

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: P231638

Luminaire Tested: **S124-DR-2-40-X-0048-1-U-DD-4-W**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P231638  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P33916)  
Test Lab: INNOVATION CENTER-P3  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: NEO-RAY  
Catalog Number: S124-DR-2-40-X-0048-1-U-DD-4-W  
Description: DEFINE 4 LED LINEAR DIRECT RECESSED LED LUMINAIRE WITH DROP LENS.  
Light Source: 4000K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 3873.6 lumens  
Efficiency: N/A  
Efficacy: 90.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.22 / 1.34  
Luminous Opening: Rectangular w/ Sides (W: 0.31' x L: 3.92' x H: 0.08')  
CIE Type: Direct

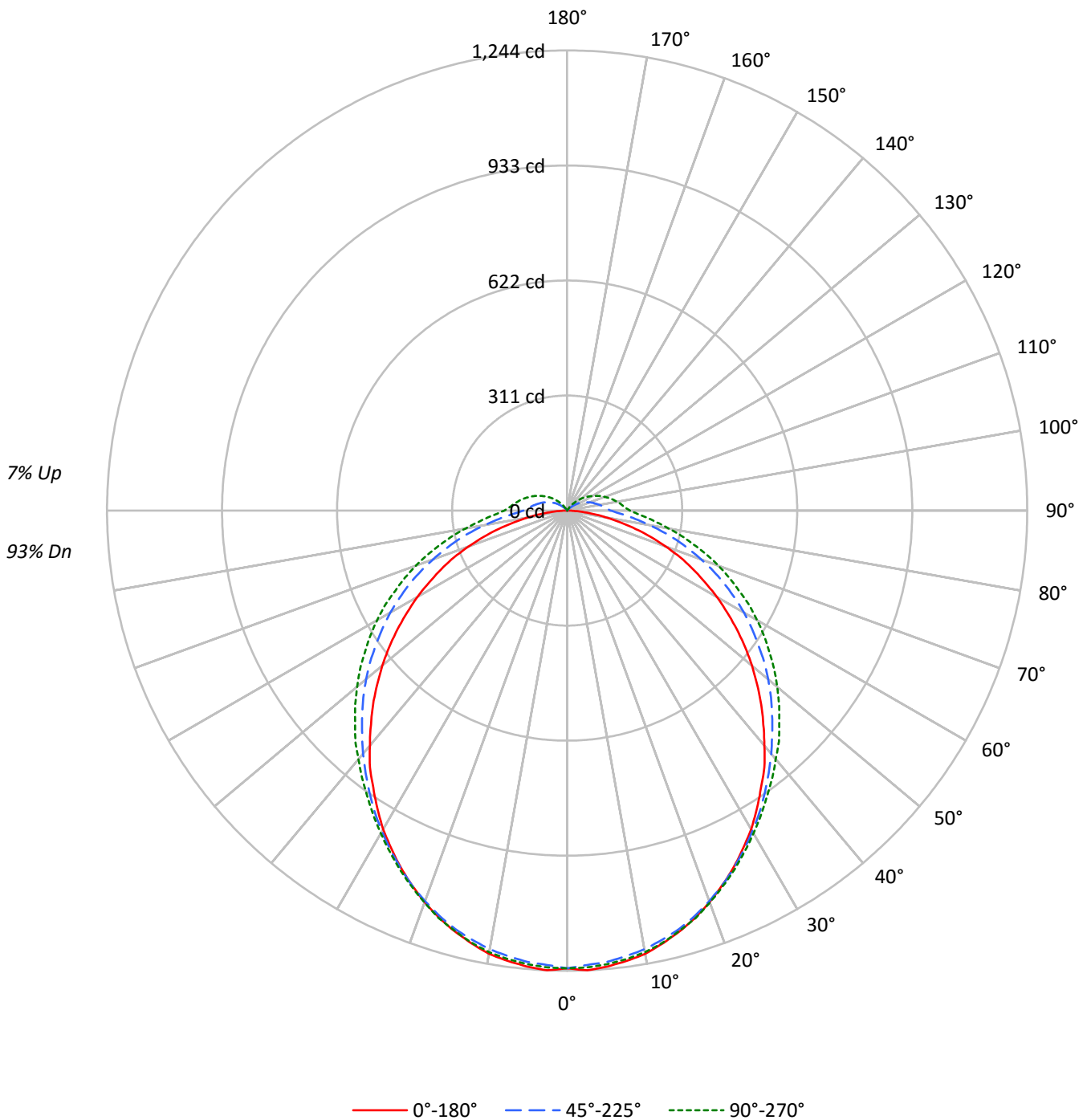
Input Watts (W): 42.6  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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CATALOG NUMBER: S124-DR-2-40-X-0048-1-U-DD-4-W

### 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	117	117	117	117	114	114	114	114	107	107	107	101	101	101	96	96	96	93
1	106	101	96	92	103	98	93	90	92	89	86	87	84	82	82	80	78	76
2	96	87	80	74	93	85	78	72	80	75	70	76	71	67	72	68	65	62
3	87	76	68	61	84	74	66	60	70	64	58	67	61	56	63	58	54	52
4	80	67	58	51	77	66	57	51	62	55	49	59	53	48	56	51	47	44
5	73	60	51	44	71	59	50	44	56	48	43	53	47	41	51	45	40	38
6	68	54	45	38	65	53	44	38	50	43	37	48	41	36	46	40	35	33
7	63	49	40	34	61	48	40	34	46	38	33	44	37	32	42	36	31	29
8	58	45	36	30	56	44	36	30	42	35	29	40	34	29	38	33	28	26
9	55	41	33	27	53	40	32	27	39	31	26	37	31	26	35	30	25	24
10	51	38	30	25	50	37	30	24	36	29	24	34	28	24	33	27	23	21

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

	0°	45°	90°
0°	11089	11089	11089
5°	11110	10821	10817
10°	11031	10571	10525
15°	10859	10291	10166
20°	10659	9961	9789
25°	10422	9613	9398
30°	10168	9252	9011
35°	9850	8897	8662
40°	9536	8553	8358
45°	9213	8228	8079
50°	8866	7929	7803
55°	8492	7594	7518
60°	8089	7282	7232
65°	7624	6895	6867
70°	6990	6437	6522
75°	6158	5948	6083
80°	4969	5347	5671
85°	3416	4940	5406



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	116.9	3.0
10°-20°	331.4	8.6
20°-30°	492.5	12.7
30°-40°	583.0	15.1
40°-50°	603.4	15.6
50°-60°	558.5	14.4
60°-70°	454.5	11.7
70°-80°	308.5	8.0
80°-90°	165.9	4.3
90°-100°	98.7	2.5
100°-110°	72.6	1.9
110°-120°	48.1	1.2
120°-130°	26.9	0.7
130°-140°	11.0	0.3
140°-150°	1.8	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	940.8	24.3
0°-40°	1523.8	39.3
0°-60°	2685.7	69.3
0°-90°	3614.5	93.3
90°-120°	219.4	5.7
90°-150°	259.1	6.7
90°-180°	259.0	6.7
0°-180°	3873.6	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1238	1238	1238	1238	1238	
5°	1238	1234	1225	1233	1231	117
15°	1177	1176	1171	1179	1176	332
25°	1065	1069	1066	1074	1071	490
35°	914	924	931	941	942	572
45°	742	762	784	804	811	572
55°	560	593	630	659	668	501
65°	376	420	470	503	512	372
75°	192	244	305	341	354	203
85°	41	101	162	202	216	48
90°	0	56	117	156	170	2
95°	0	44	102	139	151	0
105°	0	27	76	110	122	0
115°	0	11	52	83	94	0
125°	0	1	30	56	65	0
135°	0	0	10	29	36	0
145°	0	0	0	4	10	0
155°	0	0	0	0	0	0
165°	0	0	0	0	0	0
175°	0	0	0	0	0	0
180°	0	0	0	0	0	0



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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	1237.5	1237.5	1237.5	1237.5	1237.5	1237.5	1237.5	1237.5	1237.5	1237.5	1237.5
2.5°	1243.9	1240.7	1237.5	1235.9	1237.5	1239.1	1237.5	1235.9	1232.8	1229.6	1229.6
5°	1237.5	1234.3	1231.2	1231.2	1234.3	1234.3	1232.8	1231.2	1228.0	1224.8	1224.8
7.5°	1228.0	1224.8	1223.2	1223.2	1224.8	1224.8	1224.8	1223.2	1220.1	1215.3	1218.5
10°	1216.9	1213.7	1210.5	1210.5	1212.1	1212.1	1212.1	1210.5	1207.4	1204.2	1205.8
12.5°	1197.8	1194.7	1193.1	1193.1	1194.7	1196.3	1194.7	1194.7	1191.5	1188.3	1189.9
15°	1177.2	1175.6	1172.5	1174.1	1175.6	1177.2	1177.2	1175.6	1172.5	1170.9	1172.5
17.5°	1153.4	1151.8	1150.3	1150.3	1151.8	1153.4	1153.4	1153.4	1150.3	1148.7	1150.3
20°	1126.5	1123.3	1123.3	1124.9	1126.5	1128.0	1128.0	1126.5	1124.9	1123.3	1126.5
22.5°	1096.3	1094.7	1093.1	1094.7	1099.5	1099.5	1101.1	1097.9	1096.3	1096.3	1097.9
25°	1064.6	1063.0	1061.4	1064.6	1067.8	1069.3	1069.3	1069.3	1067.8	1066.2	1069.3
27.5°	1029.7	1029.7	1026.5	1029.7	1034.4	1036.0	1036.0	1036.0	1034.4	1034.4	1036.0
30°	994.8	993.2	990.0	994.8	997.9	1002.7	1002.7	1002.7	1001.1	1001.1	1004.3
32.5°	955.1	955.1	953.5	958.3	963.0	966.2	966.2	966.2	964.6	967.8	971.0
35°	913.9	912.3	913.9	917.0	921.8	926.5	928.1	928.1	928.1	931.3	934.5
37.5°	875.8	871.0	872.6	877.4	882.1	886.9	890.1	888.5	890.1	894.8	898.0
40°	829.8	828.2	831.4	837.7	842.5	847.2	848.8	850.4	853.6	858.3	863.1
42.5°	785.3	786.9	788.5	796.5	801.2	807.6	809.1	812.3	815.5	820.2	826.6
45°	742.5	740.9	745.7	750.4	758.4	764.7	769.5	771.1	777.4	783.8	788.5
47.5°	696.5	699.7	699.7	709.2	718.7	725.1	728.2	733.0	739.3	747.3	752.0
50°	652.1	652.1	658.4	666.4	674.3	682.2	687.0	693.3	701.3	709.2	715.5
52.5°	606.1	607.7	612.4	621.9	631.4	639.4	647.3	655.2	661.6	671.1	677.5
55°	560.1	561.6	569.6	579.1	588.6	598.1	606.1	614.0	623.5	629.9	637.8
57.5°	512.5	515.6	525.1	534.7	545.8	553.7	564.8	574.3	583.9	591.8	601.3
60°	468.0	469.6	477.6	490.2	498.2	510.9	522.0	531.5	541.0	552.1	560.1
62.5°	420.4	423.6	433.1	444.2	455.3	468.0	479.1	490.2	499.8	510.9	518.8
65°	376.0	379.2	387.1	398.2	412.5	426.8	437.9	447.4	458.5	469.6	477.6
67.5°	331.6	334.8	342.7	353.8	368.1	380.8	395.1	406.2	417.3	428.4	437.9
70°	282.4	287.2	296.7	311.0	323.7	337.9	350.6	363.3	374.4	385.5	395.1
72.5°	236.4	241.2	253.8	266.5	280.8	295.1	309.4	320.5	334.8	344.3	353.8
75°	192.0	198.3	209.4	222.1	236.4	252.3	265.0	280.8	293.5	304.6	312.6
77.5°	147.5	155.5	166.6	180.9	195.1	211.0	225.3	238.0	252.3	265.0	274.5
80°	107.9	114.2	126.9	141.2	158.7	172.9	187.2	201.5	214.2	225.3	238.0
82.5°	73.0	79.3	92.0	106.3	122.2	138.0	153.9	166.6	179.3	192.0	203.1
85°	41.3	49.2	61.9	76.2	93.6	107.9	122.2	136.4	149.1	161.8	172.9
87.5°	17.5	25.4	38.1	52.4	66.6	82.5	96.8	111.1	123.8	136.4	146.0
90°	0.0	7.9	19.0	33.3	49.2	63.5	77.7	92.0	104.7	117.4	126.9
92.5°	0.0	4.8	14.3	28.6	42.8	57.1	69.8	84.1	95.2	107.9	117.4
95°	0.0	3.2	11.1	23.8	38.1	50.8	65.0	77.7	90.4	101.5	111.1
97.5°	0.0	1.6	9.5	20.6	33.3	46.0	60.3	73.0	84.1	95.2	104.7
100°	0.0	0.0	6.3	17.5	28.6	41.3	53.9	66.6	77.7	88.8	98.4
102.5°	0.0	1.6	3.2	14.3	25.4	38.1	49.2	61.9	73.0	82.5	92.0
105°	0.0	0.0	1.6	9.5	20.6	33.3	44.4	55.5	66.6	76.2	85.7
107.5°	0.0	0.0	0.0	6.3	17.5	28.6	39.7	50.8	60.3	71.4	79.3
110°	0.0	0.0	0.0	3.2	12.7	23.8	34.9	44.4	55.5	65.0	73.0



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**CANDELA DISTRIBUTION (continued):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
112.5°	0.0	0.0	0.0	1.6	9.5	19.0	30.1	39.7	49.2	58.7	66.6
115°	0.0	1.6	1.6	0.0	6.3	15.9	25.4	34.9	44.4	52.4	60.3
117.5°	0.0	0.0	0.0	0.0	3.2	11.1	20.6	30.1	38.1	47.6	53.9
120°	0.0	0.0	0.0	0.0	1.6	7.9	15.9	25.4	33.3	41.3	49.2
122.5°	0.0	0.0	0.0	0.0	0.0	4.8	11.1	19.0	28.6	36.5	42.8
125°	0.0	0.0	0.0	0.0	0.0	1.6	7.9	14.3	22.2	30.1	36.5
127.5°	0.0	0.0	0.0	0.0	0.0	0.0	3.2	11.1	17.5	23.8	30.1
130°	0.0	0.0	0.0	0.0	0.0	0.0	1.6	6.3	12.7	19.0	25.4
132.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2	7.9	14.3	19.0
135°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	3.2	9.5	14.3
137.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	4.8	9.5
140°	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	4.8
142.5°	1.6	1.6	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6
145°	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
147.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
152.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
155°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
157.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
162.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
167.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
172.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
177.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180°	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):**

	55°	60°	65°	70°	75°	80°	85°	90°
0°	1237.5	1237.5	1237.5	1237.5	1237.5	1237.5	1237.5	1237.5
2.5°	1232.8	1237.5	1237.5	1237.5	1237.5	1237.5	1237.5	1235.9
5°	1229.6	1232.8	1232.8	1232.8	1232.8	1232.8	1232.8	1231.2
7.5°	1221.6	1224.8	1226.4	1226.4	1226.4	1226.4	1224.8	1223.2
10°	1210.5	1212.1	1213.7	1213.7	1213.7	1213.7	1212.1	1212.1
12.5°	1194.7	1196.3	1197.8	1197.8	1197.8	1197.8	1196.3	1196.3
15°	1175.6	1177.2	1178.8	1178.8	1178.8	1178.8	1177.2	1175.6
17.5°	1155.0	1156.6	1156.6	1156.6	1156.6	1155.0	1153.4	1155.0
20°	1128.0	1129.6	1131.2	1131.2	1131.2	1131.2	1128.0	1128.0
22.5°	1102.7	1104.2	1104.2	1102.7	1104.2	1102.7	1101.1	1099.5
25°	1070.9	1072.5	1074.1	1074.1	1075.7	1074.1	1070.9	1070.9
27.5°	1039.2	1042.4	1040.8	1040.8	1042.4	1040.8	1039.2	1039.2
30°	1007.5	1009.0	1009.0	1009.0	1010.6	1010.6	1007.5	1007.5
32.5°	972.6	974.1	975.7	977.3	977.3	977.3	975.7	975.7
35°	937.7	939.2	940.8	940.8	944.0	945.6	944.0	942.4
37.5°	901.2	904.3	907.5	909.1	909.1	910.7	910.7	910.7
40°	867.8	869.4	872.6	875.8	875.8	879.0	877.4	877.4
42.5°	829.8	836.1	837.7	844.0	844.0	844.0	844.0	847.2
45°	794.9	798.0	802.8	806.0	809.1	809.1	809.1	810.7
47.5°	760.0	764.7	766.3	771.1	774.2	775.8	775.8	777.4
50°	721.9	726.6	733.0	736.2	737.7	739.3	740.9	740.9
52.5°	683.8	690.2	694.9	699.7	701.3	702.8	702.8	706.0
55°	645.7	652.1	656.8	661.6	666.4	667.9	667.9	667.9
57.5°	609.2	614.0	618.8	625.1	626.7	628.3	631.4	631.4
60°	568.0	574.3	582.3	585.4	590.2	591.8	591.8	593.4
62.5°	528.3	536.3	541.0	545.8	550.5	553.7	553.7	555.3
65°	485.5	493.4	501.4	504.5	509.3	512.5	514.0	512.5
67.5°	445.8	455.3	460.1	466.4	469.6	471.2	474.4	474.4
70°	406.2	412.5	420.4	423.6	428.4	430.0	433.1	434.7
72.5°	364.9	371.3	377.6	383.9	388.7	390.3	395.1	395.1
75°	323.7	333.2	337.9	344.3	349.0	352.2	353.8	353.8
77.5°	284.0	293.5	299.9	306.2	311.0	314.1	315.7	317.3
80°	245.9	255.4	263.4	269.7	272.9	276.1	277.6	279.2
82.5°	214.2	220.5	228.5	236.4	239.6	242.7	244.3	244.3
85°	182.5	192.0	199.9	204.7	209.4	212.6	214.2	215.8
87.5°	155.5	165.0	171.3	177.7	182.5	187.2	188.8	188.8
90°	136.4	146.0	152.3	158.7	163.4	166.6	168.2	169.8
92.5°	126.9	134.9	142.8	149.1	152.3	155.5	158.7	158.7
95°	120.6	128.5	136.4	141.2	146.0	149.1	150.7	150.7
97.5°	114.2	122.2	128.5	134.9	139.6	141.2	142.8	144.4
100°	107.9	114.2	122.2	126.9	131.7	134.9	136.4	136.4
102.5°	101.5	107.9	115.8	120.6	123.8	126.9	128.5	130.1
105°	93.6	101.5	107.9	112.6	117.4	120.6	122.2	122.2
107.5°	87.3	95.2	101.5	106.3	111.1	112.6	114.2	115.8
110°	80.9	87.3	95.2	100.0	103.1	106.3	107.9	107.9





TEST NUMBER: P231638

CATALOG NUMBER: S124-DR-2-40-X-0048-1-U-DD-4-W

**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°
112.5°	74.6	80.9	87.3	92.0	95.2	98.4	100.0	101.5
115°	68.2	74.6	80.9	85.7	88.8	92.0	93.6	93.6
117.5°	61.9	68.2	74.6	77.7	80.9	84.1	85.7	85.7
120°	55.5	61.9	66.6	71.4	74.6	77.7	77.7	79.3
122.5°	49.2	55.5	60.3	65.0	68.2	69.8	71.4	71.4
125°	42.8	49.2	53.9	57.1	60.3	63.5	63.5	65.0
127.5°	36.5	41.3	46.0	50.8	53.9	55.5	57.1	57.1
130°	30.1	34.9	39.7	44.4	46.0	47.6	49.2	50.8
132.5°	23.8	28.6	33.3	36.5	39.7	41.3	42.8	42.8
135°	19.0	23.8	27.0	30.1	33.3	34.9	34.9	36.5
137.5°	14.3	17.5	20.6	23.8	25.4	27.0	28.6	28.6
140°	7.9	11.1	14.3	17.5	19.0	20.6	22.2	22.2
142.5°	3.2	6.3	7.9	11.1	12.7	14.3	15.9	15.9
145°	0.0	1.6	3.2	4.8	6.3	7.9	9.5	9.5
147.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
152.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
155°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
157.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
162.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
167.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
172.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
177.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)