

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: P243498

Luminaire Tested: **S124DR-H350D835-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P243498  
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-H350D835-X4F0-XX-UDD-A-W  
Description: DEFINE 4 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.  
HIGH PERFORMANCE LIGHT ENGINE  
Light Source: (184) 3500K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1470.5 lumens  
Efficiency: N/A  
Efficacy: 131.3 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

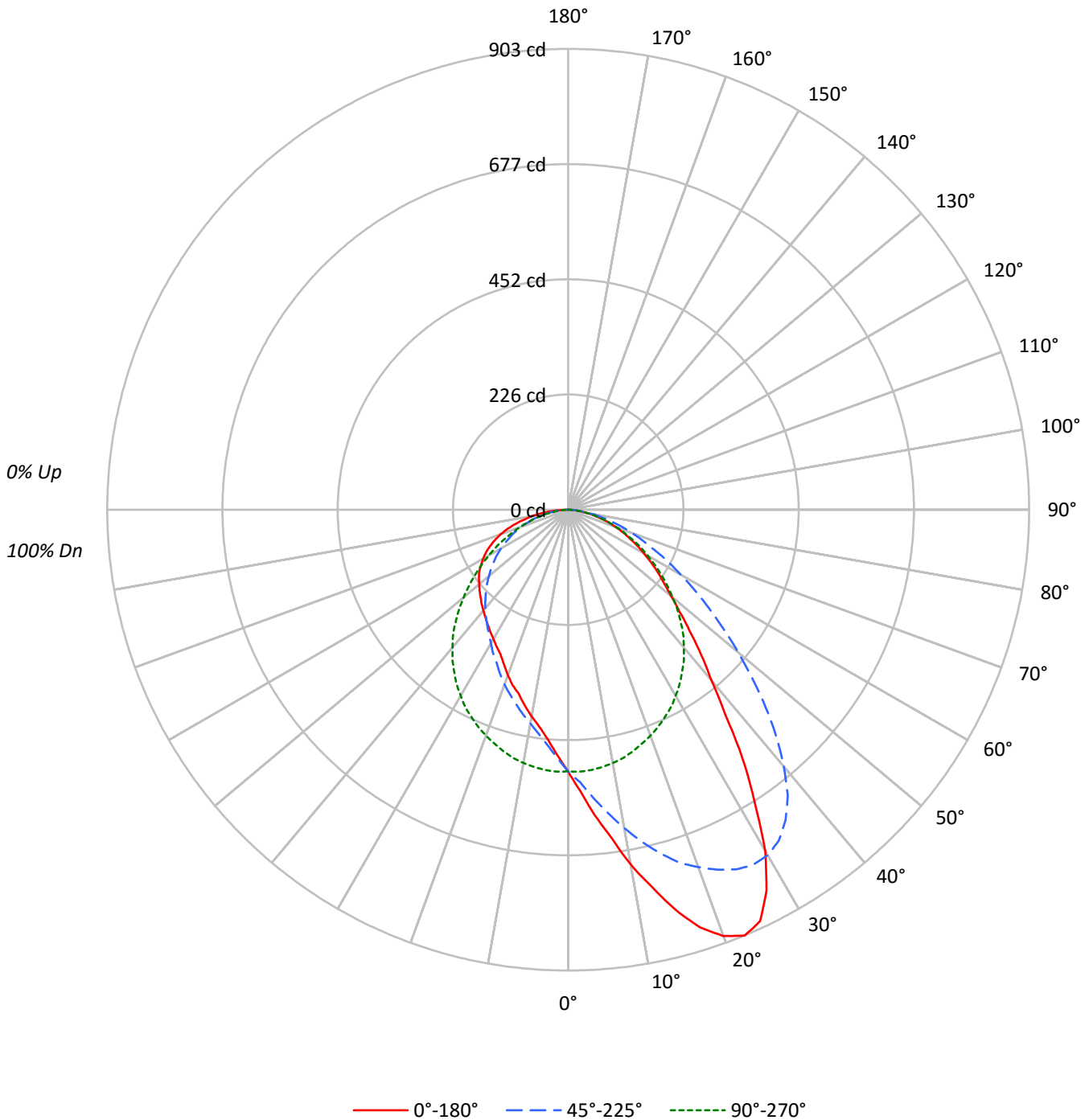
Input Watts (W): 11.2  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	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°	4558	4558	4558
5°	5364	4570	4034
10°	6374	4549	3714
15°	7466	4509	3440
20°	8407	4457	3263
25°	8725	4398	3071
30°	7924	4322	3003
35°	6464	4220	2984
40°	5062	4088	2997
45°	4236	3923	3052
50°	3636	3694	3143
55°	3321	3445	3296
60°	3044	3189	3417
65°	2791	2919	3548
70°	2568	2633	3657
75°	2287	2315	3651
80°	1909	1894	3645
85°	1448	1428	3417



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	49.9	3.4
10°-20°	154.6	10.5
20°-30°	248.4	16.9
30°-40°	283.9	19.3
40°-50°	261.3	17.8
50°-60°	213.8	14.5
60°-70°	152.4	10.4
70°-80°	83.7	5.7
80°-90°	22.5	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°	452.9	30.8
0°-40°	736.8	50.1
0°-60°	1211.9	82.4
0°-90°	1470.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1470.5	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	513	513	513	513	513	
5°	601	567	512	463	452	60
15°	811	697	490	394	374	231
25°	890	778	448	332	313	399
35°	596	742	389	277	275	370
45°	337	547	312	228	243	263
55°	214	336	222	178	213	192
65°	133	186	139	124	169	133
75°	67	86	67	69	106	71
85°	14	18	14	19	34	17
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°	512.8	512.8	512.8	512.8	512.8	512.8	512.8	512.8	512.8	512.8	512.8
2.5°	552.2	550.5	549.7	548.6	548.4	547.4	545.3	542.3	538.6	534.6	534.6
5°	601.2	600.7	597.6	597.8	593.8	589.4	586.1	581.9	573.7	566.8	562.0
7.5°	648.0	652.4	651.4	648.0	642.2	635.9	629.2	623.3	608.3	599.9	593.0
10°	706.2	707.9	705.0	700.2	694.9	682.8	674.0	664.2	647.8	633.6	621.0
12.5°	757.3	761.3	756.0	751.4	739.1	730.1	721.3	701.6	684.5	666.5	648.3
15°	811.3	807.1	809.8	798.5	789.7	781.2	758.8	738.7	719.2	697.0	678.0
17.5°	858.2	858.2	853.2	845.8	836.6	820.5	798.1	775.9	754.4	725.3	698.3
20°	888.8	891.1	885.2	877.5	866.4	849.6	831.8	807.7	779.1	745.2	714.6
22.5°	903.4	903.8	901.7	895.2	886.2	872.0	853.8	830.4	800.0	763.6	731.6
25°	889.6	891.9	891.3	890.8	886.2	878.1	863.4	841.7	814.0	777.6	743.1
27.5°	841.0	846.7	851.5	853.6	858.6	859.0	854.6	841.4	818.8	784.5	746.0
30°	772.0	769.0	782.0	788.5	805.7	815.9	823.2	822.4	809.4	781.6	745.0
32.5°	679.9	687.8	697.0	712.3	732.6	756.5	774.5	787.9	786.6	768.4	737.8
35°	595.7	595.7	607.4	626.3	647.8	676.5	706.7	731.6	746.8	742.2	720.7
37.5°	504.5	510.1	523.5	538.2	564.5	592.2	631.9	665.0	697.0	706.7	695.6
40°	436.2	438.7	453.0	465.3	492.3	521.0	554.3	596.6	633.4	657.0	658.5
42.5°	385.6	385.4	391.2	402.3	424.1	449.6	485.6	527.1	570.2	603.7	619.4
45°	337.0	336.6	342.6	354.0	369.4	392.0	423.2	464.7	508.8	546.9	571.6
47.5°	296.0	299.7	302.5	311.3	324.0	343.3	370.1	403.1	445.6	488.3	521.6
50°	262.9	264.6	270.4	274.6	288.9	302.3	323.8	353.5	390.0	434.7	470.8
52.5°	236.5	237.6	241.1	246.6	254.7	266.5	283.6	311.0	343.9	382.8	420.1
55°	214.3	213.7	216.0	219.6	226.7	236.5	249.1	270.0	298.7	336.2	370.5
57.5°	192.6	192.6	194.7	197.2	201.2	209.3	221.7	238.2	261.2	294.5	324.9
60°	171.2	172.7	173.5	176.0	179.4	185.5	194.7	207.6	227.1	254.3	284.5
62.5°	152.4	152.4	153.8	154.7	159.1	163.5	170.2	181.3	196.5	220.8	244.3
65°	132.7	134.0	134.0	135.6	139.4	142.8	148.0	156.4	168.9	186.3	208.3
67.5°	116.0	116.0	117.0	117.8	119.9	122.2	126.8	133.3	144.0	157.8	177.7
70°	98.8	99.4	99.0	100.1	101.3	103.6	107.0	112.4	120.1	132.1	146.7
72.5°	83.3	82.5	82.9	83.9	84.6	86.0	88.1	92.3	98.6	108.2	118.9
75°	66.6	66.1	67.6	67.2	68.2	69.5	71.4	74.5	79.3	86.0	94.2
77.5°	51.9	51.3	51.9	52.3	52.7	53.8	55.3	57.1	60.5	64.9	72.2
80°	37.3	37.0	37.5	37.9	38.1	39.8	40.2	42.1	43.5	46.9	50.4
82.5°	24.7	25.1	25.3	25.7	25.5	26.4	26.8	28.0	29.3	31.0	33.7
85°	14.2	13.6	14.2	14.2	14.2	15.3	15.1	15.9	16.7	17.6	19.5
87.5°	5.0	5.0	5.2	5.4	5.4	6.1	5.9	6.3	7.1	7.1	7.7
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°	512.8	512.8	512.8	512.8	512.8	512.8	512.8	512.8	512.8	512.8	512.8
2.5°	533.3	531.0	529.4	524.5	521.6	518.9	516.4	513.7	510.7	507.0	504.7
5°	557.0	552.0	544.6	537.9	530.4	523.7	518.3	512.2	505.5	498.6	492.5
7.5°	583.2	573.7	562.4	550.1	538.4	528.5	518.3	508.6	499.2	490.0	481.4
10°	609.3	593.0	578.1	561.2	545.7	530.8	517.4	504.0	492.3	480.2	469.3
12.5°	633.6	613.9	592.2	571.0	550.3	531.0	514.5	498.2	483.1	468.7	455.9
15°	652.2	627.5	601.8	576.7	552.8	532.7	511.1	490.0	474.3	456.7	442.7
17.5°	673.6	644.3	618.7	588.6	558.9	526.4	503.6	480.6	461.8	444.8	430.8
20°	687.8	655.6	618.7	584.6	554.1	525.0	497.5	471.2	451.3	431.6	414.7
22.5°	699.1	665.8	625.2	589.6	551.3	516.2	486.4	460.5	437.1	418.4	402.3
25°	705.0	664.4	625.6	582.5	544.2	510.5	477.0	448.4	424.7	404.0	390.2
27.5°	705.2	663.5	617.7	575.0	534.0	497.5	464.5	436.2	409.6	389.7	373.2
30°	704.1	658.1	609.7	563.1	522.2	485.0	450.4	421.1	396.9	375.7	360.0
32.5°	697.4	650.6	597.8	548.8	504.5	467.0	435.2	406.1	380.1	360.9	344.3
35°	682.4	634.0	581.1	530.6	488.5	449.6	418.2	388.9	365.7	344.7	327.8
37.5°	663.1	617.9	564.1	511.4	465.9	429.1	399.6	372.0	347.7	328.4	311.5
40°	638.8	596.3	543.4	488.5	443.1	405.9	378.0	352.3	331.6	311.9	295.3
42.5°	605.6	572.9	518.5	465.1	417.6	382.4	355.4	334.1	312.7	294.9	278.4
45°	570.0	540.2	491.9	438.9	393.3	357.1	331.8	312.1	293.9	275.9	262.5
47.5°	530.6	506.3	461.5	409.8	364.8	332.8	307.9	290.3	273.6	259.8	246.4
50°	483.7	471.0	429.1	382.2	338.5	305.6	285.1	267.1	254.7	241.3	228.8
52.5°	440.2	429.9	395.8	349.8	310.0	281.1	259.1	244.9	232.8	222.9	212.9
55°	392.9	387.7	358.8	319.0	283.0	254.1	235.3	222.3	212.7	203.5	196.1
57.5°	349.3	348.9	323.4	289.3	254.1	229.6	211.6	200.9	192.6	186.1	179.8
60°	304.8	308.3	287.4	256.2	228.4	205.3	189.0	179.4	173.7	167.7	162.4
62.5°	264.4	269.8	250.8	226.3	198.9	180.0	167.5	160.1	153.8	149.5	145.5
65°	225.6	232.5	217.1	195.1	174.2	156.4	145.7	138.8	134.0	131.5	128.7
67.5°	191.5	195.3	184.8	167.7	150.3	134.8	126.0	119.9	115.8	114.7	111.6
70°	157.4	161.8	154.5	138.8	125.4	114.1	106.1	101.3	98.8	97.3	95.2
72.5°	130.0	131.9	124.5	113.7	103.0	93.6	87.7	84.1	81.2	80.6	79.5
75°	101.7	104.4	98.6	90.2	81.4	74.7	70.3	67.4	65.9	64.9	64.9
77.5°	76.8	79.1	75.8	68.4	63.2	57.4	54.4	51.7	51.1	50.0	50.4
80°	54.6	55.7	53.8	48.8	44.2	41.0	38.5	37.0	36.8	36.0	36.8
82.5°	36.2	36.4	34.3	32.0	28.5	26.8	25.1	24.5	24.3	24.3	23.9
85°	20.1	20.5	19.0	17.6	16.3	14.9	14.4	14.0	13.6	14.2	14.7
87.5°	7.7	8.0	7.7	7.1	6.7	6.3	6.1	6.5	5.9	6.3	6.5
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°	512.8	512.8	512.8	512.8	512.8	512.8	512.8	512.8	512.8	512.8	512.8
2.5°	501.1	499.4	496.9	492.7	489.8	486.7	485.4	485.8	484.6	482.9	483.3
5°	487.9	483.1	478.9	473.1	467.6	463.0	461.5	459.7	458.0	456.9	455.9
7.5°	473.9	467.2	460.9	455.1	448.8	442.9	440.6	438.9	438.1	435.2	433.9
10°	460.5	452.8	445.2	438.3	431.8	425.3	423.0	420.9	418.0	416.7	415.3
12.5°	446.3	438.5	430.4	422.0	415.5	410.3	406.3	404.8	401.9	400.6	399.8
15°	432.4	423.0	416.5	410.0	400.2	394.4	392.7	387.4	385.8	383.3	381.6
17.5°	418.6	409.8	400.2	392.7	386.6	379.3	375.3	373.0	369.9	367.6	364.4
20°	405.0	394.8	387.2	377.8	371.1	364.4	359.4	357.3	354.6	351.4	347.0
22.5°	391.8	380.5	373.2	364.4	356.0	348.3	344.1	341.2	335.7	335.1	331.1
25°	376.3	366.3	356.7	347.5	339.3	331.6	328.8	324.2	322.3	318.6	318.0
27.5°	361.7	351.0	340.6	330.5	323.4	318.0	313.1	310.2	308.3	305.4	305.6
30°	346.4	334.7	324.9	315.6	307.9	302.7	299.5	298.1	295.3	294.9	293.5
32.5°	330.1	319.4	309.2	301.0	293.0	288.4	287.0	285.5	283.8	284.0	283.6
35°	313.8	304.3	293.5	285.9	279.4	276.7	274.4	274.0	273.4	273.8	273.8
37.5°	297.9	287.6	278.6	271.7	267.9	264.2	263.1	262.9	263.1	263.5	264.6
40°	282.4	272.9	264.2	258.5	254.3	252.6	251.2	251.8	252.6	254.1	255.4
42.5°	266.9	257.9	250.6	244.9	240.9	240.1	240.3	241.6	241.8	243.9	246.2
45°	250.6	242.8	235.9	231.5	229.0	227.9	228.4	229.6	231.1	234.0	236.9
47.5°	235.5	228.6	222.5	218.1	216.2	215.8	216.6	218.3	221.7	224.6	227.9
50°	220.2	213.9	208.3	204.3	204.1	202.6	204.5	206.6	210.6	214.5	219.6
52.5°	205.1	199.1	194.2	191.1	190.3	190.3	192.6	196.3	199.9	205.1	209.7
55°	189.4	184.0	179.4	178.3	177.1	177.7	180.2	184.0	189.0	194.9	199.9
57.5°	173.3	168.7	165.4	163.9	163.3	165.4	168.3	172.3	178.8	184.6	190.1
60°	158.0	154.1	150.5	150.1	149.7	152.4	155.9	160.1	166.6	172.5	179.2
62.5°	141.7	138.6	136.3	135.6	135.6	138.4	142.3	147.8	153.8	160.1	167.2
65°	125.2	122.4	121.8	121.0	122.9	124.5	128.5	133.8	140.2	147.1	154.7
67.5°	109.9	108.2	107.0	107.0	108.4	111.6	115.1	120.4	127.1	134.4	141.1
70°	94.6	92.9	91.9	92.9	93.8	97.5	101.3	106.3	112.6	119.7	126.8
72.5°	78.7	78.9	79.1	78.9	79.7	83.3	87.1	91.9	98.0	104.9	111.4
75°	64.7	63.6	63.8	64.3	67.0	68.9	72.6	77.2	83.7	90.0	95.4
77.5°	50.2	49.8	50.9	50.9	53.4	55.7	58.8	63.4	69.1	74.7	79.1
80°	36.8	37.0	37.9	38.1	40.2	42.7	46.0	49.2	54.2	58.2	62.4
82.5°	24.9	25.3	26.4	27.8	28.7	30.1	33.1	36.4	40.0	44.2	46.7
85°	14.4	15.1	15.9	17.0	17.8	19.3	21.4	24.1	26.6	28.9	31.0
87.5°	7.1	7.1	7.7	8.2	8.8	9.6	11.1	12.1	13.8	15.5	16.3
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):**

	165°	170°	175°	180°
0°	512.8	512.8	512.8	512.8
2.5°	482.5	482.3	481.4	481.8
5°	455.3	453.2	453.0	452.1
7.5°	431.8	431.2	431.2	429.5
10°	413.8	411.9	412.4	411.5
12.5°	396.7	395.6	394.4	393.1
15°	377.4	377.4	377.4	373.8
17.5°	362.3	362.1	361.1	360.9
20°	346.6	345.8	343.1	345.0
22.5°	330.7	330.1	327.8	328.2
25°	315.9	315.2	314.8	313.1
27.5°	303.1	303.3	303.7	302.7
30°	293.5	292.8	293.7	292.6
32.5°	284.5	284.5	283.6	283.8
35°	274.2	275.0	275.3	275.0
37.5°	265.2	266.2	267.1	266.2
40°	256.8	257.7	258.5	258.3
42.5°	248.0	249.5	250.1	250.8
45°	239.7	241.6	242.6	242.8
47.5°	231.1	233.4	235.5	235.3
50°	222.7	225.6	227.5	227.3
52.5°	214.3	217.3	219.6	220.6
55°	204.9	208.7	210.8	212.7
57.5°	195.5	199.7	201.8	202.6
60°	185.0	188.8	191.5	192.2
62.5°	173.3	177.3	180.8	181.7
65°	161.2	165.6	168.3	168.7
67.5°	147.1	151.3	154.1	155.3
70°	132.7	135.8	138.8	140.7
72.5°	116.6	120.4	123.1	124.3
75°	99.8	104.0	105.5	106.3
77.5°	82.5	85.0	87.3	87.5
80°	65.1	68.2	69.1	71.2
82.5°	47.9	50.9	50.2	51.1
85°	31.6	32.7	33.3	33.5
87.5°	16.7	17.4	17.8	18.0
90°	0.0	0.0	0.0	0.0

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