

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: P242138

Luminaire Tested: **S121DR-S490D935-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P242138
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-S490D935-X4F0-XX-UDD-A-W
Description: DEFINE 1 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER
STANDARD LIGHT ENGINE
Light Source: (92) 3500K CCT, 90 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1770.3 lumens
Efficiency: N/A
Efficacy: 94.2 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

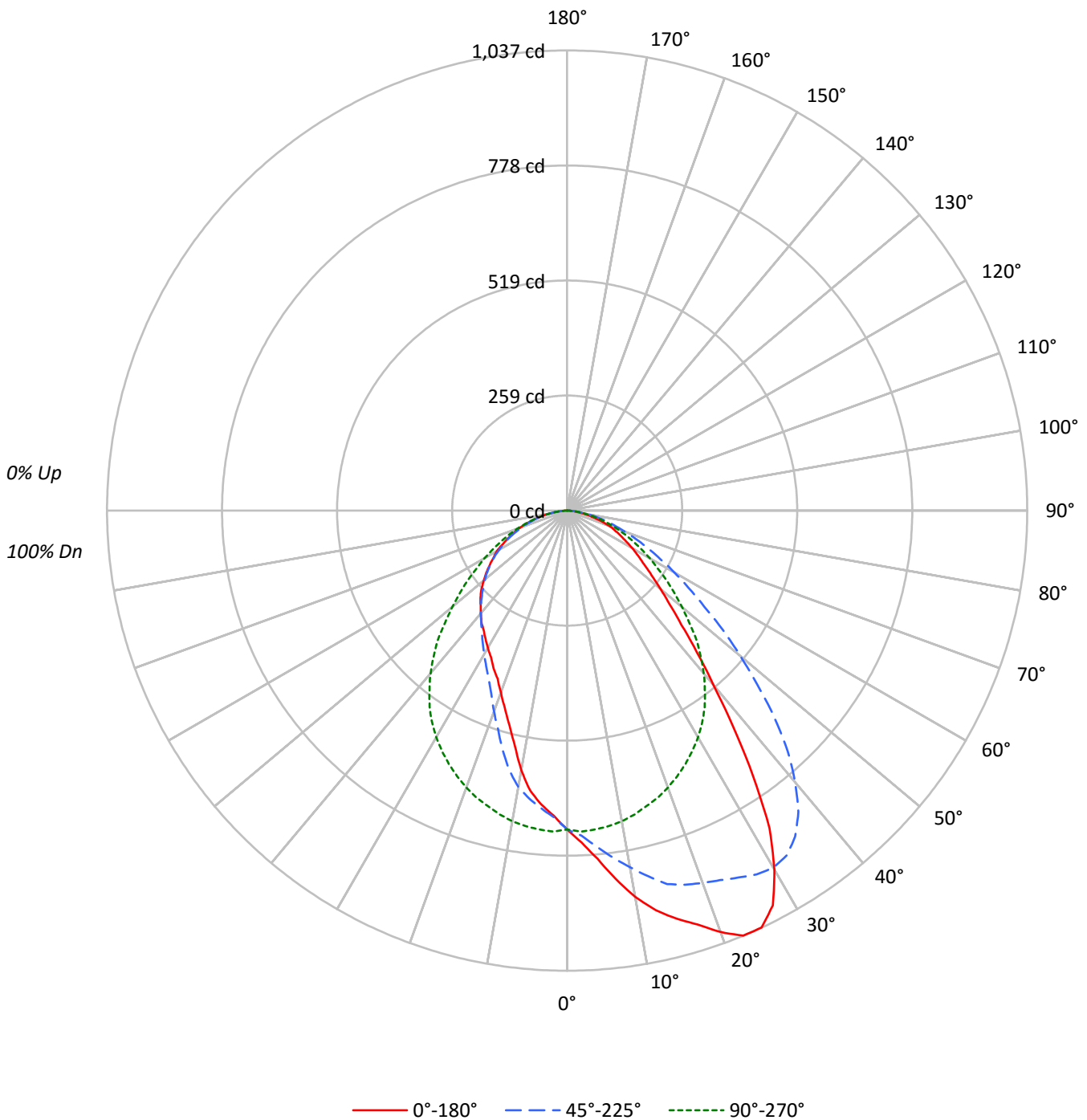
Input Watts (W): 18.8
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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°	21286	21286	21286
5°	23425	21459	19785
10°	26600	21383	17893
15°	29206	21144	15380
20°	31872	20937	13763
25°	33896	20606	12816
30°	31962	20179	12224
35°	26409	19543	11875
40°	19800	18531	11716
45°	15257	17281	11582
50°	12653	15543	11312
55°	10920	14118	10988
60°	10039	12729	10844
65°	9276	11505	10229
70°	8784	10335	9798
75°	7224	9136	8701
80°	5699	7439	7166
85°	4420	5473	4827



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	69.1	3.9
10°-20°	201.5	11.4
20°-30°	308.5	17.4
30°-40°	352.1	19.9
40°-50°	315.9	17.8
50°-60°	247.8	14.0
60°-70°	168.6	9.5
70°-80°	86.8	4.9
80°-90°	20.0	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°	579.1	32.7
0°-40°	931.2	52.6
0°-60°	1494.9	84.4
0°-90°	1770.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1770.3	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	718	718	718	718	718	
5°	788	760	722	673	665	78
15°	952	871	689	560	501	271
25°	1037	912	630	418	392	468
35°	730	896	540	335	328	453
45°	364	662	412	272	276	289
55°	211	377	273	210	213	193
65°	132	201	164	143	146	132
75°	63	88	80	73	76	68
85°	13	17	16	15	14	16
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°	718.4	718.4	718.4	718.4	718.4	718.4	718.4	718.4	718.4	718.4	718.4
2.5°	748.7	748.7	749.9	749.6	748.4	746.2	744.4	742.2	736.6	732.9	736.3
5°	787.6	789.2	790.7	790.4	785.8	781.8	775.9	774.3	764.5	759.8	758.3
7.5°	837.1	836.8	837.4	832.2	828.1	824.1	816.4	806.8	795.1	788.6	782.4
10°	884.1	886.9	885.6	879.1	873.0	868.6	856.3	844.5	830.0	816.1	808.3
12.5°	922.4	920.9	926.1	919.9	912.5	904.5	892.4	881.9	863.1	844.2	828.4
15°	952.1	950.5	951.2	946.5	938.8	931.7	919.3	908.2	890.3	871.4	854.7
17.5°	978.1	979.6	976.8	971.3	960.7	952.4	936.9	921.8	902.9	884.1	867.7
20°	1010.8	1012.4	1007.1	999.1	988.9	974.7	958.6	936.9	915.9	892.7	872.3
22.5°	1036.8	1035.9	1034.0	1026.3	1015.5	1002.2	979.0	955.2	930.1	901.4	875.1
25°	1036.8	1038.0	1039.0	1034.9	1027.8	1016.7	1000.9	975.9	947.8	912.5	875.7
27.5°	1003.4	1009.0	1013.0	1013.0	1011.4	1011.1	1001.9	986.1	959.8	924.3	883.5
30°	934.2	941.6	947.8	957.3	968.8	976.2	979.0	972.8	959.2	929.2	886.9
32.5°	848.8	848.2	860.9	876.4	898.9	914.7	930.5	939.7	939.1	921.2	885.9
35°	730.1	738.8	753.9	775.6	804.6	830.6	864.9	882.8	897.1	896.4	873.9
37.5°	614.5	615.8	632.8	662.4	688.1	728.3	773.1	810.5	844.8	856.0	848.5
40°	511.9	520.6	532.0	556.7	582.4	617.6	674.5	724.6	766.9	799.7	808.7
42.5°	432.8	437.4	448.5	470.2	493.0	535.1	576.8	630.3	683.8	736.0	762.9
45°	364.1	368.5	378.7	393.8	415.1	448.2	491.2	543.1	600.3	661.5	699.8
47.5°	314.1	315.6	323.3	334.8	354.9	379.0	413.6	464.0	521.8	581.5	637.7
50°	274.5	277.0	282.2	291.2	306.0	328.6	356.1	394.1	447.6	509.4	566.6
52.5°	239.9	241.7	247.9	252.9	264.3	283.5	307.3	341.9	387.0	442.7	501.7
55°	211.4	213.3	216.4	221.9	230.9	243.9	264.3	291.8	330.4	377.4	432.8
57.5°	189.8	190.7	191.3	195.1	202.2	212.7	230.0	251.6	281.6	324.6	373.7
60°	169.4	169.1	171.6	174.3	178.7	185.2	197.8	217.3	244.2	279.1	324.9
62.5°	149.0	150.5	152.1	154.3	157.0	160.7	170.9	185.5	206.8	236.8	274.5
65°	132.3	132.6	133.8	134.2	137.6	141.3	149.0	158.9	176.5	200.9	232.1
67.5°	116.2	116.5	116.2	117.2	118.7	121.8	125.8	133.8	147.5	167.2	194.4
70°	101.4	100.5	99.2	100.8	102.3	103.9	106.6	112.8	123.0	137.9	160.4
72.5°	81.6	82.2	82.8	83.5	83.8	85.9	88.4	92.7	100.8	112.2	129.5
75°	63.1	63.1	64.0	64.6	67.4	68.0	70.8	73.9	80.4	88.4	102.0
77.5°	46.4	46.1	47.6	47.9	49.5	51.3	52.9	56.0	60.9	67.7	76.7
80°	33.4	33.7	33.4	33.4	34.3	35.5	37.7	39.3	42.7	47.0	53.5
82.5°	22.3	22.3	22.6	22.6	23.5	23.5	24.7	26.0	28.1	30.9	35.5
85°	13.0	13.0	12.7	12.7	13.0	13.0	14.2	15.1	15.5	17.3	18.9
87.5°	5.6	5.6	5.3	5.6	5.3	5.6	5.3	5.9	6.2	6.5	7.1
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):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	718.4	718.4	718.4	718.4	718.4	718.4	718.4	718.4	718.4	718.4	718.4
2.5°	735.4	734.5	734.2	730.8	727.4	723.3	722.7	724.0	718.7	712.2	711.9
5°	754.6	751.2	746.2	739.7	734.2	726.7	723.0	721.5	713.4	704.2	702.3
7.5°	775.9	767.5	758.6	748.7	738.8	728.0	721.2	717.2	706.0	694.6	690.0
10°	796.3	785.5	771.9	756.7	742.8	728.0	717.8	710.7	697.1	682.8	675.7
12.5°	819.8	801.9	782.7	763.8	746.8	727.7	712.2	701.4	685.6	670.5	660.0
15°	836.8	810.8	796.0	769.1	747.8	724.6	705.7	689.3	672.0	655.3	644.8
17.5°	850.1	829.7	803.7	774.0	745.3	720.2	696.8	678.5	655.6	637.4	626.0
20°	854.4	833.7	807.1	774.7	745.9	713.8	685.9	664.0	639.6	617.3	601.5
22.5°	852.9	829.4	802.2	770.3	741.3	703.2	674.2	647.9	620.7	596.9	575.3
25°	849.5	822.3	792.3	762.3	729.8	692.4	659.0	630.3	597.5	571.6	545.6
27.5°	847.6	812.1	778.4	745.9	715.0	678.8	643.0	610.8	574.7	543.1	509.7
30°	847.0	804.6	762.3	724.6	696.1	659.4	623.8	589.8	547.5	511.9	477.9
32.5°	845.8	798.5	748.7	703.6	671.1	638.0	600.3	566.6	518.7	481.6	445.1
35°	837.4	787.6	732.9	681.6	643.6	609.3	575.6	540.3	490.6	450.7	415.8
37.5°	819.5	775.9	717.5	659.7	614.2	579.3	548.1	509.7	461.5	417.9	385.5
40°	792.9	757.3	700.8	638.0	584.5	546.2	513.1	479.1	429.4	387.6	358.3
42.5°	758.3	730.8	677.6	612.7	555.8	512.8	479.1	445.4	399.7	359.5	333.2
45°	712.8	695.8	649.2	585.2	528.0	478.2	441.7	412.4	370.0	333.2	309.1
47.5°	662.4	655.0	616.1	554.6	494.3	446.1	403.4	372.5	339.4	308.2	286.9
50°	601.5	607.4	576.8	520.2	461.8	412.4	370.6	337.2	308.5	284.4	265.5
52.5°	544.7	558.6	533.8	480.1	427.8	376.5	334.5	303.9	281.3	261.5	245.1
55°	481.3	501.4	486.6	440.2	388.3	342.8	300.8	273.3	253.8	238.6	224.7
57.5°	420.4	448.8	438.0	396.3	352.1	307.9	268.3	241.1	227.2	216.1	204.3
60°	366.3	392.3	390.7	355.2	311.0	271.7	239.3	214.8	202.5	195.1	184.9
62.5°	317.8	344.1	341.6	309.4	274.5	238.0	210.5	188.3	179.3	171.3	164.8
65°	268.3	290.9	292.1	268.3	234.6	205.3	181.8	164.1	156.1	151.2	146.5
67.5°	223.5	245.4	247.6	228.7	199.1	173.7	156.1	141.3	134.2	129.8	126.4
70°	184.2	202.2	206.2	190.4	165.4	145.6	130.8	119.3	114.7	110.4	109.1
72.5°	149.3	163.8	166.6	152.1	133.5	118.7	107.3	98.6	95.2	90.9	90.0
75°	118.7	128.9	129.2	119.6	105.7	94.3	85.0	79.8	76.0	73.0	72.3
77.5°	86.2	95.2	98.0	90.9	79.4	69.9	64.6	60.6	58.1	56.6	56.3
80°	62.4	68.3	69.6	63.4	56.6	50.7	47.0	43.6	42.0	40.5	39.9
82.5°	38.9	44.2	44.5	40.2	36.8	32.8	29.7	28.4	27.5	26.6	26.6
85°	21.0	23.8	23.5	21.6	20.1	17.9	16.7	16.1	15.5	14.8	14.8
87.5°	8.0	9.0	9.0	9.3	8.0	7.1	6.5	6.8	6.5	6.5	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°	718.4	718.4	718.4	718.4	718.4	718.4	718.4	718.4	718.4	718.4	718.4
2.5°	709.7	708.5	705.4	700.5	697.7	691.5	691.8	693.0	693.4	692.4	692.1
5°	697.1	693.4	688.4	682.2	677.9	673.3	670.2	672.0	671.1	670.8	669.2
7.5°	683.2	678.2	672.0	665.8	660.9	654.7	652.2	650.1	647.6	647.3	646.1
10°	669.2	663.1	656.0	647.0	640.2	632.5	625.0	621.0	616.4	613.0	605.9
12.5°	652.9	642.4	634.3	625.0	612.7	600.3	592.0	580.5	574.3	568.2	559.8
15°	634.0	620.4	606.5	587.9	577.1	559.8	547.5	539.1	529.5	523.3	516.2
17.5°	607.1	592.9	575.3	554.3	535.1	517.5	508.5	497.7	493.7	480.1	478.8
20°	580.5	559.2	537.3	515.9	494.6	481.9	470.5	463.4	456.0	447.3	444.5
22.5°	550.5	522.7	499.5	479.8	460.3	446.4	440.8	432.8	425.7	420.7	416.1
25°	514.1	488.4	464.9	446.4	428.7	418.2	411.1	405.3	402.2	396.6	394.7
27.5°	480.4	454.7	435.9	418.5	404.3	395.1	388.9	383.6	379.6	378.7	376.5
30°	446.1	424.1	406.2	391.3	378.7	373.7	367.9	365.4	362.9	361.7	359.2
32.5°	415.1	395.7	379.9	365.7	358.3	353.6	350.5	348.1	346.2	345.6	345.0
35°	387.0	369.1	356.1	345.9	340.3	335.4	333.8	331.7	330.8	330.4	330.1
37.5°	362.3	345.6	335.7	326.7	322.7	318.1	318.4	317.5	316.8	315.0	316.2
40°	337.2	324.3	314.1	307.0	304.2	302.6	302.0	301.4	301.7	301.7	301.4
42.5°	314.4	302.9	296.4	289.6	288.4	287.2	287.2	286.2	286.6	288.1	288.7
45°	293.7	284.7	278.8	273.3	273.3	271.7	273.0	272.6	273.6	274.5	275.1
47.5°	273.0	264.9	260.6	257.8	256.6	256.6	257.5	259.0	259.7	260.0	260.6
50°	252.2	246.4	242.7	241.1	240.8	242.3	243.3	243.0	243.9	245.1	246.1
52.5°	234.0	228.7	226.3	225.7	225.7	226.9	227.2	228.1	228.7	228.7	230.0
55°	215.1	211.4	209.6	209.3	209.6	210.2	211.4	212.1	211.7	212.4	212.4
57.5°	196.3	193.5	192.6	193.5	193.5	194.7	194.7	194.7	194.4	195.7	195.4
60°	178.7	175.6	176.5	176.2	177.1	177.1	178.1	178.1	177.1	178.4	179.0
62.5°	161.1	160.4	159.2	159.2	160.1	160.4	159.5	160.4	160.7	161.7	162.3
65°	142.5	140.3	141.3	141.0	141.9	143.4	142.2	142.2	143.1	144.4	145.0
67.5°	124.9	123.0	124.0	124.3	124.3	124.9	124.0	124.6	125.8	127.4	128.3
70°	107.0	106.3	106.6	106.3	106.3	107.9	108.2	107.9	109.1	110.7	111.0
72.5°	88.7	89.3	88.7	89.3	90.0	89.0	89.3	90.3	91.5	92.4	94.0
75°	72.0	71.1	71.4	73.0	72.6	73.3	73.0	73.9	76.0	75.4	75.7
77.5°	55.6	55.3	55.6	56.0	56.3	57.2	56.9	58.4	58.7	59.0	59.7
80°	39.6	39.9	40.2	40.8	41.7	41.4	42.0	42.3	43.6	42.3	43.3
82.5°	26.9	26.6	27.2	27.2	28.1	28.7	27.8	27.8	27.8	27.5	27.5
85°	14.8	15.8	15.8	15.8	15.1	15.1	15.5	15.1	15.1	15.1	14.8
87.5°	6.5	6.5	6.2	5.9	6.2	5.9	5.9	5.6	5.3	5.3	4.9
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°	718.4	718.4	718.4	718.4
2.5°	690.3	691.8	690.0	688.7
5°	667.7	667.7	665.8	665.2
7.5°	642.4	642.7	639.3	636.8
10°	604.3	602.5	597.5	594.7
12.5°	553.6	556.4	549.0	543.4
15°	509.4	501.7	504.8	501.4
17.5°	472.3	469.9	466.5	466.8
20°	439.9	438.0	436.2	436.5
22.5°	414.2	412.7	412.1	409.9
25°	392.9	393.5	392.0	392.0
27.5°	375.3	374.3	373.4	372.2
30°	358.6	358.9	358.0	357.3
32.5°	343.7	344.1	343.4	342.5
35°	329.2	328.9	329.2	328.3
37.5°	315.9	315.6	315.9	317.2
40°	302.3	302.6	301.7	302.9
42.5°	289.0	289.3	289.3	288.7
45°	274.5	275.4	275.7	276.4
47.5°	260.3	261.8	261.2	261.5
50°	246.1	245.8	245.8	245.4
52.5°	230.3	229.4	229.1	229.4
55°	211.4	212.7	212.7	212.7
57.5°	196.0	196.3	197.2	196.0
60°	180.2	180.2	180.5	183.0
62.5°	162.6	162.9	163.5	163.8
65°	145.6	146.5	146.2	145.9
67.5°	128.9	128.9	129.2	128.6
70°	111.6	111.6	111.6	113.1
72.5°	93.7	93.7	94.0	94.6
75°	77.0	77.0	77.0	76.0
77.5°	58.7	59.0	59.0	59.4
80°	42.7	42.3	42.3	42.0
82.5°	26.9	27.2	26.9	26.6
85°	14.8	15.1	14.2	14.2
87.5°	5.3	5.3	4.9	5.6
90°	0.0	0.0	0.0	0.0

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