

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: P332809-927

Luminaire Tested: **S124DIW-S1020D470U927-4F0-1E-UDD-F**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P332809-927  
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-S1020D470U927-4F0-1E-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: 4993.9 lumens  
Efficiency: N/A  
Efficacy: 108.1 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

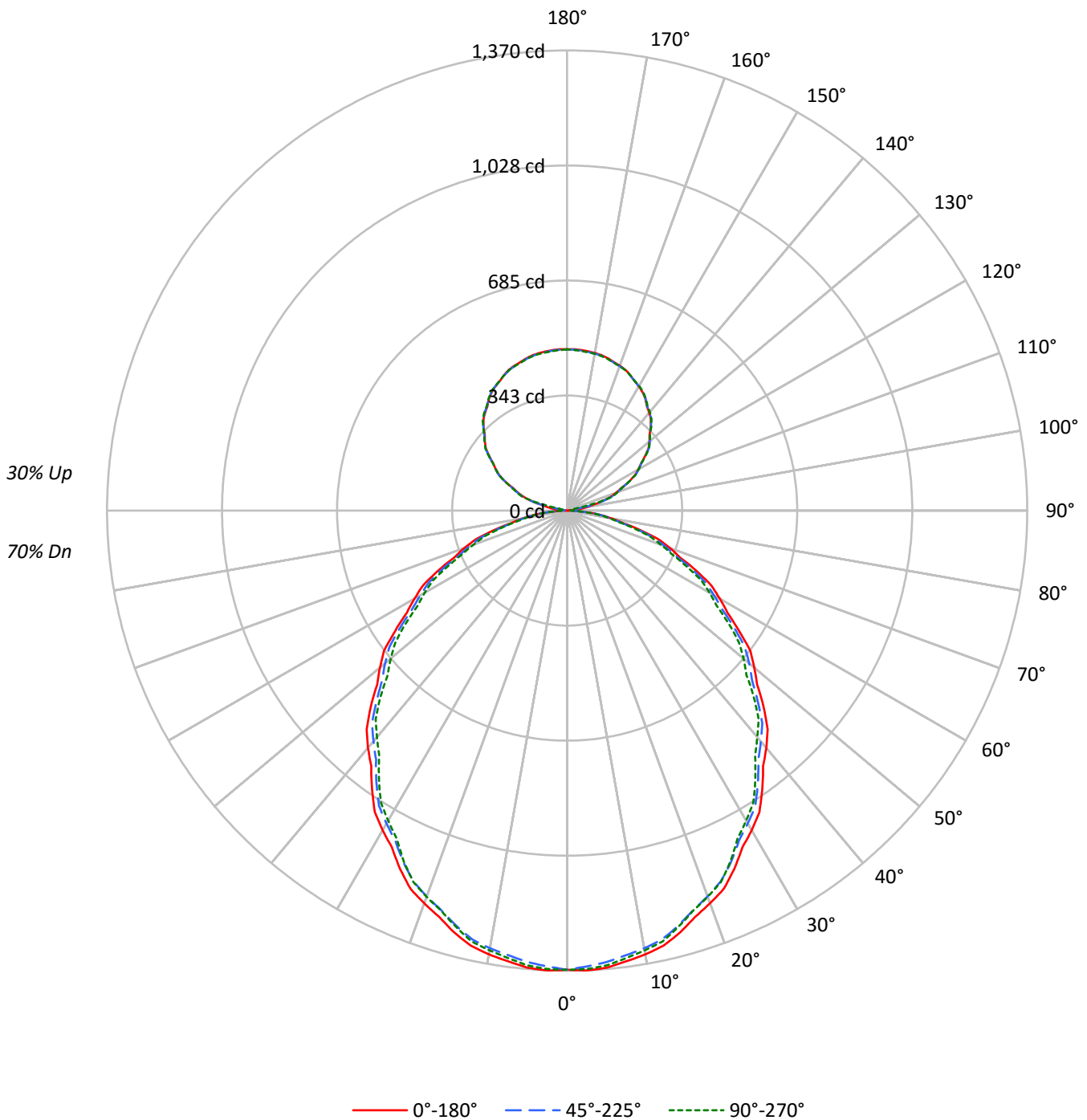
Input Watts (W): 46.2  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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

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

	0°	45°	90°
0°	11035	11035	11035
5°	11068	10935	11015
10°	10999	10846	10900
15°	10866	10692	10719
20°	10689	10501	10510
25°	10488	10283	10253
30°	10241	10026	9934
35°	9984	9758	9629
40°	9720	9454	9280
45°	9442	9154	8978
50°	9134	8887	8611
55°	8802	8541	8263
60°	8472	8152	7905
65°	8097	7782	7469
70°	7678	7291	7006
75°	7037	6697	6525
80°	6267	6007	5858
85°	5483	5280	5169



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	128.7	2.6
10°-20°	362.7	7.3
20°-30°	533.8	10.7
30°-40°	620.6	12.4
40°-50°	620.6	12.4
50°-60°	542.9	10.9
60°-70°	403.2	8.1
70°-80°	229.1	4.6
80°-90°	67.5	1.4
90°-100°	16.4	0.3
100°-110°	104.7	2.1
110°-120°	200.2	4.0
120°-130°	254.2	5.1
130°-140°	272.0	5.4
140°-150°	254.3	5.1
150°-160°	205.1	4.1
160°-170°	132.3	2.6
170°-180°	45.6	0.9
0°-30°	1025.2	20.5
0°-40°	1645.9	33.0
0°-60°	2809.4	56.3
0°-90°	3509.1	70.3
90°-120°	321.3	6.4
90°-150°	1101.8	22.1
90°-180°	1485.0	29.7
0°-180°	4993.9	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1367	1367	1367	1367	1367	
5°	1366	1361	1349	1361	1359	129
15°	1300	1295	1279	1285	1282	366
25°	1177	1169	1154	1155	1151	541
35°	1013	1005	990	983	977	633
45°	827	819	802	790	786	637
55°	625	621	607	594	587	560
65°	424	418	407	397	391	420
75°	226	220	215	210	209	240
85°	59	59	57	57	56	65
90°	1	5	8	10	11	4
95°	20	8	8	10	10	25
105°	108	110	112	114	102	113
115°	202	203	202	203	203	199
125°	284	285	284	285	286	253
135°	352	352	353	354	354	271
145°	406	407	407	407	408	253
155°	445	445	444	445	444	205
165°	469	468	468	470	467	133
175°	480	478	478	481	477	46
180°	480	480	480	480	480	



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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	1366.9	1366.9	1366.9	1366.9	1366.9	1366.9	1366.9	1366.9	1366.9	1366.9	1366.9
2.5°	1370.4	1369.8	1369.2	1368.7	1368.1	1366.7	1364.5	1362.4	1360.3	1358.1	1360.1
5°	1365.8	1364.9	1363.9	1362.9	1361.9	1360.1	1357.4	1354.7	1352.1	1349.4	1352.1
7.5°	1353.1	1352.1	1351.1	1350.2	1349.2	1347.3	1344.3	1341.3	1338.3	1335.4	1337.5
10°	1341.7	1340.8	1339.7	1338.8	1337.8	1335.8	1332.6	1329.4	1326.3	1323.1	1325.0
12.5°	1326.8	1325.9	1324.8	1323.9	1322.9	1320.7	1317.4	1314.1	1310.7	1307.3	1309.5
15°	1300.1	1299.1	1298.1	1297.2	1296.2	1293.9	1290.2	1286.6	1282.9	1279.3	1280.7
17.5°	1267.9	1266.7	1265.4	1264.2	1263.1	1260.7	1257.2	1253.8	1250.3	1246.9	1247.8
20°	1244.2	1243.0	1241.8	1240.6	1239.4	1236.9	1233.3	1229.6	1226.0	1222.3	1223.1
22.5°	1218.9	1217.2	1215.6	1214.0	1212.4	1209.7	1206.1	1202.5	1198.8	1195.2	1196.5
25°	1177.4	1175.8	1174.0	1172.3	1170.6	1168.1	1164.7	1161.3	1157.9	1154.4	1154.7
27.5°	1130.1	1128.4	1126.6	1124.8	1123.1	1120.6	1117.5	1114.3	1111.1	1107.9	1107.4
30°	1098.6	1096.6	1094.6	1092.7	1090.8	1088.2	1085.1	1081.9	1078.7	1075.5	1074.6
32.5°	1065.2	1063.5	1061.8	1060.0	1058.3	1055.7	1052.3	1049.0	1045.6	1042.3	1041.1
35°	1013.1	1011.5	1009.7	1008.1	1006.3	1003.8	1000.4	997.0	993.6	990.1	988.4
37.5°	958.1	956.6	955.1	953.5	951.9	949.4	945.6	942.0	938.3	934.7	932.9
40°	922.3	920.3	918.3	916.4	914.4	911.6	908.0	904.4	900.7	897.1	894.6
42.5°	883.7	882.5	881.3	880.2	879.0	876.4	872.4	868.3	864.3	860.2	857.4
45°	827.0	825.2	823.6	821.8	820.1	817.3	813.4	809.5	805.6	801.8	799.1
47.5°	767.5	766.4	765.2	764.1	762.9	760.5	756.9	753.3	749.7	746.1	743.1
50°	727.3	726.3	725.3	724.4	723.3	721.2	717.8	714.4	711.0	707.6	704.2
52.5°	687.9	686.7	685.5	684.4	683.2	680.8	677.2	673.6	669.9	666.4	663.4
55°	625.4	624.6	623.9	623.2	622.5	620.4	617.0	613.6	610.2	606.8	603.9
57.5°	565.9	565.0	564.2	563.3	562.5	560.4	557.1	553.7	550.3	547.0	544.2
60°	524.7	523.4	522.2	521.0	519.8	517.6	514.4	511.3	508.1	504.9	502.7
62.5°	484.3	483.3	482.3	481.3	480.2	478.1	474.7	471.3	467.9	464.6	462.6
65°	423.9	422.6	421.4	420.3	419.0	417.2	414.7	412.3	409.9	407.4	405.0
67.5°	363.0	361.9	360.8	359.7	358.5	356.8	354.4	352.1	349.7	347.5	345.1
70°	325.3	323.6	321.9	320.2	318.5	316.6	314.7	312.8	310.9	308.9	306.9
72.5°	285.0	283.3	281.6	279.9	278.2	276.6	275.0	273.5	271.9	270.3	268.8
75°	225.6	224.4	223.2	222.0	220.8	219.5	218.3	217.1	215.9	214.7	213.7
77.5°	168.9	168.3	167.8	167.3	166.8	166.0	164.9	163.8	162.7	161.7	161.4
80°	134.8	134.0	133.2	132.5	131.8	131.2	130.7	130.2	129.8	129.2	128.7
82.5°	101.4	101.1	100.8	100.4	100.1	99.8	99.7	99.7	99.6	99.4	99.2
85°	59.2	59.2	59.2	59.2	59.2	58.9	58.4	57.9	57.4	57.0	57.0
87.5°	23.0	23.0	23.0	23.0	22.9	22.9	22.8	22.7	22.7	22.6	22.7
90°	1.1	2.0	2.9	3.7	4.6	5.3	6.0	6.7	7.3	7.9	8.4
92.5°	4.5	4.6	4.6	4.7	4.8	5.1	5.7	6.3	7.0	7.6	8.1
95°	19.7	17.0	14.3	11.6	8.9	7.6	7.7	7.8	7.8	7.9	8.4
97.5°	41.9	43.6	45.3	47.0	48.7	45.1	36.2	27.3	18.4	9.5	9.5
100°	58.9	60.3	61.8	63.2	64.6	59.8	48.8	37.8	26.8	15.8	14.4
102.5°	77.9	78.9	79.9	81.0	82.1	81.8	80.4	79.0	77.6	76.1	61.5
105°	108.1	108.5	109.0	109.5	110.0	110.4	110.8	111.2	111.6	112.0	112.7
107.5°	136.2	136.4	136.7	136.9	137.1	137.5	138.0	138.6	139.1	139.7	140.0
110°	155.1	155.3	155.6	155.8	156.1	156.4	156.9	157.4	157.9	158.4	158.5



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**CANDELA DISTRIBUTION (continued):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
112.5°	173.5	173.9	174.4	174.8	175.2	175.5	175.8	175.9	176.2	176.4	176.4
115°	201.8	202.0	202.2	202.5	202.7	202.8	202.7	202.6	202.6	202.5	202.6
117.5°	227.3	227.6	227.9	228.2	228.5	228.8	228.9	229.1	229.3	229.5	229.4
120°	244.5	244.8	245.1	245.4	245.7	245.9	245.8	245.7	245.7	245.6	245.7
122.5°	260.5	260.8	260.9	261.2	261.3	261.5	261.6	261.7	261.8	262.0	262.1
125°	283.6	283.9	284.2	284.6	284.9	284.9	284.8	284.6	284.5	284.3	284.6
127.5°	305.5	305.5	305.6	305.7	305.8	306.0	306.3	306.7	307.1	307.4	307.4
130°	319.5	319.6	319.7	319.8	319.9	320.0	320.3	320.5	320.8	321.0	321.1
132.5°	332.5	332.6	332.7	332.9	333.0	333.3	333.6	333.8	334.1	334.5	334.5
135°	351.8	351.7	351.6	351.6	351.5	351.6	352.0	352.3	352.6	352.9	353.1
137.5°	369.0	369.0	369.1	369.1	369.2	369.3	369.6	370.0	370.3	370.7	370.9
140°	380.2	380.3	380.5	380.6	380.8	381.0	381.1	381.4	381.5	381.7	381.9
142.5°	390.2	390.5	390.9	391.1	391.4	391.6	391.7	391.8	391.9	392.0	392.1
145°	405.7	405.9	406.2	406.4	406.6	406.8	406.8	406.8	406.8	406.8	406.9
147.5°	418.0	418.4	418.8	419.3	419.8	419.9	419.9	419.8	419.7	419.6	419.7
150°	426.9	427.2	427.5	427.9	428.2	428.3	428.2	428.1	428.0	427.9	427.9
152.5°	434.4	434.6	434.8	435.1	435.4	435.4	435.3	435.1	435.0	434.8	435.0
155°	444.8	444.9	445.0	445.0	445.1	445.0	444.8	444.6	444.3	444.1	444.4
157.5°	453.7	453.6	453.5	453.5	453.4	453.3	453.0	452.7	452.5	452.3	452.7
160°	458.8	458.6	458.4	458.1	457.9	457.7	457.6	457.6	457.5	457.4	457.9
162.5°	463.4	463.1	462.8	462.5	462.2	462.0	461.9	461.8	461.8	461.7	462.2
165°	469.2	468.8	468.4	468.0	467.6	467.5	467.5	467.5	467.5	467.5	468.1
167.5°	473.8	473.4	473.0	472.6	472.1	471.9	471.9	471.8	471.8	471.7	472.5
170°	476.4	475.9	475.5	475.0	474.5	474.3	474.4	474.4	474.5	474.6	475.2
172.5°	478.2	477.7	477.2	476.7	476.3	476.0	476.1	476.2	476.3	476.3	477.0
175°	480.0	479.5	479.0	478.6	478.1	477.9	478.0	478.1	478.2	478.2	479.0
177.5°	480.9	480.5	480.0	479.5	479.1	479.0	479.0	479.2	479.3	479.4	479.9
180°	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0



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**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°
0°	1366.9	1366.9	1366.9	1366.9	1366.9	1366.9	1366.9	1366.9
2.5°	1362.0	1364.0	1366.0	1366.8	1366.6	1366.4	1366.2	1366.0
5°	1354.7	1357.4	1360.1	1361.2	1360.7	1360.2	1359.7	1359.2
7.5°	1339.7	1341.8	1343.9	1344.9	1344.6	1344.3	1343.9	1343.7
10°	1327.0	1329.0	1330.9	1331.6	1331.1	1330.6	1330.2	1329.7
12.5°	1311.6	1313.8	1315.9	1316.6	1316.0	1315.3	1314.5	1313.9
15°	1282.2	1283.7	1285.2	1285.5	1284.8	1284.0	1283.3	1282.5
17.5°	1248.7	1249.7	1250.5	1250.8	1250.3	1249.8	1249.4	1248.8
20°	1223.8	1224.6	1225.3	1225.3	1224.9	1224.4	1223.9	1223.4
22.5°	1197.8	1199.1	1200.4	1200.6	1199.8	1198.9	1198.0	1197.1
25°	1154.9	1155.2	1155.4	1155.0	1154.1	1153.1	1152.1	1151.1
27.5°	1106.8	1106.2	1105.6	1104.8	1103.5	1102.3	1101.1	1099.9
30°	1073.6	1072.6	1071.7	1070.6	1069.4	1068.1	1066.9	1065.7
32.5°	1039.9	1038.8	1037.6	1036.4	1035.1	1034.0	1032.8	1031.5
35°	986.7	985.0	983.3	981.8	980.6	979.5	978.2	977.0
37.5°	931.0	929.2	927.3	925.6	924.0	922.3	920.8	919.2
40°	892.2	889.7	887.3	885.5	884.2	883.0	881.9	880.6
42.5°	854.6	851.8	848.9	847.1	846.3	845.4	844.6	843.8
45°	796.4	793.7	791.0	789.3	788.6	787.9	787.1	786.4
47.5°	740.1	737.0	734.0	731.6	729.8	727.9	726.0	724.2
50°	700.8	697.4	694.0	691.5	690.0	688.6	687.1	685.6
52.5°	660.4	657.3	654.3	651.9	650.0	648.2	646.3	644.4
55°	600.9	598.0	595.1	592.9	591.4	590.0	588.5	587.1
57.5°	541.5	538.7	535.9	533.8	532.3	531.0	529.6	528.1
60°	500.6	498.4	496.1	494.5	493.2	492.0	490.8	489.6
62.5°	460.7	458.6	456.6	455.0	453.8	452.6	451.4	450.2
65°	402.6	400.1	397.7	395.9	394.7	393.5	392.2	391.0
67.5°	342.8	340.4	338.1	336.8	336.4	336.0	335.7	335.4
70°	305.0	303.0	301.1	299.8	299.0	298.3	297.5	296.8
72.5°	267.2	265.6	264.1	262.9	262.2	261.5	260.8	260.0
75°	212.7	211.8	210.8	210.2	209.9	209.7	209.5	209.2
77.5°	161.1	160.8	160.5	160.0	159.4	158.8	158.1	157.5
80°	128.3	127.8	127.3	126.9	126.7	126.4	126.2	126.0
82.5°	98.9	98.5	98.3	98.0	97.8	97.5	97.3	97.0
85°	57.0	57.0	57.0	56.8	56.6	56.3	56.1	55.8
87.5°	22.8	22.9	23.0	23.1	23.1	23.1	23.1	23.2
90°	8.9	9.3	9.8	10.1	10.3	10.5	10.6	10.8
92.5°	8.6	9.0	9.5	9.7	9.8	9.8	9.9	9.9
95°	8.9	9.3	9.8	10.1	10.1	10.2	10.3	10.4
97.5°	9.6	9.6	9.7	9.7	9.8	9.9	10.0	10.1
100°	13.1	11.7	10.4	9.7	9.8	9.9	10.0	10.1
102.5°	46.8	32.2	17.6	10.3	10.3	10.3	10.3	10.4
105°	113.4	114.2	114.9	113.8	110.9	108.1	105.2	102.3
107.5°	140.4	140.7	141.1	141.4	141.7	142.0	142.3	142.6
110°	158.7	158.8	159.0	159.1	159.4	159.6	159.9	160.1





TEST NUMBER: P332809-927

CATALOG NUMBER: S124DIW-S1020D470U927-4F0-1E-UDD-F

**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°
112.5°	176.3	176.3	176.3	176.4	176.7	177.1	177.4	177.6
115°	202.8	203.0	203.1	203.2	203.2	203.2	203.2	203.2
117.5°	229.4	229.4	229.3	229.3	229.3	229.3	229.3	229.2
120°	245.9	246.1	246.2	246.2	246.1	245.9	245.7	245.6
122.5°	262.1	262.2	262.3	262.3	262.1	262.0	261.8	261.7
125°	284.8	285.0	285.3	285.4	285.5	285.6	285.7	285.7
127.5°	307.4	307.3	307.3	307.2	307.1	307.0	307.0	307.0
130°	321.2	321.2	321.3	321.3	321.3	321.3	321.3	321.3
132.5°	334.6	334.7	334.8	334.8	334.7	334.7	334.6	334.5
135°	353.2	353.4	353.6	353.7	353.9	354.0	354.2	354.3
137.5°	371.1	371.2	371.5	371.5	371.5	371.4	371.4	371.3
140°	382.1	382.4	382.6	382.8	382.9	382.9	383.0	383.1
142.5°	392.3	392.5	392.7	392.8	392.8	392.8	392.8	392.8
145°	406.9	407.0	407.1	407.2	407.3	407.5	407.7	407.8
147.5°	419.8	419.8	419.9	419.9	420.0	420.1	420.2	420.3
150°	427.9	427.9	427.9	428.0	428.1	428.2	428.3	428.3
152.5°	435.1	435.2	435.4	435.4	435.4	435.3	435.2	435.2
155°	444.7	445.0	445.4	445.4	445.2	445.0	444.7	444.5
157.5°	453.0	453.4	453.8	453.8	453.4	453.0	452.7	452.3
160°	458.4	458.8	459.3	459.3	458.8	458.4	457.9	457.4
162.5°	462.6	463.1	463.6	463.6	463.0	462.5	461.9	461.4
165°	468.7	469.4	470.0	469.9	469.2	468.5	467.8	467.1
167.5°	473.2	473.9	474.6	474.5	473.7	472.9	472.1	471.3
170°	475.9	476.5	477.2	477.1	476.3	475.5	474.7	473.9
172.5°	477.6	478.2	478.9	478.8	477.9	477.1	476.2	475.3
175°	479.7	480.4	481.1	480.9	480.0	479.0	478.1	477.1
177.5°	480.5	480.9	481.5	481.3	480.6	479.8	479.0	478.3
180°	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0

(END OF REPORT)