

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: P231600

Luminaire Tested: **S121-DR-2-30-X-0048-1-U-DD-4-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P231600
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-2-30-X-0048-1-U-DD-4-W
Description: DEFINE 1 LED LINEAR DIRECT RECESSED LED LUMINAIRE WITH DROP LENS.
Light Source: 3000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3407.2 lumens
Efficiency: N/A
Efficacy: 80.0 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

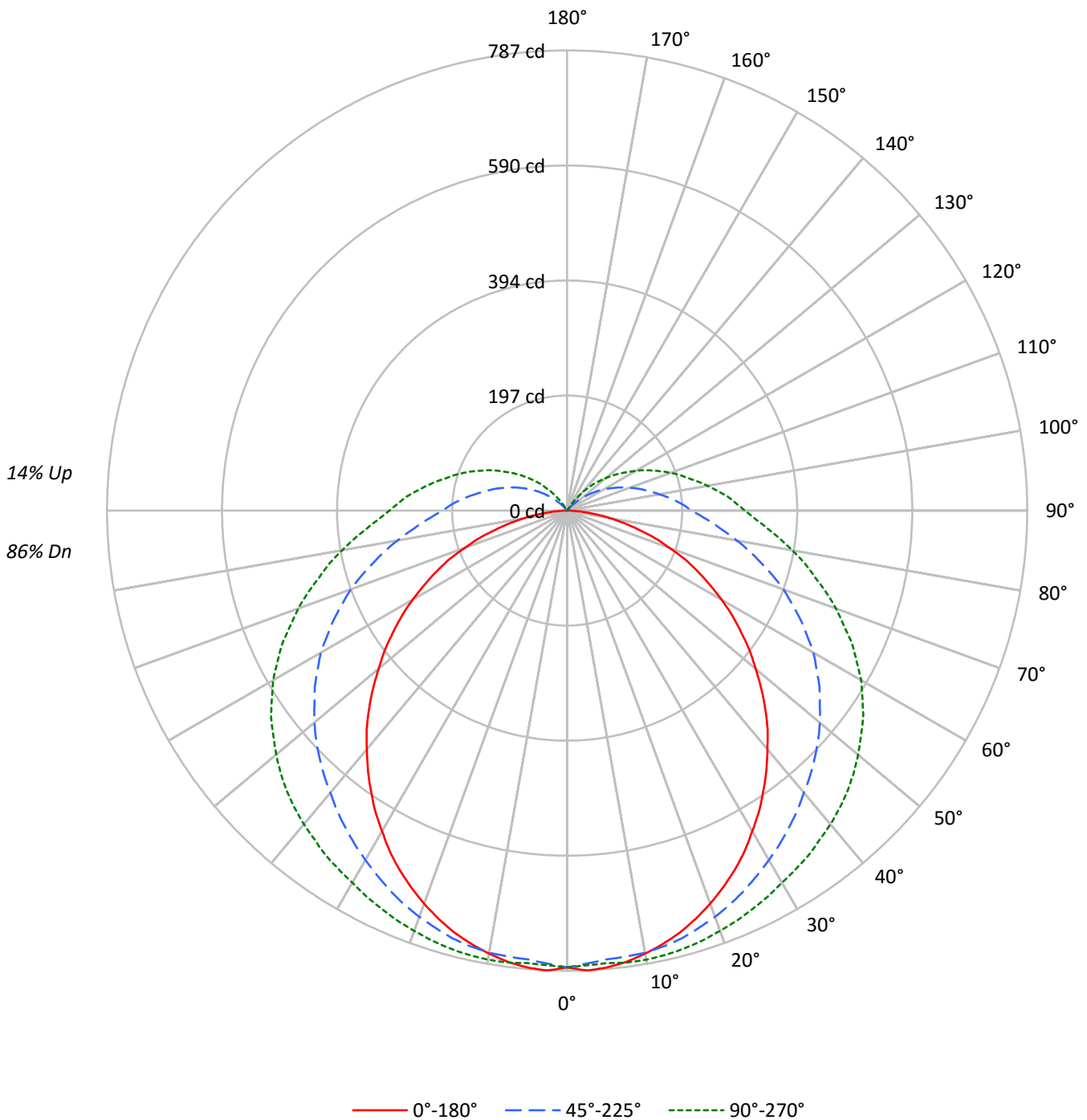
Input Watts (W): 42.6
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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°	21843	21843	21843
5°	21970	20529	20296
10°	21758	19667	19260
15°	21495	18824	18288
20°	21121	17979	17390
25°	20709	17191	16614
30°	20190	16443	15930
35°	19680	15789	15420
40°	19104	15175	14941
45°	18544	14664	14510
50°	17841	14170	14057
55°	17205	13681	13633
60°	16464	13177	13158
65°	15627	12561	12616
70°	14334	11971	12020
75°	12730	11247	11379
80°	10747	10590	10834
85°	7328	9998	10290



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	74.1	2.2
10°-20°	214.5	6.3
20°-30°	330.8	9.7
30°-40°	412.3	12.1
40°-50°	455.8	13.4
50°-60°	457.1	13.4
60°-70°	415.2	12.2
70°-80°	337.3	9.9
80°-90°	246.7	7.2
90°-100°	180.1	5.3
100°-110°	129.0	3.8
110°-120°	84.4	2.5
120°-130°	47.2	1.4
130°-140°	19.5	0.6
140°-150°	3.2	0.1
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	619.4	18.2
0°-40°	1031.7	30.3
0°-60°	1944.6	57.1
0°-90°	2943.8	86.4
90°-120°	393.5	11.5
90°-150°	463.3	13.6
90°-180°	463.0	13.6
0°-180°	3407.2	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	781	781	781	781	781	
5°	784	779	771	778	777	74
15°	747	747	757	775	775	210
25°	678	692	717	745	751	312
35°	585	615	662	705	720	366
45°	479	528	599	660	678	369
55°	364	430	527	595	618	325
65°	247	332	440	513	537	244
75°	127	230	343	415	438	136
85°	28	137	250	320	343	33
90°	0	103	212	281	304	2
95°	0	82	187	253	275	0
105°	0	48	136	196	214	0
115°	0	19	93	145	162	0
125°	0	2	52	97	111	0
135°	0	0	16	51	64	0
145°	0	0	0	9	18	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°	781.3	781.3	781.3	781.3	781.3	781.3	781.3	781.3	781.3	781.3	781.3
2.5°	787.3	784.3	781.3	782.8	782.8	784.3	781.3	781.3	778.3	775.3	775.3
5°	784.3	781.3	776.8	778.3	778.3	779.8	778.3	776.8	773.8	770.8	772.3
7.5°	778.3	775.3	770.8	772.3	772.3	772.3	772.3	772.3	770.8	769.3	770.8
10°	769.3	766.3	763.3	763.3	763.3	766.3	766.3	767.8	767.8	767.8	770.8
12.5°	758.9	755.9	752.9	752.9	754.4	758.9	760.3	761.8	763.3	763.3	766.3
15°	746.9	742.4	739.4	742.4	743.9	749.9	752.9	754.4	755.9	757.4	761.8
17.5°	731.9	728.9	724.4	727.4	731.9	739.4	742.4	745.4	748.4	748.4	754.4
20°	715.4	712.5	708.0	713.9	719.9	725.9	730.4	733.4	736.4	739.4	745.4
22.5°	697.5	693.0	691.5	699.0	705.0	712.5	716.9	721.4	724.4	728.9	736.4
25°	678.0	673.5	673.5	681.0	688.5	696.0	702.0	708.0	711.0	716.9	724.4
27.5°	657.1	652.6	654.1	663.1	669.0	679.5	685.5	693.0	697.5	703.5	712.5
30°	633.1	628.6	631.6	642.1	651.1	661.6	669.0	675.0	682.5	690.0	700.5
32.5°	610.7	604.7	609.2	621.2	630.1	642.1	651.1	658.6	667.5	676.5	687.0
35°	585.2	580.7	586.7	598.7	609.2	621.2	631.6	640.6	651.1	661.6	673.5
37.5°	559.8	553.8	562.8	574.8	588.2	600.2	612.2	621.2	633.1	646.6	660.1
40°	532.8	528.4	538.8	552.3	564.3	577.7	591.2	601.7	616.7	630.1	645.1
42.5°	507.4	502.9	514.9	526.9	541.8	556.8	571.8	582.2	598.7	615.2	630.1
45°	479.0	476.0	487.9	502.9	519.4	535.8	549.3	564.3	582.2	598.7	615.2
47.5°	450.5	447.5	461.0	477.5	493.9	511.9	528.4	546.3	564.3	582.2	598.7
50°	420.6	420.6	435.6	452.0	468.5	489.4	505.9	526.9	544.8	564.3	580.7
52.5°	393.6	393.6	408.6	425.1	444.5	465.5	486.4	505.9	526.9	544.8	564.3
55°	363.7	366.7	383.2	399.6	419.1	441.5	464.0	484.9	507.4	526.9	544.8
57.5°	335.3	339.8	354.7	372.7	395.1	419.1	441.5	464.0	484.9	505.9	525.4
60°	305.3	311.3	327.8	347.2	369.7	395.1	419.1	441.5	464.0	486.4	504.4
62.5°	275.4	282.9	299.3	318.8	344.3	369.7	395.1	417.6	441.5	462.5	482.0
65°	247.0	254.4	270.9	291.9	318.8	345.7	371.2	395.1	419.1	440.0	461.0
67.5°	218.5	226.0	244.0	266.4	293.4	320.3	345.7	371.2	395.1	416.1	435.6
70°	185.6	197.6	215.5	239.5	267.9	294.9	321.8	345.7	369.7	393.6	413.1
72.5°	158.7	169.1	188.6	214.0	241.0	269.4	296.4	321.8	345.7	368.2	387.7
75°	127.2	139.2	160.2	187.1	215.5	244.0	270.9	296.4	320.3	342.8	363.7
77.5°	100.3	112.3	134.7	161.6	190.1	218.5	247.0	272.4	296.4	318.8	338.3
80°	74.8	86.8	110.8	137.7	167.6	196.1	223.0	248.5	272.4	294.9	314.3
82.5°	50.9	62.9	88.3	115.2	143.7	172.1	199.1	224.5	248.5	270.9	291.9
85°	28.4	43.4	67.4	94.3	122.7	151.2	178.1	205.1	227.5	250.0	270.9
87.5°	12.0	28.4	50.9	76.3	104.8	133.2	160.2	184.1	209.5	230.5	250.0
90°	0.0	15.0	35.9	61.4	89.8	116.7	143.7	167.6	191.6	212.5	232.0
92.5°	0.0	9.0	28.4	52.4	79.3	106.3	131.7	157.2	179.6	200.6	220.0
95°	0.0	4.5	21.0	44.9	68.9	94.3	119.7	143.7	166.1	187.1	205.1
97.5°	0.0	1.5	16.5	35.9	59.9	85.3	109.3	133.2	154.2	173.6	191.6
100°	0.0	0.0	12.0	29.9	52.4	74.8	98.8	121.2	142.2	160.2	178.1
102.5°	0.0	0.0	6.0	23.9	44.9	65.9	88.3	109.3	130.2	148.2	166.1
105°	0.0	0.0	3.0	18.0	37.4	58.4	79.3	98.8	118.2	136.2	154.2
107.5°	0.0	0.0	0.0	12.0	29.9	49.4	70.3	89.8	109.3	125.7	140.7
110°	0.0	0.0	0.0	7.5	23.9	41.9	61.4	79.3	97.3	113.8	130.2



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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	3.0	18.0	34.4	52.4	70.3	86.8	103.3	118.2
115°	0.0	0.0	0.0	0.0	12.0	26.9	44.9	61.4	77.8	92.8	107.8
117.5°	0.0	0.0	0.0	0.0	6.0	21.0	35.9	52.4	67.4	82.3	95.8
120°	0.0	0.0	0.0	0.0	1.5	15.0	28.4	44.9	58.4	73.3	85.3
122.5°	0.0	0.0	0.0	0.0	0.0	7.5	21.0	35.9	49.4	62.9	74.8
125°	0.0	0.0	0.0	0.0	0.0	3.0	15.0	26.9	40.4	52.4	65.9
127.5°	0.0	0.0	0.0	0.0	0.0	0.0	7.5	19.5	31.4	43.4	55.4
130°	0.0	0.0	0.0	0.0	0.0	0.0	3.0	12.0	23.9	34.4	44.9
132.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	15.0	25.4	34.4
135°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	7.5	16.5	25.4
137.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	9.0	16.5
140°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	9.0
142.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5
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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CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°
0°	781.3	781.3	781.3	781.3	781.3	781.3	781.3	781.3
2.5°	778.3	779.8	781.3	779.8	779.8	781.3	779.8	778.3
5°	775.3	776.8	778.3	778.3	779.8	779.8	778.3	776.8
7.5°	775.3	778.3	779.8	781.3	781.3	782.8	781.3	779.8
10°	775.3	776.8	779.8	781.3	781.3	782.8	781.3	779.8
12.5°	772.3	775.3	778.3	778.3	779.8	781.3	779.8	778.3
15°	766.3	769.3	773.8	775.3	776.8	776.8	775.3	775.3
17.5°	760.3	763.3	767.8	769.3	770.8	772.3	770.8	770.8
20°	751.4	755.9	760.3	763.3	764.8	766.3	766.3	764.8
22.5°	742.4	748.4	752.9	754.4	757.4	760.3	758.9	758.9
25°	731.9	737.9	743.9	746.9	749.9	752.9	751.4	751.4
27.5°	721.4	727.4	733.4	737.9	742.4	743.9	743.9	743.9
30°	708.0	716.9	722.9	727.4	731.9	734.9	734.9	734.9
32.5°	696.0	705.0	712.5	716.9	722.9	725.9	727.4	727.4
35°	684.0	693.0	702.0	708.0	713.9	718.4	718.4	719.9
37.5°	670.5	682.5	691.5	699.0	705.0	709.5	711.0	709.5
40°	658.6	670.5	679.5	688.5	694.5	699.0	700.5	700.5
42.5°	643.6	657.1	667.5	676.5	684.0	688.5	690.0	690.0
45°	630.1	643.6	655.6	664.6	670.5	675.0	678.0	678.0
47.5°	615.2	628.6	639.1	649.6	657.1	661.6	663.1	664.6
50°	598.7	612.2	622.6	634.6	642.1	646.6	648.1	649.6
52.5°	580.7	594.2	607.7	618.2	625.6	631.6	633.1	633.1
55°	562.8	576.2	589.7	600.2	609.2	613.7	616.7	618.2
57.5°	541.8	556.8	570.3	582.2	589.7	595.7	598.7	598.7
60°	522.4	537.3	550.8	562.8	570.3	576.2	577.7	580.7
62.5°	499.9	514.9	529.8	540.3	547.8	553.8	556.8	558.3
65°	477.5	493.9	508.9	517.9	525.4	532.8	535.8	537.3
67.5°	453.5	470.0	483.4	495.4	501.4	508.9	511.9	511.9
70°	431.1	447.5	459.5	470.0	479.0	484.9	487.9	489.4
72.5°	407.1	422.1	435.6	446.0	453.5	459.5	464.0	464.0
75°	380.2	396.6	410.1	420.6	429.6	435.6	438.5	438.5
77.5°	357.7	372.7	384.7	396.6	405.6	411.6	414.6	416.1
80°	332.3	347.2	360.7	371.2	380.2	386.2	389.2	390.7
82.5°	309.8	324.8	336.8	348.7	356.2	362.2	365.2	366.7
85°	287.4	302.3	315.8	324.8	333.8	338.3	342.8	342.8
87.5°	267.9	281.4	294.9	303.8	312.8	318.8	321.8	321.8
90°	248.5	263.4	275.4	287.4	294.9	300.8	302.3	303.8
92.5°	235.0	250.0	261.9	272.4	279.9	284.4	288.9	288.9
95°	221.5	235.0	248.5	257.4	264.9	270.9	273.9	275.4
97.5°	208.0	221.5	233.5	242.5	250.0	255.9	257.4	258.9
100°	194.6	208.0	218.5	227.5	235.0	239.5	244.0	244.0
102.5°	181.1	194.6	205.1	214.0	221.5	226.0	229.0	229.0
105°	167.6	181.1	191.6	200.6	206.6	212.5	214.0	214.0
107.5°	155.7	169.1	179.6	187.1	193.1	199.1	202.1	202.1
110°	143.7	155.7	166.1	173.6	181.1	185.6	188.6	188.6



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CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°
112.5°	131.7	143.7	154.2	161.6	167.6	172.1	175.1	175.1
115°	119.7	131.7	140.7	149.7	155.7	160.2	161.6	161.6
117.5°	109.3	119.7	128.7	136.2	142.2	146.7	149.7	149.7
120°	97.3	107.8	116.7	124.2	130.2	133.2	136.2	136.2
122.5°	86.8	95.8	104.8	112.3	116.7	121.2	124.2	122.7
125°	76.3	85.3	92.8	100.3	104.8	109.3	110.8	110.8
127.5°	64.4	73.3	82.3	88.3	92.8	97.3	98.8	98.8
130°	53.9	62.9	70.3	76.3	80.8	83.8	86.8	86.8
132.5°	44.9	52.4	59.9	64.4	68.9	71.8	74.8	74.8
135°	34.4	41.9	47.9	53.9	58.4	61.4	62.9	64.4
137.5°	23.9	31.4	37.4	43.4	46.4	49.4	50.9	50.9
140°	15.0	21.0	26.9	31.4	34.4	37.4	38.9	40.4
142.5°	6.0	12.0	16.5	21.0	23.9	25.4	26.9	26.9
145°	0.0	3.0	7.5	10.5	13.5	16.5	16.5	18.0
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)