.1	1451.8	1448.4	1444.9	1441.5	1438.0	1440.1
12.5°	1442.1	1441.1	1439.9	1438.9	1437.9	1435.5	1431.8	1428.2	1424.5	1420.9	1423.2
15°	1413.1	1412.0	1410.9	1409.9	1408.8	1406.3	1402.3	1398.4	1394.4	1390.4	1392.0
17.5°	1378.0	1376.7	1375.4	1374.1	1372.8	1370.2	1366.4	1362.7	1358.9	1355.2	1356.2
20°	1352.3	1351.0	1349.7	1348.3	1347.0	1344.4	1340.4	1336.4	1332.5	1328.5	1329.3
22.5°	1324.7	1322.9	1321.2	1319.5	1317.8	1314.8	1310.9	1306.9	1303.0	1299.0	1300.5
25°	1279.7	1277.9	1276.0	1274.1	1272.3	1269.5	1265.8	1262.1	1258.4	1254.7	1255.0
27.5°	1228.3	1226.4	1224.4	1222.5	1220.6	1218.0	1214.5	1211.1	1207.6	1204.2	1203.6
30°	1194.0	1191.9	1189.7	1187.7	1185.5	1182.8	1179.3	1175.9	1172.4	1169.0	1167.9
32.5°	1157.8	1155.9	1154.0	1152.1	1150.2	1147.4	1143.8	1140.1	1136.4	1132.8	1131.5
35°	1101.1	1099.3	1097.4	1095.6	1093.7	1091.0	1087.3	1083.6	1079.9	1076.2	1074.3
37.5°	1041.4	1039.7	1038.0	1036.3	1034.6	1031.8	1027.8	1023.8	1019.9	1015.9	1013.9
40°	1002.4	1000.2	998.1	996.0	993.9	990.8	986.9	982.9	979.0	975.0	972.3
42.5°	960.4	959.2	957.9	956.7	955.4	952.5	948.1	943.7	939.4	935.0	931.9
45°	898.8	896.9	895.1	893.2	891.4	888.3	884.1	879.9	875.6	871.4	868.5
47.5°	834.2	833.0	831.7	830.4	829.1	826.6	822.7	818.7	814.9	810.9	807.6
50°	790.5	789.4	788.3	787.3	786.2	783.9	780.2	776.4	772.7	769.0	765.3
52.5°	747.6	746.3	745.0	743.8	742.5	739.9	736.0	732.1	728.1	724.3	721.0
55°	679.8	678.9	678.1	677.3	676.6	674.3	670.6	666.9	663.2	659.5	656.3
57.5°	615.0	614.1	613.2	612.3	611.4	609.1	605.5	601.8	598.1	594.5	591.5
60°	570.2	568.9	567.6	566.3	564.9	562.6	559.1	555.7	552.2	548.8	546.4
62.5°	526.4	525.3	524.2	523.1	521.9	519.6	515.9	512.3	508.6	505.0	502.8
65°	460.7	459.3	458.1	456.8	455.4	453.4	450.7	448.2	445.5	442.8	440.2
67.5°	394.5	393.3	392.1	390.9	389.6	387.8	385.2	382.7	380.1	377.6	375.1
70°	353.5	351.7	349.8	348.0	346.1	344.1	342.1	339.9	337.9	335.7	333.6
72.5°	309.8	307.9	306.1	304.2	302.4	300.6	298.9	297.2	295.5	293.8	292.1
75°	245.2	243.9	242.5	241.3	240.0	238.6	237.3	236.0	234.6	233.3	232.3
77.5°	183.6	183.0	182.4	181.8	181.2	180.4	179.2	178.1	176.8	175.7	175.4
80°	146.5	145.6	144.8	144.0	143.3	142.6	142.1	141.5	141.0	140.4	139.9
82.5°	110.2	109.9	109.5	109.1	108.7	108.5	108.4	108.3	108.2	108.1	107.8
85°	64.3	64.3	64.3	64.3	64.3	64.1	63.5	62.9	62.4	61.9	61.9
87.5°	25.6	26.0	26.3	26.8	27.2	27.6	27.8	28.1	28.3	28.6	28.9
90°	3.9	7.1	10.2	13.4	16.6	19.4	21.6	23.9	26.3	28.6	30.3
92.5°	16.4	16.5	16.7	16.9	17.0	18.3	20.6	22.9	25.2	27.6	29.3
95°	71.4	61.6	51.8	42.0	32.2	27.4	27.7	28.0	28.2	28.6	30.3
97.5°	151.6	157.7	163.8	170.0	176.2	163.1	130.9	98.7	66.5	34.3	34.4
100°	212.9	218.2	223.3	228.5	233.7	216.4	176.6	136.7	96.9	57.2	52.3
102.5°	281.5	285.3	289.1	292.9	296.7	296.0	290.8	285.7	280.4	275.3	222.3
105°	390.8	392.5	394.3	396.1	397.8	399.3	400.8	402.3	403.6	405.1	407.7
107.5°	492.3	493.3	494.1	495.0	495.8	497.2	499.2	501.2	503.1	505.1	506.4
110°	560.9	561.8	562.7	563.5	564.4	565.7	567.4	569.1	570.8	572.6	573.2



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**CANDELA DISTRIBUTION (continued):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
112.5°	627.4	629.0	630.5	632.1	633.6	634.8	635.6	636.5	637.2	638.1	637.9
115°	729.7	730.6	731.4	732.3	733.1	733.5	733.1	732.9	732.6	732.3	732.9
117.5°	821.9	823.0	824.2	825.4	826.6	827.4	828.0	828.7	829.3	829.9	829.8
120°	884.2	885.4	886.6	887.7	888.8	889.2	889.0	888.7	888.4	888.1	888.7
122.5°	942.4	943.1	943.7	944.4	945.2	945.7	946.2	946.5	946.9	947.4	947.7
125°	1025.8	1026.9	1028.0	1029.2	1030.4	1030.6	1030.1	1029.5	1028.9	1028.4	1029.2
127.5°	1104.7	1105.0	1105.3	1105.5	1105.9	1106.6	1108.0	1109.3	1110.6	1112.0	1111.8
130°	1155.6	1155.9	1156.2	1156.5	1156.8	1157.4	1158.2	1159.1	1159.9	1160.8	1161.1
132.5°	1202.3	1202.8	1203.4	1203.9	1204.5	1205.2	1206.3	1207.4	1208.5	1209.6	1209.9
135°	1272.5	1272.1	1271.9	1271.6	1271.3	1271.7	1272.9	1274.0	1275.2	1276.3	1276.9
137.5°	1334.6	1334.6	1334.7	1334.9	1335.0	1335.7	1337.0	1338.3	1339.5	1340.7	1341.4
140°	1375.0	1375.6	1376.2	1376.7	1377.3	1377.9	1378.5	1379.1	1379.7	1380.2	1381.1
142.5°	1411.4	1412.4	1413.5	1414.5	1415.6	1416.3	1416.6	1416.9	1417.3	1417.6	1418.2
145°	1467.2	1468.1	1469.0	1469.8	1470.7	1471.1	1471.1	1471.1	1471.1	1471.1	1471.4
147.5°	1511.7	1513.2	1514.8	1516.5	1518.1	1518.7	1518.5	1518.2	1517.9	1517.6	1517.9
150°	1543.9	1545.0	1546.1	1547.3	1548.4	1548.9	1548.6	1548.3	1548.0	1547.7	1547.7
152.5°	1570.8	1571.8	1572.7	1573.6	1574.5	1574.8	1574.2	1573.6	1573.1	1572.6	1573.1
155°	1608.8	1609.0	1609.3	1609.6	1609.9	1609.6	1608.8	1607.9	1607.1	1606.1	1607.3
157.5°	1640.7	1640.5	1640.4	1640.2	1640.0	1639.4	1638.4	1637.4	1636.5	1635.5	1637.0
160°	1659.4	1658.5	1657.7	1656.8	1656.0	1655.4	1655.0	1654.8	1654.5	1654.2	1656.0
162.5°	1676.0	1674.9	1673.8	1672.8	1671.6	1670.9	1670.6	1670.3	1670.1	1669.7	1671.5
165°	1697.0	1695.6	1694.2	1692.7	1691.3	1690.6	1690.6	1690.6	1690.6	1690.6	1692.8
167.5°	1713.6	1712.2	1710.6	1709.2	1707.6	1706.8	1706.7	1706.5	1706.3	1706.2	1708.7
170°	1723.0	1721.3	1719.5	1717.8	1716.1	1715.4	1715.6	1716.0	1716.2	1716.5	1718.8
172.5°	1729.2	1727.5	1725.8	1724.1	1722.3	1721.6	1721.9	1722.2	1722.4	1722.8	1725.0
175°	1735.9	1734.2	1732.5	1730.8	1729.1	1728.4	1728.6	1728.9	1729.2	1729.5	1732.1
177.5°	1739.1	1737.5	1735.9	1734.2	1732.7	1732.1	1732.5	1733.0	1733.5	1733.9	1735.8
180°	1735.9	1735.9	1735.9	1735.9	1735.9	1735.9	1735.9	1735.9	1735.9	1735.9	1735.9



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**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°
0°	1485.7	1485.7	1485.7	1485.7	1485.7	1485.7	1485.7	1485.7
2.5°	1480.3	1482.5	1484.6	1485.6	1485.3	1485.1	1484.9	1484.7
5°	1472.4	1475.3	1478.3	1479.5	1478.9	1478.3	1477.8	1477.3
7.5°	1456.0	1458.4	1460.7	1461.7	1461.4	1461.0	1460.7	1460.4
10°	1442.3	1444.4	1446.5	1447.3	1446.7	1446.2	1445.7	1445.2
12.5°	1425.6	1427.9	1430.2	1431.0	1430.3	1429.5	1428.7	1428.1
15°	1393.6	1395.2	1396.8	1397.1	1396.4	1395.6	1394.8	1394.0
17.5°	1357.2	1358.2	1359.2	1359.4	1358.9	1358.4	1357.9	1357.3
20°	1330.1	1330.9	1331.7	1331.8	1331.3	1330.8	1330.2	1329.7
22.5°	1301.8	1303.3	1304.7	1304.9	1304.0	1303.0	1302.1	1301.1
25°	1255.3	1255.5	1255.8	1255.3	1254.3	1253.3	1252.2	1251.1
27.5°	1203.0	1202.3	1201.7	1200.8	1199.4	1198.1	1196.7	1195.4
30°	1166.9	1165.8	1164.8	1163.6	1162.3	1160.9	1159.6	1158.3
32.5°	1130.2	1129.0	1127.7	1126.4	1125.1	1123.8	1122.5	1121.1
35°	1072.5	1070.6	1068.8	1067.1	1065.8	1064.5	1063.2	1061.9
37.5°	1011.8	1009.9	1007.9	1006.0	1004.3	1002.5	1000.7	999.0
40°	969.7	967.0	964.4	962.4	961.0	959.8	958.5	957.1
42.5°	928.8	925.7	922.6	920.7	919.8	918.9	918.0	917.1
45°	865.6	862.6	859.7	857.9	857.1	856.4	855.5	854.7
47.5°	804.3	801.1	797.8	795.1	793.2	791.1	789.1	787.1
50°	761.6	757.9	754.2	751.6	749.9	748.4	746.8	745.2
52.5°	717.7	714.4	711.1	708.5	706.5	704.5	702.5	700.4
55°	653.2	650.0	646.8	644.5	642.8	641.3	639.6	638.1
57.5°	588.5	585.5	582.5	580.1	578.6	577.1	575.6	574.0
60°	544.1	541.7	539.2	537.4	536.1	534.8	533.5	532.1
62.5°	500.7	498.4	496.3	494.6	493.3	491.9	490.6	489.3
65°	437.6	434.9	432.2	430.2	429.0	427.7	426.3	425.0
67.5°	372.6	370.0	367.5	366.0	365.6	365.2	364.9	364.5
70°	331.5	329.3	327.3	325.8	325.0	324.2	323.4	322.6
72.5°	290.4	288.7	287.1	285.8	285.0	284.2	283.4	282.6
75°	231.2	230.1	229.1	228.4	228.2	227.9	227.6	227.4
77.5°	175.0	174.8	174.4	173.9	173.2	172.5	171.9	171.2
80°	139.4	138.9	138.4	137.9	137.7	137.4	137.2	136.9
82.5°	107.5	107.1	106.9	106.5	106.2	106.0	105.7	105.5
85°	61.9	61.9	61.9	61.7	61.5	61.2	61.0	60.7
87.5°	29.3	29.6	30.0	30.2	30.3	30.4	30.6	30.7
90°	32.0	33.8	35.5	36.7	37.2	37.8	38.4	38.9
92.5°	31.0	32.7	34.4	35.4	35.5	35.6	35.7	35.8
95°	32.0	33.8	35.5	36.5	36.8	37.1	37.4	37.6
97.5°	34.6	34.8	35.0	35.2	35.5	35.8	36.1	36.3
100°	47.4	42.4	37.5	35.2	35.5	35.8	36.1	36.3
102.5°	169.4	116.5	63.6	37.2	37.2	37.3	37.4	37.4
105°	410.3	412.9	415.5	411.6	401.2	390.8	380.5	370.1
107.5°	507.6	508.9	510.1	511.3	512.5	513.5	514.6	515.7
110°	573.8	574.4	574.9	575.7	576.5	577.4	578.2	579.1





TEST NUMBER: P332833-935

CATALOG NUMBER: S124DIW-S1020D1560U935-4F0-1E-UDD-F

**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°
112.5°	637.8	637.7	637.6	638.1	639.2	640.2	641.4	642.5
115°	733.5	734.0	734.6	734.9	734.9	734.9	734.9	734.9
117.5°	829.7	829.6	829.5	829.4	829.2	829.1	829.1	828.9
120°	889.2	889.8	890.4	890.4	889.8	889.2	888.7	888.1
122.5°	948.0	948.4	948.7	948.6	948.0	947.4	946.8	946.3
125°	1030.1	1031.0	1031.8	1032.4	1032.7	1032.9	1033.3	1033.5
127.5°	1111.6	1111.5	1111.3	1111.0	1110.9	1110.6	1110.3	1110.2
130°	1161.4	1161.7	1161.9	1162.1	1162.1	1162.1	1162.1	1162.1
132.5°	1210.2	1210.5	1210.7	1210.8	1210.6	1210.3	1210.1	1209.9
135°	1277.5	1278.1	1278.7	1279.3	1279.8	1280.4	1281.0	1281.5
137.5°	1342.0	1342.6	1343.3	1343.5	1343.3	1343.2	1343.0	1342.8
140°	1382.0	1382.9	1383.7	1384.2	1384.6	1384.8	1385.1	1385.4
142.5°	1418.9	1419.5	1420.1	1420.5	1420.6	1420.6	1420.6	1420.7
145°	1471.7	1472.0	1472.2	1472.7	1473.3	1473.9	1474.5	1475.0
147.5°	1518.0	1518.3	1518.5	1518.8	1519.1	1519.3	1519.7	1519.9
150°	1547.7	1547.7	1547.7	1547.9	1548.2	1548.4	1548.8	1549.0
152.5°	1573.6	1574.0	1574.5	1574.6	1574.4	1574.3	1574.1	1573.9
155°	1608.4	1609.6	1610.8	1610.9	1610.1	1609.2	1608.3	1607.5
157.5°	1638.5	1640.0	1641.5	1641.5	1640.0	1638.5	1637.0	1635.5
160°	1657.7	1659.4	1661.1	1661.1	1659.4	1657.7	1656.0	1654.2
162.5°	1673.3	1675.0	1676.7	1676.5	1674.6	1672.7	1670.7	1668.7
165°	1695.1	1697.5	1699.8	1699.6	1697.0	1694.4	1691.9	1689.3
167.5°	1711.2	1713.7	1716.3	1716.1	1713.2	1710.4	1707.4	1704.6
170°	1721.1	1723.5	1725.8	1725.4	1722.6	1719.7	1716.8	1713.9
172.5°	1727.3	1729.7	1732.0	1731.6	1728.5	1725.4	1722.3	1719.1
175°	1734.7	1737.3	1739.9	1739.5	1735.9	1732.5	1729.1	1725.6
177.5°	1737.6	1739.5	1741.3	1740.9	1738.1	1735.3	1732.5	1729.7
180°	1735.9	1735.9	1735.9	1735.9	1735.9	1735.9	1735.9	1735.9

(END OF REPORT)