

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: P231629

Luminaire Tested: **S124-DR-LO-35-X-0048-1-U-DD-4-W**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P231629  
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-LO-35-X-0048-1-U-DD-4-W  
Description: DEFINE 4 LED LINEAR DIRECT RECESSED LED LUMINAIRE WITH DROP LENS.  
Light Source: 3500K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1320.8 lumens  
Efficiency: N/A  
Efficacy: 97.1 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

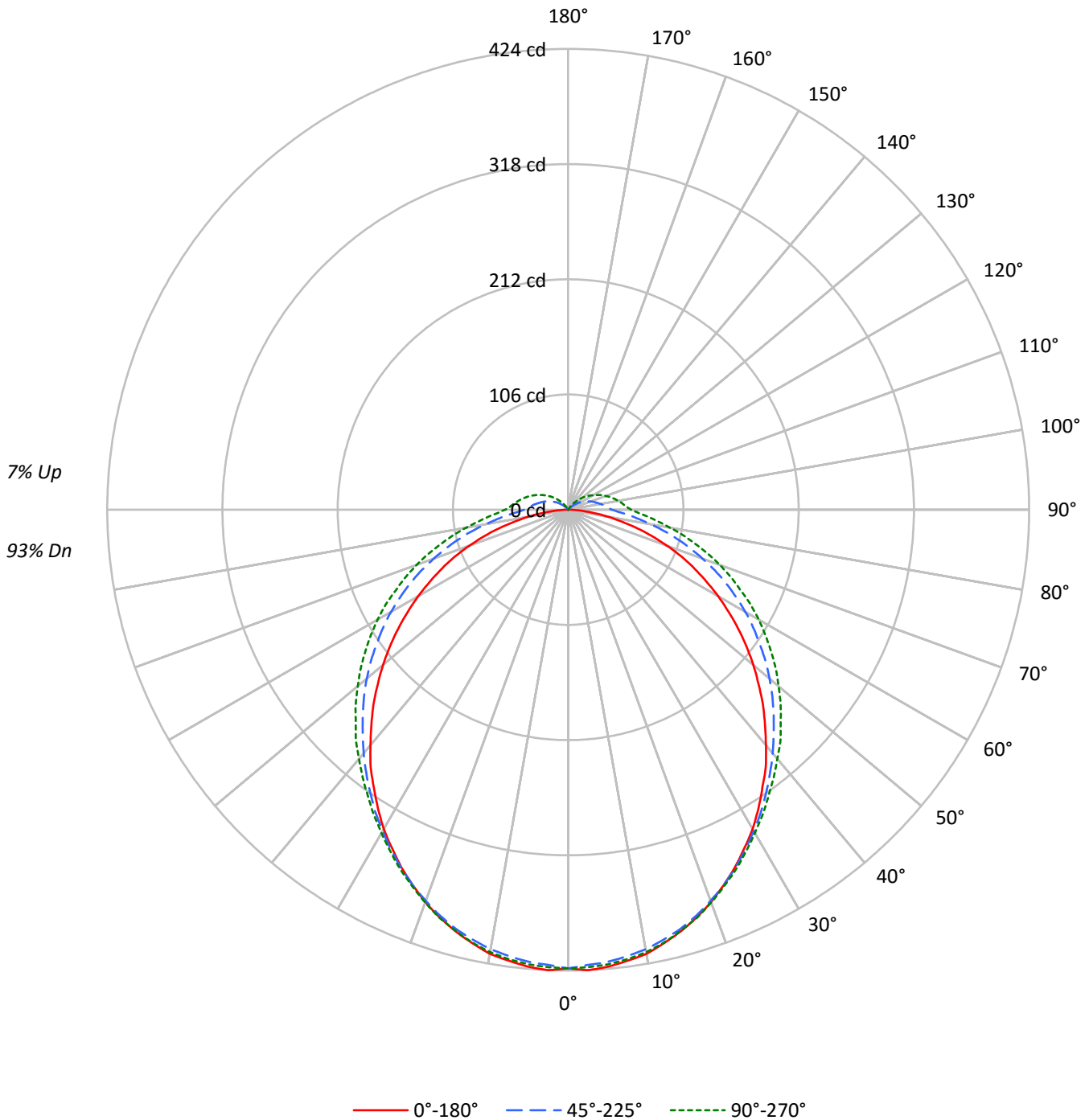
Input Watts (W): 13.6  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



TEST NUMBER: P231629

CATALOG NUMBER: S124-DR-LO-35-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°	3781	3781	3781
5°	3789	3689	3688
10°	3761	3604	3589
15°	3703	3509	3467
20°	3635	3396	3337
25°	3554	3277	3205
30°	3467	3155	3072
35°	3359	3034	2953
40°	3251	2917	2850
45°	3142	2805	2754
50°	3022	2704	2660
55°	2896	2590	2564
60°	2759	2484	2466
65°	2600	2351	2341
70°	2384	2196	2223
75°	2101	2029	2074
80°	1695	1823	1934
85°	1166	1686	1844



TEST NUMBER: P231629

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	39.9	3.0
10°-20°	113.0	8.6
20°-30°	167.9	12.7
30°-40°	198.8	15.1
40°-50°	205.7	15.6
50°-60°	190.4	14.4
60°-70°	155.0	11.7
70°-80°	105.2	8.0
80°-90°	56.6	4.3
90°-100°	33.7	2.5
100°-110°	24.8	1.9
110°-120°	16.4	1.2
120°-130°	9.2	0.7
130°-140°	3.7	0.3
140°-150°	0.6	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	320.8	24.3
0°-40°	519.6	39.3
0°-60°	915.8	69.3
0°-90°	1232.5	93.3
90°-120°	74.8	5.7
90°-150°	88.3	6.7
90°-180°	88.0	6.7
0°-180°	1320.8	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	422	422	422	422	422	
5°	422	421	418	420	420	40
15°	401	401	399	402	401	113
25°	363	364	364	366	365	167
35°	312	315	318	321	321	195
45°	253	260	267	274	276	195
55°	191	202	215	225	228	171
65°	128	143	160	172	175	127
75°	66	83	104	116	121	69
85°	14	34	55	69	74	16
90°	0	19	40	53	58	1
95°	0	15	35	47	51	0
105°	0	9	26	38	42	0
115°	0	4	18	28	32	0
125°	0	0	10	19	22	0
135°	0	0	3	10	12	0
145°	0	0	0	1	3	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: P231629

CATALOG NUMBER: S124-DR-LO-35-X-0048-1-U-DD-4-W

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	422.0	422.0	422.0	422.0	422.0	422.0	422.0	422.0	422.0	422.0	422.0
2.5°	424.1	423.1	422.0	421.4	422.0	422.5	422.0	421.4	420.3	419.3	419.3
5°	422.0	420.9	419.8	419.8	420.9	420.9	420.3	419.8	418.7	417.6	417.6
7.5°	418.7	417.6	417.1	417.1	417.6	417.6	417.6	417.1	416.0	414.4	415.5
10°	414.9	413.9	412.8	412.8	413.3	413.3	413.3	412.8	411.7	410.6	411.2
12.5°	408.4	407.4	406.8	406.8	407.4	407.9	407.4	407.4	406.3	405.2	405.7
15°	401.4	400.9	399.8	400.3	400.9	401.4	401.4	400.9	399.8	399.3	399.8
17.5°	393.3	392.8	392.2	392.2	392.8	393.3	393.3	393.3	392.2	391.7	392.2
20°	384.1	383.0	383.0	383.6	384.1	384.6	384.6	384.1	383.6	383.0	384.1
22.5°	373.8	373.3	372.7	373.3	374.9	374.9	375.4	374.4	373.8	373.8	374.4
25°	363.0	362.5	361.9	363.0	364.1	364.6	364.6	364.6	364.1	363.5	364.6
27.5°	351.1	351.1	350.0	351.1	352.7	353.3	353.3	353.3	352.7	352.7	353.3
30°	339.2	338.7	337.6	339.2	340.3	341.9	341.9	341.9	341.4	341.4	342.4
32.5°	325.7	325.7	325.1	326.8	328.4	329.5	329.5	329.5	328.9	330.0	331.1
35°	311.6	311.1	311.6	312.7	314.3	315.9	316.5	316.5	316.5	317.6	318.6
37.5°	298.6	297.0	297.5	299.2	300.8	302.4	303.5	303.0	303.5	305.1	306.2
40°	282.9	282.4	283.5	285.6	287.3	288.9	289.4	290.0	291.1	292.7	294.3
42.5°	267.8	268.3	268.9	271.6	273.2	275.4	275.9	277.0	278.1	279.7	281.9
45°	253.2	252.6	254.3	255.9	258.6	260.8	262.4	262.9	265.1	267.2	268.9
47.5°	237.5	238.6	238.6	241.8	245.1	247.2	248.3	249.9	252.1	254.8	256.4
50°	222.3	222.3	224.5	227.2	229.9	232.6	234.2	236.4	239.1	241.8	244.0
52.5°	206.7	207.2	208.8	212.1	215.3	218.0	220.7	223.4	225.6	228.8	231.0
55°	191.0	191.5	194.2	197.5	200.7	204.0	206.7	209.4	212.6	214.8	217.5
57.5°	174.7	175.8	179.1	182.3	186.1	188.8	192.6	195.8	199.1	201.8	205.0
60°	159.6	160.1	162.8	167.2	169.9	174.2	178.0	181.2	184.5	188.3	191.0
62.5°	143.4	144.4	147.7	151.5	155.3	159.6	163.4	167.2	170.4	174.2	176.9
65°	128.2	129.3	132.0	135.8	140.7	145.5	149.3	152.6	156.3	160.1	162.8
67.5°	113.1	114.1	116.9	120.6	125.5	129.8	134.7	138.5	142.3	146.1	149.3
70°	96.3	97.9	101.2	106.0	110.4	115.2	119.6	123.9	127.7	131.5	134.7
72.5°	80.6	82.2	86.6	90.9	95.8	100.6	105.5	109.3	114.1	117.4	120.6
75°	65.5	67.6	71.4	75.7	80.6	86.0	90.3	95.8	100.1	103.9	106.6
77.5°	50.3	53.0	56.8	61.7	66.5	72.0	76.8	81.1	86.0	90.3	93.6
80°	36.8	39.0	43.3	48.1	54.1	59.0	63.8	68.7	73.0	76.8	81.1
82.5°	24.9	27.0	31.4	36.2	41.7	47.1	52.5	56.8	61.1	65.5	69.2
85°	14.1	16.8	21.1	26.0	31.9	36.8	41.7	46.5	50.9	55.2	59.0
87.5°	6.0	8.7	13.0	17.9	22.7	28.1	33.0	37.9	42.2	46.5	49.8
90°	0.0	2.7	6.5	11.4	16.8	21.6	26.5	31.4	35.7	40.0	43.3
92.5°	0.0	1.6	4.9	9.7	14.6	19.5	23.8	28.7	32.5	36.8	40.0
95°	0.0	1.1	3.8	8.1	13.0	17.3	22.2	26.5	30.8	34.6	37.9
97.5°	0.0	0.5	3.2	7.0	11.4	15.7	20.6	24.9	28.7	32.5	35.7
100°	0.0	0.0	2.2	6.0	9.7	14.1	18.4	22.7	26.5	30.3	33.5
102.5°	0.0	0.5	1.1	4.9	8.7	13.0	16.8	21.1	24.9	28.1	31.4
105°	0.0	0.0	0.5	3.2	7.0	11.4	15.1	18.9	22.7	26.0	29.2
107.5°	0.0	0.0	0.0	2.2	6.0	9.7	13.5	17.3	20.6	24.3	27.0
110°	0.0	0.0	0.0	1.1	4.3	8.1	11.9	15.1	18.9	22.2	24.9



TEST NUMBER: P231629

CATALOG NUMBER: S124-DR-LO-35-X-0048-1-U-DD-4-W

**CANDELA DISTRIBUTION (continued):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
112.5°	0.0	0.0	0.0	0.5	3.2	6.5	10.3	13.5	16.8	20.0	22.7
115°	0.0	0.5	0.5	0.0	2.2	5.4	8.7	11.9	15.1	17.9	20.6
117.5°	0.0	0.0	0.0	0.0	1.1	3.8	7.0	10.3	13.0	16.2	18.4
120°	0.0	0.0	0.0	0.0	0.5	2.7	5.4	8.7	11.4	14.1	16.8
122.5°	0.0	0.0	0.0	0.0	0.0	1.6	3.8	6.5	9.7	12.4	14.6
125°	0.0	0.0	0.0	0.0	0.0	0.5	2.7	4.9	7.6	10.3	12.4
127.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.1	3.8	6.0	8.1	10.3
130°	0.0	0.0	0.0	0.0	0.0	0.0	0.5	2.2	4.3	6.5	8.7
132.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	2.7	4.9	6.5
135°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.1	3.2	4.9
137.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.6	3.2
140°	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.6
142.5°	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
145°	0.0	0.5	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: P231629

CATALOG NUMBER: S124-DR-LO-35-X-0048-1-U-DD-4-W

**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°
0°	422.0	422.0	422.0	422.0	422.0	422.0	422.0	422.0
2.5°	420.3	422.0	422.0	422.0	422.0	422.0	422.0	421.4
5°	419.3	420.3	420.3	420.3	420.3	420.3	420.3	419.8
7.5°	416.6	417.6	418.2	418.2	418.2	418.2	417.6	417.1
10°	412.8	413.3	413.9	413.9	413.9	413.9	413.3	413.3
12.5°	407.4	407.9	408.4	408.4	408.4	408.4	407.9	407.9
15°	400.9	401.4	402.0	402.0	402.0	402.0	401.4	400.9
17.5°	393.8	394.4	394.4	394.4	394.4	393.8	393.3	393.8
20°	384.6	385.2	385.7	385.7	385.7	385.7	384.6	384.6
22.5°	376.0	376.5	376.5	376.0	376.5	376.0	375.4	374.9
25°	365.2	365.7	366.3	366.3	366.8	366.3	365.2	365.2
27.5°	354.3	355.4	354.9	354.9	355.4	354.9	354.3	354.3
30°	343.5	344.1	344.1	344.1	344.6	344.6	343.5	343.5
32.5°	331.6	332.2	332.7	333.3	333.3	333.3	332.7	332.7
35°	319.7	320.3	320.8	320.8	321.9	322.4	321.9	321.3
37.5°	307.3	308.4	309.4	310.0	310.0	310.5	310.5	310.5
40°	295.9	296.5	297.5	298.6	298.6	299.7	299.2	299.2
42.5°	282.9	285.1	285.6	287.8	287.8	287.8	287.8	288.9
45°	271.0	272.1	273.7	274.8	275.9	275.9	275.9	276.4
47.5°	259.1	260.8	261.3	262.9	264.0	264.5	264.5	265.1
50°	246.2	247.8	249.9	251.0	251.6	252.1	252.6	252.6
52.5°	233.2	235.3	237.0	238.6	239.1	239.7	239.7	240.7
55°	220.2	222.3	224.0	225.6	227.2	227.8	227.8	227.8
57.5°	207.7	209.4	211.0	213.2	213.7	214.2	215.3	215.3
60°	193.7	195.8	198.5	199.6	201.2	201.8	201.8	202.3
62.5°	180.1	182.9	184.5	186.1	187.7	188.8	188.8	189.3
65°	165.5	168.2	171.0	172.0	173.7	174.7	175.3	174.7
67.5°	152.0	155.3	156.9	159.1	160.1	160.7	161.8	161.8
70°	138.5	140.7	143.4	144.4	146.1	146.6	147.7	148.2
72.5°	124.4	126.6	128.8	130.9	132.5	133.1	134.7	134.7
75°	110.4	113.6	115.2	117.4	119.0	120.1	120.6	120.6
77.5°	96.8	100.1	102.2	104.4	106.0	107.1	107.7	108.2
80°	83.9	87.1	89.8	92.0	93.1	94.1	94.7	95.2
82.5°	73.0	75.2	77.9	80.6	81.7	82.8	83.3	83.3
85°	62.2	65.5	68.2	69.8	71.4	72.5	73.0	73.6
87.5°	53.0	56.3	58.4	60.6	62.2	63.8	64.4	64.4
90°	46.5	49.8	51.9	54.1	55.7	56.8	57.3	57.9
92.5°	43.3	46.0	48.7	50.9	51.9	53.0	54.1	54.1
95°	41.1	43.8	46.5	48.1	49.8	50.9	51.4	51.4
97.5°	39.0	41.7	43.8	46.0	47.6	48.1	48.7	49.2
100°	36.8	39.0	41.7	43.3	44.9	46.0	46.5	46.5
102.5°	34.6	36.8	39.5	41.1	42.2	43.3	43.8	44.4
105°	31.9	34.6	36.8	38.4	40.0	41.1	41.7	41.7
107.5°	29.8	32.5	34.6	36.2	37.9	38.4	39.0	39.5
110°	27.6	29.8	32.5	34.1	35.2	36.2	36.8	36.8





TEST NUMBER: P231629

CATALOG NUMBER: S124-DR-LO-35-X-0048-1-U-DD-4-W

**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°
112.5°	25.4	27.6	29.8	31.4	32.5	33.5	34.1	34.6
115°	23.3	25.4	27.6	29.2	30.3	31.4	31.9	31.9
117.5°	21.1	23.3	25.4	26.5	27.6	28.7	29.2	29.2
120°	18.9	21.1	22.7	24.3	25.4	26.5	26.5	27.0
122.5°	16.8	18.9	20.6	22.2	23.3	23.8	24.3	24.3
125°	14.6	16.8	18.4	19.5	20.6	21.6	21.6	22.2
127.5°	12.4	14.1	15.7	17.3	18.4	18.9	19.5	19.5
130°	10.3	11.9	13.5	15.1	15.7	16.2	16.8	17.3
132.5°	8.1	9.7	11.4	12.4	13.5	14.1	14.6	14.6
135°	6.5	8.1	9.2	10.3	11.4	11.9	11.9	12.4
137.5°	4.9	6.0	7.0	8.1	8.7	9.2	9.7	9.7
140°	2.7	3.8	4.9	6.0	6.5	7.0	7.6	7.6
142.5°	1.1	2.2	2.7	3.8	4.3	4.9	5.4	5.4
145°	0.0	0.5	1.1	1.6	2.2	2.7	3.2	3.2
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)