

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: P243513

Luminaire Tested: **S124DR-H350D935-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P243513
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-60)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S124DR-H350D935-X4F0-XX-UDD-A-W
Description: DEFINE 4 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: 1266.1 lumens
Efficiency: N/A
Efficacy: 113.0 lumens/watt
Spacing Criteria (0/90/45): 1.35 / 1.22 / 1.45
Luminous Opening: Rectangular (W 3.88' x L: 0.31' x H: 0')
CIE Type: Direct

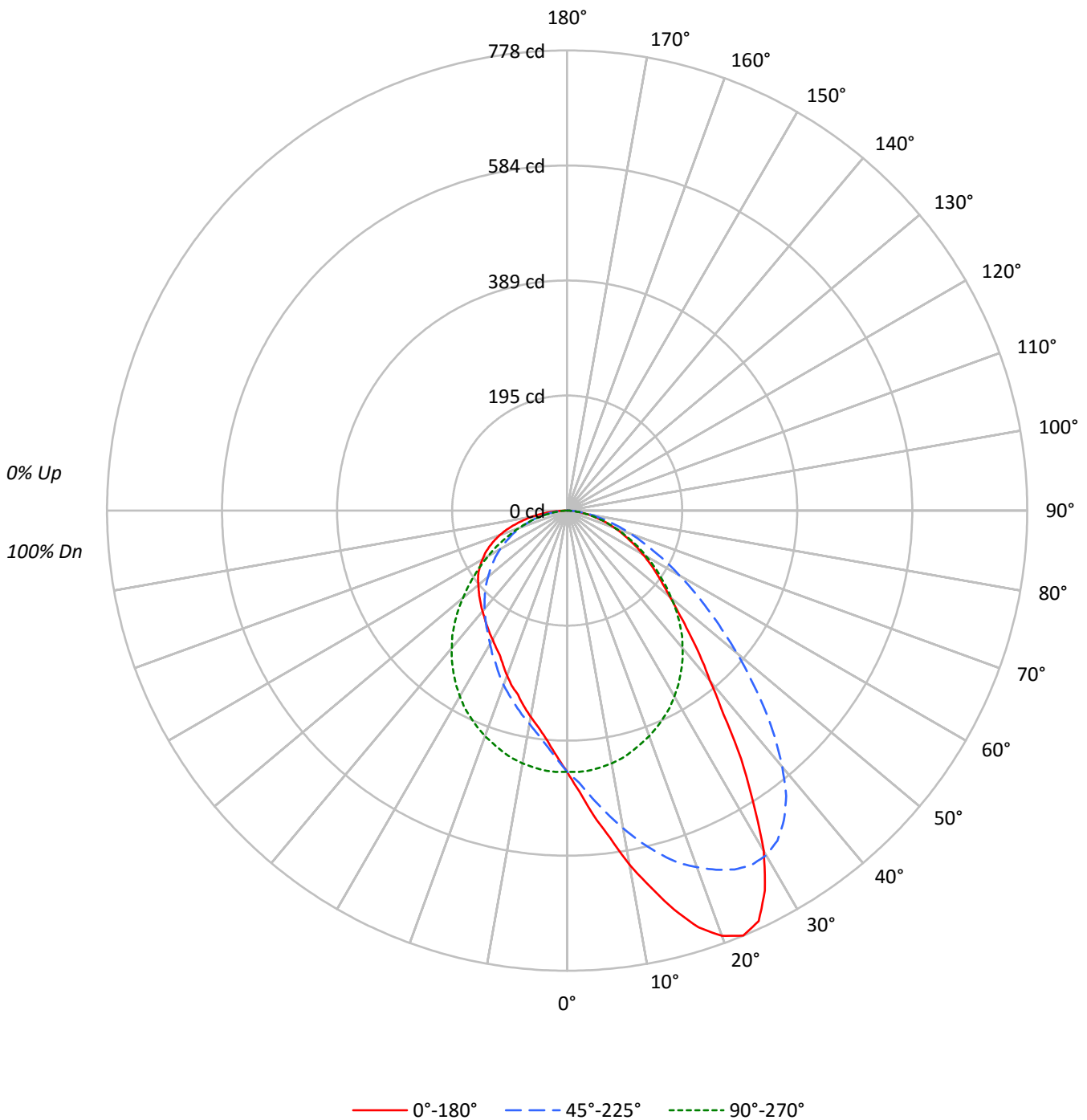
Input Watts (W): 11.2
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	109	105	101	97	107	103	99	96	98	95	93	94	92	90	91	89	87	85
2	100	92	86	80	97	90	84	79	87	82	77	83	79	76	80	77	74	72
3	92	81	74	67	89	80	73	67	77	71	66	74	69	64	72	67	63	61
4	84	73	64	58	82	71	63	57	69	62	56	66	60	56	64	59	55	53
5	78	65	56	50	75	64	56	50	62	55	49	60	54	49	58	53	48	46
6	72	59	50	44	70	58	50	44	56	49	43	54	48	43	53	47	43	41
7	67	53	45	39	65	53	45	39	51	44	38	50	43	38	48	42	38	36
8	62	49	41	35	61	48	40	35	47	40	35	46	39	34	44	39	34	32
9	58	45	37	31	57	44	37	31	43	36	31	42	36	31	41	35	31	29
10	54	41	34	29	53	41	34	28	40	33	28	39	33	28	38	32	28	26

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	3924	3924	3924
5°	4618	3935	3474
10°	5489	3917	3198
15°	6428	3883	2962
20°	7238	3838	2809
25°	7512	3786	2644
30°	6823	3722	2586
35°	5566	3634	2570
40°	4358	3519	2581
45°	3648	3378	2629
50°	3131	3181	2706
55°	2859	2966	2838
60°	2620	2745	2940
65°	2404	2513	3056
70°	2212	2266	3147
75°	1968	1992	3146
80°	1643	1633	3138
85°	1254	1234	2937



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	43.0	3.4
10°-20°	133.1	10.5
20°-30°	213.8	16.9
30°-40°	244.4	19.3
40°-50°	225.0	17.8
50°-60°	184.1	14.5
60°-70°	131.2	10.4
70°-80°	72.1	5.7
80°-90°	19.4	1.5
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°	389.9	30.8
0°-40°	634.4	50.1
0°-60°	1043.5	82.4
0°-90°	1266.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1266.1	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	442	442	442	442	442	
5°	518	488	441	399	389	52
15°	698	600	422	340	322	199
25°	766	670	386	286	270	344
35°	513	639	335	238	237	319
45°	290	471	269	196	209	226
55°	184	289	191	153	183	165
65°	114	160	120	107	145	114
75°	57	74	58	59	92	61
85°	12	15	12	17	29	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°	441.5	441.5	441.5	441.5	441.5	441.5	441.5	441.5	441.5	441.5	441.5
2.5°	475.4	474.0	473.3	472.4	472.2	471.3	469.5	467.0	463.7	460.3	460.3
5°	517.6	517.2	514.5	514.7	511.3	507.5	504.6	501.0	494.0	488.0	483.9
7.5°	558.0	561.7	560.8	558.0	552.9	547.5	541.7	536.7	523.7	516.5	510.6
10°	608.1	609.5	607.0	602.8	598.3	587.9	580.3	571.8	557.8	545.5	534.7
12.5°	652.0	655.5	651.0	647.0	636.4	628.6	621.0	604.1	589.3	573.8	558.1
15°	698.5	694.9	697.3	687.5	680.0	672.6	653.3	636.0	619.2	600.1	583.7
17.5°	738.9	738.9	734.6	728.3	720.3	706.5	687.2	668.1	649.5	624.5	601.2
20°	765.2	767.2	762.2	755.5	745.9	731.5	716.2	695.5	670.8	641.6	615.3
22.5°	777.8	778.2	776.4	770.8	763.1	750.8	735.1	714.9	688.8	657.4	629.9
25°	765.9	767.9	767.4	767.0	763.1	756.0	743.4	724.7	700.9	669.5	639.8
27.5°	724.1	729.0	733.1	734.9	739.3	739.6	735.8	724.5	705.0	675.5	642.3
30°	664.7	662.1	673.3	678.9	693.7	702.5	708.8	708.1	696.9	672.9	641.4
32.5°	585.4	592.2	600.1	613.3	630.8	651.3	666.8	678.4	677.3	661.6	635.3
35°	512.9	512.9	523.0	539.2	557.8	582.5	608.4	629.9	643.0	639.1	620.5
37.5°	434.3	439.2	450.7	463.3	486.1	509.8	544.1	572.6	600.1	608.4	598.9
40°	375.6	377.7	390.0	400.6	423.9	448.6	477.2	513.6	545.3	565.7	567.0
42.5°	332.0	331.8	336.8	346.4	365.1	387.1	418.1	453.8	490.9	519.8	533.3
45°	290.2	289.8	295.0	304.8	318.1	337.6	364.4	400.1	438.1	470.9	492.2
47.5°	254.8	258.1	260.4	268.0	279.0	295.6	318.6	347.1	383.7	420.5	449.1
50°	226.4	227.8	232.8	236.4	248.7	260.2	278.8	304.4	335.8	374.3	405.3
52.5°	203.6	204.6	207.6	212.3	219.3	229.4	244.2	267.8	296.1	329.6	361.7
55°	184.5	184.0	186.0	189.1	195.2	203.6	214.5	232.5	257.2	289.4	319.0
57.5°	165.8	165.8	167.6	169.8	173.2	180.2	190.9	205.1	224.9	253.6	279.7
60°	147.4	148.7	149.4	151.6	154.4	159.7	167.6	178.8	195.5	219.0	244.9
62.5°	131.2	131.2	132.5	133.2	137.0	140.8	146.5	156.1	169.2	190.1	210.3
65°	114.3	115.3	115.3	116.8	120.0	122.9	127.4	134.6	145.4	160.4	179.3
67.5°	99.8	99.8	100.7	101.5	103.3	105.2	109.2	114.8	124.0	135.9	153.0
70°	85.1	85.6	85.2	86.1	87.2	89.2	92.1	96.8	103.4	113.7	126.3
72.5°	71.7	71.0	71.4	72.3	72.8	74.1	75.9	79.5	84.9	93.2	102.4
75°	57.3	56.9	58.2	57.9	58.8	59.8	61.5	64.2	68.3	74.1	81.1
77.5°	44.7	44.2	44.7	45.1	45.4	46.3	47.6	49.2	52.1	55.9	62.2
80°	32.1	31.9	32.3	32.6	32.8	34.2	34.6	36.2	37.5	40.4	43.4
82.5°	21.3	21.6	21.8	22.2	22.0	22.7	23.1	24.1	25.2	26.7	29.0
85°	12.3	11.7	12.3	12.3	12.3	13.2	13.0	13.7	14.4	15.1	16.8
87.5°	4.3	4.3	4.5	4.7	4.7	5.2	5.0	5.4	6.1	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°	441.5	441.5	441.5	441.5	441.5	441.5	441.5	441.5	441.5	441.5	441.5
2.5°	459.2	457.2	455.8	451.6	449.1	446.8	444.6	442.3	439.7	436.5	434.5
5°	479.6	475.2	468.9	463.2	456.7	450.9	446.2	441.0	435.2	429.3	424.1
7.5°	502.1	494.0	484.3	473.6	463.5	455.1	446.2	437.9	429.8	421.9	414.5
10°	524.6	510.6	497.8	483.2	469.8	457.0	445.5	434.0	423.9	413.4	404.1
12.5°	545.5	528.6	509.8	491.6	473.8	457.2	443.0	428.9	415.9	403.5	392.5
15°	561.6	540.3	518.1	496.5	476.0	458.7	440.1	421.9	408.4	393.2	381.2
17.5°	580.0	554.7	532.7	506.8	481.2	453.3	433.6	413.8	397.6	383.0	370.9
20°	592.2	564.5	532.7	503.4	477.0	452.0	428.4	405.7	388.6	371.6	357.0
22.5°	601.9	573.3	538.3	507.7	474.7	444.4	418.8	396.5	376.3	360.3	346.4
25°	607.0	572.0	538.7	501.6	468.6	439.6	410.7	386.0	365.7	347.8	335.9
27.5°	607.2	571.3	531.8	495.1	459.7	428.4	399.9	375.6	352.7	335.6	321.3
30°	606.3	566.6	525.0	484.8	449.7	417.6	387.8	362.6	341.7	323.5	310.0
32.5°	600.5	560.1	514.7	472.5	434.3	402.1	374.7	349.6	327.3	310.7	296.5
35°	587.5	545.9	500.3	456.9	420.6	387.1	360.1	334.9	314.8	296.8	282.2
37.5°	570.9	532.0	485.7	440.3	401.2	369.5	344.0	320.3	299.3	282.8	268.2
40°	550.0	513.4	467.9	420.6	381.5	349.4	325.5	303.3	285.5	268.5	254.3
42.5°	521.4	493.3	446.4	400.5	359.5	329.3	306.0	287.6	269.3	253.9	239.7
45°	490.7	465.2	423.5	377.9	338.6	307.5	285.7	268.7	253.0	237.5	226.0
47.5°	456.9	436.0	397.4	352.9	314.1	286.6	265.1	250.0	235.5	223.7	212.1
50°	416.5	405.5	369.5	329.1	291.4	263.1	245.5	230.0	219.3	207.8	197.0
52.5°	379.0	370.2	340.8	301.1	266.9	242.0	223.1	210.9	200.4	191.9	183.3
55°	338.3	333.8	308.9	274.7	243.7	218.8	202.6	191.4	183.1	175.2	168.9
57.5°	300.8	300.4	278.4	249.1	218.8	197.7	182.2	173.0	165.8	160.2	154.8
60°	262.4	265.5	247.4	220.6	196.6	176.8	162.7	154.4	149.6	144.4	139.9
62.5°	227.6	232.3	215.9	194.8	171.2	155.0	144.2	137.9	132.5	128.7	125.3
65°	194.3	200.2	186.9	168.0	149.9	134.6	125.4	119.5	115.3	113.2	110.8
67.5°	164.9	168.1	159.1	144.4	129.4	116.1	108.5	103.3	99.7	98.8	96.1
70°	135.5	139.3	133.0	119.5	108.0	98.2	91.4	87.2	85.1	83.8	82.0
72.5°	111.9	113.5	107.2	97.9	88.7	80.6	75.5	72.4	69.9	69.4	68.5
75°	87.6	89.9	84.9	77.7	70.1	64.3	60.6	58.0	56.8	55.9	55.9
77.5°	66.1	68.1	65.2	58.9	54.4	49.4	46.9	44.5	44.0	43.1	43.4
80°	47.0	47.9	46.3	42.0	38.0	35.3	33.2	31.9	31.7	31.0	31.7
82.5°	31.2	31.4	29.6	27.6	24.5	23.1	21.6	21.1	20.9	20.9	20.5
85°	17.3	17.7	16.4	15.1	14.1	12.8	12.4	12.1	11.7	12.3	12.6
87.5°	6.7	6.8	6.7	6.1	5.8	5.4	5.2	5.6	5.0	5.4	5.6
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):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	441.5	441.5	441.5	441.5	441.5	441.5	441.5	441.5	441.5	441.5	441.5
2.5°	431.4	430.0	427.8	424.2	421.7	419.0	417.9	418.3	417.2	415.8	416.1
5°	420.1	415.9	412.3	407.3	402.6	398.6	397.4	395.8	394.3	393.4	392.5
7.5°	408.0	402.3	396.8	391.8	386.4	381.3	379.4	377.9	377.2	374.7	373.6
10°	396.5	389.8	383.3	377.4	371.8	366.2	364.2	362.4	359.9	358.8	357.6
12.5°	384.2	377.6	370.5	363.3	357.7	353.2	349.8	348.5	346.0	344.9	344.2
15°	372.3	364.2	358.6	353.1	344.6	339.5	338.1	333.6	332.1	330.0	328.5
17.5°	360.4	352.9	344.6	338.1	332.9	326.6	323.1	321.2	318.5	316.5	313.8
20°	348.7	339.9	333.4	325.3	319.5	313.8	309.4	307.6	305.3	302.6	298.8
22.5°	337.4	327.6	321.3	313.8	306.6	299.9	296.3	293.8	289.1	288.5	285.1
25°	324.0	315.4	307.1	299.2	292.1	285.5	283.1	279.2	277.5	274.3	273.8
27.5°	311.4	302.2	293.2	284.6	278.4	273.8	269.6	267.1	265.5	262.9	263.1
30°	298.3	288.2	279.7	271.8	265.1	260.6	257.9	256.6	254.3	253.9	252.7
32.5°	284.2	275.0	266.2	259.2	252.3	248.3	247.1	245.8	244.4	244.6	244.2
35°	270.2	262.0	252.7	246.2	240.6	238.3	236.3	235.9	235.4	235.7	235.7
37.5°	256.5	247.6	239.9	233.9	230.7	227.4	226.5	226.4	226.5	226.9	227.8
40°	243.1	235.0	227.4	222.6	219.0	217.5	216.3	216.8	217.5	218.8	219.9
42.5°	229.8	222.0	215.7	210.9	207.4	206.7	206.9	208.0	208.2	210.0	211.9
45°	215.7	209.1	203.1	199.3	197.2	196.3	196.6	197.7	199.0	201.5	204.0
47.5°	202.7	196.8	191.6	187.8	186.2	185.8	186.5	188.0	190.9	193.4	196.3
50°	189.6	184.2	179.3	175.9	175.7	174.5	176.1	177.9	181.3	184.7	189.1
52.5°	176.6	171.4	167.2	164.5	163.8	163.8	165.8	169.0	172.1	176.6	180.6
55°	163.1	158.4	154.4	153.5	152.5	153.0	155.2	158.4	162.7	167.8	172.1
57.5°	149.2	145.3	142.4	141.1	140.6	142.4	144.9	148.3	153.9	159.0	163.6
60°	136.1	132.6	129.6	129.2	128.9	131.2	134.3	137.9	143.5	148.5	154.3
62.5°	122.0	119.3	117.3	116.8	116.8	119.1	122.6	127.2	132.5	137.9	144.0
65°	107.8	105.4	104.9	104.2	105.8	107.2	110.7	115.2	120.7	126.7	133.2
67.5°	94.6	93.2	92.1	92.1	93.4	96.1	99.1	103.6	109.4	115.7	121.5
70°	81.5	80.0	79.1	80.0	80.7	84.0	87.2	91.6	97.0	103.1	109.2
72.5°	67.8	67.9	68.1	67.9	68.7	71.7	75.0	79.1	84.3	90.3	95.9
75°	55.7	54.8	55.0	55.3	57.7	59.3	62.5	66.5	72.1	77.5	82.2
77.5°	43.3	42.9	43.8	43.8	46.0	47.9	50.6	54.6	59.5	64.3	68.1
80°	31.7	31.9	32.6	32.8	34.6	36.8	39.6	42.4	46.7	50.1	53.7
82.5°	21.4	21.8	22.7	24.0	24.7	26.0	28.5	31.4	34.4	38.0	40.2
85°	12.4	13.0	13.7	14.6	15.3	16.6	18.4	20.7	22.9	24.9	26.7
87.5°	6.1	6.1	6.7	7.0	7.6	8.3	9.6	10.5	11.9	13.3	14.1
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):

	165°	170°	175°	180°
0°	441.5	441.5	441.5	441.5
2.5°	415.4	415.2	414.5	414.9
5°	392.0	390.2	390.0	389.3
7.5°	371.8	371.3	371.3	369.8
10°	356.3	354.7	355.0	354.3
12.5°	341.5	340.6	339.5	338.5
15°	324.9	324.9	324.9	321.9
17.5°	312.0	311.8	310.9	310.7
20°	298.4	297.7	295.4	297.0
22.5°	284.7	284.2	282.2	282.6
25°	272.0	271.4	271.1	269.6
27.5°	261.0	261.1	261.5	260.6
30°	252.7	252.1	252.8	251.9
32.5°	244.9	244.9	244.2	244.4
35°	236.1	236.8	237.0	236.8
37.5°	228.3	229.2	230.0	229.2
40°	221.1	221.9	222.6	222.4
42.5°	213.6	214.8	215.4	215.9
45°	206.4	208.0	208.9	209.1
47.5°	199.0	200.9	202.7	202.6
50°	191.8	194.3	195.9	195.7
52.5°	184.5	187.1	189.1	190.0
55°	176.4	179.7	181.5	183.1
57.5°	168.3	171.9	173.7	174.5
60°	159.3	162.6	164.9	165.4
62.5°	149.2	152.6	155.7	156.4
65°	138.8	142.6	144.9	145.3
67.5°	126.7	130.3	132.6	133.7
70°	114.3	117.0	119.5	121.1
72.5°	100.4	103.6	106.0	107.1
75°	86.0	89.6	90.8	91.6
77.5°	71.0	73.2	75.2	75.3
80°	56.0	58.8	59.5	61.3
82.5°	41.3	43.8	43.3	44.0
85°	27.2	28.1	28.7	28.8
87.5°	14.4	15.0	15.3	15.5
90°	0.0	0.0	0.0	0.0

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