

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: P242133

Luminaire Tested: **S121DR-S490D930-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P242133
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-18)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S121DR-S490D930-X4F0-XX-UDD-A-W
Description: DEFINE 1 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER
STANDARD LIGHT ENGINE
Light Source: (92) 3000K CCT, 90 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1676.3 lumens
Efficiency: N/A
Efficacy: 89.2 lumens/watt
Spacing Criteria (0/90/45): 1.27 / 1.22 / 1.37
Luminous Opening: Rectangular (W 3.88' x L: 0.09' x H: 0')
CIE Type: Direct

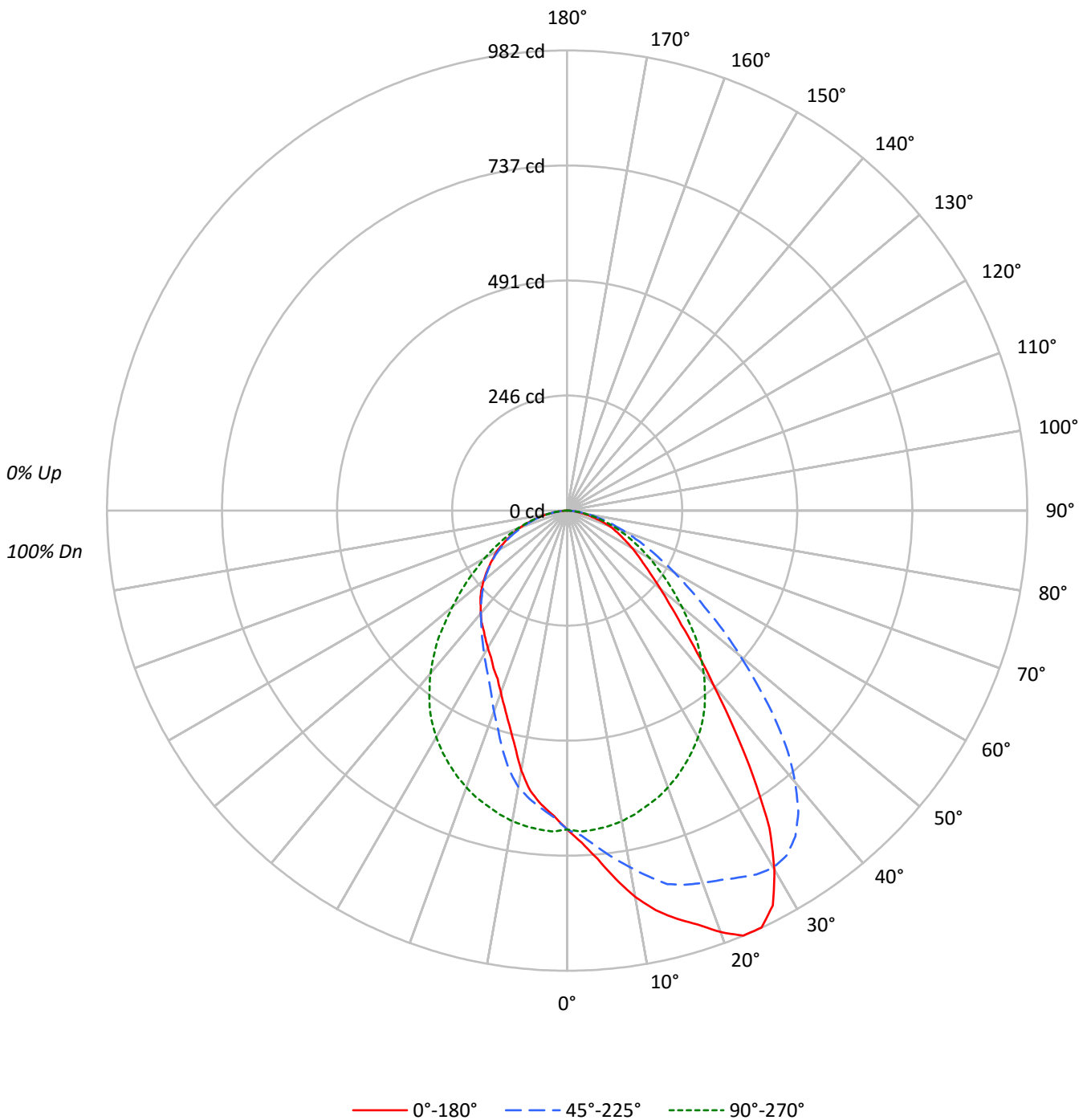
Input Watts (W): 18.8
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	110	105	102	98	107	103	100	96	99	96	93	95	93	91	92	90	88	86
2	101	93	87	82	98	91	85	81	88	83	79	85	80	77	82	78	75	73
3	92	83	75	69	90	81	74	68	78	72	67	75	70	66	73	69	65	63
4	85	74	66	59	83	73	65	59	70	63	58	68	62	57	66	61	57	54
5	79	66	58	52	77	65	57	51	63	56	51	61	55	50	60	54	50	48
6	73	60	52	46	71	59	51	45	57	50	45	56	49	45	54	49	44	42
7	68	55	46	41	66	54	46	40	52	45	40	51	45	40	50	44	40	38
8	63	50	42	36	62	50	42	36	48	41	36	47	41	36	46	40	36	34
9	59	46	38	33	58	46	38	33	44	38	33	43	37	33	42	37	32	31
10	56	43	35	30	54	42	35	30	41	34	30	40	34	30	39	34	30	28

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	20157	20157	20157
5°	22182	20320	18735
10°	25189	20245	16945
15°	27657	20022	14564
20°	30182	19824	13032
25°	32098	19511	12136
30°	30265	19108	11578
35°	25009	18509	11246
40°	18748	17549	11097
45°	14448	16363	10966
50°	11980	14718	10713
55°	10342	13369	10404
60°	9505	12053	10270
65°	8785	10895	9689
70°	8317	9789	9278
75°	6834	8643	8243
80°	5392	7047	6791
85°	4182	5167	4589



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	65.4	3.9
10°-20°	190.8	11.4
20°-30°	292.2	17.4
30°-40°	333.4	19.9
40°-50°	299.1	17.8
50°-60°	234.7	14.0
60°-70°	159.6	9.5
70°-80°	82.2	4.9
80°-90°	18.9	1.1
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°	548.4	32.7
0°-40°	881.7	52.6
0°-60°	1415.5	84.4
0°-90°	1676.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1676.3	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	680	680	680	680	680	
5°	746	720	683	638	630	74
15°	902	825	653	530	475	257
25°	982	864	597	396	371	443
35°	691	849	512	318	311	429
45°	345	626	390	257	262	273
55°	200	357	259	199	201	182
65°	125	190	155	136	138	125
75°	60	84	76	69	72	64
85°	12	16	15	14	14	15
90°	0	0	0	0	0	



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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	680.3	680.3	680.3	680.3	680.3	680.3	680.3	680.3	680.3	680.3	680.3
2.5°	708.9	708.9	710.1	709.8	708.7	706.6	704.9	702.8	697.5	694.0	697.2
5°	745.8	747.3	748.8	748.5	744.1	740.3	734.7	733.2	723.9	719.5	718.0
7.5°	792.7	792.4	793.0	788.0	784.2	780.4	773.1	764.0	752.9	746.7	740.9
10°	837.2	839.8	838.6	832.5	826.6	822.5	810.8	799.7	785.9	772.8	765.4
12.5°	873.5	872.0	877.0	871.1	864.1	856.5	845.1	835.1	817.3	799.4	784.5
15°	901.6	900.1	900.7	896.3	889.0	882.2	870.5	860.0	843.0	825.2	809.3
17.5°	926.1	927.6	925.0	919.7	909.7	901.8	887.2	872.9	855.0	837.2	821.6
20°	957.2	958.6	953.7	946.0	936.4	922.9	907.7	887.2	867.3	845.4	826.0
22.5°	981.8	980.9	979.1	971.8	961.6	949.0	927.0	904.5	880.8	853.5	828.7
25°	981.8	982.9	983.8	980.0	973.3	962.7	947.8	924.1	897.5	864.1	829.3
27.5°	950.1	955.4	959.2	959.2	957.8	957.5	948.7	933.8	908.9	875.2	836.6
30°	884.6	891.6	897.5	906.5	917.4	924.4	927.0	921.2	908.3	879.9	839.8
32.5°	803.8	803.2	815.2	829.8	851.2	866.1	881.1	889.8	889.3	872.3	838.9
35°	691.4	699.6	713.9	734.4	761.9	786.5	819.0	836.0	849.5	848.9	827.5
37.5°	581.9	583.1	599.2	627.3	651.6	689.6	732.1	767.5	800.0	810.5	803.5
40°	484.7	492.9	503.8	527.2	551.5	584.8	638.7	686.1	726.2	757.2	765.7
42.5°	409.8	414.2	424.7	445.2	466.9	506.7	546.2	596.8	647.5	696.9	722.4
45°	344.8	348.9	358.6	372.9	393.1	424.4	465.1	514.3	568.4	626.4	662.7
47.5°	297.4	298.9	306.2	317.0	336.0	358.9	391.6	439.4	494.1	550.6	603.9
50°	259.9	262.3	267.2	275.7	289.8	311.2	337.2	373.2	423.8	482.4	536.5
52.5°	227.1	228.9	234.8	239.4	250.3	268.4	291.0	323.7	366.5	419.2	475.1
55°	200.2	202.0	204.9	210.2	218.7	230.9	250.3	276.3	312.9	357.4	409.8
57.5°	179.7	180.6	181.2	184.7	191.4	201.4	217.8	238.3	266.7	307.3	353.9
60°	160.4	160.1	162.5	165.1	169.2	175.3	187.3	205.8	231.2	264.3	307.6
62.5°	141.1	142.6	144.0	146.1	148.7	152.2	161.9	175.6	195.8	224.2	259.9
65°	125.3	125.6	126.7	127.0	130.3	133.8	141.1	150.5	167.1	190.3	219.8
67.5°	110.1	110.4	110.1	110.9	112.4	115.3	119.1	126.7	139.6	158.4	184.1
70°	96.0	95.1	94.0	95.4	96.9	98.4	101.0	106.8	116.5	130.5	151.9
72.5°	77.3	77.9	78.4	79.0	79.3	81.4	83.7	87.8	95.4	106.3	122.6
75°	59.7	59.7	60.6	61.2	63.8	64.4	67.0	70.0	76.1	83.7	96.6
77.5°	43.9	43.6	45.1	45.4	46.8	48.6	50.1	53.0	57.7	64.1	72.6
80°	31.6	31.9	31.6	31.6	32.5	33.7	35.7	37.2	40.4	44.5	50.6
82.5°	21.1	21.1	21.4	21.4	22.2	22.2	23.4	24.6	26.6	29.3	33.7
85°	12.3	12.3	12.0	12.0	12.3	12.3	13.5	14.3	14.6	16.4	17.9
87.5°	5.3	5.3	5.0	5.3	5.0	5.3	5.0	5.6	5.9	6.1	6.7
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°	680.3	680.3	680.3	680.3	680.3	680.3	680.3	680.3	680.3	680.3	680.3
2.5°	696.4	695.5	695.2	692.0	688.8	684.9	684.4	685.5	680.6	674.4	674.1
5°	714.5	711.3	706.6	700.5	695.2	688.2	684.7	683.2	675.6	666.8	665.0
7.5°	734.7	726.8	718.3	708.9	699.6	689.3	682.9	679.1	668.6	657.7	653.3
10°	754.0	743.8	730.9	716.6	703.4	689.3	679.7	672.9	660.1	646.6	639.9
12.5°	776.3	759.3	741.1	723.3	707.2	689.0	674.4	664.2	649.2	634.9	624.9
15°	792.4	767.8	753.7	728.3	708.1	686.1	668.3	652.7	636.4	620.5	610.6
17.5°	805.0	785.6	761.1	733.0	705.7	682.0	659.8	642.5	620.8	603.6	592.7
20°	809.1	789.4	764.3	733.5	706.3	675.9	649.5	628.7	605.6	584.5	569.6
22.5°	807.6	785.3	759.6	729.4	701.9	665.9	638.4	613.5	587.8	565.2	544.7
25°	804.4	778.6	750.2	721.8	691.1	655.7	624.1	596.8	565.8	541.2	516.6
27.5°	802.6	769.0	737.0	706.3	677.0	642.8	608.8	578.4	544.2	514.3	482.7
30°	802.0	761.9	721.8	686.1	659.2	624.4	590.7	558.5	518.4	484.7	452.5
32.5°	800.9	756.1	708.9	666.2	635.5	604.2	568.4	536.5	491.2	456.0	421.5
35°	793.0	745.8	694.0	645.4	609.4	576.9	545.0	511.7	464.5	426.8	393.7
37.5°	776.0	734.7	679.4	624.6	581.6	548.5	519.0	482.7	437.0	395.7	365.0
40°	750.8	717.1	663.6	604.2	553.5	517.2	485.9	453.7	406.6	367.1	339.3
42.5°	718.0	692.0	641.6	580.2	526.3	485.6	453.7	421.8	378.5	340.4	315.5
45°	675.0	658.9	614.7	554.1	500.0	452.8	418.3	390.5	350.4	315.5	292.7
47.5°	627.3	620.3	583.4	525.1	468.0	422.4	382.0	352.7	321.4	291.8	271.6
50°	569.6	575.2	546.2	492.6	437.3	390.5	351.0	319.3	292.1	269.3	251.4
52.5°	515.8	528.9	505.5	454.6	405.1	356.5	316.7	287.7	266.4	247.6	232.1
55°	455.8	474.8	460.7	416.8	367.6	324.6	284.8	258.8	240.3	226.0	212.8
57.5°	398.1	425.0	414.8	375.3	333.4	291.5	254.1	228.3	215.1	204.6	193.5
60°	346.9	371.5	370.0	336.3	294.5	257.3	226.6	203.4	191.7	184.7	175.0
62.5°	300.9	325.8	323.4	293.0	259.9	225.4	199.3	178.3	169.8	162.2	156.0
65°	254.1	275.4	276.6	254.1	222.2	194.4	172.1	155.4	147.8	143.1	138.7
67.5°	211.6	232.4	234.5	216.6	188.5	164.5	147.8	133.8	127.0	122.9	119.7
70°	174.5	191.4	195.2	180.3	156.6	137.9	123.8	113.0	108.6	104.5	103.3
72.5°	141.4	155.1	157.8	144.0	126.5	112.4	101.6	93.4	90.2	86.1	85.2
75°	112.4	122.1	122.4	113.3	100.1	89.3	80.5	75.5	72.0	69.1	68.5
77.5°	81.7	90.2	92.8	86.1	75.2	66.2	61.2	57.4	55.0	53.6	53.3
80°	59.1	64.7	65.9	60.0	53.6	48.0	44.5	41.3	39.8	38.3	37.8
82.5°	36.9	41.9	42.2	38.1	34.8	31.0	28.1	26.9	26.1	25.2	25.2
85°	19.9	22.5	22.2	20.5	19.0	17.0	15.8	15.2	14.6	14.1	14.1
87.5°	7.6	8.5	8.5	8.8	7.6	6.7	6.1	6.4	6.1	6.1	6.1
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°	680.3	680.3	680.3	680.3	680.3	680.3	680.3	680.3	680.3	680.3	680.3
2.5°	672.1	670.9	668.0	663.3	660.7	654.8	655.1	656.3	656.6	655.7	655.4
5°	660.1	656.6	651.9	646.0	641.9	637.5	634.6	636.4	635.5	635.2	633.7
7.5°	646.9	642.2	636.4	630.5	625.8	620.0	617.6	615.6	613.2	612.9	611.8
10°	633.7	627.9	621.1	612.6	606.2	598.9	591.9	588.1	583.7	580.4	573.7
12.5°	618.2	608.3	600.6	591.9	580.2	568.4	560.5	549.7	543.9	538.0	530.1
15°	600.4	587.5	574.3	556.7	546.5	530.1	518.4	510.5	501.4	495.6	488.8
17.5°	574.9	561.4	544.7	524.8	506.7	490.0	481.5	471.3	467.5	454.6	453.4
20°	549.7	529.5	508.7	488.5	468.3	456.3	445.5	438.8	431.8	423.6	420.9
22.5°	521.3	495.0	473.0	454.3	435.8	422.7	417.4	409.8	403.1	398.4	394.0
25°	486.8	462.5	440.2	422.7	406.0	396.0	389.3	383.7	380.8	375.5	373.8
27.5°	454.9	430.6	412.7	396.3	382.9	374.1	368.2	363.3	359.5	358.6	356.5
30°	422.4	401.6	384.6	370.6	358.6	353.9	348.3	346.0	343.6	342.5	340.1
32.5°	393.1	374.7	359.7	346.3	339.3	334.9	331.9	329.6	327.8	327.3	326.7
35°	366.5	349.5	337.2	327.5	322.3	317.6	316.1	314.1	313.2	312.9	312.6
37.5°	343.1	327.3	317.9	309.4	305.6	301.2	301.5	300.6	300.0	298.3	299.4
40°	319.3	307.1	297.4	290.7	288.0	286.6	286.0	285.4	285.7	285.7	285.4
42.5°	297.7	286.9	280.7	274.3	273.1	271.9	271.9	271.1	271.3	272.8	273.4
45°	278.1	269.6	264.0	258.8	258.8	257.3	258.5	258.2	259.1	259.9	260.5
47.5°	258.5	250.9	246.8	244.1	243.0	243.0	243.8	245.3	245.9	246.2	246.8
50°	238.9	233.3	229.8	228.3	228.0	229.5	230.4	230.1	230.9	232.1	233.0
52.5°	221.6	216.6	214.3	213.7	213.7	214.9	215.1	216.0	216.6	216.6	217.8
55°	203.7	200.2	198.5	198.2	198.5	199.0	200.2	200.8	200.5	201.1	201.1
57.5°	185.9	183.2	182.4	183.2	183.2	184.4	184.4	184.4	184.1	185.3	185.0
60°	169.2	166.3	167.1	166.8	167.7	167.7	168.6	168.6	167.7	168.9	169.5
62.5°	152.5	151.9	150.7	150.7	151.6	151.9	151.0	151.9	152.2	153.1	153.7
65°	134.9	132.9	133.8	133.5	134.4	135.8	134.6	134.6	135.5	136.7	137.3
67.5°	118.3	116.5	117.4	117.7	117.7	118.3	117.4	118.0	119.1	120.6	121.5
70°	101.3	100.7	101.0	100.7	100.7	102.2	102.4	102.2	103.3	104.8	105.1
72.5°	84.0	84.6	84.0	84.6	85.2	84.3	84.6	85.5	86.6	87.5	89.0
75°	68.2	67.3	67.6	69.1	68.8	69.4	69.1	70.0	72.0	71.4	71.7
77.5°	52.7	52.4	52.7	53.0	53.3	54.2	53.9	55.3	55.6	55.9	56.5
80°	37.5	37.8	38.1	38.6	39.5	39.2	39.8	40.1	41.3	40.1	41.0
82.5°	25.5	25.2	25.8	25.8	26.6	27.2	26.3	26.3	26.3	26.1	26.1
85°	14.1	14.9	14.9	14.9	14.3	14.3	14.6	14.3	14.3	14.3	14.1
87.5°	6.1	6.1	5.9	5.6	5.9	5.6	5.6	5.3	5.0	5.0	4.7
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°	680.3	680.3	680.3	680.3
2.5°	653.6	655.1	653.3	652.2
5°	632.3	632.3	630.5	629.9
7.5°	608.3	608.5	605.3	603.0
10°	572.3	570.5	565.8	563.2
12.5°	524.2	526.9	519.9	514.6
15°	482.4	475.1	478.0	474.8
17.5°	447.3	444.9	441.7	442.0
20°	416.5	414.8	413.0	413.3
22.5°	392.2	390.8	390.2	388.1
25°	372.0	372.6	371.2	371.2
27.5°	355.4	354.5	353.6	352.4
30°	339.5	339.8	339.0	338.4
32.5°	325.5	325.8	325.2	324.3
35°	311.7	311.4	311.7	310.9
37.5°	299.2	298.9	299.2	300.3
40°	286.3	286.6	285.7	286.9
42.5°	273.7	274.0	274.0	273.4
45°	259.9	260.8	261.1	261.7
47.5°	246.5	247.9	247.3	247.6
50°	233.0	232.7	232.7	232.4
52.5°	218.1	217.2	216.9	217.2
55°	200.2	201.4	201.4	201.4
57.5°	185.6	185.9	186.8	185.6
60°	170.7	170.7	170.9	173.3
62.5°	154.0	154.3	154.8	155.1
65°	137.9	138.7	138.5	138.2
67.5°	122.1	122.1	122.4	121.8
70°	105.7	105.7	105.7	107.1
72.5°	88.7	88.7	89.0	89.6
75°	72.9	72.9	72.9	72.0
77.5°	55.6	55.9	55.9	56.2
80°	40.4	40.1	40.1	39.8
82.5°	25.5	25.8	25.5	25.2
85°	14.1	14.3	13.5	13.5
87.5°	5.0	5.0	4.7	5.3
90°	0.0	0.0	0.0	0.0

(END OF REPORT)