

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: P231593

Luminaire Tested: **S121-DR-LO-35-X-0048-1-U-DD-4-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P231593
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P33907)
Test Lab: INNOVATION CENTER-P3
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S121-DR-LO-35-X-0048-1-U-DD-4-W
Description: DEFINE 1 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: 1231.5 lumens
Efficiency: N/A
Efficacy: 90.6 lumens/watt
Spacing Criteria (0/90/45): 1.21 / 1.42 / 1.49
Luminous Opening: Rectangular w/ Sides (W: 0.1' x L: 3.92' x H: 0.08')
CIE Type: Semi-Direct

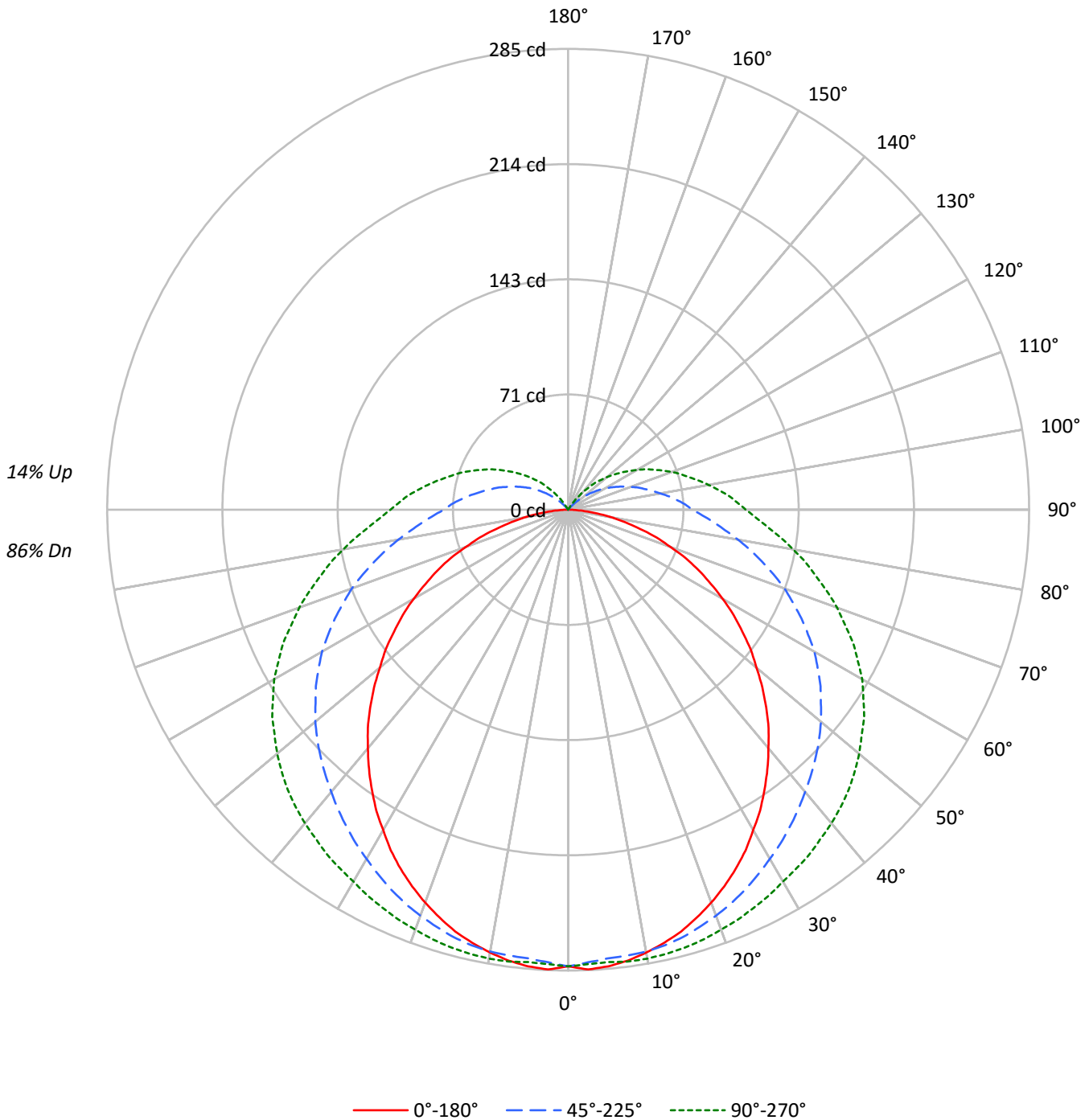
Input Watts (W): 13.6
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P231593

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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	116	116	116	116	112	112	112	112	104	104	104	96	96	96	90	90	90	86
1	103	97	91	86	98	93	88	84	86	82	79	80	77	74	74	72	69	66
2	92	83	75	68	88	79	72	66	74	68	62	68	63	59	63	59	56	53
3	83	72	62	55	80	69	61	54	64	57	51	59	53	49	55	50	46	43
4	76	63	53	46	72	61	52	45	56	49	43	52	46	41	48	43	39	36
5	69	56	46	39	66	54	45	38	50	42	36	47	40	35	43	38	33	31
6	64	50	40	34	61	48	39	33	45	37	32	42	35	30	39	33	29	26
7	59	45	36	29	57	44	35	29	41	33	28	38	31	27	36	30	25	23
8	55	41	32	26	53	40	31	26	37	30	25	35	28	24	33	27	23	20
9	51	37	29	23	49	36	28	23	34	27	22	32	26	21	30	24	20	18
10	48	34	26	21	46	33	26	21	31	25	20	30	23	19	28	22	18	16

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	7895	7895	7895
5°	7941	7420	7337
10°	7865	7108	6962
15°	7770	6802	6609
20°	7635	6497	6285
25°	7486	6213	6005
30°	7297	5943	5757
35°	7113	5706	5573
40°	6906	5486	5401
45°	6701	5300	5246
50°	6448	5123	5081
55°	6221	4944	4927
60°	5954	4763	4756
65°	5650	4542	4560
70°	5182	4328	4345
75°	4603	4065	4113
80°	3879	3828	3916
85°	2658	3611	3719



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	26.8	2.2
10°-20°	77.5	6.3
20°-30°	119.6	9.7
30°-40°	149.0	12.1
40°-50°	164.8	13.4
50°-60°	165.2	13.4
60°-70°	150.1	12.2
70°-80°	121.9	9.9
80°-90°	89.2	7.2
90°-100°	65.1	5.3
100°-110°	46.6	3.8
110°-120°	30.5	2.5
120°-130°	17.1	1.4
130°-140°	7.1	0.6
140°-150°	1.1	0.1
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	223.9	18.2
0°-40°	372.9	30.3
0°-60°	702.9	57.1
0°-90°	1064.0	86.4
90°-120°	142.2	11.5
90°-150°	167.5	13.6
90°-180°	167.0	13.6
0°-180°	1231.5	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	282	282	282	282	282	
5°	284	282	279	281	281	27
15°	270	270	274	280	280	76
25°	245	250	259	269	272	113
35°	212	222	239	255	260	132
45°	173	191	216	239	245	133
55°	132	156	190	215	223	118
65°	89	120	159	186	194	88
75°	46	83	124	150	158	49
85°	10	50	90	116	124	12
90°	0	37	77	102	110	1
95°	0	30	68	91	100	0
105°	0	17	49	71	77	0
115°	0	7	34	52	58	0
125°	0	1	19	35	40	0
135°	0	0	6	18	23	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



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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	282.4	282.4	282.4	282.4	282.4	282.4	282.4	282.4	282.4	282.4	282.4
2.5°	284.6	283.5	282.4	282.9	282.9	283.5	282.4	282.4	281.3	280.2	280.2
5°	283.5	282.4	280.8	281.3	281.3	281.9	281.3	280.8	279.7	278.6	279.2
7.5°	281.3	280.2	278.6	279.2	279.2	279.2	279.2	279.2	278.6	278.1	278.6
10°	278.1	277.0	275.9	275.9	275.9	277.0	277.0	277.5	277.5	277.5	278.6
12.5°	274.3	273.2	272.1	272.1	272.7	274.3	274.8	275.4	275.9	275.9	277.0
15°	270.0	268.3	267.2	268.3	268.9	271.0	272.1	272.7	273.2	273.7	275.4
17.5°	264.5	263.5	261.8	262.9	264.5	267.2	268.3	269.4	270.5	270.5	272.7
20°	258.6	257.5	255.9	258.1	260.2	262.4	264.0	265.1	266.2	267.2	269.4
22.5°	252.1	250.5	249.9	252.6	254.8	257.5	259.1	260.8	261.8	263.5	266.2
25°	245.1	243.4	243.4	246.2	248.9	251.6	253.7	255.9	257.0	259.1	261.8
27.5°	237.5	235.9	236.4	239.7	241.8	245.6	247.8	250.5	252.1	254.3	257.5
30°	228.8	227.2	228.3	232.1	235.3	239.1	241.8	244.0	246.7	249.4	253.2
32.5°	220.7	218.6	220.2	224.5	227.8	232.1	235.3	238.0	241.3	244.5	248.3
35°	211.5	209.9	212.1	216.4	220.2	224.5	228.3	231.5	235.3	239.1	243.4
37.5°	202.3	200.2	203.4	207.7	212.6	216.9	221.3	224.5	228.8	233.7	238.6
40°	192.6	191.0	194.8	199.6	204.0	208.8	213.7	217.5	222.9	227.8	233.2
42.5°	183.4	181.8	186.1	190.4	195.8	201.2	206.7	210.4	216.4	222.3	227.8
45°	173.1	172.0	176.4	181.8	187.7	193.7	198.5	204.0	210.4	216.4	222.3
47.5°	162.8	161.8	166.6	172.6	178.5	185.0	191.0	197.5	204.0	210.4	216.4
50°	152.0	152.0	157.4	163.4	169.3	176.9	182.9	190.4	196.9	204.0	209.9
52.5°	142.3	142.3	147.7	153.6	160.7	168.2	175.8	182.9	190.4	196.9	204.0
55°	131.5	132.5	138.5	144.4	151.5	159.6	167.7	175.3	183.4	190.4	196.9
57.5°	121.2	122.8	128.2	134.7	142.8	151.5	159.6	167.7	175.3	182.9	189.9
60°	110.4	112.5	118.5	125.5	133.6	142.8	151.5	159.6	167.7	175.8	182.3
62.5°	99.5	102.2	108.2	115.2	124.4	133.6	142.8	150.9	159.6	167.2	174.2
65°	89.3	92.0	97.9	105.5	115.2	125.0	134.2	142.8	151.5	159.1	166.6
67.5°	79.0	81.7	88.2	96.3	106.0	115.8	125.0	134.2	142.8	150.4	157.4
70°	67.1	71.4	77.9	86.6	96.8	106.6	116.3	125.0	133.6	142.3	149.3
72.5°	57.3	61.1	68.2	77.4	87.1	97.4	107.1	116.3	125.0	133.1	140.1
75°	46.0	50.3	57.9	67.6	77.9	88.2	97.9	107.1	115.8	123.9	131.5
77.5°	36.2	40.6	48.7	58.4	68.7	79.0	89.3	98.5	107.1	115.2	122.3
80°	27.0	31.4	40.0	49.8	60.6	70.9	80.6	89.8	98.5	106.6	113.6
82.5°	18.4	22.7	31.9	41.7	51.9	62.2	72.0	81.1	89.8	97.9	105.5
85°	10.3	15.7	24.3	34.1	44.4	54.6	64.4	74.1	82.2	90.3	97.9
87.5°	4.3	10.3	18.4	27.6	37.9	48.1	57.9	66.5	75.7	83.3	90.3
90°	0.0	5.4	13.0	22.2	32.5	42.2	51.9	60.6	69.2	76.8	83.9
92.5°	0.0	3.2	10.3	18.9	28.7	38.4	47.6	56.8	64.9	72.5	79.5
95°	0.0	1.6	7.6	16.2	24.9	34.1	43.3	51.9	60.0	67.6	74.1
97.5°	0.0	0.5	6.0	13.0	21.6	30.8	39.5	48.1	55.7	62.8	69.2
100°	0.0	0.0	4.3	10.8	18.9	27.0	35.7	43.8	51.4	57.9	64.4
102.5°	0.0	0.0	2.2	8.7	16.2	23.8	31.9	39.5	47.1	53.6	60.0
105°	0.0	0.0	1.1	6.5	13.5	21.1	28.7	35.7	42.7	49.2	55.7
107.5°	0.0	0.0	0.0	4.3	10.8	17.9	25.4	32.5	39.5	45.4	50.9
110°	0.0	0.0	0.0	2.7	8.7	15.1	22.2	28.7	35.2	41.1	47.1



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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	6.5	12.4	18.9	25.4	31.4	37.3	42.7
115°	0.0	0.0	0.0	0.0	4.3	9.7	16.2	22.2	28.1	33.5	39.0
117.5°	0.0	0.0	0.0	0.0	2.2	7.6	13.0	18.9	24.3	29.8	34.6
120°	0.0	0.0	0.0	0.0	0.5	5.4	10.3	16.2	21.1	26.5	30.8
122.5°	0.0	0.0	0.0	0.0	0.0	2.7	7.6	13.0	17.9	22.7	27.0
125°	0.0	0.0	0.0	0.0	0.0	1.1	5.4	9.7	14.6	18.9	23.8
127.5°	0.0	0.0	0.0	0.0	0.0	0.0	2.7	7.0	11.4	15.7	20.0
130°	0.0	0.0	0.0	0.0	0.0	0.0	1.1	4.3	8.7	12.4	16.2
132.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	5.4	9.2	12.4
135°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	2.7	6.0	9.2
137.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	3.2	6.0
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	0.5
145°	0.0	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



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CATALOG NUMBER: S121-DR-LO-35-X-0048-1-U-DD-4-W

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°
0°	282.4	282.4	282.4	282.4	282.4	282.4	282.4	282.4
2.5°	281.3	281.9	282.4	281.9	281.9	282.4	281.9	281.3
5°	280.2	280.8	281.3	281.3	281.9	281.9	281.3	280.8
7.5°	280.2	281.3	281.9	282.4	282.4	282.9	282.4	281.9
10°	280.2	280.8	281.9	282.4	282.4	282.9	282.4	281.9
12.5°	279.2	280.2	281.3	281.3	281.9	282.4	281.9	281.3
15°	277.0	278.1	279.7	280.2	280.8	280.8	280.2	280.2
17.5°	274.8	275.9	277.5	278.1	278.6	279.2	278.6	278.6
20°	271.6	273.2	274.8	275.9	276.4	277.0	277.0	276.4
22.5°	268.3	270.5	272.1	272.7	273.7	274.8	274.3	274.3
25°	264.5	266.7	268.9	270.0	271.0	272.1	271.6	271.6
27.5°	260.8	262.9	265.1	266.7	268.3	268.9	268.9	268.9
30°	255.9	259.1	261.3	262.9	264.5	265.6	265.6	265.6
32.5°	251.6	254.8	257.5	259.1	261.3	262.4	262.9	262.9
35°	247.2	250.5	253.7	255.9	258.1	259.7	259.7	260.2
37.5°	242.4	246.7	249.9	252.6	254.8	256.4	257.0	256.4
40°	238.0	242.4	245.6	248.9	251.0	252.6	253.2	253.2
42.5°	232.6	237.5	241.3	244.5	247.2	248.9	249.4	249.4
45°	227.8	232.6	237.0	240.2	242.4	244.0	245.1	245.1
47.5°	222.3	227.2	231.0	234.8	237.5	239.1	239.7	240.2
50°	216.4	221.3	225.1	229.4	232.1	233.7	234.2	234.8
52.5°	209.9	214.8	219.6	223.4	226.1	228.3	228.8	228.8
55°	203.4	208.3	213.2	216.9	220.2	221.8	222.9	223.4
57.5°	195.8	201.2	206.1	210.4	213.2	215.3	216.4	216.4
60°	188.8	194.2	199.1	203.4	206.1	208.3	208.8	209.9
62.5°	180.7	186.1	191.5	195.3	198.0	200.2	201.2	201.8
65°	172.6	178.5	183.9	187.2	189.9	192.6	193.7	194.2
67.5°	163.9	169.9	174.7	179.1	181.2	183.9	185.0	185.0
70°	155.8	161.8	166.1	169.9	173.1	175.3	176.4	176.9
72.5°	147.1	152.6	157.4	161.2	163.9	166.1	167.7	167.7
75°	137.4	143.4	148.2	152.0	155.3	157.4	158.5	158.5
77.5°	129.3	134.7	139.0	143.4	146.6	148.8	149.9	150.4
80°	120.1	125.5	130.4	134.2	137.4	139.6	140.7	141.2
82.5°	112.0	117.4	121.7	126.1	128.8	130.9	132.0	132.5
85°	103.9	109.3	114.1	117.4	120.6	122.3	123.9	123.9
87.5°	96.8	101.7	106.6	109.8	113.1	115.2	116.3	116.3
90°	89.8	95.2	99.5	103.9	106.6	108.7	109.3	109.8
92.5°	84.9	90.3	94.7	98.5	101.2	102.8	104.4	104.4
95°	80.1	84.9	89.8	93.1	95.8	97.9	99.0	99.5
97.5°	75.2	80.1	84.4	87.6	90.3	92.5	93.1	93.6
100°	70.3	75.2	79.0	82.2	84.9	86.6	88.2	88.2
102.5°	65.5	70.3	74.1	77.4	80.1	81.7	82.8	82.8
105°	60.6	65.5	69.2	72.5	74.7	76.8	77.4	77.4
107.5°	56.3	61.1	64.9	67.6	69.8	72.0	73.0	73.0
110°	51.9	56.3	60.0	62.8	65.5	67.1	68.2	68.2



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CATALOG NUMBER: S121-DR-LO-35-X-0048-1-U-DD-4-W

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°
112.5°	47.6	51.9	55.7	58.4	60.6	62.2	63.3	63.3
115°	43.3	47.6	50.9	54.1	56.3	57.9	58.4	58.4
117.5°	39.5	43.3	46.5	49.2	51.4	53.0	54.1	54.1
120°	35.2	39.0	42.2	44.9	47.1	48.1	49.2	49.2
122.5°	31.4	34.6	37.9	40.6	42.2	43.8	44.9	44.4
125°	27.6	30.8	33.5	36.2	37.9	39.5	40.0	40.0
127.5°	23.3	26.5	29.8	31.9	33.5	35.2	35.7	35.7
130°	19.5	22.7	25.4	27.6	29.2	30.3	31.4	31.4
132.5°	16.2	18.9	21.6	23.3	24.9	26.0	27.0	27.0
135°	12.4	15.1	17.3	19.5	21.1	22.2	22.7	23.3
137.5°	8.7	11.4	13.5	15.7	16.8	17.9	18.4	18.4
140°	5.4	7.6	9.7	11.4	12.4	13.5	14.1	14.6
142.5°	2.2	4.3	6.0	7.6	8.7	9.2	9.7	9.7
145°	0.0	1.1	2.7	3.8	4.9	6.0	6.0	6.5
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)