

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: P231635

Luminaire Tested: **S124-DR-2-27-X-0048-1-U-DD-4-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P231635
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-2-27-X-0048-1-U-DD-4-W
Description: DEFINE 4 LED LINEAR DIRECT RECESSED LED LUMINAIRE WITH DROP LENS.
Light Source: 2700K CCT, 90 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

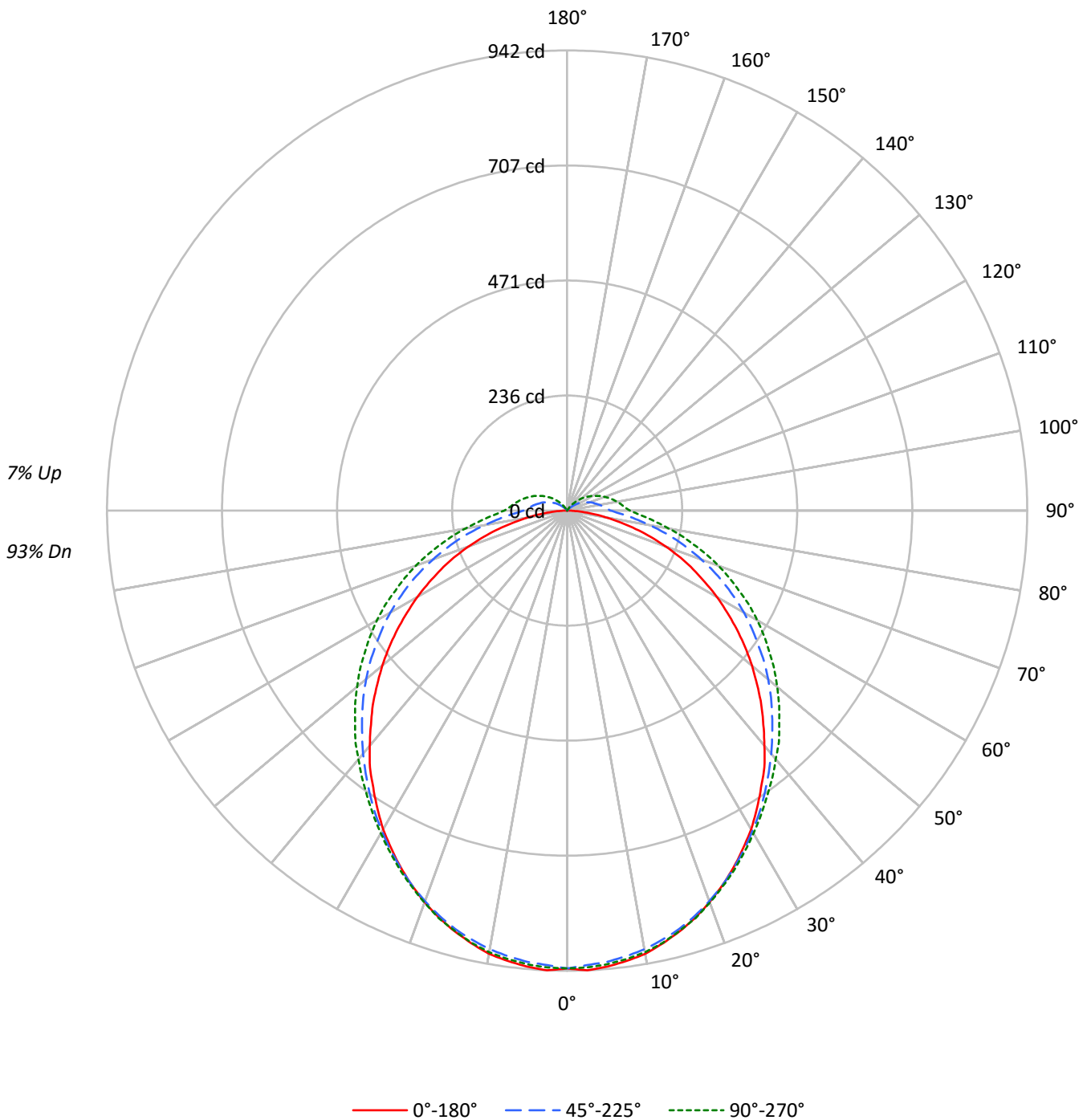
Lumens per Lamp: N/A
Luminaire Lumens: 2933.4 lumens
Efficiency: N/A
Efficacy: 68.9 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.21 / 1.34
Luminous Opening: Rectangular w/ Sides (W: 0.31' x L: 3.92' x H: 0.08')
CIE Type: Direct

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-2-27-X-0048-1-U-DD-4-W

Luminous Intensity Polar Plot





TEST NUMBER: P231635

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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°	8398	8398	8398
5°	8414	8194	8192
10°	8353	8005	7970
15°	8223	7793	7699
20°	8072	7543	7413
25°	7893	7280	7117
30°	7700	7006	6824
35°	7460	6738	6560
40°	7222	6478	6329
45°	6977	6231	6119
50°	6714	6005	5909
55°	6430	5751	5693
60°	6126	5515	5477
65°	5775	5221	5200
70°	5295	4876	4939
75°	4664	4505	4606
80°	3762	4048	4296
85°	2580	3744	4093



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	88.5	3.0
10°-20°	251.0	8.6
20°-30°	372.9	12.7
30°-40°	441.5	15.1
40°-50°	456.9	15.6
50°-60°	423.0	14.4
60°-70°	344.2	11.7
70°-80°	233.6	8.0
80°-90°	125.6	4.3
90°-100°	74.7	2.5
100°-110°	55.0	1.9
110°-120°	36.4	1.2
120°-130°	20.4	0.7
130°-140°	8.3	0.3
140°-150°	1.3	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	712.4	24.3
0°-40°	1154.0	39.3
0°-60°	2033.9	69.3
0°-90°	2737.2	93.3
90°-120°	166.1	5.7
90°-150°	196.2	6.7
90°-180°	196.0	6.7
0°-180°	2933.4	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	937	937	937	937	937	
5°	937	935	928	934	932	89
15°	892	891	887	893	890	251
25°	806	809	807	813	811	371
35°	692	700	705	712	714	433
45°	562	577	594	609	614	433
55°	424	449	477	499	506	379
65°	285	318	356	381	388	282
75°	145	185	231	258	268	154
85°	31	76	123	153	163	36
90°	0	43	89	118	129	2
95°	0	34	77	105	114	0
105°	0	20	58	84	92	0
115°	0	8	40	63	71	0
125°	0	1	23	42	49	0
135°	0	0	7	22	28	0
145°	0	0	0	3	7	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



TEST NUMBER: P231635

CATALOG NUMBER: S124-DR-2-27-X-0048-1-U-DD-4-W

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	937.2	937.2	937.2	937.2	937.2	937.2	937.2	937.2	937.2	937.2	937.2
2.5°	942.0	939.6	937.2	936.0	937.2	938.4	937.2	936.0	933.6	931.2	931.2
5°	937.2	934.8	932.4	932.4	934.8	934.8	933.6	932.4	929.9	927.5	927.5
7.5°	929.9	927.5	926.3	926.3	927.5	927.5	927.5	926.3	923.9	920.3	922.7
10°	921.5	919.1	916.7	916.7	917.9	917.9	917.9	916.7	914.3	911.9	913.1
12.5°	907.1	904.7	903.5	903.5	904.7	905.9	904.7	904.7	902.3	899.9	901.1
15°	891.5	890.3	887.9	889.1	890.3	891.5	891.5	890.3	887.9	886.7	887.9
17.5°	873.5	872.3	871.1	871.1	872.3	873.5	873.5	873.5	871.1	869.9	871.1
20°	853.1	850.7	850.7	851.9	853.1	854.3	854.3	853.1	851.9	850.7	853.1
22.5°	830.2	829.0	827.8	829.0	832.6	832.6	833.8	831.4	830.2	830.2	831.4
25°	806.2	805.0	803.8	806.2	808.6	809.8	809.8	809.8	808.6	807.4	809.8
27.5°	779.8	779.8	777.4	779.8	783.4	784.6	784.6	784.6	783.4	783.4	784.6
30°	753.3	752.1	749.7	753.3	755.7	759.3	759.3	759.3	758.1	758.1	760.5
32.5°	723.3	723.3	722.1	725.7	729.3	731.7	731.7	731.7	730.5	732.9	735.3
35°	692.1	690.9	692.1	694.5	698.1	701.7	702.9	702.9	702.9	705.3	707.7
37.5°	663.2	659.6	660.8	664.4	668.0	671.6	674.0	672.8	674.0	677.6	680.0
40°	628.4	627.2	629.6	634.4	638.0	641.6	642.8	644.0	646.4	650.0	653.6
42.5°	594.7	595.9	597.1	603.1	606.7	611.6	612.8	615.2	617.6	621.2	626.0
45°	562.3	561.1	564.7	568.3	574.3	579.1	582.7	583.9	588.7	593.5	597.1
47.5°	527.5	529.9	529.9	537.1	544.3	549.1	551.5	555.1	559.9	565.9	569.5
50°	493.8	493.8	498.6	504.6	510.6	516.6	520.2	525.0	531.1	537.1	541.9
52.5°	459.0	460.2	463.8	471.0	478.2	484.2	490.2	496.2	501.0	508.2	513.0
55°	424.1	425.3	431.3	438.5	445.8	453.0	459.0	465.0	472.2	477.0	483.0
57.5°	388.1	390.5	397.7	404.9	413.3	419.3	427.7	434.9	442.1	448.2	455.4
60°	354.4	355.6	361.6	371.3	377.3	386.9	395.3	402.5	409.7	418.1	424.1
62.5°	318.4	320.8	328.0	336.4	344.8	354.4	362.8	371.3	378.5	386.9	392.9
65°	284.8	287.2	293.2	301.6	312.4	323.2	331.6	338.8	347.2	355.6	361.6
67.5°	251.1	253.5	259.5	267.9	278.7	288.4	299.2	307.6	316.0	324.4	331.6
70°	213.9	217.5	224.7	235.5	245.1	255.9	265.5	275.1	283.6	292.0	299.2
72.5°	179.0	182.6	192.2	201.8	212.7	223.5	234.3	242.7	253.5	260.7	267.9
75°	145.4	150.2	158.6	168.2	179.0	191.0	200.6	212.7	222.3	230.7	236.7
77.5°	111.7	117.7	126.2	137.0	147.8	159.8	170.6	180.2	191.0	200.6	207.9
80°	81.7	86.5	96.1	106.9	120.1	131.0	141.8	152.6	162.2	170.6	180.2
82.5°	55.3	60.1	69.7	80.5	92.5	104.5	116.5	126.2	135.8	145.4	153.8
85°	31.2	37.2	46.9	57.7	70.9	81.7	92.5	103.3	112.9	122.6	131.0
87.5°	13.2	19.2	28.8	39.6	50.5	62.5	73.3	84.1	93.7	103.3	110.5
90°	0.0	6.0	14.4	25.2	37.2	48.1	58.9	69.7	79.3	88.9	96.1
92.5°	0.0	3.6	10.8	21.6	32.4	43.3	52.9	63.7	72.1	81.7	88.9
95°	0.0	2.4	8.4	18.0	28.8	38.4	49.3	58.9	68.5	76.9	84.1
97.5°	0.0	1.2	7.2	15.6	25.2	34.8	45.7	55.3	63.7	72.1	79.3
100°	0.0	0.0	4.8	13.2	21.6	31.2	40.9	50.5	58.9	67.3	74.5
102.5°	0.0	1.2	2.4	10.8	19.2	28.8	37.2	46.9	55.3	62.5	69.7
105°	0.0	0.0	1.2	7.2	15.6	25.2	33.6	42.1	50.5	57.7	64.9
107.5°	0.0	0.0	0.0	4.8	13.2	21.6	30.0	38.4	45.7	54.1	60.1
110°	0.0	0.0	0.0	2.4	9.6	18.0	26.4	33.6	42.1	49.3	55.3



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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	1.2	7.2	14.4	22.8	30.0	37.2	44.5	50.5
115°	0.0	1.2	1.2	0.0	4.8	12.0	19.2	26.4	33.6	39.6	45.7
117.5°	0.0	0.0	0.0	0.0	2.4	8.4	15.6	22.8	28.8	36.0	40.9
120°	0.0	0.0	0.0	0.0	1.2	6.0	12.0	19.2	25.2	31.2	37.2
122.5°	0.0	0.0	0.0	0.0	0.0	3.6	8.4	14.4	21.6	27.6	32.4
125°	0.0	0.0	0.0	0.0	0.0	1.2	6.0	10.8	16.8	22.8	27.6
127.5°	0.0	0.0	0.0	0.0	0.0	0.0	2.4	8.4	13.2	18.0	22.8
130°	0.0	0.0	0.0	0.0	0.0	0.0	1.2	4.8	9.6	14.4	19.2
132.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	6.0	10.8	14.4
135°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	2.4	7.2	10.8
137.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	3.6	7.2
140°	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	3.6
142.5°	1.2	1.2	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2
145°	0.0	1.2	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



TEST NUMBER: P231635

CATALOG NUMBER: S124-DR-2-27-X-0048-1-U-DD-4-W

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°
0°	937.2	937.2	937.2	937.2	937.2	937.2	937.2	937.2
2.5°	933.6	937.2	937.2	937.2	937.2	937.2	937.2	936.0
5°	931.2	933.6	933.6	933.6	933.6	933.6	933.6	932.4
7.5°	925.1	927.5	928.7	928.7	928.7	928.7	927.5	926.3
10°	916.7	917.9	919.1	919.1	919.1	919.1	917.9	917.9
12.5°	904.7	905.9	907.1	907.1	907.1	907.1	905.9	905.9
15°	890.3	891.5	892.7	892.7	892.7	892.7	891.5	890.3
17.5°	874.7	875.9	875.9	875.9	875.9	874.7	873.5	874.7
20°	854.3	855.5	856.7	856.7	856.7	856.7	854.3	854.3
22.5°	835.0	836.2	836.2	835.0	836.2	835.0	833.8	832.6
25°	811.0	812.2	813.4	813.4	814.6	813.4	811.0	811.0
27.5°	787.0	789.4	788.2	788.2	789.4	788.2	787.0	787.0
30°	762.9	764.1	764.1	764.1	765.3	765.3	762.9	762.9
32.5°	736.5	737.7	738.9	740.1	740.1	740.1	738.9	738.9
35°	710.1	711.3	712.5	712.5	714.9	716.1	714.9	713.7
37.5°	682.4	684.8	687.2	688.5	688.5	689.7	689.7	689.7
40°	657.2	658.4	660.8	663.2	663.2	665.6	664.4	664.4
42.5°	628.4	633.2	634.4	639.2	639.2	639.2	639.2	641.6
45°	601.9	604.3	608.0	610.4	612.8	612.8	612.8	614.0
47.5°	575.5	579.1	580.3	583.9	586.3	587.5	587.5	588.7
50°	546.7	550.3	555.1	557.5	558.7	559.9	561.1	561.1
52.5°	517.8	522.6	526.3	529.9	531.1	532.3	532.3	534.7
55°	489.0	493.8	497.4	501.0	504.6	505.8	505.8	505.8
57.5°	461.4	465.0	468.6	473.4	474.6	475.8	478.2	478.2
60°	430.1	434.9	440.9	443.3	447.0	448.2	448.2	449.4
62.5°	400.1	406.1	409.7	413.3	416.9	419.3	419.3	420.5
65°	367.7	373.7	379.7	382.1	385.7	388.1	389.3	388.1
67.5°	337.6	344.8	348.4	353.2	355.6	356.8	359.2	359.2
70°	307.6	312.4	318.4	320.8	324.4	325.6	328.0	329.2
72.5°	276.3	281.1	286.0	290.8	294.4	295.6	299.2	299.2
75°	245.1	252.3	255.9	260.7	264.3	266.7	267.9	267.9
77.5°	215.1	222.3	227.1	231.9	235.5	237.9	239.1	240.3
80°	186.2	193.4	199.4	204.3	206.7	209.1	210.3	211.5
82.5°	162.2	167.0	173.0	179.0	181.4	183.8	185.0	185.0
85°	138.2	145.4	151.4	155.0	158.6	161.0	162.2	163.4
87.5°	117.7	125.0	129.8	134.6	138.2	141.8	143.0	143.0
90°	103.3	110.5	115.3	120.1	123.8	126.2	127.4	128.6
92.5°	96.1	102.1	108.1	112.9	115.3	117.7	120.1	120.1
95°	91.3	97.3	103.3	106.9	110.5	112.9	114.1	114.1
97.5°	86.5	92.5	97.3	102.1	105.7	106.9	108.1	109.3
100°	81.7	86.5	92.5	96.1	99.7	102.1	103.3	103.3
102.5°	76.9	81.7	87.7	91.3	93.7	96.1	97.3	98.5
105°	70.9	76.9	81.7	85.3	88.9	91.3	92.5	92.5
107.5°	66.1	72.1	76.9	80.5	84.1	85.3	86.5	87.7
110°	61.3	66.1	72.1	75.7	78.1	80.5	81.7	81.7



TEST NUMBER: P231635

CATALOG NUMBER: S124-DR-2-27-X-0048-1-U-DD-4-W

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°
112.5°	56.5	61.3	66.1	69.7	72.1	74.5	75.7	76.9
115°	51.7	56.5	61.3	64.9	67.3	69.7	70.9	70.9
117.5°	46.9	51.7	56.5	58.9	61.3	63.7	64.9	64.9
120°	42.1	46.9	50.5	54.1	56.5	58.9	58.9	60.1
122.5°	37.2	42.1	45.7	49.3	51.7	52.9	54.1	54.1
125°	32.4	37.2	40.9	43.3	45.7	48.1	48.1	49.3
127.5°	27.6	31.2	34.8	38.4	40.9	42.1	43.3	43.3
130°	22.8	26.4	30.0	33.6	34.8	36.0	37.2	38.4
132.5°	18.0	21.6	25.2	27.6	30.0	31.2	32.4	32.4
135°	14.4	18.0	20.4	22.8	25.2	26.4	26.4	27.6
137.5°	10.8	13.2	15.6	18.0	19.2	20.4	21.6	21.6
140°	6.0	8.4	10.8	13.2	14.4	15.6	16.8	16.8
142.5°	2.4	4.8	6.0	8.4	9.6	10.8	12.0	12.0
145°	0.0	1.2	2.4	3.6	4.8	6.0	7.2	7.2
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)