

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: P231617

Luminaire Tested: **S123-DR-LO-35-X-0048-1-U-DD-4-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P231617
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P33913)
Test Lab: INNOVATION CENTER-P3
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S123-DR-LO-35-X-0048-1-U-DD-4-W
Description: DEFINE 3 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: 1307.6 lumens
Efficiency: N/A
Efficacy: 96.1 lumens/watt
Spacing Criteria (0/90/45): 1.19 / 1.25 / 1.37
Luminous Opening: Rectangular w/ Sides (W: 0.22' x L: 3.92' x H: 0.08')
CIE Type: Direct

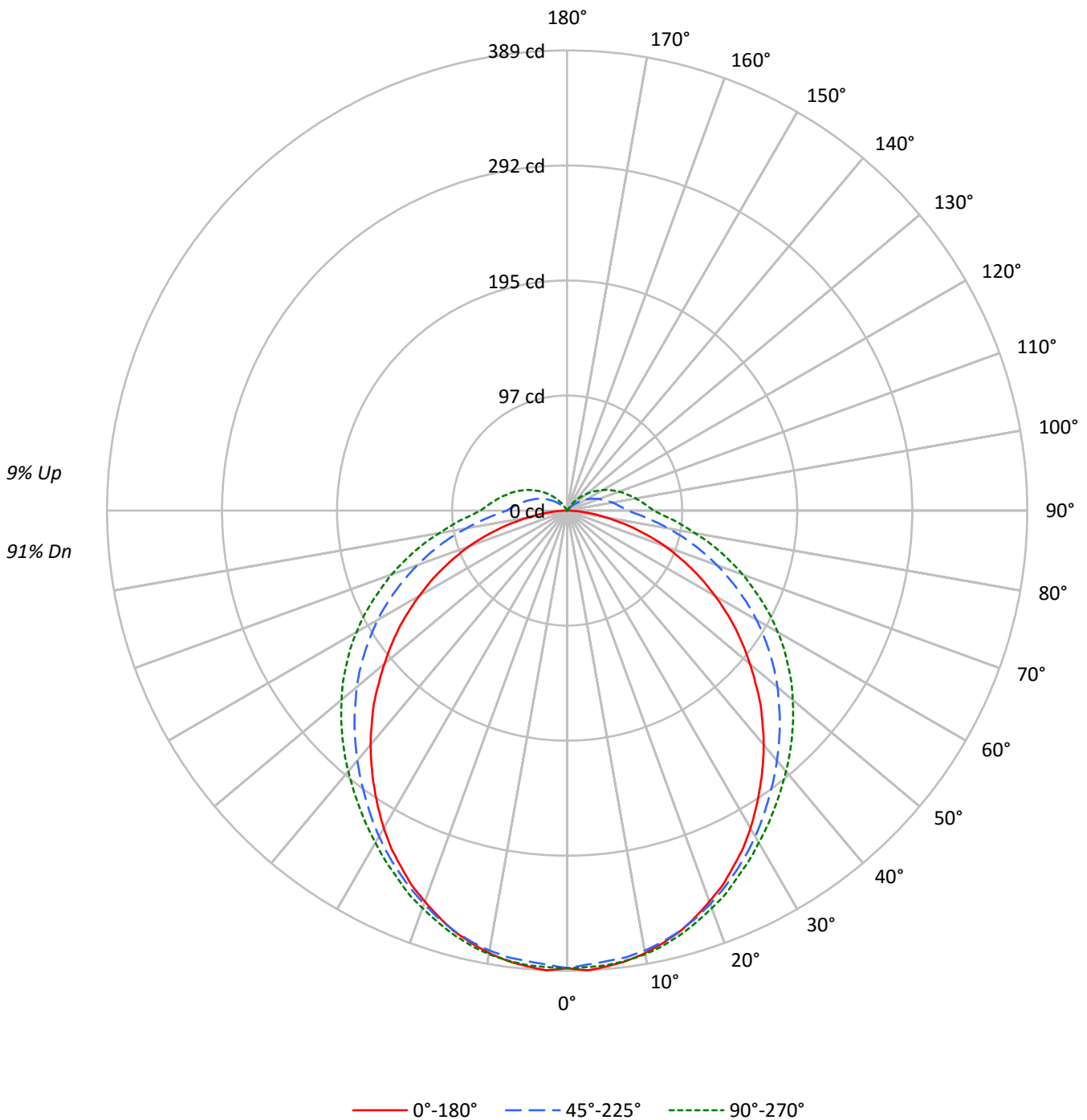
Input Watts (W): 13.6
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	0
RCR																		
0	117	117	117	117	113	113	113	113	106	106	106	100	100	100	94	94	94	91
1	105	100	95	90	101	96	92	88	90	87	84	85	82	79	80	78	76	73
2	95	86	79	72	91	83	76	71	78	73	68	74	69	65	69	66	62	59
3	86	75	66	59	83	73	65	58	68	62	56	64	59	54	61	56	52	49
4	79	66	57	50	76	64	56	49	61	53	48	57	51	46	54	49	44	42
5	72	59	50	43	70	57	49	42	54	47	41	51	45	40	49	43	38	36
6	67	53	44	37	64	52	43	37	49	41	36	46	40	35	44	38	34	31
7	62	48	39	33	59	47	38	32	44	37	31	42	36	31	40	34	30	28
8	57	44	35	29	55	43	34	29	41	33	28	39	32	27	37	31	27	25
9	54	40	32	26	52	39	31	26	37	30	25	36	29	25	34	28	24	22
10	50	37	29	24	49	36	28	23	35	28	23	33	27	22	32	26	22	20

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	4760	4760	4760
5°	4770	4613	4614
10°	4729	4498	4466
15°	4667	4362	4299
20°	4570	4207	4124
25°	4467	4050	3949
30°	4352	3894	3790
35°	4213	3733	3648
40°	4082	3592	3521
45°	3937	3461	3409
50°	3768	3336	3299
55°	3617	3204	3189
60°	3428	3071	3074
65°	3225	2909	2941
70°	2999	2745	2808
75°	2621	2573	2656
80°	2119	2378	2498
85°	1477	2243	2409



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	36.6	2.8
10°-20°	104.2	8.0
20°-30°	155.7	11.9
30°-40°	186.0	14.2
40°-50°	195.1	14.9
50°-60°	183.9	14.1
60°-70°	154.0	11.8
70°-80°	110.7	8.5
80°-90°	66.8	5.1
90°-100°	43.1	3.3
100°-110°	31.7	2.4
110°-120°	21.3	1.6
120°-130°	12.2	0.9
130°-140°	5.3	0.4
140°-150°	1.0	0.1
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	296.5	22.7
0°-40°	482.5	36.9
0°-60°	861.5	65.9
0°-90°	1193.1	91.2
90°-120°	96.0	7.3
90°-150°	114.5	8.8
90°-180°	114.0	8.7
0°-180°	1307.6	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	387	387	387	387	387	
5°	387	385	382	386	386	37
15°	368	368	368	372	371	104
25°	332	335	337	342	341	153
35°	285	291	297	305	306	178
45°	231	241	254	266	269	178
55°	174	189	209	224	228	155
65°	116	136	160	177	182	115
75°	60	84	110	127	134	63
85°	13	39	66	84	90	15
90°	0	24	51	67	73	1
95°	0	20	44	61	66	0
105°	0	12	34	48	52	0
115°	0	5	24	36	41	0
125°	0	1	14	25	29	0
135°	0	0	5	14	17	0
145°	0	0	0	3	5	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°	386.8	386.8	386.8	386.8	386.8	386.8	386.8	386.8	386.8	386.8	386.8
2.5°	389.0	387.9	386.8	386.8	387.4	387.4	387.4	386.3	385.7	384.1	384.1
5°	386.8	385.7	384.6	385.2	385.2	385.7	385.7	385.2	384.1	382.5	383.6
7.5°	384.1	383.0	381.9	381.9	382.5	383.0	383.0	382.5	381.9	380.9	381.4
10°	379.8	378.7	377.6	377.6	378.2	379.2	379.8	379.2	378.7	377.6	378.2
12.5°	374.4	373.3	372.2	373.3	373.8	374.9	374.9	374.9	374.4	373.3	374.4
15°	368.4	366.8	366.3	366.8	367.9	369.0	369.5	369.0	369.0	367.9	369.0
17.5°	360.3	359.2	358.7	359.8	360.8	361.9	363.0	362.5	362.5	361.4	362.5
20°	351.6	350.6	350.6	351.6	352.7	354.3	354.9	354.9	354.9	353.8	355.4
22.5°	343.0	341.4	341.4	342.4	344.6	345.7	346.2	346.2	346.2	345.7	347.9
25°	332.2	331.1	331.6	332.7	334.3	336.0	337.0	337.0	337.0	337.0	338.7
27.5°	321.9	320.3	320.8	322.4	324.6	325.7	327.3	327.3	327.3	327.8	329.5
30°	310.0	308.9	310.0	311.6	313.8	315.4	316.5	317.6	317.6	318.1	320.3
32.5°	297.5	297.0	298.1	300.3	301.3	304.0	305.1	305.7	306.7	307.8	309.4
35°	284.6	284.0	285.6	287.8	290.0	292.1	293.8	294.3	295.9	297.0	299.7
37.5°	271.6	271.6	273.2	274.8	277.5	280.2	281.9	282.9	284.0	286.7	289.4
40°	258.6	258.1	259.7	261.8	264.5	267.8	269.4	271.0	272.7	275.9	278.6
42.5°	244.5	244.5	246.7	249.4	252.6	255.9	257.5	258.6	261.8	265.1	267.8
45°	231.0	231.0	233.2	236.4	239.7	242.9	245.6	247.8	251.0	254.3	257.0
47.5°	215.9	216.9	219.1	222.3	226.1	229.9	232.6	235.9	239.7	242.9	246.2
50°	201.8	202.3	206.1	209.4	213.2	217.5	220.7	224.0	228.3	232.1	235.9
52.5°	187.7	188.8	192.1	195.8	200.2	204.0	208.8	212.6	216.4	220.7	224.5
55°	173.7	174.2	178.5	182.9	186.6	191.5	195.8	200.7	205.0	208.8	212.6
57.5°	159.1	160.7	163.9	168.2	173.1	178.5	183.4	187.7	192.1	196.9	201.2
60°	144.4	146.6	150.4	154.7	159.6	165.5	171.0	175.8	180.2	185.0	189.3
62.5°	130.4	132.0	136.3	140.7	146.1	152.0	158.0	162.8	167.7	172.6	177.4
65°	115.8	119.0	122.3	127.1	133.1	139.0	145.0	150.4	155.3	159.6	164.5
67.5°	101.7	103.9	108.7	113.6	119.6	126.1	131.5	137.4	142.8	147.1	151.5
70°	88.2	90.3	94.7	100.1	106.6	113.1	119.0	123.9	129.8	134.7	139.6
72.5°	73.6	76.3	81.1	86.6	93.1	99.5	106.0	112.0	117.4	122.3	127.1
75°	59.5	62.8	67.6	73.6	80.6	86.6	93.1	99.0	105.0	110.4	114.7
77.5°	46.0	49.2	54.6	61.1	67.6	74.7	80.6	87.1	92.5	98.5	103.3
80°	33.5	37.3	42.7	49.2	55.7	62.8	69.2	75.2	81.1	86.6	92.0
82.5°	23.3	26.5	31.9	38.4	45.4	51.9	58.4	64.9	70.3	76.3	81.1
85°	13.0	16.8	22.7	28.7	35.7	42.2	48.7	55.2	60.6	66.5	71.4
87.5°	5.4	9.7	15.1	21.1	27.6	34.1	40.6	46.5	52.5	57.9	62.8
90°	0.0	3.8	8.7	14.6	21.1	27.6	33.5	39.5	45.4	50.9	55.2
92.5°	0.0	2.2	6.5	12.4	18.4	24.9	31.4	36.8	42.2	47.6	51.9
95°	0.0	1.1	5.4	10.8	16.8	22.7	28.7	34.1	39.5	44.4	48.7
97.5°	0.0	0.5	4.3	9.2	14.6	20.6	26.5	31.9	36.8	41.7	46.0
100°	0.0	0.0	3.2	7.6	13.0	18.4	23.8	29.2	34.1	39.0	43.3
102.5°	0.0	0.0	1.6	6.0	11.4	16.2	21.6	27.0	31.9	36.2	40.6
105°	0.0	0.0	1.1	4.9	9.2	14.6	19.5	24.3	29.2	33.5	37.9
107.5°	0.0	0.0	0.0	3.2	8.1	12.4	17.3	22.2	27.0	30.8	35.2
110°	0.0	0.0	0.0	2.2	6.5	10.8	15.7	20.0	24.3	28.7	32.5



TEST NUMBER: P231617

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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	4.9	9.2	13.5	17.9	22.2	26.0	29.8
115°	0.0	0.0	0.0	0.0	3.2	7.6	11.4	15.7	20.0	23.8	27.0
117.5°	0.0	0.0	0.0	0.0	2.2	6.0	9.7	13.5	17.3	21.1	24.3
120°	0.0	0.0	0.0	0.0	0.5	4.3	7.6	11.4	15.1	18.4	22.2
122.5°	0.0	0.0	0.0	0.0	0.0	2.7	6.0	9.7	13.0	16.2	19.5
125°	0.0	0.0	0.0	0.0	0.0	1.1	4.3	7.6	10.8	14.1	16.8
127.5°	0.0	0.0	0.0	0.0	0.0	0.0	2.7	5.4	8.7	11.4	14.6
130°	0.0	0.0	0.0	0.0	0.0	0.0	1.1	3.8	6.5	9.2	11.9
132.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	4.9	7.0	9.7
135°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	2.7	5.4	7.6
137.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	3.2	5.4
140°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	3.2
142.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
145°	0.5	0.0	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: P231617

CATALOG NUMBER: S123-DR-LO-35-X-0048-1-U-DD-4-W

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°
0°	386.8	386.8	386.8	386.8	386.8	386.8	386.8	386.8
2.5°	385.7	386.3	386.8	386.8	386.8	386.8	386.3	386.3
5°	384.6	385.7	385.7	386.3	386.3	386.3	385.7	385.7
7.5°	383.0	383.6	384.1	384.1	384.6	384.6	384.1	383.6
10°	379.8	380.9	381.4	381.4	381.4	381.4	381.4	380.9
12.5°	376.0	376.5	377.1	377.1	377.1	377.6	377.1	376.5
15°	370.6	371.7	371.7	372.2	372.2	372.2	371.7	371.1
17.5°	364.1	365.2	365.7	365.7	365.7	365.7	365.2	364.6
20°	357.1	357.6	358.7	358.1	358.7	358.7	358.1	357.6
22.5°	348.9	349.5	350.6	350.0	351.1	351.1	350.6	350.6
25°	340.3	341.4	341.9	341.9	341.9	341.9	341.9	341.4
27.5°	331.1	331.6	332.7	333.3	333.3	333.3	333.3	333.3
30°	321.3	322.4	323.5	323.5	324.6	325.1	324.6	324.1
32.5°	311.1	312.7	313.8	314.3	315.4	315.9	315.4	315.4
35°	300.8	303.0	304.6	305.1	306.2	306.2	306.7	306.2
37.5°	291.1	293.2	294.3	295.9	297.0	298.1	297.5	297.0
40°	281.3	283.5	285.1	286.2	287.3	287.8	287.8	287.8
42.5°	270.5	273.2	274.8	276.4	278.1	278.6	278.6	278.6
45°	259.7	262.4	264.5	266.7	268.3	268.9	268.9	268.9
47.5°	249.4	252.1	254.3	256.4	258.1	258.6	259.1	259.1
50°	239.1	241.8	244.5	246.2	247.8	248.9	248.9	248.9
52.5°	227.8	230.5	233.2	235.3	237.5	238.0	239.1	239.1
55°	216.4	219.6	222.9	225.1	226.1	227.2	227.8	227.8
57.5°	205.0	207.7	210.4	213.7	215.3	216.4	216.9	217.5
60°	193.1	196.4	199.6	202.3	203.4	205.0	205.6	205.6
62.5°	180.7	183.9	187.7	189.9	192.1	193.1	193.7	194.2
65°	168.8	172.0	175.3	178.5	179.6	180.7	181.8	181.8
67.5°	156.3	159.6	162.8	165.5	167.2	168.8	169.9	169.3
70°	143.9	147.7	150.4	153.6	155.3	156.3	157.4	158.0
72.5°	131.5	135.2	138.5	141.2	142.8	143.9	145.0	145.5
75°	119.6	122.8	126.1	128.2	130.4	132.0	132.5	133.6
77.5°	107.1	111.4	114.1	117.4	118.5	120.1	120.6	121.7
80°	96.3	99.5	102.8	105.5	107.7	109.3	109.3	109.8
82.5°	85.5	88.7	92.0	95.2	96.8	98.5	99.0	99.0
85°	75.2	79.0	82.2	84.9	87.1	88.2	89.3	89.8
87.5°	67.1	70.3	73.6	75.7	77.9	79.0	80.1	80.1
90°	59.5	62.8	66.0	68.7	70.3	71.4	72.5	73.0
92.5°	56.3	59.5	62.8	64.9	67.1	68.2	68.7	69.2
95°	53.0	56.3	59.5	61.7	63.3	64.9	65.5	65.5
97.5°	49.8	53.0	56.3	58.4	60.1	61.1	62.2	62.2
100°	47.1	50.3	53.0	55.2	56.8	57.9	59.0	59.0
102.5°	43.8	47.1	49.8	51.9	53.6	54.6	55.7	55.7
105°	41.1	44.4	47.1	49.2	50.9	51.9	52.5	52.5
107.5°	38.4	41.7	44.4	46.0	47.6	48.7	49.8	49.8
110°	35.7	38.4	41.1	43.3	44.9	46.0	46.5	46.5



TEST NUMBER: P231617

CATALOG NUMBER: S123-DR-LO-35-X-0048-1-U-DD-4-W

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°
112.5°	33.0	35.7	38.4	40.0	41.7	42.7	43.3	43.8
115°	30.3	33.0	35.2	37.3	39.0	39.5	40.6	40.6
117.5°	27.6	30.3	32.5	34.1	35.7	36.8	37.3	37.9
120°	24.9	27.0	29.8	31.4	33.0	33.5	34.6	34.6
122.5°	22.2	24.3	27.0	28.1	29.8	30.8	31.4	31.4
125°	19.5	22.2	23.8	25.4	27.0	27.6	28.1	28.7
127.5°	16.8	18.9	21.1	22.7	23.8	24.9	25.4	25.4
130°	14.1	16.2	18.4	20.0	21.1	21.6	22.2	22.7
132.5°	11.9	14.1	15.7	16.8	18.4	18.9	19.5	19.5
135°	9.2	11.4	13.0	14.1	15.1	16.2	16.2	16.8
137.5°	7.0	8.7	10.3	11.4	12.4	13.0	13.5	13.5
140°	4.9	6.5	7.6	8.7	9.7	10.3	10.8	10.8
142.5°	2.7	3.8	5.4	6.0	7.0	7.6	8.1	8.1
145°	0.5	1.6	2.7	3.8	4.3	4.9	5.4	5.4
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)