

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: P332809-930

Luminaire Tested: **S124DIW-S1020D470U930-4F0-1E-UDD-F**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P332809-930  
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-S1020D470U930-4F0-1E-UDD-F  
Description: DEFINE 4 DIRECT-INDIRECT WALL MOUNT LED LUMINAIRE  
DOWNLIGHT 1020 LUMENS PER FOOT, FLUSH SATIN WHITE DIFFUSER  
UPLIGHT 470 LUMENS PER FOOT, NO LENS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 5139.6 lumens  
Efficiency: N/A  
Efficacy: 111.2 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

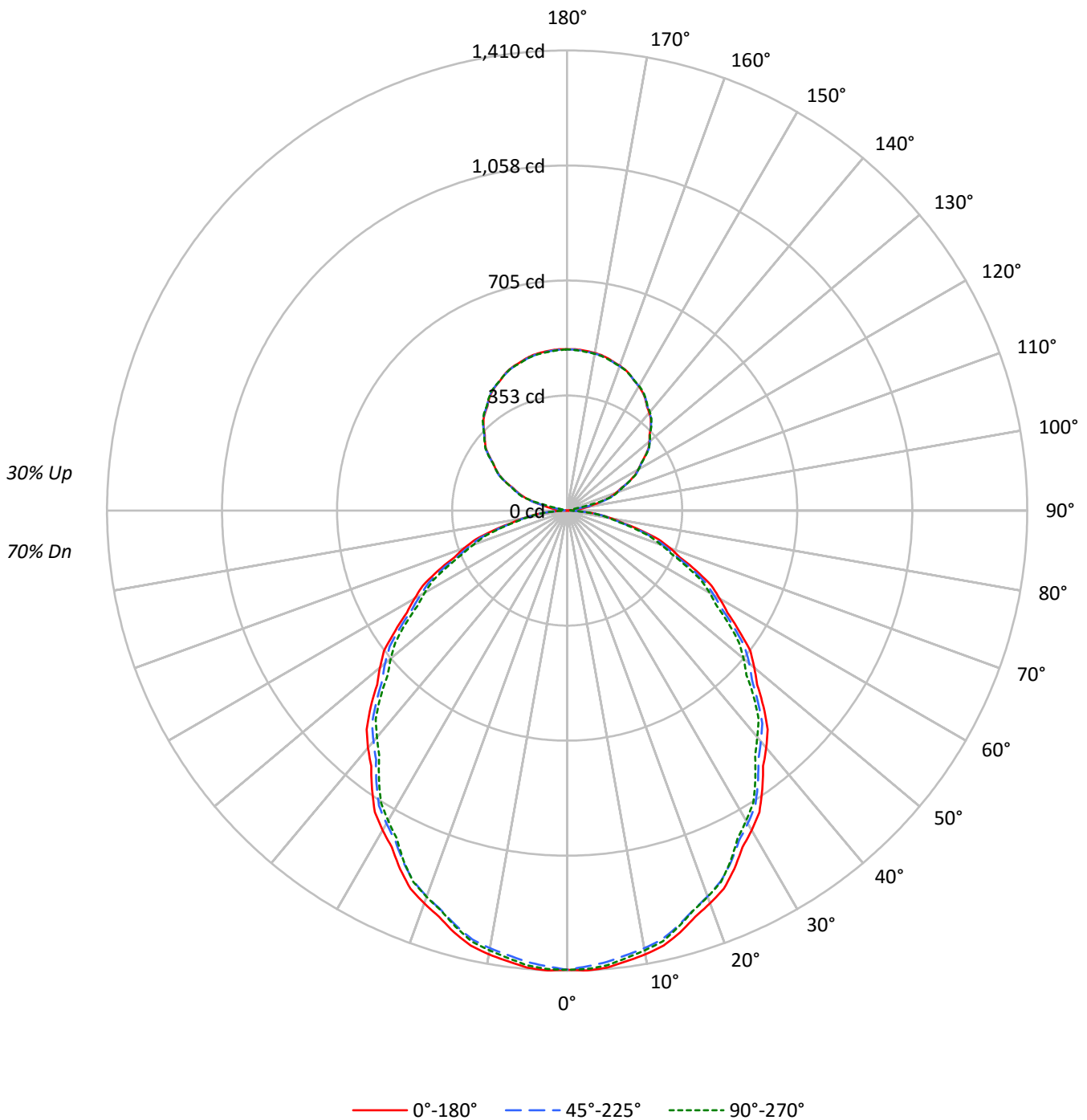
Input Watts (W): 46.2  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	112	112	112	112	106	106	106	106	95	95	95	84	84	84	75	75	75	70
1	102	98	94	90	97	93	89	86	83	80	78	74	72	70	66	64	63	59
2	93	85	79	74	88	81	75	70	73	68	64	65	62	59	58	55	53	49
3	85	75	67	61	80	71	64	59	64	59	54	58	53	50	51	48	45	42
4	78	67	58	52	73	63	56	50	57	51	46	51	47	43	46	42	39	36
5	72	59	51	45	67	57	49	43	51	45	40	46	41	37	41	37	34	31
6	66	53	45	39	62	51	43	38	46	40	35	42	37	32	38	33	30	27
7	61	48	40	34	58	46	39	33	42	36	31	38	33	29	34	30	27	24
8	57	44	36	31	54	42	35	30	38	32	28	35	30	26	32	27	24	22
9	53	40	33	27	50	39	31	27	35	29	25	32	27	23	29	25	22	20
10	50	37	30	25	47	36	29	24	33	27	23	30	25	21	27	23	20	18

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

	0°	45°	90°
0°	11357	11357	11357
5°	11391	11255	11336
10°	11320	11163	11218
15°	11183	11004	11032
20°	11001	10808	10817
25°	10794	10583	10553
30°	10540	10318	10224
35°	10276	10042	9909
40°	10003	9729	9551
45°	9717	9421	9240
50°	9401	9146	8862
55°	9060	8790	8504
60°	8719	8391	8136
65°	8334	8010	7687
70°	7903	7504	7211
75°	7243	6890	6716
80°	6448	6183	6025
85°	5641	5428	5326



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	132.5	2.6
10°-20°	373.3	7.3
20°-30°	549.4	10.7
30°-40°	638.7	12.4
40°-50°	638.7	12.4
50°-60°	558.7	10.9
60°-70°	414.9	8.1
70°-80°	235.7	4.6
80°-90°	69.5	1.4
90°-100°	16.9	0.3
100°-110°	107.7	2.1
110°-120°	206.1	4.0
120°-130°	261.6	5.1
130°-140°	279.9	5.4
140°-150°	261.7	5.1
150°-160°	211.1	4.1
160°-170°	136.1	2.6
170°-180°	46.9	0.9
0°-30°	1055.2	20.5
0°-40°	1693.9	33.0
0°-60°	2891.3	56.3
0°-90°	3611.5	70.3
90°-120°	330.7	6.4
90°-150°	1134.0	22.1
90°-180°	1528.0	29.7
0°-180°	5139.6	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1407	1407	1407	1407	1407	
5°	1406	1401	1389	1400	1399	133
15°	1338	1333	1317	1323	1320	377
25°	1212	1204	1188	1189	1185	557
35°	1043	1034	1019	1011	1006	652
45°	851	843	825	813	809	656
55°	644	640	624	611	604	576
65°	436	430	419	408	402	432
75°	232	227	221	217	215	247
85°	61	61	59	59	58	67
90°	1	5	8	10	11	4
95°	20	8	8	10	11	26
105°	111	113	115	118	105	116
115°	208	209	208	209	209	204
125°	292	293	293	294	294	261
135°	362	362	363	364	365	279
145°	418	419	419	419	420	261
155°	458	458	457	458	458	211
165°	483	481	481	484	481	136
175°	494	492	492	495	491	47
180°	494	494	494	494	494	



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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	1406.8	1406.8	1406.8	1406.8	1406.8	1406.8	1406.8	1406.8	1406.8	1406.8	1406.8
2.5°	1410.4	1409.8	1409.2	1408.6	1408.0	1406.6	1404.4	1402.2	1400.0	1397.7	1399.8
5°	1405.7	1404.7	1403.7	1402.6	1401.7	1399.8	1397.0	1394.2	1391.6	1388.8	1391.6
7.5°	1392.6	1391.6	1390.6	1389.6	1388.6	1386.6	1383.5	1380.5	1377.4	1374.4	1376.6
10°	1380.9	1379.9	1378.8	1377.9	1376.9	1374.8	1371.5	1368.2	1365.0	1361.7	1363.7
12.5°	1365.5	1364.6	1363.5	1362.5	1361.5	1359.3	1355.8	1352.4	1348.9	1345.5	1347.7
15°	1338.1	1337.0	1336.0	1335.1	1334.0	1331.6	1327.9	1324.1	1320.4	1316.6	1318.1
17.5°	1304.9	1303.7	1302.4	1301.1	1299.9	1297.5	1293.9	1290.4	1286.8	1283.3	1284.2
20°	1280.5	1279.3	1278.1	1276.8	1275.5	1273.0	1269.3	1265.5	1261.8	1258.0	1258.7
22.5°	1254.4	1252.7	1251.1	1249.4	1247.8	1245.0	1241.3	1237.5	1233.8	1230.0	1231.4
25°	1211.8	1210.1	1208.3	1206.5	1204.8	1202.2	1198.7	1195.1	1191.6	1188.1	1188.4
27.5°	1163.1	1161.3	1159.4	1157.6	1155.8	1153.3	1150.1	1146.8	1143.5	1140.3	1139.7
30°	1130.7	1128.6	1126.6	1124.6	1122.6	1120.0	1116.7	1113.5	1110.2	1106.9	1106.0
32.5°	1096.3	1094.5	1092.7	1091.0	1089.2	1086.5	1083.0	1079.6	1076.1	1072.7	1071.5
35°	1042.7	1041.0	1039.2	1037.5	1035.7	1033.1	1029.6	1026.1	1022.5	1019.0	1017.2
37.5°	986.1	984.5	982.9	981.3	979.7	977.1	973.2	969.5	965.7	962.0	960.1
40°	949.2	947.1	945.1	943.1	941.1	938.2	934.5	930.7	927.0	923.2	920.7
42.5°	909.5	908.2	907.0	905.9	904.7	902.0	897.8	893.6	889.5	885.3	882.4
45°	851.1	849.3	847.6	845.8	844.1	841.1	837.1	833.2	829.2	825.2	822.4
47.5°	789.9	788.8	787.6	786.4	785.1	782.7	779.0	775.3	771.6	767.8	764.8
50°	748.5	747.5	746.5	745.5	744.4	742.2	738.7	735.2	731.7	728.2	724.7
52.5°	707.9	706.7	705.5	704.3	703.1	700.7	696.9	693.2	689.5	685.8	682.7
55°	643.7	642.9	642.1	641.4	640.7	638.5	635.0	631.5	628.0	624.5	621.5
57.5°	582.4	581.5	580.7	579.8	578.9	576.7	573.3	569.9	566.4	563.0	560.1
60°	540.0	538.7	537.4	536.2	534.9	532.7	529.5	526.2	522.9	519.7	517.4
62.5°	498.5	497.4	496.4	495.3	494.2	492.0	488.5	485.1	481.6	478.2	476.1
65°	436.3	435.0	433.7	432.5	431.2	429.3	426.8	424.4	421.8	419.3	416.9
67.5°	373.6	372.4	371.3	370.1	368.9	367.2	364.8	362.4	360.0	357.6	355.1
70°	334.8	333.0	331.3	329.5	327.8	325.9	323.9	321.9	319.9	317.9	315.8
72.5°	293.3	291.6	289.8	288.0	286.3	284.6	283.0	281.4	279.8	278.2	276.6
75°	232.2	231.0	229.7	228.4	227.2	225.9	224.7	223.5	222.2	220.9	220.0
77.5°	173.8	173.3	172.7	172.2	171.6	170.8	169.7	168.6	167.5	166.4	166.1
80°	138.7	137.9	137.1	136.4	135.7	135.0	134.5	134.0	133.5	133.0	132.5
82.5°	104.4	104.0	103.7	103.3	103.0	102.7	102.6	102.6	102.5	102.3	102.1
85°	60.9	60.9	60.9	60.9	60.9	60.7	60.1	59.6	59.1	58.6	58.6
87.5°	23.6	23.6	23.6	23.6	23.6	23.6	23.5	23.4	23.3	23.2	23.4
90°	1.1	2.0	2.9	3.8	4.7	5.5	6.2	6.8	7.5	8.2	8.6
92.5°	4.6	4.7	4.7	4.8	4.9	5.2	5.9	6.5	7.2	7.8	8.3
95°	20.3	17.5	14.8	12.0	9.1	7.8	7.9	8.0	8.1	8.2	8.6
97.5°	43.1	44.9	46.6	48.3	50.1	46.4	37.3	28.0	18.9	9.8	9.8
100°	60.6	62.0	63.6	65.1	66.5	61.6	50.2	38.9	27.6	16.2	14.8
102.5°	80.1	81.2	82.3	83.3	84.5	84.2	82.8	81.3	79.8	78.4	63.3
105°	111.2	111.7	112.2	112.7	113.2	113.7	114.1	114.5	114.9	115.3	116.0
107.5°	140.1	140.4	140.6	140.9	141.1	141.5	142.0	142.6	143.2	143.7	144.1
110°	159.6	159.9	160.1	160.4	160.6	160.9	161.4	162.0	162.5	163.0	163.1



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**CANDELA DISTRIBUTION (continued):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
112.5°	178.6	179.0	179.4	179.9	180.3	180.7	180.9	181.1	181.3	181.6	181.6
115°	207.7	207.9	208.1	208.4	208.6	208.7	208.6	208.6	208.5	208.4	208.6
117.5°	233.9	234.2	234.6	234.9	235.2	235.5	235.6	235.8	236.0	236.2	236.1
120°	251.6	251.9	252.3	252.6	252.9	253.1	253.0	252.9	252.8	252.7	252.9
122.5°	268.2	268.4	268.6	268.8	269.0	269.1	269.2	269.4	269.5	269.6	269.7
125°	291.9	292.2	292.5	292.9	293.2	293.3	293.1	292.9	292.8	292.6	292.9
127.5°	314.4	314.5	314.5	314.6	314.7	315.0	315.3	315.7	316.1	316.4	316.4
130°	328.8	328.9	329.1	329.1	329.2	329.4	329.6	329.9	330.1	330.4	330.4
132.5°	342.2	342.3	342.4	342.6	342.8	343.0	343.3	343.6	343.9	344.2	344.3
135°	362.1	362.0	361.9	361.8	361.7	361.9	362.2	362.6	362.9	363.2	363.4
137.5°	379.8	379.8	379.8	379.8	379.9	380.1	380.4	380.8	381.2	381.6	381.7
140°	391.3	391.4	391.6	391.8	391.9	392.1	392.2	392.5	392.6	392.8	393.1
142.5°	401.6	401.9	402.3	402.5	402.8	403.0	403.1	403.2	403.3	403.4	403.6
145°	417.5	417.8	418.0	418.2	418.5	418.7	418.7	418.7	418.7	418.7	418.7
147.5°	430.2	430.6	431.0	431.5	432.0	432.2	432.1	432.0	431.9	431.9	431.9
150°	439.4	439.7	440.0	440.3	440.7	440.8	440.7	440.6	440.5	440.4	440.4
152.5°	447.0	447.3	447.5	447.8	448.1	448.1	448.0	447.8	447.7	447.5	447.7
155°	457.8	457.9	458.0	458.0	458.1	458.0	457.8	457.5	457.3	457.1	457.4
157.5°	466.9	466.8	466.8	466.8	466.7	466.5	466.3	465.9	465.7	465.5	465.9
160°	472.2	472.0	471.7	471.5	471.2	471.1	471.0	470.9	470.8	470.8	471.2
162.5°	477.0	476.6	476.3	476.0	475.7	475.5	475.4	475.3	475.2	475.2	475.6
165°	482.9	482.5	482.1	481.7	481.3	481.1	481.1	481.1	481.1	481.1	481.8
167.5°	487.6	487.2	486.8	486.4	485.9	485.7	485.7	485.6	485.6	485.5	486.2
170°	490.3	489.8	489.3	488.9	488.4	488.1	488.2	488.3	488.4	488.4	489.1
172.5°	492.1	491.6	491.1	490.6	490.2	489.9	490.0	490.1	490.2	490.2	490.9
175°	494.0	493.5	493.0	492.5	492.0	491.9	492.0	492.0	492.1	492.2	492.9
177.5°	494.9	494.5	494.0	493.5	493.1	492.9	493.0	493.2	493.3	493.4	493.9
180°	494.0	494.0	494.0	494.0	494.0	494.0	494.0	494.0	494.0	494.0	494.0



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**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°
0°	1406.8	1406.8	1406.8	1406.8	1406.8	1406.8	1406.8	1406.8
2.5°	1401.7	1403.8	1405.8	1406.7	1406.5	1406.3	1406.1	1405.9
5°	1394.2	1397.0	1399.8	1400.9	1400.4	1399.9	1399.4	1398.9
7.5°	1378.8	1381.0	1383.2	1384.1	1383.8	1383.5	1383.2	1382.9
10°	1365.7	1367.7	1369.7	1370.4	1369.9	1369.5	1369.0	1368.5
12.5°	1349.9	1352.1	1354.3	1355.0	1354.4	1353.6	1352.9	1352.3
15°	1319.6	1321.1	1322.7	1323.0	1322.3	1321.5	1320.8	1320.0
17.5°	1285.2	1286.1	1287.0	1287.3	1286.8	1286.3	1285.8	1285.2
20°	1259.5	1260.3	1261.0	1261.1	1260.6	1260.1	1259.6	1259.1
22.5°	1232.7	1234.1	1235.4	1235.7	1234.8	1233.9	1233.0	1232.1
25°	1188.6	1188.9	1189.1	1188.7	1187.7	1186.7	1185.7	1184.7
27.5°	1139.1	1138.5	1137.9	1137.0	1135.7	1134.5	1133.2	1132.0
30°	1105.0	1103.9	1102.9	1101.8	1100.6	1099.3	1098.0	1096.8
32.5°	1070.2	1069.1	1067.9	1066.7	1065.4	1064.1	1062.9	1061.6
35°	1015.5	1013.7	1012.0	1010.5	1009.3	1008.0	1006.7	1005.5
37.5°	958.1	956.3	954.4	952.6	951.0	949.3	947.6	946.0
40°	918.2	915.7	913.2	911.3	910.0	908.8	907.6	906.3
42.5°	879.5	876.6	873.7	871.8	871.0	870.1	869.3	868.5
45°	819.6	816.8	814.1	812.4	811.6	810.9	810.1	809.3
47.5°	761.7	758.6	755.5	752.9	751.1	749.1	747.2	745.3
50°	721.2	717.7	714.2	711.7	710.1	708.7	707.2	705.6
52.5°	679.6	676.5	673.4	670.9	669.0	667.1	665.2	663.2
55°	618.5	615.5	612.5	610.3	608.7	607.2	605.7	604.2
57.5°	557.3	554.4	551.5	549.3	547.9	546.5	545.0	543.6
60°	515.2	512.9	510.6	508.9	507.6	506.4	505.2	503.9
62.5°	474.1	472.0	469.9	468.3	467.1	465.8	464.6	463.3
65°	414.3	411.8	409.3	407.4	406.2	405.0	403.7	402.4
67.5°	352.8	350.3	348.0	346.6	346.2	345.8	345.5	345.2
70°	313.9	311.9	309.9	308.5	307.8	307.0	306.2	305.5
72.5°	275.0	273.4	271.8	270.6	269.9	269.1	268.4	267.6
75°	218.9	217.9	217.0	216.3	216.1	215.8	215.6	215.3
77.5°	165.8	165.5	165.2	164.7	164.0	163.4	162.7	162.1
80°	132.0	131.5	131.0	130.6	130.4	130.1	129.9	129.6
82.5°	101.7	101.4	101.2	100.9	100.6	100.4	100.1	99.9
85°	58.6	58.6	58.6	58.5	58.2	58.0	57.7	57.5
87.5°	23.5	23.6	23.6	23.7	23.7	23.8	23.8	23.9
90°	9.1	9.6	10.1	10.4	10.6	10.8	10.9	11.1
92.5°	8.8	9.3	9.8	10.0	10.1	10.1	10.2	10.2
95°	9.1	9.6	10.1	10.4	10.4	10.5	10.6	10.7
97.5°	9.9	9.9	9.9	10.0	10.1	10.2	10.3	10.4
100°	13.5	12.1	10.7	10.0	10.1	10.2	10.3	10.4
102.5°	48.2	33.2	18.1	10.6	10.6	10.6	10.6	10.7
105°	116.8	117.5	118.2	117.2	114.1	111.2	108.3	105.3
107.5°	144.5	144.8	145.2	145.5	145.9	146.1	146.4	146.8
110°	163.3	163.5	163.6	163.8	164.0	164.3	164.5	164.8





TEST NUMBER: P332809-930

CATALOG NUMBER: S124DIW-S1020D470U930-4F0-1E-UDD-F

**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°
112.5°	181.5	181.5	181.4	181.6	181.9	182.2	182.5	182.8
115°	208.7	208.9	209.0	209.1	209.1	209.1	209.1	209.1
117.5°	236.1	236.1	236.0	236.0	235.9	235.9	235.9	235.9
120°	253.1	253.2	253.4	253.4	253.2	253.1	252.9	252.7
122.5°	269.8	269.9	269.9	269.9	269.8	269.6	269.5	269.3
125°	293.1	293.3	293.6	293.8	293.8	293.9	294.0	294.1
127.5°	316.3	316.3	316.3	316.2	316.1	316.0	316.0	315.9
130°	330.5	330.6	330.7	330.7	330.7	330.7	330.7	330.7
132.5°	344.4	344.5	344.5	344.5	344.5	344.5	344.4	344.3
135°	363.5	363.7	363.9	364.0	364.2	364.4	364.5	364.7
137.5°	381.9	382.0	382.3	382.3	382.3	382.2	382.2	382.1
140°	393.3	393.5	393.8	394.0	394.0	394.1	394.2	394.3
142.5°	403.7	404.0	404.1	404.2	404.2	404.3	404.3	404.3
145°	418.8	418.9	419.0	419.1	419.2	419.4	419.6	419.7
147.5°	432.0	432.0	432.1	432.2	432.3	432.4	432.4	432.5
150°	440.4	440.4	440.4	440.5	440.6	440.7	440.8	440.8
152.5°	447.8	447.9	448.1	448.1	448.1	448.0	447.9	447.9
155°	457.7	458.0	458.4	458.4	458.2	458.0	457.7	457.5
157.5°	466.3	466.7	467.1	467.1	466.7	466.3	465.9	465.5
160°	471.7	472.2	472.7	472.7	472.2	471.7	471.2	470.8
162.5°	476.1	476.6	477.1	477.1	476.5	476.0	475.4	474.9
165°	482.4	483.1	483.7	483.6	482.9	482.2	481.4	480.7
167.5°	487.0	487.7	488.4	488.4	487.5	486.7	485.9	485.1
170°	489.8	490.4	491.1	491.1	490.2	489.3	488.5	487.7
172.5°	491.5	492.2	492.8	492.8	491.9	491.0	490.1	489.2
175°	493.7	494.4	495.1	495.0	494.0	493.0	492.0	491.1
177.5°	494.5	495.0	495.5	495.4	494.6	493.8	493.0	492.3
180°	494.0	494.0	494.0	494.0	494.0	494.0	494.0	494.0

(END OF REPORT)