

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: P231599

Luminaire Tested: **S121-DR-2-27-X-0048-1-U-DD-4-W**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P231599  
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-2-27-X-0048-1-U-DD-4-W  
Description: DEFINE 1 LED LINEAR DIRECT RECESSED LED LUMINAIRE WITH DROP LENS.  
Light Source: 2700K CCT, 90 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 2735.0 lumens  
Efficiency: N/A  
Efficacy: 64.2 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

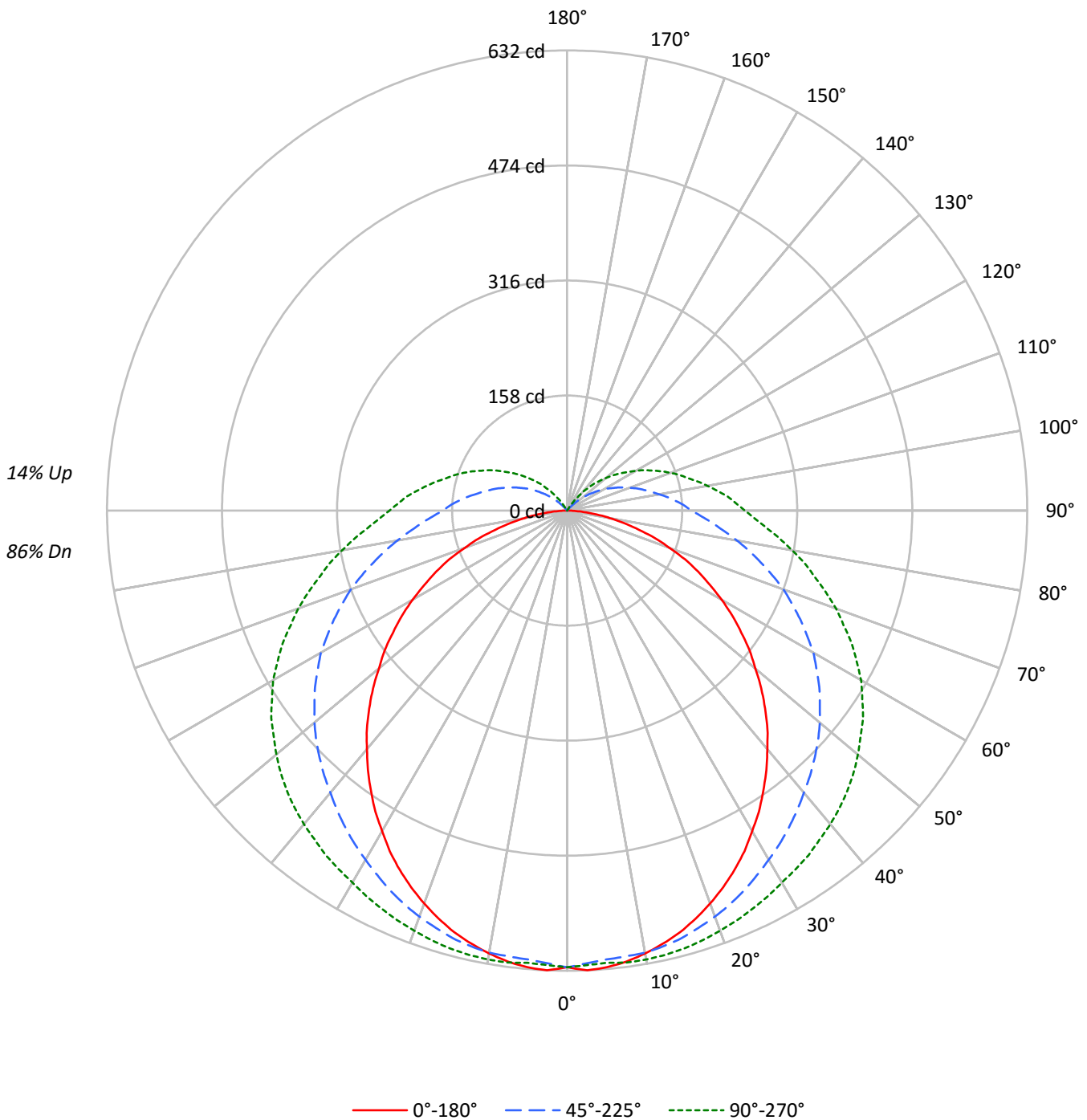
Input Watts (W): 42.6  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



TEST NUMBER: P231599

CATALOG NUMBER: S121-DR-2-27-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°	17535	17535	17535
5°	17636	16480	16293
10°	17467	15789	15461
15°	17253	15111	14681
20°	16955	14431	13961
25°	16625	13800	13335
30°	16207	13200	12787
35°	15799	12675	12379
40°	15336	12181	11993
45°	14886	11771	11649
50°	14321	11376	11283
55°	13813	10981	10943
60°	13218	10579	10563
65°	12540	10083	10127
70°	11507	9611	9650
75°	10218	9026	9134
80°	8635	8500	8696
85°	5883	8023	8258



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	59.5	2.2
10°-20°	172.2	6.3
20°-30°	265.5	9.7
30°-40°	331.0	12.1
40°-50°	365.9	13.4
50°-60°	366.9	13.4
60°-70°	333.3	12.2
70°-80°	270.7	9.9
80°-90°	198.0	7.2
90°-100°	144.6	5.3
100°-110°	103.5	3.8
110°-120°	67.7	2.5
120°-130°	37.9	1.4
130°-140°	15.7	0.6
140°-150°	2.5	0.1
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	497.2	18.2
0°-40°	828.2	30.3
0°-60°	1561.0	57.1
0°-90°	2363.1	86.4
90°-120°	315.8	11.5
90°-150°	371.9	13.6
90°-180°	372.0	13.6
0°-180°	2735.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	627	627	627	627	627	
5°	630	625	619	625	624	60
15°	600	600	608	622	622	169
25°	544	556	576	598	603	251
35°	470	494	531	566	578	294
45°	384	424	481	530	544	296
55°	292	345	423	478	496	261
65°	198	267	353	412	431	196
75°	102	184	275	333	352	109
85°	23	110	201	257	275	27
90°	0	83	171	226	244	1
95°	0	66	150	203	221	0
105°	0	38	109	157	172	0
115°	0	16	74	116	130	0
125°	0	1	42	78	89	0
135°	0	0	13	41	52	0
145°	0	0	0	7	14	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: P231599

CATALOG NUMBER: S121-DR-2-27-X-0048-1-U-DD-4-W

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	627.2	627.2	627.2	627.2	627.2	627.2	627.2	627.2	627.2	627.2	627.2
2.5°	632.0	629.6	627.2	628.4	628.4	629.6	627.2	627.2	624.8	622.4	622.4
5°	629.6	627.2	623.6	624.8	624.8	626.0	624.8	623.6	621.2	618.8	620.0
7.5°	624.8	622.4	618.8	620.0	620.0	620.0	620.0	620.0	618.8	617.6	618.8
10°	617.6	615.2	612.8	612.8	612.8	615.2	615.2	616.4	616.4	616.4	618.8
12.5°	609.2	606.7	604.3	604.3	605.5	609.2	610.4	611.6	612.8	612.8	615.2
15°	599.5	595.9	593.5	595.9	597.1	601.9	604.3	605.5	606.7	608.0	611.6
17.5°	587.5	585.1	581.5	583.9	587.5	593.5	595.9	598.3	600.7	600.7	605.5
20°	574.3	571.9	568.3	573.1	577.9	582.7	586.3	588.7	591.1	593.5	598.3
22.5°	559.9	556.3	555.1	561.1	565.9	571.9	575.5	579.1	581.5	585.1	591.1
25°	544.3	540.7	540.7	546.7	552.7	558.7	563.5	568.3	570.7	575.5	581.5
27.5°	527.5	523.8	525.0	532.3	537.1	545.5	550.3	556.3	559.9	564.7	571.9
30°	508.2	504.6	507.0	515.4	522.6	531.1	537.1	541.9	547.9	553.9	562.3
32.5°	490.2	485.4	489.0	498.6	505.8	515.4	522.6	528.7	535.9	543.1	551.5
35°	469.8	466.2	471.0	480.6	489.0	498.6	507.0	514.2	522.6	531.1	540.7
37.5°	449.4	444.5	451.8	461.4	472.2	481.8	491.4	498.6	508.2	519.0	529.9
40°	427.7	424.1	432.5	443.3	453.0	463.8	474.6	483.0	495.0	505.8	517.8
42.5°	407.3	403.7	413.3	422.9	434.9	447.0	459.0	467.4	480.6	493.8	505.8
45°	384.5	382.1	391.7	403.7	416.9	430.1	440.9	453.0	467.4	480.6	493.8
47.5°	361.6	359.2	370.1	383.3	396.5	410.9	424.1	438.5	453.0	467.4	480.6
50°	337.6	337.6	349.6	362.8	376.1	392.9	406.1	422.9	437.3	453.0	466.2
52.5°	316.0	316.0	328.0	341.2	356.8	373.7	390.5	406.1	422.9	437.3	453.0
55°	292.0	294.4	307.6	320.8	336.4	354.4	372.5	389.3	407.3	422.9	437.3
57.5°	269.1	272.7	284.8	299.2	317.2	336.4	354.4	372.5	389.3	406.1	421.7
60°	245.1	249.9	263.1	278.7	296.8	317.2	336.4	354.4	372.5	390.5	404.9
62.5°	221.1	227.1	240.3	255.9	276.3	296.8	317.2	335.2	354.4	371.3	386.9
65°	198.2	204.3	217.5	234.3	255.9	277.5	298.0	317.2	336.4	353.2	370.1
67.5°	175.4	181.4	195.8	213.9	235.5	257.1	277.5	298.0	317.2	334.0	349.6
70°	149.0	158.6	173.0	192.2	215.1	236.7	258.3	277.5	296.8	316.0	331.6
72.5°	127.4	135.8	151.4	171.8	193.4	216.3	237.9	258.3	277.5	295.6	311.2
75°	102.1	111.7	128.6	150.2	173.0	195.8	217.5	237.9	257.1	275.1	292.0
77.5°	80.5	90.1	108.1	129.8	152.6	175.4	198.2	218.7	237.9	255.9	271.5
80°	60.1	69.7	88.9	110.5	134.6	157.4	179.0	199.4	218.7	236.7	252.3
82.5°	40.9	50.5	70.9	92.5	115.3	138.2	159.8	180.2	199.4	217.5	234.3
85°	22.8	34.8	54.1	75.7	98.5	121.3	143.0	164.6	182.6	200.6	217.5
87.5°	9.6	22.8	40.9	61.3	84.1	106.9	128.6	147.8	168.2	185.0	200.6
90°	0.0	12.0	28.8	49.3	72.1	93.7	115.3	134.6	153.8	170.6	186.2
92.5°	0.0	7.2	22.8	42.1	63.7	85.3	105.7	126.2	144.2	161.0	176.6
95°	0.0	3.6	16.8	36.0	55.3	75.7	96.1	115.3	133.4	150.2	164.6
97.5°	0.0	1.2	13.2	28.8	48.1	68.5	87.7	106.9	123.8	139.4	153.8
100°	0.0	0.0	9.6	24.0	42.1	60.1	79.3	97.3	114.1	128.6	143.0
102.5°	0.0	0.0	4.8	19.2	36.0	52.9	70.9	87.7	104.5	118.9	133.4
105°	0.0	0.0	2.4	14.4	30.0	46.9	63.7	79.3	94.9	109.3	123.8
107.5°	0.0	0.0	0.0	9.6	24.0	39.6	56.5	72.1	87.7	100.9	112.9
110°	0.0	0.0	0.0	6.0	19.2	33.6	49.3	63.7	78.1	91.3	104.5



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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	2.4	14.4	27.6	42.1	56.5	69.7	82.9	94.9
115°	0.0	0.0	0.0	0.0	9.6	21.6	36.0	49.3	62.5	74.5	86.5
117.5°	0.0	0.0	0.0	0.0	4.8	16.8	28.8	42.1	54.1	66.1	76.9
120°	0.0	0.0	0.0	0.0	1.2	12.0	22.8	36.0	46.9	58.9	68.5
122.5°	0.0	0.0	0.0	0.0	0.0	6.0	16.8	28.8	39.6	50.5	60.1
125°	0.0	0.0	0.0	0.0	0.0	2.4	12.0	21.6	32.4	42.1	52.9
127.5°	0.0	0.0	0.0	0.0	0.0	0.0	6.0	15.6	25.2	34.8	44.5
130°	0.0	0.0	0.0	0.0	0.0	0.0	2.4	9.6	19.2	27.6	36.0
132.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8	12.0	20.4	27.6
135°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	6.0	13.2	20.4
137.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	7.2	13.2
140°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	7.2
142.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2
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°	627.2	627.2	627.2	627.2	627.2	627.2	627.2	627.2
2.5°	624.8	626.0	627.2	626.0	626.0	627.2	626.0	624.8
5°	622.4	623.6	624.8	624.8	626.0	626.0	624.8	623.6
7.5°	622.4	624.8	626.0	627.2	627.2	628.4	627.2	626.0
10°	622.4	623.6	626.0	627.2	627.2	628.4	627.2	626.0
12.5°	620.0	622.4	624.8	624.8	626.0	627.2	626.0	624.8
15°	615.2	617.6	621.2	622.4	623.6	623.6	622.4	622.4
17.5°	610.4	612.8	616.4	617.6	618.8	620.0	618.8	618.8
20°	603.1	606.7	610.4	612.8	614.0	615.2	615.2	614.0
22.5°	595.9	600.7	604.3	605.5	608.0	610.4	609.2	609.2
25°	587.5	592.3	597.1	599.5	601.9	604.3	603.1	603.1
27.5°	579.1	583.9	588.7	592.3	595.9	597.1	597.1	597.1
30°	568.3	575.5	580.3	583.9	587.5	589.9	589.9	589.9
32.5°	558.7	565.9	571.9	575.5	580.3	582.7	583.9	583.9
35°	549.1	556.3	563.5	568.3	573.1	576.7	576.7	577.9
37.5°	538.3	547.9	555.1	561.1	565.9	569.5	570.7	569.5
40°	528.7	538.3	545.5	552.7	557.5	561.1	562.3	562.3
42.5°	516.6	527.5	535.9	543.1	549.1	552.7	553.9	553.9
45°	505.8	516.6	526.2	533.5	538.3	541.9	544.3	544.3
47.5°	493.8	504.6	513.0	521.4	527.5	531.1	532.3	533.5
50°	480.6	491.4	499.8	509.4	515.4	519.0	520.2	521.4
52.5°	466.2	477.0	487.8	496.2	502.2	507.0	508.2	508.2
55°	451.8	462.6	473.4	481.8	489.0	492.6	495.0	496.2
57.5°	434.9	447.0	457.8	467.4	473.4	478.2	480.6	480.6
60°	419.3	431.3	442.1	451.8	457.8	462.6	463.8	466.2
62.5°	401.3	413.3	425.3	433.7	439.7	444.5	447.0	448.2
65°	383.3	396.5	408.5	415.7	421.7	427.7	430.1	431.3
67.5°	364.0	377.3	388.1	397.7	402.5	408.5	410.9	410.9
70°	346.0	359.2	368.9	377.3	384.5	389.3	391.7	392.9
72.5°	326.8	338.8	349.6	358.0	364.0	368.9	372.5	372.5
75°	305.2	318.4	329.2	337.6	344.8	349.6	352.0	352.0
77.5°	287.2	299.2	308.8	318.4	325.6	330.4	332.8	334.0
80°	266.7	278.7	289.6	298.0	305.2	310.0	312.4	313.6
82.5°	248.7	260.7	270.3	279.9	286.0	290.8	293.2	294.4
85°	230.7	242.7	253.5	260.7	267.9	271.5	275.1	275.1
87.5°	215.1	225.9	236.7	243.9	251.1	255.9	258.3	258.3
90°	199.4	211.5	221.1	230.7	236.7	241.5	242.7	243.9
92.5°	188.6	200.6	210.3	218.7	224.7	228.3	231.9	231.9
95°	177.8	188.6	199.4	206.7	212.7	217.5	219.9	221.1
97.5°	167.0	177.8	187.4	194.6	200.6	205.5	206.7	207.9
100°	156.2	167.0	175.4	182.6	188.6	192.2	195.8	195.8
102.5°	145.4	156.2	164.6	171.8	177.8	181.4	183.8	183.8
105°	134.6	145.4	153.8	161.0	165.8	170.6	171.8	171.8
107.5°	125.0	135.8	144.2	150.2	155.0	159.8	162.2	162.2
110°	115.3	125.0	133.4	139.4	145.4	149.0	151.4	151.4





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**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°
112.5°	105.7	115.3	123.8	129.8	134.6	138.2	140.6	140.6
115°	96.1	105.7	112.9	120.1	125.0	128.6	129.8	129.8
117.5°	87.7	96.1	103.3	109.3	114.1	117.7	120.1	120.1
120°	78.1	86.5	93.7	99.7	104.5	106.9	109.3	109.3
122.5°	69.7	76.9	84.1	90.1	93.7	97.3	99.7	98.5
125°	61.3	68.5	74.5	80.5	84.1	87.7	88.9	88.9
127.5°	51.7	58.9	66.1	70.9	74.5	78.1	79.3	79.3
130°	43.3	50.5	56.5	61.3	64.9	67.3	69.7	69.7
132.5°	36.0	42.1	48.1	51.7	55.3	57.7	60.1	60.1
135°	27.6	33.6	38.4	43.3	46.9	49.3	50.5	51.7
137.5°	19.2	25.2	30.0	34.8	37.2	39.6	40.9	40.9
140°	12.0	16.8	21.6	25.2	27.6	30.0	31.2	32.4
142.5°	4.8	9.6	13.2	16.8	19.2	20.4	21.6	21.6
145°	0.0	2.4	6.0	8.4	10.8	13.2	13.2	14.4
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)