

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: P242998

Luminaire Tested: **S121DR-H490D935-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P242998
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-57)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S121DR-H490D935-X4F0-XX-UDD-A-W
Description: DEFINE 1 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.
HIGH PERFORMANCE LIGHT ENGINE
Light Source: (184) 3500K CCT, 90 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1652.5 lumens
Efficiency: N/A
Efficacy: 96.1 lumens/watt
Spacing Criteria (0/90/45): 1.13 / 1.2 / 1.28
Luminous Opening: Rectangular (W 3.88' x L: 0.09' x H: 0')
CIE Type: Direct

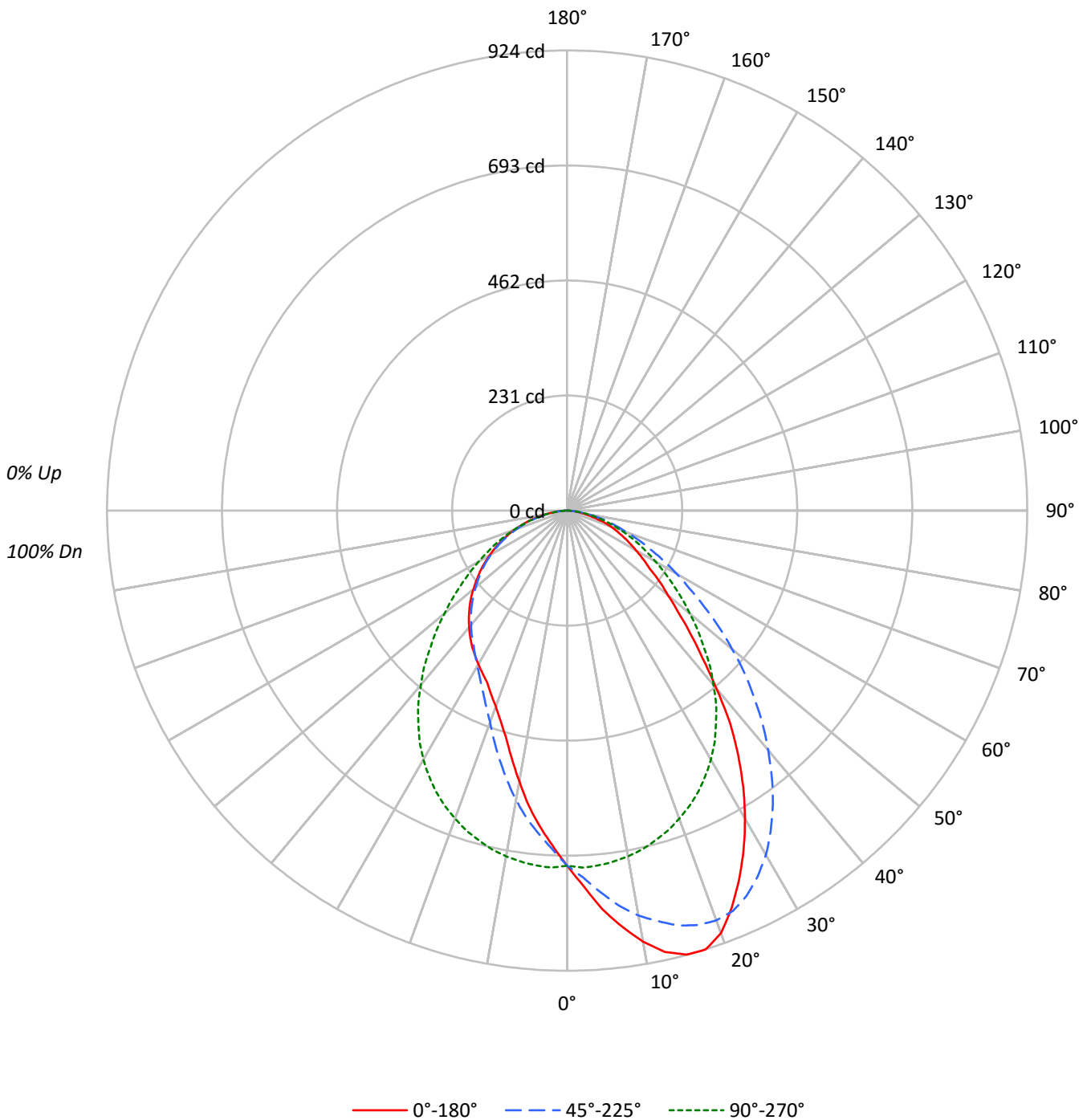
Input Watts (W): 17.2
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	50	30	10	50	30	10	0		
RCR																										
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100					100			
1	110	105	102	98	107	103	100	96	99	96	93	95	93	91	92	90	88	86					86			
2	101	93	87	81	98	91	85	80	88	83	79	84	80	77	81	78	75	73					73			
3	92	83	75	69	90	81	74	68	78	72	67	75	70	66	73	69	65	63					63			
4	85	74	66	59	83	72	65	59	70	63	58	68	62	57	66	61	57	54					54			
5	79	66	58	52	77	65	57	51	63	56	51	61	55	50	60	54	50	48					48			
6	73	60	52	46	71	59	51	45	57	50	45	56	49	45	54	49	44	42					42			
7	68	55	46	41	66	54	46	40	53	45	40	51	45	40	50	44	40	38					38			
8	63	50	42	37	62	50	42	36	48	41	36	47	41	36	46	40	36	34					34			
9	59	46	38	33	58	46	38	33	45	38	33	44	37	33	43	37	33	31					31			
10	56	43	35	30	54	42	35	30	41	35	30	41	34	30	40	34	30	28					28			

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	21126	21126	21126
5°	23869	21275	18902
10°	26443	21208	16614
15°	28316	21025	14494
20°	28473	20754	13196
25°	26707	20364	12443
30°	24432	19748	12197
35°	21638	18845	12045
40°	18028	17676	11836
45°	14699	16262	11620
50°	12197	14820	11326
55°	10440	13431	11034
60°	9458	12160	10684
65°	8736	11070	10306
70°	8057	9971	9694
75°	6502	8838	8941
80°	5187	7149	7644
85°	3910	5269	6255



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	68.1	4.1
10°-20°	195.1	11.8
20°-30°	284.1	17.2
30°-40°	316.8	19.2
40°-50°	292.8	17.7
50°-60°	233.3	14.1
60°-70°	159.7	9.7
70°-80°	82.9	5.0
80°-90°	19.6	1.2
90°-100°	0.0	0.0
100°-110°	0.0	0.0
110°-120°	0.0	0.0
120°-130°	0.0	0.0
130°-140°	0.0	0.0
140°-150°	0.0	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	547.4	33.1
0°-40°	864.1	52.3
0°-60°	1390.3	84.1
0°-90°	1652.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1652.5	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	713	713	713	713	713	
5°	802	769	715	652	636	79
15°	923	862	685	520	472	259
25°	817	853	623	400	381	374
35°	598	720	521	328	333	371
45°	351	531	388	271	277	273
55°	202	335	260	208	214	185
65°	125	185	158	143	147	124
75°	57	83	77	73	78	62
85°	12	16	16	16	18	14
90°	0	0	0	0	0	



TEST NUMBER: P242998

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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	713.0	713.0	713.0	713.0	713.0	713.0	713.0	713.0	713.0	713.0	713.0
2.5°	754.3	754.3	752.3	753.2	752.0	750.0	746.9	743.4	739.1	737.4	736.5
5°	802.5	803.7	802.2	799.4	798.8	796.5	789.6	785.6	776.4	769.2	766.9
7.5°	842.7	844.7	844.7	839.6	837.3	831.5	826.6	820.0	808.6	800.5	793.9
10°	878.9	879.7	876.6	873.7	869.1	864.5	856.2	847.9	835.5	825.8	814.9
12.5°	907.6	909.3	907.0	902.4	897.0	890.9	880.6	870.0	857.9	844.7	833.0
15°	923.1	925.7	926.0	922.2	918.2	911.0	903.6	892.1	878.9	862.5	843.3
17.5°	924.2	925.4	926.2	923.4	920.8	918.2	910.7	901.3	888.6	872.6	854.8
20°	903.0	905.6	908.5	905.9	907.0	907.0	903.9	899.0	888.6	875.7	858.5
22.5°	863.4	869.4	873.1	875.7	878.3	882.0	885.8	883.5	879.5	870.0	854.5
25°	816.9	821.8	828.9	831.2	833.2	844.2	850.8	855.3	855.3	853.3	843.0
27.5°	767.5	770.7	776.7	784.7	792.2	798.8	812.6	821.2	828.1	828.1	822.6
30°	714.1	718.7	725.9	731.4	740.5	754.0	765.5	775.8	791.6	798.5	797.4
32.5°	657.9	662.5	669.9	674.5	687.7	698.6	716.4	732.5	750.6	760.9	767.2
35°	598.2	598.5	611.1	618.5	630.0	643.5	665.3	683.4	703.2	720.4	733.9
37.5°	536.7	536.5	545.4	558.6	567.7	586.7	609.1	629.2	656.7	675.1	696.3
40°	466.1	472.2	479.6	491.7	507.5	529.9	551.1	577.2	604.8	627.7	650.4
42.5°	403.0	407.9	419.9	433.4	450.4	469.3	495.1	524.1	551.1	580.9	606.2
45°	350.8	353.3	360.5	371.4	389.2	410.7	437.7	468.4	500.3	530.7	558.8
47.5°	302.5	310.3	314.0	324.1	337.0	357.1	385.2	412.7	449.5	483.4	514.1
50°	264.6	266.1	272.7	280.1	295.4	310.3	331.5	359.9	394.1	432.3	463.6
52.5°	233.6	233.1	238.5	245.1	255.7	271.5	289.9	317.5	346.4	384.3	418.5
55°	202.1	204.9	207.5	214.1	223.6	235.7	251.2	274.4	301.7	335.3	371.1
57.5°	180.3	180.5	182.0	187.4	193.7	203.2	218.1	237.9	262.3	291.6	326.4
60°	159.6	159.9	162.5	164.2	168.5	176.5	188.0	204.4	225.9	254.0	284.4
62.5°	141.8	142.1	143.5	145.2	149.3	152.4	162.2	176.2	193.7	218.7	244.8
65°	124.6	124.9	124.9	127.2	129.7	132.6	139.5	148.4	165.3	185.1	208.4
67.5°	107.9	109.6	109.1	110.8	113.1	114.5	119.4	127.4	138.9	155.6	175.7
70°	93.0	92.7	93.6	94.4	95.3	97.6	100.7	106.2	116.0	127.7	145.5
72.5°	76.9	75.2	76.4	77.5	78.9	80.7	83.2	87.3	94.7	104.2	117.4
75°	56.8	56.0	57.7	58.0	60.6	62.9	65.7	69.7	75.2	83.2	91.8
77.5°	41.3	42.5	43.1	43.6	43.9	46.5	49.7	53.1	56.3	63.7	70.3
80°	30.4	30.4	30.7	31.3	31.9	32.4	34.4	36.7	39.3	43.9	50.5
82.5°	21.2	21.0	21.0	21.2	21.5	22.1	23.0	23.8	26.1	28.4	31.9
85°	11.5	11.8	12.1	11.5	11.8	12.1	12.6	13.5	14.1	15.8	17.2
87.5°	4.0	4.9	4.6	4.6	4.9	4.9	4.9	5.5	5.5	5.5	6.3
90°	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°	95°	100°	105°
0°	713.0	713.0	713.0	713.0	713.0	713.0	713.0	713.0	713.0	713.0	713.0
2.5°	735.7	734.8	732.5	727.9	724.8	719.0	717.9	717.6	712.4	704.7	704.1
5°	762.9	756.3	750.9	742.8	734.8	725.0	719.3	715.3	706.1	694.6	689.4
7.5°	787.9	778.4	767.2	754.6	742.8	729.1	719.0	711.0	697.5	682.8	673.9
10°	808.0	796.2	782.2	765.2	749.1	731.1	717.0	704.9	687.2	669.1	657.0
12.5°	821.8	808.6	792.5	772.7	753.2	732.5	712.1	696.9	674.5	653.6	638.1
15°	837.3	815.5	798.8	776.4	753.5	728.8	707.2	685.4	659.6	636.1	616.0
17.5°	841.0	820.9	801.1	776.4	752.6	722.5	697.5	673.4	644.7	615.7	596.2
20°	844.4	821.5	797.1	770.4	745.4	714.4	686.3	658.2	624.9	593.6	569.2
22.5°	841.9	819.5	792.2	762.1	735.1	703.2	672.8	641.8	604.5	571.8	544.2
25°	834.4	813.7	785.6	752.6	720.2	687.7	655.9	622.9	582.4	544.5	514.1
27.5°	819.2	800.8	773.8	738.8	704.7	668.8	635.5	601.0	557.7	519.0	486.5
30°	798.8	784.2	756.9	721.9	684.9	646.4	612.2	577.2	532.2	490.0	455.5
32.5°	770.7	760.3	736.8	702.6	662.8	622.0	587.0	551.4	503.2	463.0	428.0
35°	739.1	734.2	713.3	679.1	637.8	595.0	557.4	521.0	476.5	434.0	400.4
37.5°	702.1	705.5	686.6	652.7	609.9	566.3	526.7	491.4	446.3	405.6	372.6
40°	665.3	670.5	656.2	624.6	580.1	535.0	494.8	457.0	415.0	379.2	346.4
42.5°	624.6	634.9	623.7	593.0	549.7	502.0	460.1	424.8	384.9	351.9	323.2
45°	581.2	594.4	589.8	558.6	515.8	469.0	424.8	388.1	355.9	326.6	300.5
47.5°	537.3	552.5	550.5	524.4	483.4	435.4	391.8	355.6	326.1	302.5	280.7
50°	492.3	507.8	508.0	484.8	446.6	401.0	354.2	321.5	297.9	277.3	259.5
52.5°	448.3	463.8	464.1	446.0	407.9	363.4	320.3	290.5	270.4	254.3	239.4
55°	402.4	420.5	422.2	404.7	370.8	328.1	288.5	260.0	242.3	231.9	219.0
57.5°	355.9	375.4	378.9	364.8	332.1	292.2	258.9	231.6	217.3	210.1	200.3
60°	312.6	331.8	337.3	321.2	294.2	260.0	228.2	205.2	193.7	188.0	181.1
62.5°	272.7	291.9	294.8	281.0	254.3	225.6	201.5	180.5	171.1	166.8	161.3
65°	233.6	250.9	254.6	242.3	218.1	194.3	173.1	157.9	149.5	145.8	142.4
67.5°	197.8	213.8	216.4	205.2	185.1	164.8	149.3	136.1	130.3	125.4	124.0
70°	163.9	178.5	180.8	169.6	153.8	137.2	124.3	115.1	109.6	106.8	104.8
72.5°	132.6	144.1	146.1	139.2	126.9	112.2	102.2	94.4	91.0	88.4	87.5
75°	103.6	114.8	115.1	109.1	99.0	89.0	81.2	77.2	73.2	70.6	70.0
77.5°	79.5	85.8	86.7	83.5	73.8	67.5	61.4	58.6	57.1	54.5	54.5
80°	56.8	60.6	62.0	57.4	52.8	47.4	44.2	41.9	40.8	39.0	39.0
82.5°	35.3	38.5	40.2	36.7	34.4	31.6	29.3	27.8	27.0	26.1	25.8
85°	19.2	21.5	21.5	20.4	18.4	16.9	16.1	15.5	15.2	14.9	14.6
87.5°	6.9	8.6	7.7	8.0	7.2	6.9	6.6	6.6	6.9	6.3	6.3
90°	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):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	713.0	713.0	713.0	713.0	713.0	713.0	713.0	713.0	713.0	713.0	713.0
2.5°	700.4	698.9	694.6	690.6	687.4	680.5	679.1	679.7	679.7	680.0	676.8
5°	683.4	677.4	670.5	664.2	659.3	651.6	647.3	646.1	645.2	643.5	640.4
7.5°	664.2	657.3	647.5	641.8	631.5	622.9	616.8	612.8	610.2	606.5	601.3
10°	644.7	634.6	623.7	612.2	601.9	590.4	580.9	576.4	570.9	567.2	561.4
12.5°	625.2	611.1	596.2	583.0	568.9	555.4	545.6	539.3	529.6	524.1	518.1
15°	599.6	582.4	569.8	546.8	539.9	520.4	508.6	503.7	494.3	492.5	483.1
17.5°	575.5	555.7	537.0	517.8	499.4	485.9	475.9	469.6	462.1	457.5	451.2
20°	545.4	524.7	502.3	482.2	466.7	452.4	446.0	438.0	433.7	429.1	424.5
22.5°	516.7	491.4	469.0	452.6	436.9	425.1	418.2	412.7	409.0	404.4	401.3
25°	485.9	462.4	441.7	424.8	409.6	400.4	394.7	391.5	389.2	385.8	383.8
27.5°	456.7	432.8	412.5	399.5	387.2	379.2	376.3	373.4	370.6	369.4	369.1
30°	425.4	403.6	386.9	375.7	364.5	360.2	358.8	355.9	356.5	356.8	355.9
32.5°	399.0	377.7	365.1	355.6	347.0	343.9	343.6	342.4	342.7	344.1	343.6
35°	371.7	355.9	343.3	335.5	330.1	327.8	328.1	328.4	330.1	330.4	331.5
37.5°	348.5	333.2	324.9	317.5	314.9	314.9	315.2	315.4	316.9	318.6	319.2
40°	325.5	313.1	306.0	301.1	299.7	299.7	300.8	302.2	303.1	304.8	305.1
42.5°	304.8	294.5	289.0	284.2	284.7	286.2	286.5	287.3	289.6	289.9	290.5
45°	284.4	276.7	271.2	269.8	269.8	271.0	272.4	273.0	274.7	275.0	275.5
47.5°	266.9	258.9	254.9	253.4	254.3	255.7	257.8	258.6	260.0	259.8	261.2
50°	247.4	240.8	237.7	237.1	237.7	240.2	241.1	243.1	244.5	245.4	246.0
52.5°	228.8	223.6	222.2	221.9	223.0	224.7	225.9	227.9	229.6	229.6	229.3
55°	211.0	206.4	204.7	206.1	207.5	208.4	210.7	211.8	213.6	213.8	213.6
57.5°	192.9	188.9	188.3	188.9	191.7	193.5	194.9	194.9	195.8	196.0	196.9
60°	174.2	171.6	171.1	172.5	175.7	176.8	177.7	178.0	179.1	178.5	180.3
62.5°	156.7	154.1	155.3	156.7	157.9	159.6	160.2	161.6	161.3	161.9	162.7
65°	138.6	137.2	137.5	139.2	140.6	142.9	142.9	142.9	144.4	144.4	145.0
67.5°	121.1	120.3	121.4	122.8	123.1	124.6	124.3	126.0	127.2	127.7	128.3
70°	104.2	103.6	103.6	105.1	106.5	107.1	107.6	108.8	109.1	109.9	111.4
72.5°	88.1	86.4	86.7	88.7	88.7	89.8	91.3	91.3	93.0	93.3	94.7
75°	70.6	70.0	70.6	71.8	73.2	72.9	74.6	74.3	74.9	76.9	77.2
77.5°	55.1	54.2	55.7	56.3	56.5	56.8	57.4	58.8	60.0	60.9	61.1
80°	39.6	39.3	40.8	41.3	41.0	41.6	42.5	43.9	43.9	44.5	45.4
82.5°	26.7	26.1	27.0	27.8	28.4	28.7	28.7	29.3	29.6	30.1	30.1
85°	15.2	15.2	15.8	16.1	16.6	16.4	16.9	16.6	17.2	17.8	17.5
87.5°	6.6	6.6	6.6	6.6	6.9	6.9	7.2	7.2	6.9	7.2	6.6
90°	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):

	165°	170°	175°	180°
0°	713.0	713.0	713.0	713.0
2.5°	675.7	676.2	674.8	673.4
5°	640.1	638.1	636.1	635.5
7.5°	600.2	600.2	595.3	596.4
10°	557.4	555.7	552.0	552.2
12.5°	515.8	514.4	512.3	511.5
15°	478.2	479.1	480.5	472.5
17.5°	448.6	446.3	445.2	443.7
20°	422.2	421.1	418.8	418.5
22.5°	401.8	399.3	398.7	399.0
25°	382.3	382.3	382.3	380.6
27.5°	368.5	368.5	367.7	368.0
30°	356.5	357.1	356.2	356.5
32.5°	345.0	345.3	344.7	344.4
35°	332.1	333.0	332.7	333.0
37.5°	319.8	320.3	319.8	319.8
40°	305.7	307.1	306.8	306.0
42.5°	291.6	291.6	292.5	292.2
45°	277.0	276.4	276.4	277.3
47.5°	261.5	262.6	262.1	262.3
50°	247.1	246.8	246.0	245.7
52.5°	230.2	230.8	230.5	229.1
55°	213.8	213.8	213.6	213.6
57.5°	196.3	197.2	196.9	196.9
60°	179.7	180.3	180.5	180.3
62.5°	162.7	163.0	162.7	163.0
65°	146.4	146.4	146.1	147.0
67.5°	128.6	128.9	128.6	129.2
70°	111.7	112.2	112.5	111.9
72.5°	95.6	95.0	95.3	94.7
75°	77.8	78.1	77.8	78.1
77.5°	61.1	61.4	61.1	61.4
80°	45.1	45.1	45.4	44.8
82.5°	30.4	30.4	31.3	30.4
85°	17.8	17.8	17.2	18.4
87.5°	6.9	6.9	6.9	6.9
90°	0.0	0.0	0.0	0.0

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