

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: P242472

Luminaire Tested: **S123DR-S560D840-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P242472
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-20)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S123DR-S560D840-X4F0-XX-UDD-A-W
Description: DEFINE 3 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER
STANDARD LIGHT ENGINE
Light Source: (92) 4000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2258.5 lumens
Efficiency: N/A
Efficacy: 120.1 lumens/watt
Spacing Criteria (0/90/45): 1.37 / 1.23 / 1.5
Luminous Opening: Rectangular (W 3.88' x L: 0.23' x H: 0')
CIE Type: Direct

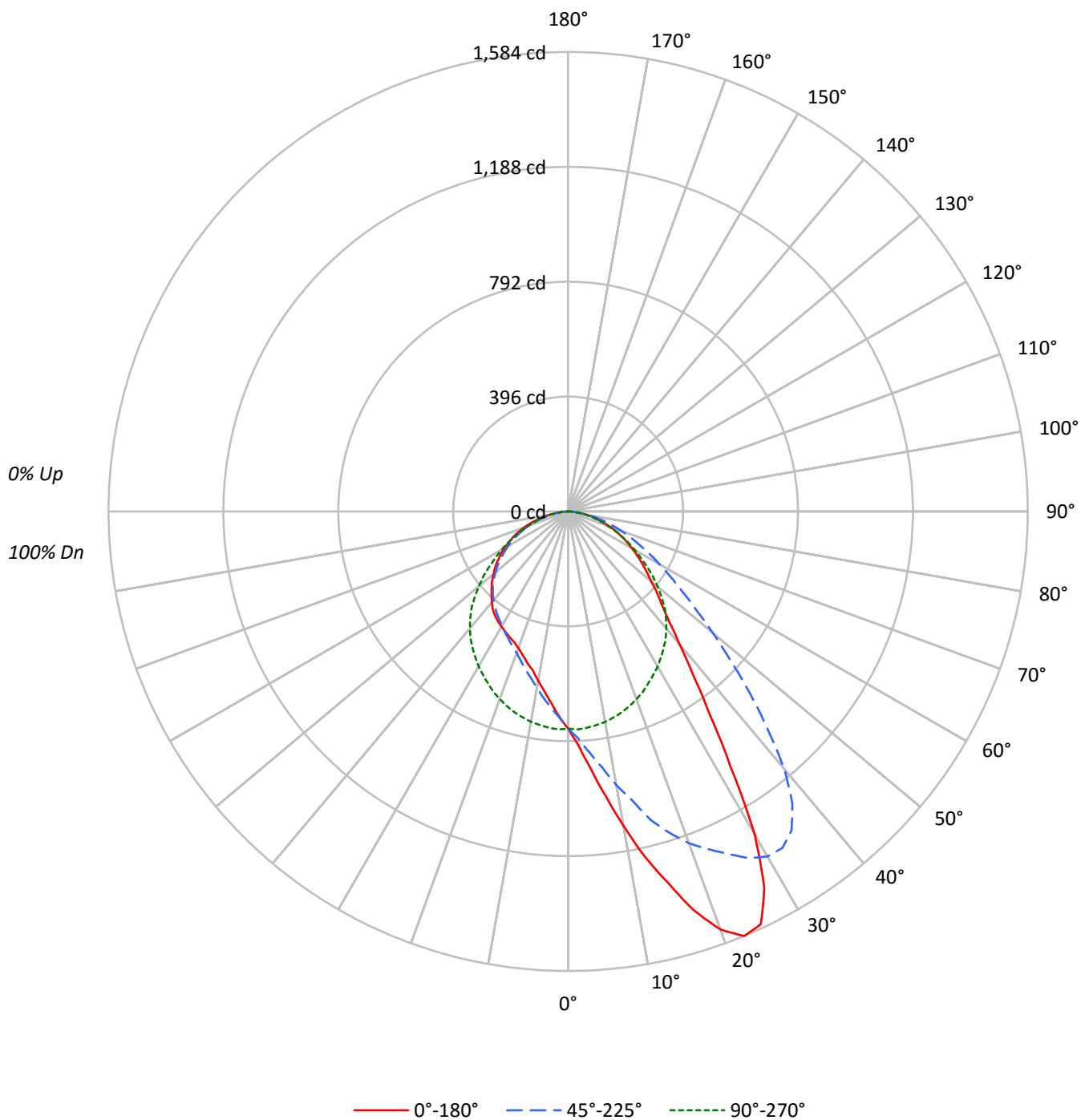
Input Watts (W): 18.8
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10
RCR																				
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100		
1	110	105	101	98	107	103	99	96	99	96	93	95	92	90	91	89	87	85		
2	100	93	86	81	98	91	85	80	87	82	78	84	80	76	81	78	74	72		
3	92	82	74	68	89	80	73	67	77	71	66	75	69	65	72	68	64	62		
4	84	73	65	58	82	72	64	58	69	62	57	67	61	56	65	60	56	53		
5	78	66	57	51	76	64	56	50	62	55	50	60	54	49	59	53	49	47		
6	72	59	51	44	70	58	50	44	56	49	44	55	48	43	53	48	43	41		
7	67	54	45	39	65	53	45	39	52	44	39	50	44	39	49	43	38	36		
8	62	49	41	35	61	49	41	35	47	40	35	46	39	35	45	39	35	33		
9	58	45	37	32	57	45	37	32	43	36	32	42	36	31	41	36	31	29		
10	55	42	34	29	53	41	34	29	40	33	29	39	33	29	38	33	28	27		

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	9070	9070	9070
5°	10816	9109	8072
10°	13538	9063	7291
15°	16606	8990	6788
20°	19781	8876	6462
25°	21004	8737	6390
30°	18004	8636	6424
35°	12521	8492	6492
40°	9431	8323	6470
45°	7830	8072	6389
50°	7015	7562	6330
55°	6557	7010	6251
60°	6153	6434	6187
65°	5782	5865	5989
70°	5422	5217	5706
75°	4857	4566	5231
80°	4251	3748	4502
85°	3324	2726	3032

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	73.6	3.3
10°-20°	236.4	10.5
20°-30°	397.7	17.6
30°-40°	449.5	19.9
40°-50°	402.6	17.8
50°-60°	325.0	14.4
60°-70°	226.4	10.0
70°-80°	118.9	5.3
80°-90°	28.5	1.3
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°	707.7	31.3
0°-40°	1157.2	51.2
0°-60°	1884.8	83.5
0°-90°	2258.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2258.5	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	748	748	748	748	748	
5°	889	833	749	678	663	91
15°	1323	1101	716	565	541	382
25°	1570	1302	653	485	478	694
35°	846	1342	574	429	439	546
45°	457	885	471	367	373	360
55°	310	480	332	284	296	278
65°	202	269	204	192	209	201
75°	104	128	98	97	112	111
85°	24	28	20	19	22	29
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°	748.3	748.3	748.3	748.3	748.3	748.3	748.3	748.3	748.3	748.3	748.3
2.5°	805.6	804.8	803.0	804.5	801.6	797.6	797.2	793.6	783.1	782.4	779.5
5°	888.9	886.0	885.7	885.3	880.2	873.4	860.3	859.2	841.8	833.1	822.6
7.5°	989.7	988.6	985.7	982.5	965.4	957.1	944.8	928.8	908.5	888.9	876.6
10°	1099.9	1111.9	1097.0	1086.9	1077.5	1059.7	1039.0	1013.3	987.6	957.5	934.6
12.5°	1218.1	1222.5	1222.5	1213.1	1197.1	1167.7	1127.1	1098.1	1074.9	1019.8	1000.2
15°	1323.3	1345.4	1331.2	1298.6	1299.3	1273.6	1225.7	1173.2	1145.3	1101.4	1041.6
17.5°	1442.2	1446.2	1441.8	1411.4	1396.5	1359.2	1316.0	1267.1	1214.5	1161.2	1099.2
20°	1533.5	1531.4	1518.7	1504.5	1473.4	1445.8	1397.6	1341.4	1268.9	1216.7	1147.4
22.5°	1584.3	1580.3	1576.0	1564.7	1540.1	1510.0	1467.9	1405.2	1337.0	1260.2	1177.5
25°	1570.5	1575.2	1576.0	1572.7	1563.6	1545.9	1511.8	1462.8	1394.0	1301.5	1218.1
27.5°	1463.9	1475.9	1491.1	1501.3	1517.6	1528.5	1517.6	1486.8	1430.2	1347.6	1245.0
30°	1286.3	1271.8	1307.7	1353.0	1383.8	1438.2	1468.6	1470.5	1441.8	1373.3	1274.0
32.5°	1039.8	1063.3	1074.2	1132.6	1209.1	1271.8	1339.9	1400.5	1414.6	1374.8	1291.0
35°	846.2	866.1	895.1	924.1	996.6	1059.0	1165.6	1258.4	1332.3	1342.1	1288.8
37.5°	703.3	714.9	732.7	763.5	813.2	890.4	974.9	1095.6	1197.5	1269.3	1262.0
40°	596.0	598.9	619.6	641.7	680.1	741.0	815.4	919.0	1047.4	1158.7	1205.1
42.5°	515.5	522.8	528.6	549.6	578.3	620.3	688.1	769.3	884.2	1016.6	1118.4
45°	456.8	464.1	469.5	483.6	505.4	536.2	584.4	662.7	752.3	884.6	1006.8
47.5°	416.2	415.5	420.2	431.4	447.0	471.7	507.2	559.4	645.3	755.9	883.9
50°	372.0	377.8	379.2	387.6	399.2	416.2	444.5	487.3	554.7	648.9	764.2
52.5°	340.8	341.5	346.2	351.7	361.5	373.8	397.3	428.5	477.8	554.7	658.4
55°	310.3	310.3	314.3	319.0	324.8	336.8	353.1	377.8	418.0	480.4	568.1
57.5°	282.1	283.5	287.1	288.2	293.3	301.6	315.8	335.3	366.2	416.6	489.1
60°	253.8	257.0	256.7	259.6	263.9	270.1	281.7	296.9	323.7	362.2	420.9
62.5°	229.1	228.0	228.0	231.7	236.0	241.8	248.3	261.0	282.8	315.8	363.6
65°	201.6	200.8	203.4	205.6	207.0	211.4	217.2	228.8	244.0	269.4	308.2
67.5°	177.6	175.5	177.3	178.0	180.5	184.2	190.0	197.2	209.5	230.9	262.1
70°	153.0	151.2	150.8	151.5	153.7	156.3	160.2	167.1	178.4	194.7	216.1
72.5°	127.6	126.5	126.5	128.3	129.1	130.5	133.1	139.2	147.6	158.8	178.4
75°	103.7	103.7	103.7	104.0	105.1	106.6	108.8	112.0	118.9	127.6	141.0
77.5°	81.9	82.3	81.6	81.2	83.0	83.7	84.1	87.7	91.7	98.2	108.8
80°	60.9	59.1	59.8	60.9	61.6	62.0	63.1	63.8	67.1	70.3	77.2
82.5°	41.3	39.9	39.9	41.7	41.7	42.1	43.1	44.2	45.0	47.9	50.8
85°	23.9	23.9	24.3	24.3	24.7	24.3	25.4	25.7	25.7	27.6	29.7
87.5°	10.9	10.2	10.5	10.9	10.5	10.9	11.2	11.6	12.0	12.3	12.7
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°	748.3	748.3	748.3	748.3	748.3	748.3	748.3	748.3	748.3	748.3	748.3
2.5°	777.3	774.4	771.5	766.4	762.1	755.9	754.1	751.9	745.4	739.6	735.2
5°	818.6	809.9	797.2	785.6	776.2	763.5	756.3	748.6	737.8	728.0	720.0
7.5°	858.1	842.9	825.1	805.9	787.4	769.7	755.5	742.8	728.7	714.9	704.4
10°	907.1	882.4	854.9	825.1	799.8	775.1	754.4	736.3	716.7	699.7	685.6
12.5°	962.9	923.4	882.8	845.1	813.9	777.3	751.2	726.9	704.1	682.7	666.3
15°	1004.6	958.2	913.2	863.6	817.9	775.1	745.4	716.4	690.6	669.6	649.3
17.5°	1045.9	995.2	937.9	878.1	824.4	775.1	734.5	703.3	671.8	646.4	626.8
20°	1080.0	1020.2	953.1	890.4	829.5	772.9	727.3	688.1	653.3	626.1	603.3
22.5°	1109.4	1036.9	966.9	898.7	829.1	767.1	713.8	673.2	634.8	608.3	583.7
25°	1127.9	1044.1	974.5	895.8	820.1	757.0	699.0	653.3	615.6	584.4	559.4
27.5°	1145.3	1043.0	964.4	879.5	809.2	746.5	684.1	635.2	595.7	561.9	536.2
30°	1162.7	1044.8	946.6	862.8	791.8	726.5	666.3	617.0	575.0	540.5	516.6
32.5°	1173.5	1043.8	930.3	839.6	764.2	708.4	647.1	595.7	552.1	518.4	495.6
35°	1176.4	1037.6	911.1	805.9	734.1	677.9	626.8	573.9	528.6	497.0	470.9
37.5°	1170.3	1026.4	890.0	775.5	697.9	642.1	597.5	552.1	508.6	473.5	450.6
40°	1150.3	1015.5	864.7	742.8	660.2	606.9	570.3	526.0	483.3	450.3	429.2
42.5°	1112.3	993.4	836.7	706.6	621.0	567.7	534.7	499.6	459.7	429.2	408.2
45°	1045.6	959.3	808.8	670.3	582.6	527.5	497.8	470.9	434.3	404.2	386.1
47.5°	960.4	913.2	768.6	632.3	542.4	489.1	457.9	435.8	407.1	382.8	365.1
50°	870.8	853.8	727.6	593.1	502.1	450.3	420.5	401.0	381.8	357.5	341.5
52.5°	767.5	784.9	679.8	552.5	461.2	410.4	382.8	368.3	351.3	332.4	319.0
55°	671.8	709.9	623.2	506.1	420.5	372.0	345.5	331.7	321.6	306.7	294.7
57.5°	579.0	627.6	564.5	459.3	380.7	338.2	312.1	296.6	290.0	281.7	271.9
60°	498.1	546.0	500.7	412.2	340.4	300.5	278.1	265.4	258.9	253.4	245.4
62.5°	426.0	474.6	438.3	364.4	300.9	264.7	245.8	233.5	228.8	226.6	220.1
65°	361.1	402.8	377.4	314.3	263.6	230.9	213.2	204.5	199.8	198.7	194.3
67.5°	304.9	337.2	317.6	270.1	228.8	199.0	183.4	175.8	171.8	171.5	167.9
70°	249.8	279.5	265.4	223.3	188.9	166.8	153.7	147.2	145.0	144.7	142.8
72.5°	207.0	225.5	215.0	181.6	157.0	137.4	128.7	121.8	119.3	120.0	118.9
75°	159.5	175.1	168.6	144.3	122.9	109.8	101.9	97.5	95.3	96.4	95.0
77.5°	121.8	132.7	126.2	107.7	93.9	84.1	77.9	75.0	72.9	72.9	72.1
80°	86.6	92.4	89.2	79.0	68.2	60.2	55.5	53.7	52.6	52.2	51.8
82.5°	55.5	60.2	56.2	50.0	43.5	39.5	37.3	34.8	34.1	34.4	34.1
85°	31.2	33.0	31.5	27.2	24.3	22.1	20.7	19.6	18.9	19.2	18.5
87.5°	13.4	13.8	12.7	11.2	10.5	9.4	9.4	8.7	8.0	8.0	7.6
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°	748.3	748.3	748.3	748.3	748.3	748.3	748.3	748.3	748.3	748.3	748.3
2.5°	732.7	730.2	726.5	721.1	716.7	709.9	709.9	710.9	710.9	710.6	709.9
5°	713.5	708.0	701.5	693.9	685.9	677.9	676.5	673.6	671.4	670.0	668.2
7.5°	693.9	684.8	675.8	665.3	656.2	648.6	643.1	638.4	635.5	632.3	629.7
10°	674.0	662.0	650.8	639.5	627.2	617.4	611.2	606.9	603.6	600.7	599.3
12.5°	650.4	636.3	623.6	613.1	599.3	589.1	583.3	581.9	577.9	571.0	567.4
15°	627.6	614.9	600.0	583.7	577.2	564.8	557.9	554.7	552.5	547.8	546.3
17.5°	608.7	591.7	574.6	562.7	550.7	540.9	536.9	532.6	529.7	525.3	524.2
20°	585.1	570.3	555.0	542.0	529.3	518.4	515.2	512.3	509.4	507.6	506.1
22.5°	561.2	546.3	534.4	522.4	508.6	502.5	498.9	495.6	493.8	492.7	491.2
25°	539.1	526.0	511.9	501.0	490.2	485.4	483.3	481.5	480.0	478.2	477.8
27.5°	519.5	505.0	493.1	482.5	474.6	470.6	468.0	467.0	467.0	467.7	468.0
30°	497.0	484.0	474.6	465.9	458.6	455.0	454.6	454.6	456.1	456.4	457.2
32.5°	476.4	466.2	456.8	448.5	443.4	441.2	443.0	443.0	444.1	445.2	446.6
35°	456.4	447.0	439.8	432.5	427.8	428.9	429.6	430.3	432.1	434.3	435.8
37.5°	437.6	428.9	421.3	415.5	412.6	414.7	416.6	418.0	420.2	422.0	423.4
40°	416.9	410.8	403.5	398.4	399.2	400.2	401.7	403.5	405.3	406.4	407.9
42.5°	397.7	391.2	386.1	382.1	383.2	384.7	385.4	386.1	388.3	390.5	391.2
45°	378.1	373.1	368.0	365.4	366.2	366.9	367.6	368.7	370.5	372.0	372.3
47.5°	356.0	352.4	349.1	346.2	347.7	347.3	348.4	350.6	351.3	352.0	354.2
50°	335.0	331.7	327.7	327.0	327.0	327.0	327.4	330.3	330.3	331.7	333.2
52.5°	311.8	310.0	307.8	306.3	305.6	305.6	307.4	308.5	309.2	311.4	312.9
55°	288.9	286.8	284.6	283.5	282.8	283.5	286.4	287.1	288.9	290.0	291.1
57.5°	265.0	263.6	261.8	261.0	261.0	261.4	263.6	265.4	265.7	269.4	270.8
60°	241.5	238.9	237.5	237.5	236.7	240.0	239.3	242.9	243.6	245.8	248.3
62.5°	217.2	213.5	213.2	213.2	214.6	215.0	216.4	217.5	219.7	222.6	224.4
65°	190.7	188.9	191.4	191.1	190.3	192.5	192.5	194.3	196.5	199.0	203.0
67.5°	166.0	164.6	165.3	165.0	166.0	167.5	168.6	170.0	172.6	175.5	178.0
70°	141.0	142.1	140.3	141.8	142.8	143.2	143.9	146.1	149.0	150.8	153.7
72.5°	116.7	116.4	117.1	117.5	118.6	119.3	120.0	122.5	125.8	127.3	129.4
75°	93.5	93.2	94.3	94.3	96.1	96.8	97.5	98.6	101.5	103.7	105.5
77.5°	72.5	72.9	72.5	74.0	73.2	73.6	75.8	76.9	77.2	81.9	82.7
80°	51.5	52.2	52.6	52.9	53.3	52.6	55.1	56.2	56.2	58.7	60.5
82.5°	33.4	33.7	34.8	35.2	35.2	36.3	35.9	36.6	37.7	38.4	41.0
85°	18.5	19.6	19.9	19.6	19.9	19.2	20.3	20.7	21.0	21.0	21.0
87.5°	7.3	7.6	7.3	7.6	7.3	7.6	7.6	6.9	6.9	8.0	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):

	165°	170°	175°	180°
0°	748.3	748.3	748.3	748.3
2.5°	707.3	707.0	709.5	707.7
5°	666.0	667.1	663.4	663.4
7.5°	628.6	627.2	627.6	625.0
10°	594.9	592.8	592.0	592.4
12.5°	567.0	567.0	561.2	561.2
15°	546.3	539.5	538.7	540.9
17.5°	523.5	519.5	519.9	519.2
20°	506.1	503.9	503.6	501.0
22.5°	490.2	489.8	490.2	487.3
25°	477.5	479.3	477.8	477.8
27.5°	468.8	468.8	467.7	467.7
30°	458.6	458.3	459.0	459.0
32.5°	448.5	449.2	449.2	449.5
35°	437.9	438.3	439.4	438.7
37.5°	424.2	426.0	425.6	426.3
40°	408.2	409.3	408.9	408.9
42.5°	391.9	392.6	391.5	390.8
45°	373.8	373.1	374.1	372.7
47.5°	353.8	354.2	354.6	356.0
50°	333.9	336.1	336.1	335.7
52.5°	314.3	315.0	316.9	316.9
55°	294.0	294.7	295.5	295.8
57.5°	273.4	273.0	274.4	274.8
60°	251.2	251.2	254.1	255.2
62.5°	227.7	229.1	232.0	229.9
65°	204.8	207.7	207.4	208.8
67.5°	180.9	182.7	185.6	185.6
70°	156.6	158.4	159.9	161.0
72.5°	133.1	133.8	137.8	135.6
75°	108.0	110.6	112.7	111.7
77.5°	84.1	87.4	88.1	87.0
80°	63.1	62.7	64.9	64.5
82.5°	42.1	41.7	42.4	42.8
85°	22.5	23.6	22.1	21.8
87.5°	6.5	6.5	6.2	5.8
90°	0.0	0.0	0.0	0.0

(END OF REPORT)