

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: P242570

Luminaire Tested: **S123RDR-S560D835-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P242570
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-30)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S123RDR-S560D835-X4F0-XX-UDD-A-W
Description: DEFINE 3 REGRESSED DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER
STANDARD LIGHT ENGINE
Light Source: (92) 3500K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2088.3 lumens
Efficiency: N/A
Efficacy: 111.1 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.22 / 1.35
Luminous Opening: Rectangular (W 3.88' x L: 0.23' x H: 0')
CIE Type: Direct

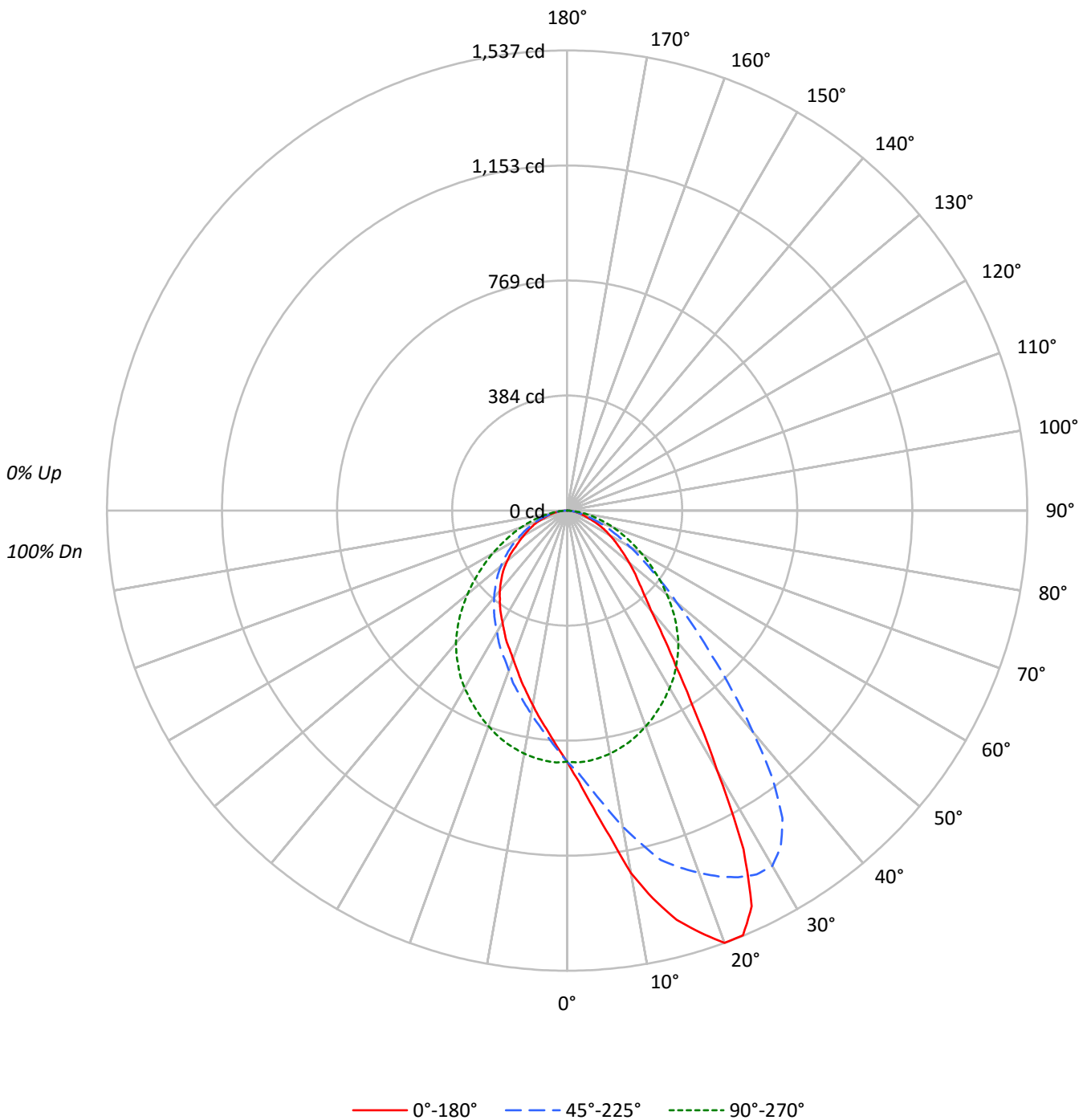
Input Watts (W): 18.8
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	106	102	99	108	104	100	97	100	97	94	96	93	91	92	90	89	87
2	101	94	88	83	99	92	87	82	89	84	80	86	82	78	83	79	77	74
3	93	84	76	71	91	82	75	70	79	74	69	77	72	68	74	70	66	64
4	86	75	67	61	84	74	66	61	71	65	60	69	64	59	67	62	58	56
5	80	68	60	53	78	67	59	53	65	58	53	63	57	52	61	56	52	50
6	74	62	53	47	72	61	53	47	59	52	47	57	51	46	56	50	46	44
7	69	56	48	42	67	55	48	42	54	47	42	53	46	42	51	46	41	39
8	64	52	44	38	63	51	43	38	50	43	38	48	42	38	47	42	37	36
9	60	48	40	35	59	47	40	35	46	39	34	45	39	34	44	38	34	32
10	57	44	37	32	55	44	36	32	43	36	31	42	36	31	41	35	31	29

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	10166	10166	10166
5°	12118	10209	8991
10°	15130	10151	8122
15°	17760	10047	7406
20°	19821	9892	6798
25°	19504	9728	6425
30°	14020	9578	6039
35°	9361	9381	5790
40°	6897	9146	5533
45°	5785	8732	5280
50°	5105	8192	4929
55°	4476	7572	4446
60°	3985	6979	4073
65°	3502	6344	3789
70°	2747	5777	3462
75°	2421	5044	3161
80°	2108	4286	3106
85°	1697	3449	3296



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	82.4	3.9
10°-20°	257.8	12.3
20°-30°	406.1	19.4
30°-40°	422.3	20.2
40°-50°	361.3	17.3
50°-60°	275.3	13.2
60°-70°	176.4	8.4
70°-80°	84.5	4.0
80°-90°	22.2	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°	746.2	35.7
0°-40°	1168.5	56.0
0°-60°	1805.1	86.4
0°-90°	2088.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2088.3	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	839	839	839	839	839	
5°	996	934	839	758	739	102
15°	1415	1208	801	629	590	402
25°	1458	1351	727	520	480	634
35°	633	1254	634	424	391	411
45°	338	681	509	335	308	265
55°	212	340	358	242	210	191
65°	122	167	221	151	132	120
75°	52	61	108	77	68	55
85°	12	13	25	23	24	14
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°	838.7	838.7	838.7	838.7	838.7	838.7	838.7	838.7	838.7	838.7	838.7
2.5°	906.9	908.3	903.7	902.9	897.6	896.1	896.1	888.6	883.9	877.8	874.2
5°	995.9	1001.7	998.8	992.3	981.6	979.0	972.2	961.5	949.2	934.2	927.0
7.5°	1097.9	1109.7	1107.6	1097.5	1086.0	1078.9	1059.8	1044.4	1021.1	999.9	983.4
10°	1229.3	1221.0	1214.6	1204.9	1194.5	1177.6	1157.5	1129.8	1097.9	1072.8	1044.7
12.5°	1327.7	1328.0	1319.4	1309.3	1293.5	1277.8	1251.9	1216.7	1178.3	1139.2	1106.1
15°	1415.3	1417.4	1412.0	1401.6	1380.8	1352.4	1315.1	1301.1	1248.0	1208.5	1169.0
17.5°	1477.7	1478.1	1477.0	1463.0	1440.4	1421.0	1386.2	1353.5	1303.2	1249.7	1197.0
20°	1536.6	1533.0	1533.7	1517.6	1501.8	1478.4	1444.7	1391.2	1351.7	1287.4	1232.5
22.5°	1535.2	1535.2	1538.4	1535.5	1525.1	1508.6	1483.8	1440.7	1387.6	1322.6	1259.1
25°	1458.3	1455.5	1472.3	1477.0	1495.3	1498.6	1490.7	1465.9	1418.1	1351.4	1274.9
27.5°	1275.2	1264.8	1300.0	1334.8	1381.2	1410.6	1440.7	1447.6	1425.0	1370.4	1290.3
30°	1001.7	1035.4	1051.2	1107.9	1171.1	1246.5	1312.6	1375.4	1390.8	1370.0	1307.2
32.5°	789.1	817.5	830.1	876.7	934.5	1026.1	1133.4	1228.9	1303.6	1328.7	1297.1
35°	632.6	633.0	663.1	684.7	739.2	830.1	926.3	1045.5	1163.9	1253.7	1263.0
37.5°	522.0	523.5	542.8	564.4	608.2	659.2	748.6	849.1	991.6	1125.5	1195.2
40°	435.9	439.1	452.7	473.9	503.3	539.6	605.7	699.0	813.2	966.5	1091.8
42.5°	380.6	386.3	391.7	406.8	422.2	455.6	505.9	572.6	673.9	816.8	966.1
45°	337.5	340.4	345.7	353.3	369.8	393.5	429.4	477.9	564.0	680.7	825.4
47.5°	304.4	302.7	308.8	315.2	326.3	343.6	368.7	410.7	475.3	573.0	698.3
50°	270.7	270.3	274.3	279.0	289.4	301.2	321.0	350.8	399.6	477.1	589.5
52.5°	239.1	240.9	243.4	249.5	256.3	265.3	282.5	301.9	342.1	406.4	495.4
55°	211.8	212.9	216.8	220.1	225.5	235.2	246.3	264.2	293.0	339.6	416.8
57.5°	188.1	187.8	191.7	192.1	198.9	207.2	216.1	230.1	252.0	289.0	342.9
60°	164.4	163.4	166.6	169.1	172.3	178.8	186.0	199.6	216.1	241.6	286.1
62.5°	142.9	142.5	144.7	147.2	149.7	155.5	161.2	170.9	183.1	203.6	236.6
65°	122.1	123.1	124.2	125.3	126.7	130.3	136.1	143.2	152.2	167.3	192.8
67.5°	100.5	102.0	102.3	104.8	107.7	109.5	112.7	119.6	126.4	140.0	155.1
70°	77.5	77.2	77.5	78.6	82.6	86.5	91.2	95.9	99.8	108.8	121.0
72.5°	63.9	63.2	64.3	64.3	65.7	66.1	68.6	72.9	78.3	83.7	91.6
75°	51.7	51.7	51.7	51.7	53.1	53.9	54.9	56.0	57.8	60.7	67.1
77.5°	40.2	40.2	40.9	41.3	41.6	42.0	42.7	43.8	44.5	46.0	49.2
80°	30.2	30.5	30.2	30.5	30.5	31.2	31.6	32.7	33.0	34.8	35.9
82.5°	20.8	20.5	20.8	21.2	21.2	21.9	21.9	22.6	22.6	23.3	24.4
85°	12.2	11.5	12.2	11.8	12.6	11.8	12.2	12.9	12.9	13.3	14.7
87.5°	3.6	4.3	3.6	3.9	3.9	4.3	4.3	4.3	5.0	4.7	5.0
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°	838.7	838.7	838.7	838.7	838.7	838.7	838.7	838.7	838.7	838.7	838.7
2.5°	872.8	871.7	866.7	860.9	853.4	848.4	844.4	842.3	835.8	827.9	822.5
5°	919.5	908.7	897.2	883.2	870.3	857.0	848.7	839.0	827.2	813.9	804.6
7.5°	965.8	947.1	926.6	905.4	883.9	864.9	847.3	832.9	815.0	796.7	784.1
10°	1020.7	989.8	957.9	925.2	895.4	867.4	845.9	824.7	802.1	780.2	763.6
12.5°	1070.6	1027.5	989.5	947.5	907.2	872.4	839.0	813.2	784.8	761.1	741.7
15°	1111.2	1069.5	1025.0	964.0	913.3	871.0	833.3	800.6	767.6	738.9	720.6
17.5°	1153.5	1090.3	1031.8	984.4	918.4	867.0	822.9	784.8	748.9	719.5	696.5
20°	1177.9	1117.3	1052.3	987.3	922.7	863.4	809.9	766.9	729.2	694.7	673.9
22.5°	1192.7	1121.9	1052.6	981.6	911.9	849.8	797.0	748.6	706.9	674.6	647.7
25°	1203.4	1121.6	1046.2	977.3	907.2	840.5	777.6	727.4	683.2	648.4	621.1
27.5°	1212.1	1117.3	1030.7	955.7	885.0	817.1	760.4	706.6	662.4	626.1	596.3
30°	1214.2	1111.9	1012.4	929.5	857.3	796.3	735.3	684.3	636.9	597.8	570.5
32.5°	1217.1	1098.6	987.7	898.3	824.0	763.6	709.8	661.7	612.8	574.4	546.4
35°	1207.0	1095.4	962.5	861.3	787.3	728.8	678.9	634.0	586.3	548.9	520.6
37.5°	1176.5	1077.8	937.4	820.0	743.5	689.7	648.0	607.1	562.9	522.0	495.8
40°	1125.2	1049.1	907.2	783.0	702.2	646.6	610.0	578.0	535.7	498.0	469.2
42.5°	1048.7	1009.9	878.5	744.2	655.6	602.4	573.0	543.6	507.7	469.2	442.7
45°	951.8	957.9	837.2	702.6	613.2	559.4	530.3	509.4	476.4	444.8	417.2
47.5°	834.0	885.0	793.1	658.8	567.3	516.6	491.1	472.1	449.1	416.5	391.0
50°	719.1	800.6	737.8	614.6	524.5	474.3	449.1	434.4	415.0	390.6	366.6
52.5°	613.2	702.2	671.0	565.5	478.2	433.3	408.9	397.4	383.1	360.5	339.3
55°	517.3	606.0	597.4	515.9	431.9	390.6	371.9	358.3	347.9	330.7	313.4
57.5°	434.1	519.9	521.7	461.0	391.7	349.7	333.5	322.8	315.6	301.9	285.1
60°	356.1	433.3	448.4	405.3	347.9	312.0	296.2	287.9	282.5	272.1	259.9
62.5°	291.5	354.4	371.9	343.9	305.9	272.9	261.4	253.5	250.2	241.6	231.2
65°	233.0	287.6	304.1	286.9	265.0	238.0	228.0	221.2	217.9	212.9	205.0
67.5°	183.8	226.2	244.1	229.8	221.5	202.5	195.7	191.7	188.8	185.3	178.4
70°	140.7	170.2	188.8	185.6	179.2	170.2	165.5	163.0	160.1	157.3	151.5
72.5°	106.3	124.2	141.5	144.3	139.3	139.3	135.4	134.6	133.2	129.6	127.1
75°	75.0	89.0	101.2	105.9	108.1	109.9	108.1	107.7	107.3	104.5	102.7
77.5°	52.1	61.0	69.3	77.5	80.4	82.9	83.3	84.7	83.7	81.9	81.1
80°	37.7	39.5	44.9	51.7	57.1	59.2	60.7	61.4	61.0	60.7	59.2
82.5°	24.8	26.2	28.0	32.3	36.6	40.6	41.3	40.9	42.0	42.4	41.3
85°	14.7	15.1	15.8	16.5	19.0	23.0	24.1	24.8	25.5	25.5	23.3
87.5°	5.7	5.4	6.1	6.1	7.2	7.5	9.7	11.5	11.8	10.4	10.4
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°	838.7	838.7	838.7	838.7	838.7	838.7	838.7	838.7	838.7	838.7	838.7
2.5°	820.7	816.1	812.8	805.6	801.0	795.9	790.9	794.2	793.8	793.4	793.4
5°	796.7	788.4	780.9	771.2	765.1	757.5	751.8	751.1	752.5	747.5	744.6
7.5°	774.0	763.3	752.5	742.5	731.3	722.7	717.3	715.2	711.2	708.0	705.1
10°	750.0	736.7	726.3	713.0	700.8	690.0	683.2	678.5	676.0	673.5	668.9
12.5°	725.2	712.3	698.3	682.9	671.4	658.4	653.8	648.4	643.0	640.1	633.3
15°	701.2	684.3	670.3	654.5	641.6	629.4	622.2	611.8	610.3	606.7	600.3
17.5°	677.8	659.2	638.7	627.9	615.0	602.1	590.6	587.4	576.6	573.0	566.9
20°	649.1	632.2	617.5	602.1	580.9	569.0	560.4	555.8	547.5	542.5	538.9
22.5°	624.3	607.1	589.5	570.8	554.3	540.7	534.9	527.0	523.5	515.9	512.0
25°	601.0	582.3	561.9	542.5	529.9	519.9	509.8	503.3	496.9	493.7	486.5
27.5°	572.6	554.0	534.2	519.1	504.8	494.7	485.0	479.7	471.4	466.0	462.1
30°	550.0	527.0	510.5	497.2	477.5	468.2	461.3	454.2	448.4	442.7	438.7
32.5°	523.8	503.3	487.9	470.7	456.7	446.3	436.9	430.8	426.2	420.8	416.8
35°	496.2	478.6	462.4	445.9	434.8	424.4	414.0	408.6	403.9	398.9	395.3
37.5°	471.0	454.5	439.4	423.6	410.0	401.0	392.4	388.8	382.4	378.8	375.2
40°	448.1	431.9	415.4	400.3	385.9	379.5	371.9	365.8	360.1	357.6	353.6
42.5°	422.9	406.8	393.5	377.0	365.8	356.5	349.7	342.9	338.9	335.0	333.2
45°	398.2	383.8	370.1	354.0	342.9	335.3	327.4	321.3	317.4	314.9	310.9
47.5°	374.5	359.7	346.1	331.7	321.0	312.3	304.1	300.1	294.8	291.9	289.0
50°	348.2	335.3	320.6	307.7	296.9	288.3	281.8	276.4	271.8	267.8	266.0
52.5°	324.2	310.2	298.0	286.1	274.7	264.6	258.9	253.1	249.9	245.2	243.1
55°	297.3	284.0	273.2	261.4	250.2	242.0	234.8	229.8	226.2	221.2	218.3
57.5°	272.5	261.0	247.7	237.3	225.5	219.0	212.9	205.7	201.4	197.5	194.6
60°	247.4	233.7	222.6	212.9	202.8	193.9	188.5	183.1	178.4	174.5	172.0
62.5°	221.2	209.7	199.3	188.5	179.5	172.0	165.5	161.2	157.3	155.1	152.6
65°	194.2	184.9	174.1	165.5	156.9	151.1	146.1	142.2	139.3	137.5	135.4
67.5°	169.5	160.5	150.8	141.8	136.1	131.4	127.8	124.2	122.8	120.6	119.2
70°	145.4	136.1	127.8	121.3	115.6	112.4	110.2	107.7	106.3	103.4	102.0
72.5°	119.2	113.1	107.7	102.7	98.4	95.5	92.6	89.4	86.9	83.7	82.2
75°	98.0	91.9	87.2	83.7	80.8	76.8	72.9	69.6	68.6	67.5	67.1
77.5°	76.5	72.5	68.9	66.1	62.1	58.5	57.4	56.7	56.4	55.6	55.6
80°	57.1	53.5	51.0	47.4	45.2	45.2	45.2	44.5	44.9	44.9	44.9
82.5°	38.8	35.5	34.5	33.7	33.7	34.1	34.1	34.5	34.1	34.8	34.5
85°	21.9	22.3	23.0	22.6	23.0	23.0	23.7	23.3	23.7	23.0	23.7
87.5°	10.1	11.1	11.5	11.8	12.2	11.8	12.2	12.2	12.6	12.6	12.6
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):

	165°	170°	175°	180°
0°	838.7	838.7	838.7	838.7
2.5°	789.1	788.8	789.1	787.7
5°	743.5	743.2	742.1	738.9
7.5°	702.2	701.5	698.7	699.4
10°	666.3	666.7	662.4	659.9
12.5°	631.5	629.4	626.1	623.3
15°	601.7	598.1	589.5	590.2
17.5°	564.7	561.9	561.5	556.5
20°	533.1	531.3	532.1	527.0
22.5°	508.4	506.6	502.6	501.9
25°	484.3	481.4	478.6	480.4
27.5°	459.9	457.8	454.5	454.5
30°	436.9	434.8	433.3	431.5
32.5°	413.6	413.6	410.7	410.7
35°	393.8	391.7	391.0	391.3
37.5°	374.8	371.9	370.5	369.1
40°	354.0	351.1	350.4	349.7
42.5°	330.7	329.9	329.6	328.1
45°	309.8	309.5	307.3	308.0
47.5°	287.6	285.8	284.7	285.8
50°	264.6	263.9	260.6	261.4
52.5°	241.6	238.4	237.7	237.0
55°	215.8	212.5	211.1	210.4
57.5°	190.3	189.2	187.8	188.8
60°	168.4	168.4	168.4	168.0
62.5°	151.5	150.4	150.1	150.8
65°	134.3	133.9	132.5	132.1
67.5°	118.5	117.0	117.0	116.3
70°	100.2	99.4	97.3	97.7
72.5°	80.4	79.7	79.7	79.0
75°	66.8	66.4	66.1	67.5
77.5°	55.6	55.6	56.0	55.3
80°	44.9	44.9	44.5	44.5
82.5°	33.7	34.1	34.5	33.7
85°	23.7	23.3	24.1	23.7
87.5°	13.3	12.6	12.6	12.9
90°	0.0	0.0	0.0	0.0

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