

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: P231632

Luminaire Tested: **S124-DR-1-30-X-0048-1-U-DD-4-W**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P231632  
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-1-30-X-0048-1-U-DD-4-W  
Description: DEFINE 4 LED LINEAR DIRECT RECESSED LED LUMINAIRE WITH DROP LENS.  
Light Source: 3000K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

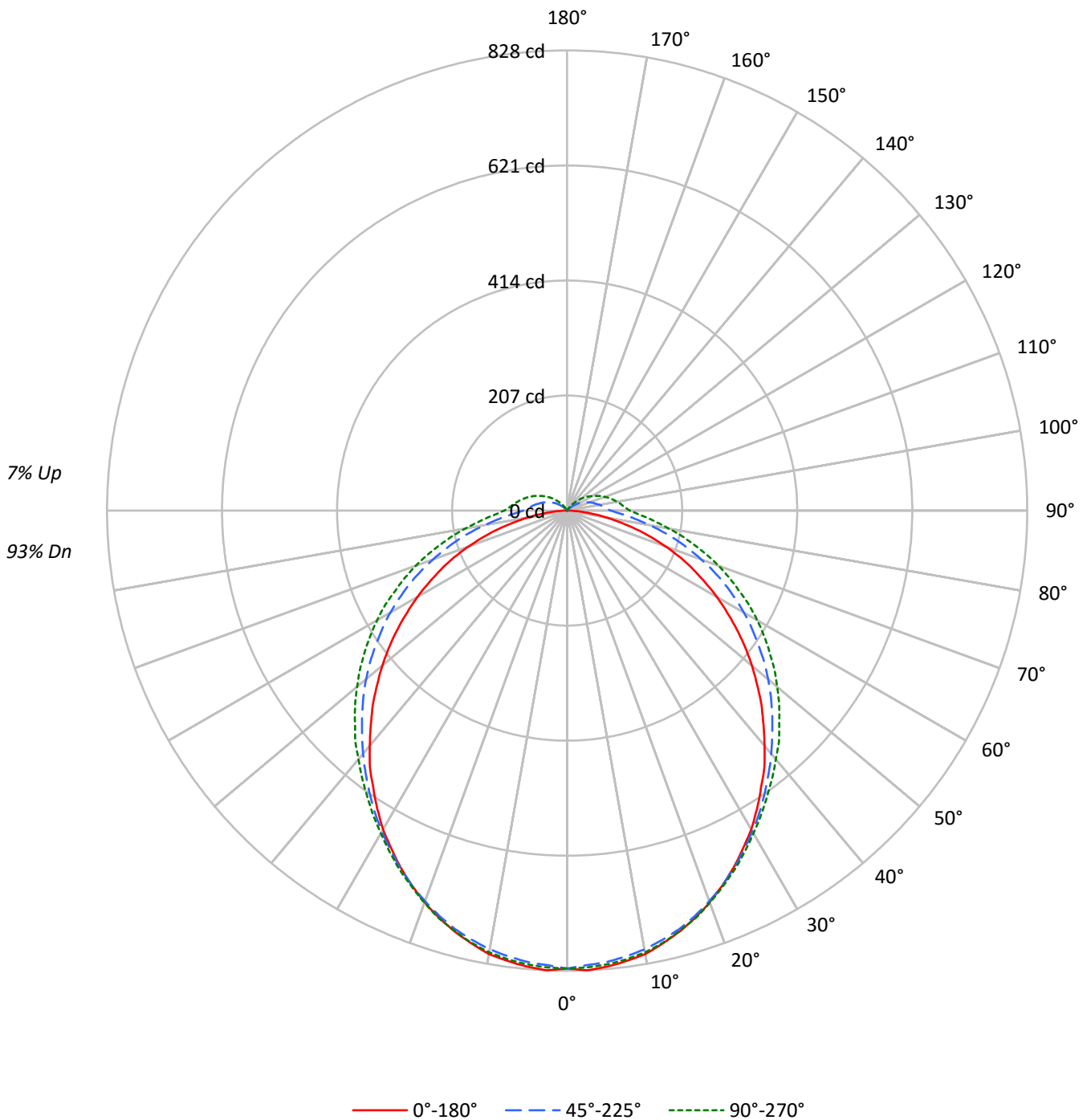
Lumens per Lamp: N/A  
Luminaire Lumens: 2578.9 lumens  
Efficiency: N/A  
Efficacy: 92.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.21 / 1.34  
Luminous Opening: Rectangular w/ Sides (W: 0.31' x L: 3.92' x H: 0.08')  
CIE Type: Direct

Input Watts (W): 27.9  
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



TEST NUMBER: P231632  
CATALOG NUMBER: S124-DR-1-30-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°	7383	7383	7383
5°	7397	7204	7202
10°	7344	7038	7007
15°	7230	6851	6768
20°	7097	6631	6517
25°	6939	6400	6257
30°	6770	6160	5999
35°	6558	5923	5766
40°	6348	5694	5564
45°	6133	5478	5379
50°	5902	5280	5195
55°	5654	5055	5006
60°	5386	4849	4814
65°	5076	4591	4572
70°	4653	4286	4342
75°	4099	3960	4049
80°	3306	3560	3776
85°	2274	3289	3600



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	77.8	3.0
10°-20°	220.6	8.6
20°-30°	327.9	12.7
30°-40°	388.2	15.1
40°-50°	401.7	15.6
50°-60°	371.8	14.4
60°-70°	302.6	11.7
70°-80°	205.4	8.0
80°-90°	110.4	4.3
90°-100°	65.7	2.5
100°-110°	48.3	1.9
110°-120°	32.0	1.2
120°-130°	17.9	0.7
130°-140°	7.3	0.3
140°-150°	1.2	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	626.3	24.3
0°-40°	1014.5	39.3
0°-60°	1788.1	69.3
0°-90°	2406.4	93.3
90°-120°	146.1	5.7
90°-150°	172.5	6.7
90°-180°	172.0	6.7
0°-180°	2578.9	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	824	824	824	824	824	
5°	824	822	815	821	820	78
15°	784	783	780	785	783	221
25°	709	711	710	715	713	326
35°	608	615	620	626	627	381
45°	494	507	522	536	540	381
55°	373	395	419	439	445	333
65°	250	279	313	335	341	248
75°	128	163	203	227	236	135
85°	28	67	108	135	144	32
90°	0	38	78	104	113	2
95°	0	30	68	92	100	0
105°	0	18	51	73	81	0
115°	0	7	35	55	62	0
125°	0	1	20	37	43	0
135°	0	0	6	19	24	0
145°	0	0	0	3	6	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: P231632

CATALOG NUMBER: S124-DR-1-30-X-0048-1-U-DD-4-W

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	823.9	823.9	823.9	823.9	823.9	823.9	823.9	823.9	823.9	823.9	823.9
2.5°	828.1	826.0	823.9	822.8	823.9	825.0	823.9	822.8	820.7	818.6	818.6
5°	823.9	821.8	819.7	819.7	821.8	821.8	820.7	819.7	817.6	815.4	815.4
7.5°	817.6	815.4	814.4	814.4	815.4	815.4	815.4	814.4	812.3	809.1	811.2
10°	810.2	808.1	805.9	805.9	807.0	807.0	807.0	805.9	803.8	801.7	802.8
12.5°	797.5	795.4	794.3	794.3	795.4	796.4	795.4	795.4	793.3	791.2	792.2
15°	783.8	782.7	780.6	781.6	782.7	783.8	783.8	782.7	780.6	779.5	780.6
17.5°	767.9	766.9	765.8	765.8	766.9	767.9	767.9	767.9	765.8	764.7	765.8
20°	750.0	747.8	747.8	748.9	750.0	751.0	751.0	750.0	748.9	747.8	750.0
22.5°	729.9	728.8	727.8	728.8	732.0	732.0	733.1	730.9	729.9	729.9	730.9
25°	708.8	707.7	706.6	708.8	710.9	711.9	711.9	711.9	710.9	709.8	711.9
27.5°	685.5	685.5	683.4	685.5	688.7	689.7	689.7	689.7	688.7	688.7	689.7
30°	662.3	661.2	659.1	662.3	664.4	667.6	667.6	667.6	666.5	666.5	668.6
32.5°	635.9	635.9	634.8	638.0	641.2	643.3	643.3	643.3	642.2	644.3	646.4
35°	608.4	607.4	608.4	610.5	613.7	616.9	617.9	617.9	617.9	620.0	622.1
37.5°	583.1	579.9	581.0	584.1	587.3	590.5	592.6	591.5	592.6	595.7	597.9
40°	552.4	551.4	553.5	557.7	560.9	564.1	565.1	566.2	568.3	571.4	574.6
42.5°	522.9	523.9	525.0	530.3	533.4	537.6	538.7	540.8	542.9	546.1	550.3
45°	494.3	493.3	496.5	499.6	504.9	509.1	512.3	513.4	517.6	521.8	525.0
47.5°	463.7	465.8	465.8	472.2	478.5	482.7	484.8	488.0	492.2	497.5	500.7
50°	434.1	434.1	438.4	443.6	448.9	454.2	457.4	461.6	466.9	472.2	476.4
52.5°	403.5	404.6	407.7	414.1	420.4	425.7	431.0	436.2	440.5	446.8	451.0
55°	372.9	373.9	379.2	385.5	391.9	398.2	403.5	408.8	415.1	419.3	424.6
57.5°	341.2	343.3	349.6	356.0	363.4	368.6	376.0	382.4	388.7	394.0	400.3
60°	311.6	312.7	317.9	326.4	331.7	340.1	347.5	353.9	360.2	367.6	372.9
62.5°	279.9	282.0	288.4	295.8	303.2	311.6	319.0	326.4	332.7	340.1	345.4
65°	250.3	252.5	257.7	265.1	274.6	284.1	291.5	297.9	305.3	312.7	317.9
67.5°	220.8	222.9	228.2	235.5	245.1	253.5	263.0	270.4	277.8	285.2	291.5
70°	188.0	191.2	197.5	207.0	215.5	225.0	233.4	241.9	249.3	256.7	263.0
72.5°	157.4	160.6	169.0	177.5	187.0	196.5	206.0	213.4	222.9	229.2	235.5
75°	127.8	132.0	139.4	147.9	157.4	167.9	176.4	187.0	195.4	202.8	208.1
77.5°	98.2	103.5	110.9	120.4	129.9	140.5	150.0	158.4	167.9	176.4	182.7
80°	71.8	76.1	84.5	94.0	105.6	115.1	124.6	134.1	142.6	150.0	158.4
82.5°	48.6	52.8	61.3	70.8	81.3	91.9	102.5	110.9	119.4	127.8	135.2
85°	27.5	32.7	41.2	50.7	62.3	71.8	81.3	90.8	99.3	107.7	115.1
87.5°	11.6	16.9	25.4	34.9	44.4	54.9	64.4	73.9	82.4	90.8	97.2
90°	0.0	5.3	12.7	22.2	32.7	42.3	51.8	61.3	69.7	78.2	84.5
92.5°	0.0	3.2	9.5	19.0	28.5	38.0	46.5	56.0	63.4	71.8	78.2
95°	0.0	2.1	7.4	15.8	25.4	33.8	43.3	51.8	60.2	67.6	73.9
97.5°	0.0	1.1	6.3	13.7	22.2	30.6	40.1	48.6	56.0	63.4	69.7
100°	0.0	0.0	4.2	11.6	19.0	27.5	35.9	44.4	51.8	59.2	65.5
102.5°	0.0	1.1	2.1	9.5	16.9	25.4	32.7	41.2	48.6	54.9	61.3
105°	0.0	0.0	1.1	6.3	13.7	22.2	29.6	37.0	44.4	50.7	57.0
107.5°	0.0	0.0	0.0	4.2	11.6	19.0	26.4	33.8	40.1	47.5	52.8
110°	0.0	0.0	0.0	2.1	8.5	15.8	23.2	29.6	37.0	43.3	48.6



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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	1.1	6.3	12.7	20.1	26.4	32.7	39.1	44.4
115°	0.0	1.1	1.1	0.0	4.2	10.6	16.9	23.2	29.6	34.9	40.1
117.5°	0.0	0.0	0.0	0.0	2.1	7.4	13.7	20.1	25.4	31.7	35.9
120°	0.0	0.0	0.0	0.0	1.1	5.3	10.6	16.9	22.2	27.5	32.7
122.5°	0.0	0.0	0.0	0.0	0.0	3.2	7.4	12.7	19.0	24.3	28.5
125°	0.0	0.0	0.0	0.0	0.0	1.1	5.3	9.5	14.8	20.1	24.3
127.5°	0.0	0.0	0.0	0.0	0.0	0.0	2.1	7.4	11.6	15.8	20.1
130°	0.0	0.0	0.0	0.0	0.0	0.0	1.1	4.2	8.5	12.7	16.9
132.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	5.3	9.5	12.7
135°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	2.1	6.3	9.5
137.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	3.2	6.3
140°	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	3.2
142.5°	1.1	1.1	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
145°	0.0	1.1	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°	823.9	823.9	823.9	823.9	823.9	823.9	823.9	823.9
2.5°	820.7	823.9	823.9	823.9	823.9	823.9	823.9	822.8
5°	818.6	820.7	820.7	820.7	820.7	820.7	820.7	819.7
7.5°	813.3	815.4	816.5	816.5	816.5	816.5	815.4	814.4
10°	805.9	807.0	808.1	808.1	808.1	808.1	807.0	807.0
12.5°	795.4	796.4	797.5	797.5	797.5	797.5	796.4	796.4
15°	782.7	783.8	784.8	784.8	784.8	784.8	783.8	782.7
17.5°	769.0	770.0	770.0	770.0	770.0	769.0	767.9	769.0
20°	751.0	752.1	753.1	753.1	753.1	753.1	751.0	751.0
22.5°	734.1	735.2	735.2	734.1	735.2	734.1	733.1	732.0
25°	713.0	714.0	715.1	715.1	716.2	715.1	713.0	713.0
27.5°	691.9	694.0	692.9	692.9	694.0	692.9	691.9	691.9
30°	670.7	671.8	671.8	671.8	672.8	672.8	670.7	670.7
32.5°	647.5	648.6	649.6	650.7	650.7	650.7	649.6	649.6
35°	624.3	625.3	626.4	626.4	628.5	629.5	628.5	627.4
37.5°	600.0	602.1	604.2	605.2	605.2	606.3	606.3	606.3
40°	577.8	578.8	581.0	583.1	583.1	585.2	584.1	584.1
42.5°	552.4	556.7	557.7	561.9	561.9	561.9	561.9	564.1
45°	529.2	531.3	534.5	536.6	538.7	538.7	538.7	539.8
47.5°	506.0	509.1	510.2	513.4	515.5	516.5	516.5	517.6
50°	480.6	483.8	488.0	490.1	491.2	492.2	493.3	493.3
52.5°	455.3	459.5	462.6	465.8	466.9	467.9	467.9	470.0
55°	429.9	434.1	437.3	440.5	443.6	444.7	444.7	444.7
57.5°	405.6	408.8	411.9	416.2	417.2	418.3	420.4	420.4
60°	378.1	382.4	387.7	389.8	392.9	394.0	394.0	395.0
62.5°	351.7	357.0	360.2	363.4	366.5	368.6	368.6	369.7
65°	323.2	328.5	333.8	335.9	339.1	341.2	342.2	341.2
67.5°	296.8	303.2	306.3	310.5	312.7	313.7	315.8	315.8
70°	270.4	274.6	279.9	282.0	285.2	286.3	288.4	289.4
72.5°	242.9	247.2	251.4	255.6	258.8	259.8	263.0	263.0
75°	215.5	221.8	225.0	229.2	232.4	234.5	235.5	235.5
77.5°	189.1	195.4	199.6	203.9	207.0	209.1	210.2	211.3
80°	163.7	170.1	175.3	179.6	181.7	183.8	184.8	185.9
82.5°	142.6	146.8	152.1	157.4	159.5	161.6	162.7	162.7
85°	121.5	127.8	133.1	136.3	139.4	141.5	142.6	143.7
87.5°	103.5	109.9	114.1	118.3	121.5	124.6	125.7	125.7
90°	90.8	97.2	101.4	105.6	108.8	110.9	112.0	113.0
92.5°	84.5	89.8	95.1	99.3	101.4	103.5	105.6	105.6
95°	80.3	85.6	90.8	94.0	97.2	99.3	100.3	100.3
97.5°	76.1	81.3	85.6	89.8	93.0	94.0	95.1	96.1
100°	71.8	76.1	81.3	84.5	87.7	89.8	90.8	90.8
102.5°	67.6	71.8	77.1	80.3	82.4	84.5	85.6	86.6
105°	62.3	67.6	71.8	75.0	78.2	80.3	81.3	81.3
107.5°	58.1	63.4	67.6	70.8	73.9	75.0	76.1	77.1
110°	53.9	58.1	63.4	66.5	68.7	70.8	71.8	71.8





TEST NUMBER: P231632

CATALOG NUMBER: S124-DR-1-30-X-0048-1-U-DD-4-W

**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°
112.5°	49.6	53.9	58.1	61.3	63.4	65.5	66.5	67.6
115°	45.4	49.6	53.9	57.0	59.2	61.3	62.3	62.3
117.5°	41.2	45.4	49.6	51.8	53.9	56.0	57.0	57.0
120°	37.0	41.2	44.4	47.5	49.6	51.8	51.8	52.8
122.5°	32.7	37.0	40.1	43.3	45.4	46.5	47.5	47.5
125°	28.5	32.7	35.9	38.0	40.1	42.3	42.3	43.3
127.5°	24.3	27.5	30.6	33.8	35.9	37.0	38.0	38.0
130°	20.1	23.2	26.4	29.6	30.6	31.7	32.7	33.8
132.5°	15.8	19.0	22.2	24.3	26.4	27.5	28.5	28.5
135°	12.7	15.8	18.0	20.1	22.2	23.2	23.2	24.3
137.5°	9.5	11.6	13.7	15.8	16.9	18.0	19.0	19.0
140°	5.3	7.4	9.5	11.6	12.7	13.7	14.8	14.8
142.5°	2.1	4.2	5.3	7.4	8.5	9.5	10.6	10.6
145°	0.0	1.1	2.1	3.2	4.2	5.3	6.3	6.3
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)