

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: P231597

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

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P231597  
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-1-35-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: 2500.7 lumens  
Efficiency: N/A  
Efficacy: 89.6 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

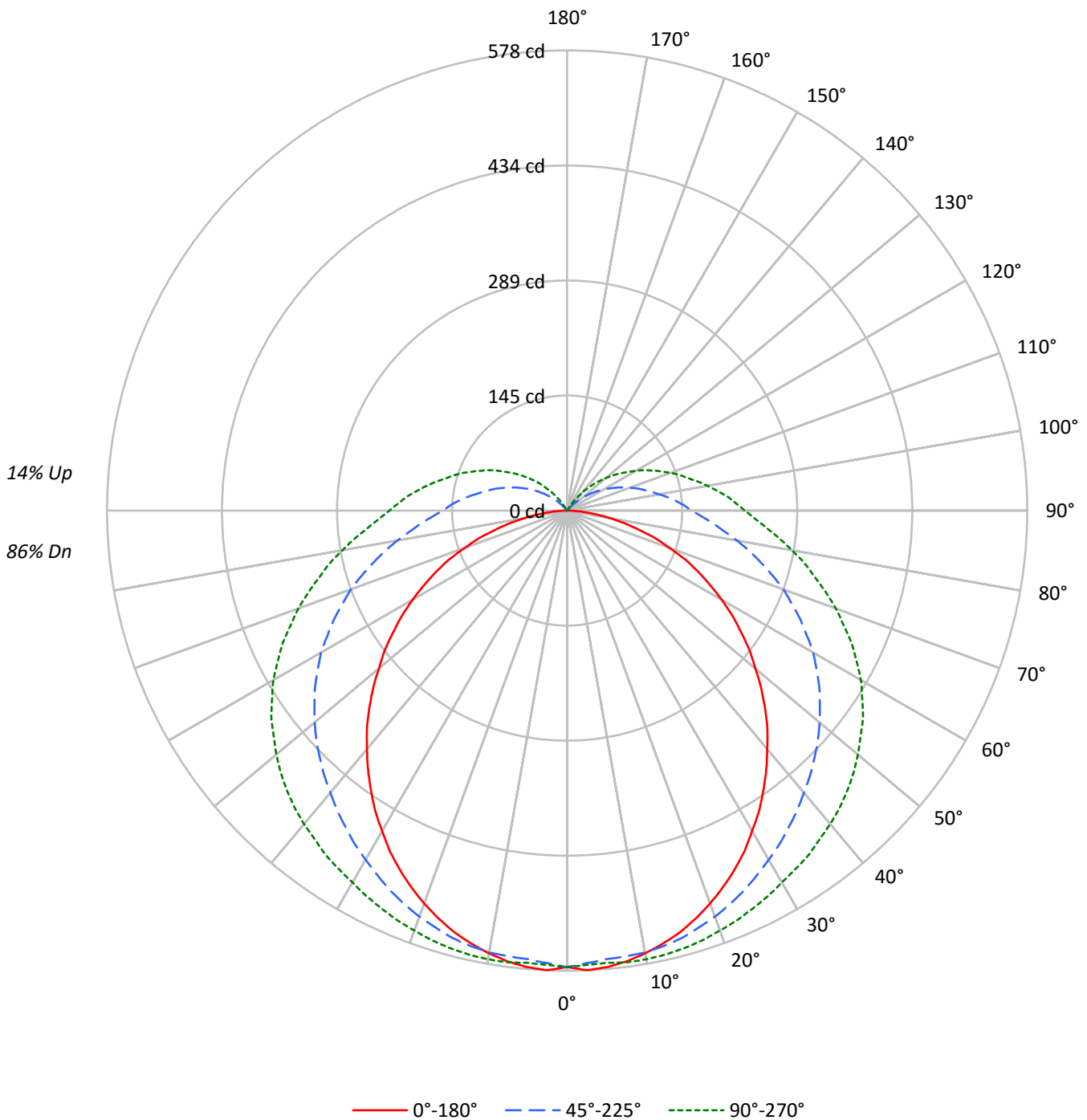
Input Watts (W): 27.9  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



TEST NUMBER: P231597

CATALOG NUMBER: S121-DR-1-35-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	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°	16031	16031	16031
5°	16124	15066	14895
10°	15968	14434	14135
15°	15777	13816	13421
20°	15503	13196	12763
25°	15199	12618	12194
30°	14820	12068	11693
35°	14444	11587	11318
40°	14023	11138	10965
45°	13608	10762	10650
50°	13095	10399	10318
55°	12626	10041	10005
60°	12085	9672	9657
65°	11470	9221	9261
70°	10519	8787	8822
75°	9347	8255	8353
80°	7888	7771	7950
85°	5393	7339	7553



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	54.4	2.2
10°-20°	157.5	6.3
20°-30°	242.8	9.7
30°-40°	302.6	12.1
40°-50°	334.5	13.4
50°-60°	335.5	13.4
60°-70°	304.7	12.2
70°-80°	247.5	9.9
80°-90°	181.1	7.2
90°-100°	132.2	5.3
100°-110°	94.7	3.8
110°-120°	61.9	2.5
120°-130°	34.6	1.4
130°-140°	14.3	0.6
140°-150°	2.3	0.1
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	454.6	18.2
0°-40°	757.2	30.3
0°-60°	1427.2	57.1
0°-90°	2160.6	86.4
90°-120°	288.8	11.5
90°-150°	340.0	13.6
90°-180°	340.0	13.6
0°-180°	2500.7	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	573	573	573	573	573	
5°	576	572	566	571	570	55
15°	548	548	556	568	569	154
25°	498	508	526	547	552	229
35°	430	452	486	517	528	269
45°	352	387	439	484	498	271
55°	267	316	387	437	454	239
65°	181	244	323	377	394	179
75°	93	169	252	305	322	100
85°	21	101	184	235	252	24
90°	0	76	156	206	223	1
95°	0	60	137	186	202	0
105°	0	35	100	144	157	0
115°	0	14	68	107	119	0
125°	0	1	38	71	81	0
135°	0	0	12	37	47	0
145°	0	0	0	7	13	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°	573.4	573.4	573.4	573.4	573.4	573.4	573.4	573.4	573.4	573.4	573.4
2.5°	577.8	575.6	573.4	574.5	574.5	575.6	573.4	573.4	571.2	569.0	569.0
5°	575.6	573.4	570.1	571.2	571.2	572.3	571.2	570.1	567.9	565.7	566.8
7.5°	571.2	569.0	565.7	566.8	566.8	566.8	566.8	566.8	565.7	564.6	565.7
10°	564.6	562.4	560.2	560.2	560.2	562.4	562.4	563.5	563.5	563.5	565.7
12.5°	557.0	554.8	552.6	552.6	553.7	557.0	558.1	559.2	560.2	560.2	562.4
15°	548.2	544.9	542.7	544.9	546.0	550.4	552.6	553.7	554.8	555.9	559.2
17.5°	537.2	535.0	531.7	533.9	537.2	542.7	544.9	547.1	549.3	549.3	553.7
20°	525.1	522.9	519.6	524.0	528.4	532.8	536.1	538.3	540.5	542.7	547.1
22.5°	511.9	508.6	507.5	513.0	517.4	522.9	526.2	529.5	531.7	535.0	540.5
25°	497.6	494.3	494.3	499.8	505.3	510.8	515.2	519.6	521.8	526.2	531.7
27.5°	482.3	479.0	480.1	486.6	491.0	498.7	503.1	508.6	511.9	516.3	522.9
30°	464.7	461.4	463.6	471.3	477.9	485.5	491.0	495.4	500.9	506.4	514.1
32.5°	448.2	443.8	447.1	455.9	462.5	471.3	477.9	483.4	489.9	496.5	504.2
35°	429.5	426.2	430.6	439.4	447.1	455.9	463.6	470.2	477.9	485.5	494.3
37.5°	410.8	406.5	413.0	421.8	431.7	440.5	449.3	455.9	464.7	474.6	484.5
40°	391.1	387.8	395.5	405.4	414.1	424.0	433.9	441.6	452.6	462.5	473.5
42.5°	372.4	369.1	377.9	386.7	397.7	408.7	419.6	427.3	439.4	451.5	462.5
45°	351.5	349.3	358.1	369.1	381.2	393.3	403.2	414.1	427.3	439.4	451.5
47.5°	330.7	328.5	338.3	350.4	362.5	375.7	387.8	401.0	414.1	427.3	439.4
50°	308.7	308.7	319.7	331.8	343.8	359.2	371.3	386.7	399.9	414.1	426.2
52.5°	288.9	288.9	299.9	312.0	326.3	341.6	357.0	371.3	386.7	399.9	414.1
55°	266.9	269.1	281.2	293.3	307.6	324.1	340.5	355.9	372.4	386.7	399.9
57.5°	246.1	249.4	260.4	273.5	290.0	307.6	324.1	340.5	355.9	371.3	385.6
60°	224.1	228.5	240.6	254.9	271.3	290.0	307.6	324.1	340.5	357.0	370.2
62.5°	202.1	207.6	219.7	234.0	252.7	271.3	290.0	306.5	324.1	339.4	353.7
65°	181.3	186.7	198.8	214.2	234.0	253.8	272.4	290.0	307.6	323.0	338.3
67.5°	160.4	165.9	179.1	195.5	215.3	235.1	253.8	272.4	290.0	305.4	319.7
70°	136.2	145.0	158.2	175.8	196.6	216.4	236.2	253.8	271.3	288.9	303.2
72.5°	116.4	124.1	138.4	157.1	176.9	197.7	217.5	236.2	253.8	270.2	284.5
75°	93.4	102.2	117.5	137.3	158.2	179.1	198.8	217.5	235.1	251.6	266.9
77.5°	73.6	82.4	98.9	118.6	139.5	160.4	181.3	199.9	217.5	234.0	248.3
80°	54.9	63.7	81.3	101.1	123.0	143.9	163.7	182.4	199.9	216.4	230.7
82.5°	37.3	46.1	64.8	84.6	105.5	126.3	146.1	164.8	182.4	198.8	214.2
85°	20.9	31.9	49.4	69.2	90.1	111.0	130.7	150.5	167.0	183.5	198.8
87.5°	8.8	20.9	37.3	56.0	76.9	97.8	117.5	135.1	153.8	169.2	183.5
90°	0.0	11.0	26.4	45.0	65.9	85.7	105.5	123.0	140.6	156.0	170.3
92.5°	0.0	6.6	20.9	38.4	58.2	78.0	96.7	115.3	131.8	147.2	161.5
95°	0.0	3.3	15.4	33.0	50.5	69.2	87.9	105.5	121.9	137.3	150.5
97.5°	0.0	1.1	12.1	26.4	43.9	62.6	80.2	97.8	113.1	127.4	140.6
100°	0.0	0.0	8.8	22.0	38.4	54.9	72.5	89.0	104.4	117.5	130.7
102.5°	0.0	0.0	4.4	17.6	33.0	48.3	64.8	80.2	95.6	108.8	121.9
105°	0.0	0.0	2.2	13.2	27.5	42.8	58.2	72.5	86.8	100.0	113.1
107.5°	0.0	0.0	0.0	8.8	22.0	36.3	51.6	65.9	80.2	92.3	103.3
110°	0.0	0.0	0.0	5.5	17.6	30.8	45.0	58.2	71.4	83.5	95.6



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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	2.2	13.2	25.3	38.4	51.6	63.7	75.8	86.8
115°	0.0	0.0	0.0	0.0	8.8	19.8	33.0	45.0	57.1	68.1	79.1
117.5°	0.0	0.0	0.0	0.0	4.4	15.4	26.4	38.4	49.4	60.4	70.3
120°	0.0	0.0	0.0	0.0	1.1	11.0	20.9	33.0	42.8	53.8	62.6
122.5°	0.0	0.0	0.0	0.0	0.0	5.5	15.4	26.4	36.3	46.1	54.9
125°	0.0	0.0	0.0	0.0	0.0	2.2	11.0	19.8	29.7	38.4	48.3
127.5°	0.0	0.0	0.0	0.0	0.0	0.0	5.5	14.3	23.1	31.9	40.6
130°	0.0	0.0	0.0	0.0	0.0	0.0	2.2	8.8	17.6	25.3	33.0
132.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	11.0	18.7	25.3
135°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	5.5	12.1	18.7
137.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	6.6	12.1
140°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	6.6
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°	0.0	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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**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°
0°	573.4	573.4	573.4	573.4	573.4	573.4	573.4	573.4
2.5°	571.2	572.3	573.4	572.3	572.3	573.4	572.3	571.2
5°	569.0	570.1	571.2	571.2	572.3	572.3	571.2	570.1
7.5°	569.0	571.2	572.3	573.4	573.4	574.5	573.4	572.3
10°	569.0	570.1	572.3	573.4	573.4	574.5	573.4	572.3
12.5°	566.8	569.0	571.2	571.2	572.3	573.4	572.3	571.2
15°	562.4	564.6	567.9	569.0	570.1	570.1	569.0	569.0
17.5°	558.1	560.2	563.5	564.6	565.7	566.8	565.7	565.7
20°	551.5	554.8	558.1	560.2	561.3	562.4	562.4	561.3
22.5°	544.9	549.3	552.6	553.7	555.9	558.1	557.0	557.0
25°	537.2	541.6	546.0	548.2	550.4	552.6	551.5	551.5
27.5°	529.5	533.9	538.3	541.6	544.9	546.0	546.0	546.0
30°	519.6	526.2	530.6	533.9	537.2	539.4	539.4	539.4
32.5°	510.8	517.4	522.9	526.2	530.6	532.8	533.9	533.9
35°	502.0	508.6	515.2	519.6	524.0	527.3	527.3	528.4
37.5°	492.1	500.9	507.5	513.0	517.4	520.7	521.8	520.7
40°	483.4	492.1	498.7	505.3	509.7	513.0	514.1	514.1
42.5°	472.4	482.3	489.9	496.5	502.0	505.3	506.4	506.4
45°	462.5	472.4	481.2	487.7	492.1	495.4	497.6	497.6
47.5°	451.5	461.4	469.1	476.8	482.3	485.5	486.6	487.7
50°	439.4	449.3	457.0	465.8	471.3	474.6	475.7	476.8
52.5°	426.2	436.1	446.0	453.7	459.2	463.6	464.7	464.7
55°	413.0	422.9	432.8	440.5	447.1	450.4	452.6	453.7
57.5°	397.7	408.7	418.5	427.3	432.8	437.2	439.4	439.4
60°	383.4	394.4	404.3	413.0	418.5	422.9	424.0	426.2
62.5°	366.9	377.9	388.9	396.6	402.1	406.5	408.7	409.8
65°	350.4	362.5	373.5	380.1	385.6	391.1	393.3	394.4
67.5°	332.9	344.9	354.8	363.6	368.0	373.5	375.7	375.7
70°	316.4	328.5	337.2	344.9	351.5	355.9	358.1	359.2
72.5°	298.8	309.8	319.7	327.4	332.9	337.2	340.5	340.5
75°	279.0	291.1	301.0	308.7	315.3	319.7	321.9	321.9
77.5°	262.5	273.5	282.3	291.1	297.7	302.1	304.3	305.4
80°	243.9	254.9	264.7	272.4	279.0	283.4	285.6	286.7
82.5°	227.4	238.4	247.2	256.0	261.4	265.8	268.0	269.1
85°	210.9	221.9	231.8	238.4	245.0	248.3	251.6	251.6
87.5°	196.6	206.5	216.4	223.0	229.6	234.0	236.2	236.2
90°	182.4	193.3	202.1	210.9	216.4	220.8	221.9	223.0
92.5°	172.5	183.5	192.2	199.9	205.4	208.7	212.0	212.0
95°	162.6	172.5	182.4	188.9	194.4	198.8	201.0	202.1
97.5°	152.7	162.6	171.4	178.0	183.5	187.8	188.9	190.0
100°	142.8	152.7	160.4	167.0	172.5	175.8	179.1	179.1
102.5°	132.9	142.8	150.5	157.1	162.6	165.9	168.1	168.1
105°	123.0	132.9	140.6	147.2	151.6	156.0	157.1	157.1
107.5°	114.2	124.1	131.8	137.3	141.7	146.1	148.3	148.3
110°	105.5	114.2	121.9	127.4	132.9	136.2	138.4	138.4





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

**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°
112.5°	96.7	105.5	113.1	118.6	123.0	126.3	128.5	128.5
115°	87.9	96.7	103.3	109.9	114.2	117.5	118.6	118.6
117.5°	80.2	87.9	94.5	100.0	104.4	107.7	109.9	109.9
120°	71.4	79.1	85.7	91.2	95.6	97.8	100.0	100.0
122.5°	63.7	70.3	76.9	82.4	85.7	89.0	91.2	90.1
125°	56.0	62.6	68.1	73.6	76.9	80.2	81.3	81.3
127.5°	47.2	53.8	60.4	64.8	68.1	71.4	72.5	72.5
130°	39.5	46.1	51.6	56.0	59.3	61.5	63.7	63.7
132.5°	33.0	38.4	43.9	47.2	50.5	52.7	54.9	54.9
135°	25.3	30.8	35.2	39.5	42.8	45.0	46.1	47.2
137.5°	17.6	23.1	27.5	31.9	34.1	36.3	37.3	37.3
140°	11.0	15.4	19.8	23.1	25.3	27.5	28.6	29.7
142.5°	4.4	8.8	12.1	15.4	17.6	18.7	19.8	19.8
145°	0.0	2.2	5.5	7.7	9.9	12.1	12.1	13.2
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)