

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: P332810-935

Luminaire Tested: **S124DIW-S1020D470U935-4F0-1E-UDD-F1**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P332810-935  
REPORT IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1807-864-10,  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: NEO-RAY  
Catalog Number: S124DIW-S1020D470U935-4F0-1E-UDD-F1  
Description: DEFINE 4 DIRECT-INDIRECT WALL MOUNT LED LUMINAIRE  
DOWNLIGHT 1020 LUMENS PER FOOT, FLUSH SATIN WHITE DIFFUSER  
UPLIGHT 470 LUMENS PER FOOT, FLUSH SATIN WHITE DIFFUSER  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 5213.5 lumens  
Efficiency: N/A  
Efficacy: 112.8 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: Semi-Direct

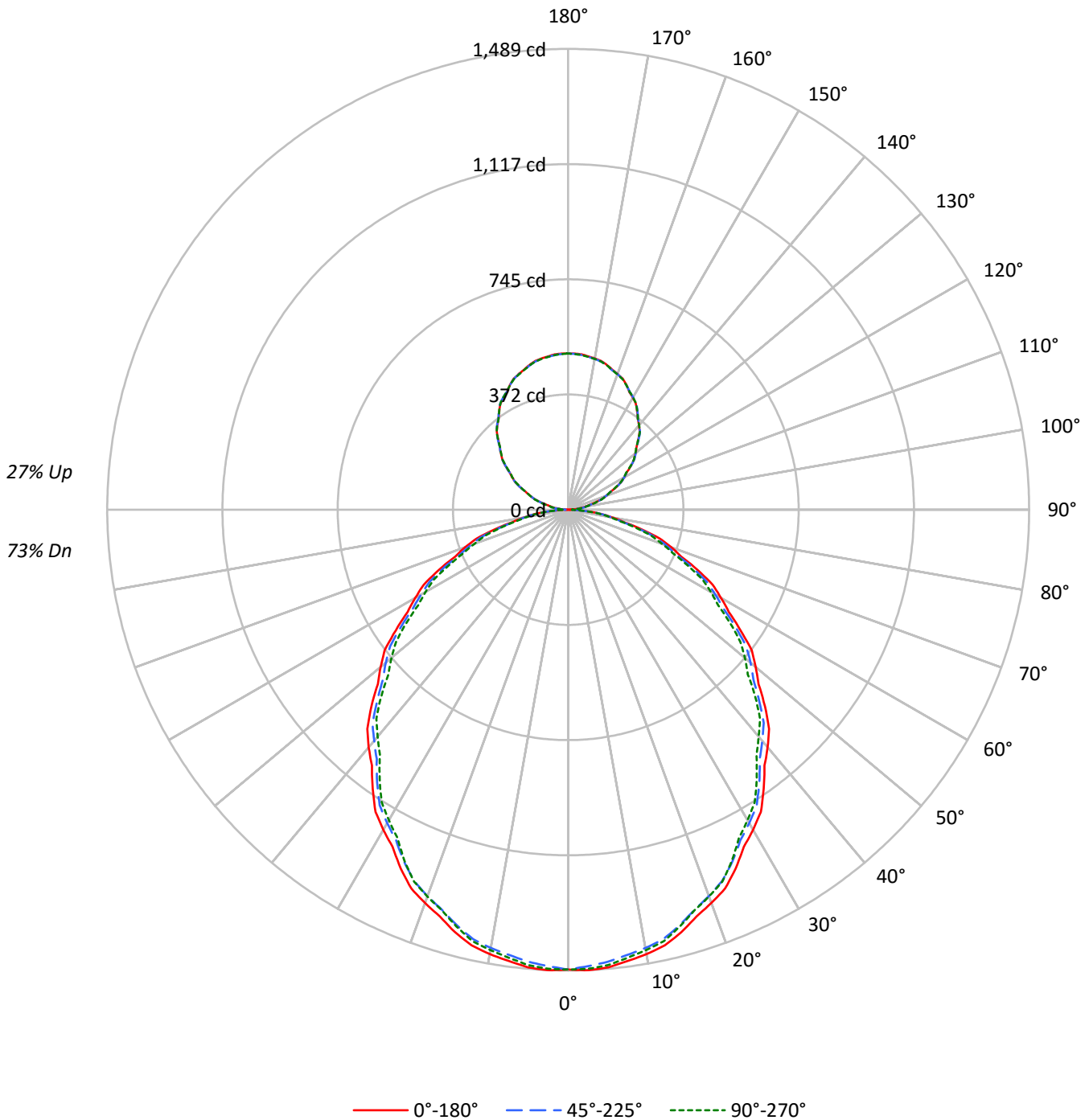
Input Watts (W): 46.2  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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### Luminous Intensity Polar Plot





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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	113	113	113	113	107	107	107	107	96	96	96	86	86	86	77	77	77	73
1	103	98	94	91	98	94	90	87	84	82	79	76	74	72	68	67	65	62
2	94	86	80	74	89	82	76	71	74	69	66	67	63	60	60	57	55	51
3	86	76	68	62	81	72	65	60	65	60	55	59	55	51	53	50	47	44
4	78	67	59	52	74	64	56	51	58	52	47	53	48	44	48	44	40	37
5	72	60	51	45	68	57	49	44	52	46	41	47	42	38	43	39	35	32
6	66	54	45	39	63	52	44	38	47	41	36	43	38	33	39	35	31	29
7	62	49	40	35	58	47	39	34	43	36	32	39	34	30	36	31	28	25
8	57	44	36	31	54	43	35	30	39	33	28	36	30	26	33	28	25	23
9	53	41	33	28	51	39	32	27	36	30	25	33	28	24	30	26	22	20
10	50	37	30	25	48	36	29	24	33	27	23	31	25	22	28	24	20	19

**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	2.7
10°-20°	394.2	7.6
20°-30°	580.2	11.1
30°-40°	674.5	12.9
40°-50°	674.5	12.9
50°-60°	590.0	11.3
60°-70°	438.2	8.4
70°-80°	248.9	4.8
80°-90°	73.4	1.4
90°-100°	33.3	0.6
100°-110°	98.6	1.9
110°-120°	167.3	3.2
120°-130°	220.6	4.2
130°-140°	247.7	4.8
140°-150°	243.4	4.7
150°-160°	204.8	3.9
160°-170°	136.2	2.6
170°-180°	47.7	0.9
0°-30°	1114.3	21.4
0°-40°	1788.8	34.3
0°-60°	3053.4	58.6
0°-90°	3813.9	73.2
90°-120°	299.1	5.7
90°-150°	1010.9	19.4
90°-180°	1400.0	26.9
0°-180°	5213.5	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°	1	5	9	11	12	5
95°	23	27	30	31	31	26
105°	91	91	93	94	95	96
115°	170	170	169	169	169	168
125°	248	248	247	247	246	221
135°	320	322	322	321	320	247
145°	388	390	390	390	389	243
155°	445	445	444	446	444	205
165°	484	483	482	484	483	136
175°	504	502	501	504	501	48
180°	504	504	504	504	504	



TEST NUMBER: P332810-935

CATALOG NUMBER: S124DIW-S1020D470U935-4F0-1E-UDD-F1

**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°	25.0	25.0	25.0	25.0	24.9	24.9	24.8	24.7	24.6	24.5	24.7
90°	1.2	2.2	3.1	4.0	5.0	5.8	6.5	7.2	7.9	8.6	9.1
92.5°	8.4	9.5	10.5	11.6	12.7	13.5	14.0	14.5	15.0	15.4	15.8
95°	23.4	24.2	25.0	25.7	26.5	27.2	27.8	28.4	29.0	29.6	29.9
97.5°	40.9	41.5	42.1	42.8	43.4	44.1	44.8	45.5	46.1	46.9	47.2
100°	54.6	54.9	55.3	55.6	56.1	56.6	57.3	58.1	58.9	59.7	59.8
102.5°	69.0	69.1	69.2	69.4	69.6	70.0	70.7	71.4	72.1	72.8	73.0
105°	90.9	91.0	91.1	91.2	91.3	91.4	91.8	92.1	92.5	92.8	93.1
107.5°	113.9	114.0	114.2	114.3	114.3	114.4	114.5	114.5	114.6	114.6	114.9
110°	129.5	129.7	129.8	130.0	130.2	130.3	130.2	130.1	130.0	129.9	129.8



TEST NUMBER: P332810-935

CATALOG NUMBER: S124DIW-S1020D470U935-4F0-1E-UDD-F1

**CANDELA DISTRIBUTION (continued):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
112.5°	145.8	145.8	145.9	145.9	145.9	145.9	145.7	145.5	145.3	145.3	145.2
115°	170.1	170.1	170.1	170.1	170.1	170.0	169.9	169.7	169.5	169.4	169.3
117.5°	193.0	193.1	193.2	193.3	193.3	193.3	193.2	193.0	193.0	192.8	192.5
120°	208.4	208.7	209.1	209.4	209.7	209.7	209.5	209.2	209.0	208.7	208.3
122.5°	224.3	224.4	224.5	224.6	224.8	224.8	224.7	224.5	224.5	224.4	224.0
125°	247.7	247.7	247.7	247.7	247.7	247.7	247.6	247.5	247.5	247.4	247.2
127.5°	269.1	269.3	269.6	269.8	270.1	270.2	270.0	269.8	269.8	269.6	269.4
130°	284.0	284.3	284.6	284.8	285.1	285.2	285.2	285.2	285.2	285.2	285.0
132.5°	299.3	299.5	299.7	299.9	300.1	300.1	300.1	300.0	300.0	299.9	299.7
135°	319.5	320.0	320.6	321.1	321.6	321.8	321.8	321.8	321.8	321.8	321.7
137.5°	341.6	341.8	342.0	342.2	342.5	342.7	342.9	343.0	343.1	343.3	343.0
140°	356.2	356.4	356.5	356.7	356.9	357.0	357.0	357.0	357.0	357.0	356.9
142.5°	369.6	369.8	370.0	370.1	370.3	370.4	370.3	370.2	370.1	370.1	370.1
145°	388.2	388.6	388.9	389.3	389.6	389.8	389.9	389.9	390.0	390.1	390.0
147.5°	406.7	407.0	407.4	407.9	408.3	408.5	408.4	408.3	408.3	408.2	408.1
150°	417.8	418.2	418.5	418.9	419.2	419.4	419.4	419.4	419.4	419.4	419.4
152.5°	428.4	428.7	428.9	429.1	429.3	429.5	429.5	429.6	429.6	429.7	429.9
155°	444.8	444.8	444.8	444.8	444.8	444.7	444.6	444.5	444.4	444.4	444.7
157.5°	458.5	458.3	458.2	458.1	457.9	457.8	457.8	457.8	457.7	457.7	458.0
160°	466.7	466.6	466.5	466.4	466.3	466.2	466.1	466.1	466.0	465.9	466.1
162.5°	474.2	473.9	473.6	473.5	473.2	473.0	472.9	472.9	472.8	472.7	473.2
165°	484.1	483.9	483.6	483.4	483.1	482.9	482.8	482.6	482.4	482.2	482.8
167.5°	491.9	491.5	491.2	490.9	490.4	490.3	490.3	490.3	490.3	490.3	490.9
170°	496.3	495.8	495.4	495.0	494.6	494.4	494.5	494.6	494.6	494.7	495.2
172.5°	499.4	499.0	498.7	498.3	497.9	497.7	497.7	497.8	497.8	497.8	498.4
175°	503.7	503.3	502.8	502.4	502.0	501.7	501.6	501.5	501.4	501.4	502.0
177.5°	505.1	504.7	504.4	504.0	503.7	503.5	503.5	503.5	503.5	503.5	504.0
180°	504.5	504.5	504.5	504.5	504.5	504.5	504.5	504.5	504.5	504.5	504.5



TEST NUMBER: P332810-935

CATALOG NUMBER: S124DIW-S1020D470U935-4F0-1E-UDD-F1

**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°	24.8	24.9	25.0	25.1	25.1	25.1	25.1	25.2
90°	9.6	10.2	10.7	11.0	11.2	11.4	11.5	11.7
92.5°	16.1	16.4	16.7	16.9	17.0	17.1	17.2	17.3
95°	30.1	30.4	30.7	30.8	30.8	30.8	30.8	30.8
97.5°	47.5	47.9	48.1	48.3	48.3	48.3	48.3	48.3
100°	60.0	60.2	60.4	60.4	60.4	60.4	60.4	60.4
102.5°	73.3	73.5	73.8	74.0	74.0	74.0	74.1	74.2
105°	93.4	93.7	93.9	94.2	94.5	94.7	95.0	95.2
107.5°	115.1	115.4	115.6	115.7	115.7	115.7	115.6	115.6
110°	129.6	129.4	129.2	129.2	129.5	129.8	130.0	130.3





TEST NUMBER: P332810-935

CATALOG NUMBER: S124DIW-S1020D470U935-4F0-1E-UDD-F1

**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°
112.5°	145.2	145.1	145.1	145.1	145.2	145.2	145.3	145.3
115°	169.2	169.1	169.0	168.9	168.8	168.8	168.7	168.6
117.5°	192.3	191.9	191.7	191.4	191.2	191.1	190.9	190.7
120°	207.8	207.4	207.0	206.9	207.1	207.2	207.4	207.6
122.5°	223.8	223.4	223.2	222.8	222.6	222.2	221.9	221.6
125°	247.0	246.8	246.7	246.5	246.3	246.2	246.0	245.8
127.5°	269.2	269.1	268.9	268.7	268.6	268.5	268.4	268.2
130°	284.8	284.6	284.5	284.2	283.9	283.5	283.2	282.8
132.5°	299.5	299.4	299.2	299.0	298.9	298.8	298.6	298.5
135°	321.5	321.3	321.2	321.0	320.7	320.5	320.2	319.9
137.5°	342.8	342.6	342.3	342.2	342.3	342.3	342.4	342.5
140°	356.8	356.7	356.6	356.5	356.5	356.4	356.3	356.2
142.5°	370.1	370.1	370.1	370.0	370.0	370.0	370.0	370.0
145°	389.9	389.9	389.8	389.6	389.3	389.1	388.8	388.6
147.5°	408.0	407.9	407.9	407.9	407.8	407.7	407.6	407.5
150°	419.4	419.4	419.4	419.4	419.3	419.2	419.1	419.0
152.5°	430.2	430.3	430.6	430.5	430.3	430.1	429.9	429.6
155°	445.1	445.4	445.7	445.7	445.4	445.1	444.7	444.4
157.5°	458.2	458.5	458.7	458.7	458.5	458.1	457.9	457.5
160°	466.4	466.7	466.9	466.8	466.4	466.0	465.5	465.0
162.5°	473.6	474.2	474.6	474.6	474.2	473.7	473.3	472.9
165°	483.3	483.8	484.3	484.4	484.1	483.7	483.4	483.0
167.5°	491.4	491.9	492.4	492.4	491.9	491.4	490.8	490.3
170°	495.8	496.3	496.8	496.7	496.1	495.5	494.9	494.3
172.5°	499.0	499.6	500.2	500.2	499.6	498.9	498.3	497.7
175°	502.6	503.2	503.8	503.8	503.2	502.6	502.0	501.4
177.5°	504.5	505.0	505.5	505.4	504.9	504.4	503.8	503.3
180°	504.5	504.5	504.5	504.5	504.5	504.5	504.5	504.5

(END OF REPORT)