

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: P242993

Luminaire Tested: **S121DR-H490D930-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P242993
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-H490D930-X4F0-XX-UDD-A-W
Description: DEFINE 1 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.
HIGH PERFORMANCE LIGHT ENGINE
Light Source: (184) 3000K CCT, 90 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1564.8 lumens
Efficiency: N/A
Efficacy: 91.0 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

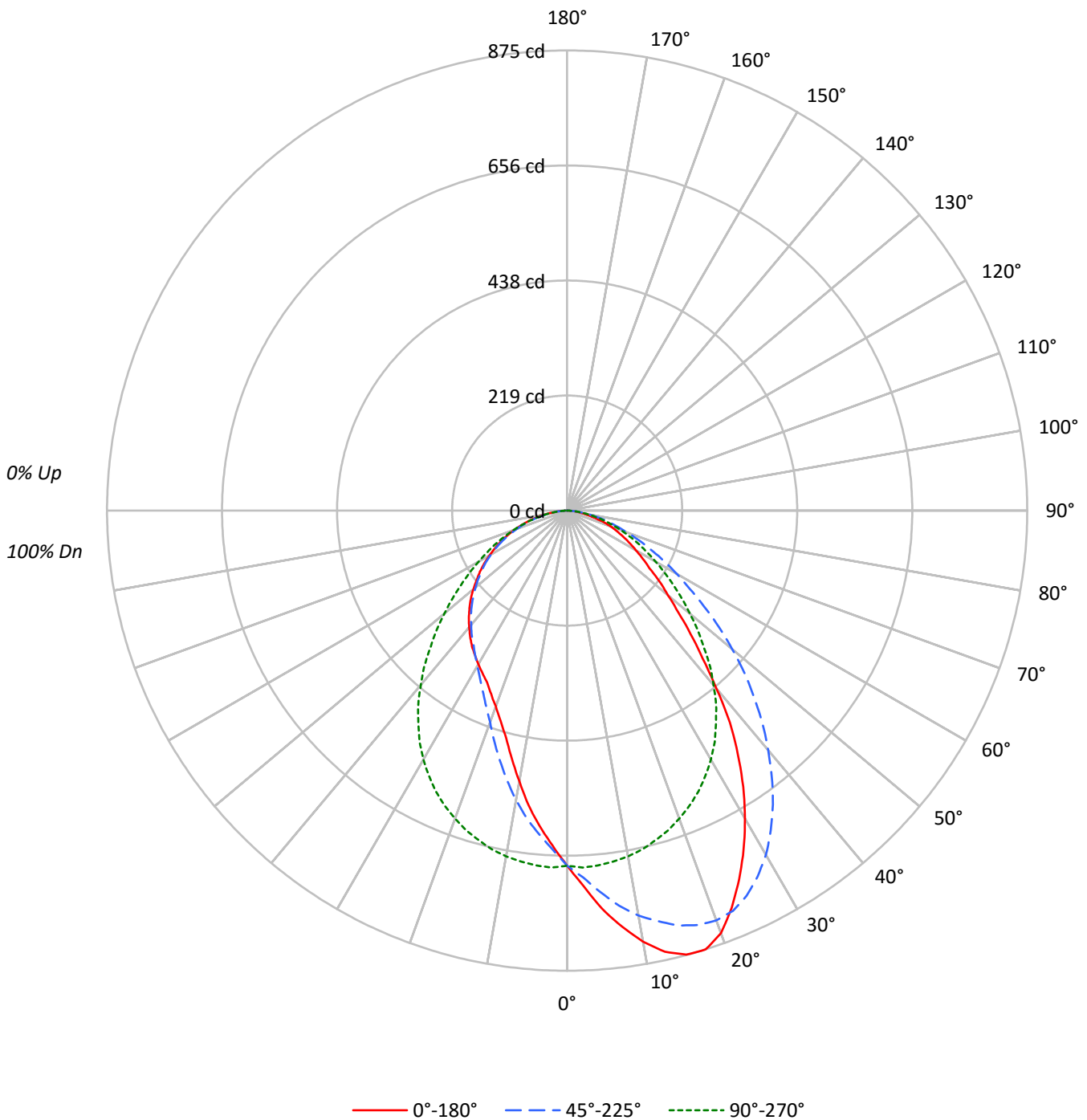
Input Watts (W): 17.2
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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				
2	101	93	87	81	98	91	85	80	88	83	79	84	80	77	81	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	72	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	53	45	40	51	45	40	50	44	40					38				
8	63	50	42	37	62	50	42	36	48	41	36	47	41	36	46	40	36					34				
9	59	46	38	33	58	46	38	33	45	38	33	44	37	33	43	37	33					31				
10	56	43	35	30	54	42	35	30	41	35	30	41	34	30	40	34	30					28				

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	20003	20003	20003
5°	22602	20145	17899
10°	25038	20083	15732
15°	26813	19908	13724
20°	26962	19650	12496
25°	25288	19282	11782
30°	23135	18701	11550
35°	20487	17843	11405
40°	17073	16736	11205
45°	13916	15399	11004
50°	11552	14032	10726
55°	9882	12718	10445
60°	8954	11514	10116
65°	8273	10481	9759
70°	7632	9443	9183
75°	6159	8369	8460
80°	4914	6774	7235
85°	3706	4997	5915



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	64.5	4.1
10°-20°	184.8	11.8
20°-30°	269.0	17.2
30°-40°	299.9	19.2
40°-50°	277.3	17.7
50°-60°	220.9	14.1
60°-70°	151.2	9.7
70°-80°	78.5	5.0
80°-90°	18.6	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°	518.3	33.1
0°-40°	818.3	52.3
0°-60°	1316.5	84.1
0°-90°	1564.8	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1564.8	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	675	675	675	675	675	
5°	760	728	677	617	602	75
15°	874	817	649	493	447	245
25°	774	808	590	379	360	354
35°	566	682	493	310	315	352
45°	332	502	368	257	263	259
55°	191	318	246	197	202	175
65°	118	175	150	135	139	117
75°	54	79	73	69	74	59
85°	11	15	15	16	17	13
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°	675.1	675.1	675.1	675.1	675.1	675.1	675.1	675.1	675.1	675.1	675.1
2.5°	714.3	714.3	712.4	713.2	712.1	710.2	707.2	703.9	699.9	698.2	697.4
5°	759.9	761.0	759.7	756.9	756.4	754.2	747.7	743.9	735.2	728.4	726.2
7.5°	798.0	799.9	799.9	795.0	792.8	787.4	782.8	776.5	765.6	758.0	751.8
10°	832.2	833.1	830.1	827.3	823.0	818.6	810.8	802.9	791.2	782.0	771.6
12.5°	859.4	861.0	858.9	854.5	849.4	843.7	833.9	823.8	812.4	799.9	788.7
15°	874.1	876.5	876.8	873.3	869.5	862.7	855.6	844.7	832.2	816.7	798.5
17.5°	875.2	876.3	877.1	874.4	871.9	869.5	862.4	853.4	841.5	826.3	809.4
20°	855.1	857.5	860.2	857.8	858.9	858.9	855.9	851.3	841.5	829.2	812.9
22.5°	817.6	823.3	826.8	829.2	831.7	835.2	838.8	836.6	832.8	823.8	809.1
25°	773.5	778.1	784.9	787.1	789.0	799.3	805.6	809.9	809.9	808.0	798.3
27.5°	726.8	729.8	735.5	743.1	750.2	756.4	769.5	777.6	784.1	784.1	779.0
30°	676.2	680.6	687.4	692.5	701.2	714.0	724.9	734.7	749.6	756.1	755.0
32.5°	623.0	627.3	634.4	638.7	651.2	661.5	678.4	693.6	710.7	720.5	726.5
35°	566.4	566.7	578.7	585.7	596.6	609.4	630.0	647.1	665.9	682.2	695.0
37.5°	508.3	508.0	516.4	528.9	537.6	555.5	576.7	595.8	621.9	639.3	659.4
40°	441.4	447.1	454.2	465.6	480.5	501.7	521.8	546.6	572.7	594.4	615.9
42.5°	381.6	386.2	397.6	410.4	426.4	444.4	468.8	496.3	521.8	550.1	574.0
45°	332.1	334.6	341.4	351.7	368.6	388.9	414.5	443.6	473.7	502.5	529.2
47.5°	286.5	293.8	297.3	306.9	319.1	338.1	364.7	390.8	425.6	457.7	486.8
50°	250.6	252.0	258.2	265.3	279.7	293.8	313.9	340.8	373.2	409.3	438.9
52.5°	221.2	220.7	225.9	232.1	242.2	257.1	274.5	300.6	328.1	363.9	396.3
55°	191.3	194.1	196.5	202.8	211.7	223.1	237.8	259.8	285.7	317.5	351.4
57.5°	170.7	171.0	172.3	177.5	183.5	192.4	206.6	225.3	248.4	276.1	309.0
60°	151.1	151.4	153.8	155.5	159.5	167.2	178.0	193.5	213.9	240.5	269.3
62.5°	134.3	134.5	135.9	137.5	141.3	144.3	153.6	166.9	183.5	207.1	231.8
65°	118.0	118.2	118.2	120.4	122.9	125.6	132.1	140.5	156.6	175.3	197.3
67.5°	102.2	103.8	103.3	104.9	107.1	108.4	113.1	120.7	131.5	147.3	166.3
70°	88.1	87.8	88.6	89.4	90.2	92.4	95.4	100.6	109.8	120.9	137.8
72.5°	72.8	71.2	72.3	73.4	74.7	76.4	78.8	82.6	89.7	98.7	111.2
75°	53.8	53.0	54.6	54.9	57.3	59.5	62.2	66.0	71.2	78.8	87.0
77.5°	39.1	40.2	40.8	41.3	41.6	44.0	47.0	50.3	53.3	60.3	66.6
80°	28.8	28.8	29.1	29.6	30.2	30.7	32.6	34.8	37.2	41.6	47.8
82.5°	20.1	19.8	19.8	20.1	20.4	20.9	21.7	22.6	24.7	26.9	30.2
85°	10.9	11.1	11.4	10.9	11.1	11.4	12.0	12.8	13.3	14.9	16.3
87.5°	3.8	4.6	4.3	4.3	4.6	4.6	4.6	5.2	5.2	5.2	6.0
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°	675.1	675.1	675.1	675.1	675.1	675.1	675.1	675.1	675.1	675.1	675.1
2.5°	696.6	695.8	693.6	689.3	686.3	680.8	679.8	679.5	674.6	667.3	666.7
5°	722.4	716.2	711.0	703.4	695.8	686.6	681.1	677.3	668.6	657.7	652.9
7.5°	746.1	737.1	726.5	714.5	703.4	690.4	680.8	673.2	660.5	646.6	638.2
10°	765.1	754.0	740.6	724.6	709.4	692.3	678.9	667.5	650.7	633.6	622.1
12.5°	778.1	765.6	750.4	731.7	713.2	693.6	674.3	659.9	638.7	618.9	604.2
15°	792.8	772.2	756.4	735.2	713.5	690.1	669.7	649.0	624.6	602.3	583.3
17.5°	796.4	777.3	758.6	735.2	712.6	684.1	660.5	637.6	610.5	583.0	564.5
20°	799.6	777.9	754.8	729.5	705.9	676.5	649.9	623.2	591.7	562.1	539.0
22.5°	797.2	776.0	750.2	721.6	696.1	665.9	637.1	607.7	572.4	541.4	515.3
25°	790.1	770.5	743.9	712.6	681.9	651.2	621.1	589.8	551.5	515.6	486.8
27.5°	775.7	758.3	732.8	699.6	667.3	633.3	601.8	569.1	528.1	491.4	460.7
30°	756.4	742.5	716.7	683.6	648.5	612.1	579.7	546.6	503.9	464.0	431.3
32.5°	729.8	720.0	697.7	665.4	627.6	589.0	555.8	522.1	476.5	438.4	405.2
35°	699.9	695.3	675.4	643.1	603.9	563.4	527.8	493.3	451.2	411.0	379.2
37.5°	664.8	668.1	650.1	618.1	577.6	536.3	498.7	465.3	422.6	384.0	352.8
40°	630.0	634.9	621.3	591.4	549.3	506.6	468.6	432.7	393.0	359.0	328.1
42.5°	591.4	601.2	590.6	561.5	520.5	475.4	435.7	402.3	364.5	333.2	306.0
45°	550.4	562.9	558.5	528.9	488.4	444.1	402.3	367.5	337.0	309.3	284.6
47.5°	508.8	523.2	521.3	496.6	457.7	412.3	371.0	336.8	308.8	286.5	265.8
50°	466.1	480.8	481.1	459.1	422.9	379.7	335.4	304.4	282.1	262.6	245.7
52.5°	424.5	439.2	439.5	422.4	386.2	344.1	303.3	275.1	256.0	240.8	226.7
55°	381.1	398.2	399.8	383.2	351.2	310.7	273.2	246.2	229.4	219.6	207.4
57.5°	337.0	355.5	358.8	345.5	314.5	276.7	245.2	219.3	205.7	199.0	189.7
60°	296.0	314.2	319.4	304.1	278.6	246.2	216.1	194.3	183.5	178.0	171.5
62.5°	258.2	276.4	279.1	266.1	240.8	213.6	190.8	171.0	162.0	157.9	152.7
65°	221.2	237.5	241.1	229.4	206.6	184.0	163.9	149.5	141.6	138.1	134.8
67.5°	187.3	202.5	204.9	194.3	175.3	156.0	141.3	128.8	123.4	118.8	117.4
70°	155.2	169.1	171.2	160.6	145.7	129.9	117.7	109.0	103.8	101.1	99.2
72.5°	125.6	136.4	138.3	131.8	120.1	106.3	96.8	89.4	86.2	83.7	82.9
75°	98.1	108.7	109.0	103.3	93.8	84.3	76.9	73.1	69.3	66.9	66.3
77.5°	75.3	81.3	82.1	79.1	69.9	63.9	58.2	55.4	54.1	51.6	51.6
80°	53.8	57.3	58.7	54.4	50.0	44.8	41.9	39.7	38.6	37.0	37.0
82.5°	33.4	36.4	38.1	34.8	32.6	29.9	27.7	26.4	25.5	24.7	24.5
85°	18.2	20.4	20.4	19.3	17.4	16.0	15.2	14.7	14.4	14.1	13.9
87.5°	6.5	8.2	7.3	7.6	6.8	6.5	6.3	6.3	6.5	6.0	6.0
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°	675.1	675.1	675.1	675.1	675.1	675.1	675.1	675.1	675.1	675.1	675.1
2.5°	663.2	661.8	657.7	653.9	650.9	644.4	643.1	643.6	643.6	643.9	640.9
5°	647.1	641.4	634.9	628.9	624.3	617.0	612.9	611.8	611.0	609.4	606.4
7.5°	628.9	622.4	613.2	607.7	597.9	589.8	584.1	580.3	577.8	574.3	569.4
10°	610.5	600.9	590.6	579.7	570.0	559.1	550.1	545.8	540.6	537.1	531.6
12.5°	592.0	578.7	564.5	552.0	538.7	525.9	516.7	510.7	501.5	496.3	490.6
15°	567.8	551.5	539.5	517.8	511.2	492.8	481.6	477.0	468.0	466.4	457.4
17.5°	544.9	526.2	508.5	490.3	472.9	460.1	450.6	444.7	437.6	433.2	427.3
20°	516.4	496.8	475.6	456.6	441.9	428.3	422.4	414.8	410.7	406.3	402.0
22.5°	489.2	465.3	444.1	428.6	413.7	402.5	396.0	390.8	387.3	383.0	380.0
25°	460.1	437.9	418.3	402.3	387.9	379.2	373.7	370.7	368.6	365.3	363.4
27.5°	432.4	409.9	390.6	378.3	366.7	359.0	356.3	353.6	350.9	349.8	349.5
30°	402.8	382.1	366.4	355.8	345.2	341.1	339.7	337.0	337.6	337.8	337.0
32.5°	377.8	357.7	345.7	336.8	328.6	325.6	325.3	324.3	324.5	325.9	325.3
35°	352.0	337.0	325.1	317.7	312.6	310.4	310.7	310.9	312.6	312.8	313.9
37.5°	330.0	315.6	307.7	300.6	298.2	298.2	298.4	298.7	300.1	301.7	302.2
40°	308.2	296.5	289.7	285.1	283.8	283.8	284.8	286.2	287.0	288.6	288.9
42.5°	288.6	278.9	273.7	269.1	269.6	271.0	271.3	272.1	274.2	274.5	275.1
45°	269.3	262.0	256.8	255.5	255.5	256.6	257.9	258.5	260.1	260.4	260.9
47.5°	252.8	245.2	241.4	240.0	240.8	242.2	244.1	244.9	246.2	246.0	247.3
50°	234.3	228.0	225.0	224.5	225.0	227.5	228.3	230.2	231.6	232.4	232.9
52.5°	216.6	211.7	210.4	210.1	211.2	212.8	213.9	215.8	217.4	217.4	217.2
55°	199.8	195.4	193.8	195.1	196.5	197.3	199.5	200.6	202.2	202.5	202.2
57.5°	182.6	178.8	178.3	178.8	181.6	183.2	184.5	184.5	185.4	185.6	186.5
60°	165.0	162.5	162.0	163.3	166.3	167.4	168.2	168.5	169.6	169.1	170.7
62.5°	148.4	146.0	147.0	148.4	149.5	151.1	151.7	153.0	152.7	153.3	154.1
65°	131.3	129.9	130.2	131.8	133.2	135.4	135.4	135.4	136.7	136.7	137.3
67.5°	114.7	113.9	115.0	116.3	116.6	118.0	117.7	119.3	120.4	120.9	121.5
70°	98.7	98.1	98.1	99.5	100.8	101.4	101.9	103.0	103.3	104.1	105.5
72.5°	83.4	81.8	82.1	84.0	84.0	85.1	86.4	86.4	88.1	88.3	89.7
75°	66.9	66.3	66.9	67.9	69.3	69.0	70.7	70.4	70.9	72.8	73.1
77.5°	52.2	51.4	52.7	53.3	53.5	53.8	54.4	55.7	56.8	57.6	57.9
80°	37.5	37.2	38.6	39.1	38.9	39.4	40.2	41.6	41.6	42.1	42.9
82.5°	25.3	24.7	25.5	26.4	26.9	27.2	27.2	27.7	28.0	28.5	28.5
85°	14.4	14.4	14.9	15.2	15.8	15.5	16.0	15.8	16.3	16.9	16.6
87.5°	6.3	6.3	6.3	6.3	6.5	6.5	6.8	6.8	6.5	6.8	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):

	165°	170°	175°	180°
0°	675.1	675.1	675.1	675.1
2.5°	639.8	640.3	639.0	637.6
5°	606.1	604.2	602.3	601.8
7.5°	568.3	568.3	563.7	564.8
10°	527.8	526.2	522.7	522.9
12.5°	488.4	487.1	485.2	484.3
15°	452.8	453.6	455.0	447.4
17.5°	424.8	422.6	421.6	420.2
20°	399.8	398.7	396.5	396.3
22.5°	380.5	378.1	377.5	377.8
25°	362.0	362.0	362.0	360.4
27.5°	349.0	349.0	348.2	348.4
30°	337.6	338.1	337.3	337.6
32.5°	326.7	327.0	326.4	326.2
35°	314.5	315.3	315.0	315.3
37.5°	302.8	303.3	302.8	302.8
40°	289.5	290.8	290.5	289.7
42.5°	276.1	276.1	277.0	276.7
45°	262.3	261.7	261.7	262.6
47.5°	247.6	248.7	248.1	248.4
50°	234.0	233.7	232.9	232.7
52.5°	218.0	218.5	218.3	216.9
55°	202.5	202.5	202.2	202.2
57.5°	185.9	186.7	186.5	186.5
60°	170.1	170.7	171.0	170.7
62.5°	154.1	154.4	154.1	154.4
65°	138.6	138.6	138.3	139.2
67.5°	121.8	122.0	121.8	122.3
70°	105.7	106.3	106.5	106.0
72.5°	90.5	90.0	90.2	89.7
75°	73.7	73.9	73.7	73.9
77.5°	57.9	58.2	57.9	58.2
80°	42.7	42.7	42.9	42.4
82.5°	28.8	28.8	29.6	28.8
85°	16.9	16.9	16.3	17.4
87.5°	6.5	6.5	6.5	6.5
90°	0.0	0.0	0.0	0.0

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