

Scaled data based on original data using

LM-41-14 Approved Method for Photometric Testing Of Indoor Fluorescent Luminaires

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: io LED

Report Number: P182748

Luminaire Tested: **LDSQA4A09935D010TE LAR35FL 4LSQA1H 30°**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P182748
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P26801)
Test Lab: INNOVATION CENTER-P2
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: io LED
Catalog Number: LDSQA4A09935D010TE LAR35FL 4LSQA1H 30°
Description: PORTFOLIO 4" SQUARE ADJUSTABLE REFLECTOR, ANGLE-CUT TRIM,
SELF-FLANGED, 35° FLOOD, 30° Tilt
Light Source: (1) HIGH LUMEN LED 90CRI / 3500K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 966.4 lumens
Efficiency: N/A
Efficacy: 69.8 lumens/watt
Spacing Criteria (0/90/45): 2.46 / 0.59 / 1.2
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
CIE Type: Direct

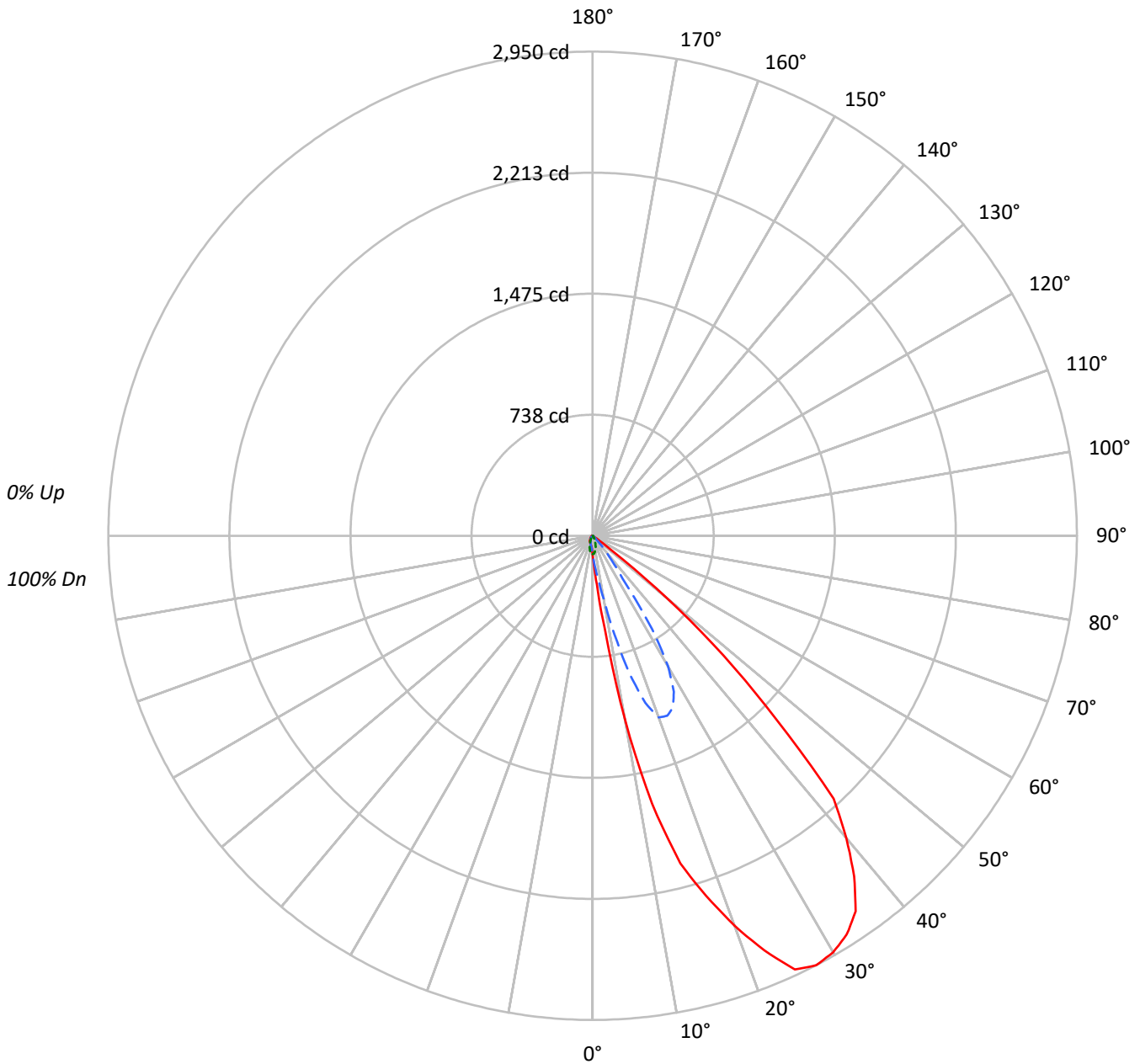
Input Watts (W): 13.84
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	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	112	109	106	104	110	107	105	102	103	101	99	99	98	96	96	94	93	91					91			
2	106	100	95	91	103	98	94	90	95	91	88	92	89	86	89	87	84	83					83			
3	99	91	85	81	97	90	84	80	87	83	79	85	81	77	82	79	76	74					74			
4	92	83	77	72	91	82	76	71	80	75	71	78	73	70	76	72	69	67					67			
5	86	76	69	64	85	75	69	64	74	68	63	72	67	63	70	66	62	60					60			
6	81	70	63	58	79	69	62	58	68	62	57	66	61	57	65	60	56	55					55			
7	75	64	57	52	74	64	57	52	62	56	52	61	55	51	60	55	51	49					49			
8	71	59	52	47	69	59	52	47	57	51	47	56	51	47	55	50	46	45					45			
9	66	55	48	43	65	54	47	43	53	47	43	52	46	42	51	46	42	41					41			
10	62	50	44	39	61	50	43	39	49	43	39	48	43	39	47	42	39	37					37			

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	10928	10928	10928
5°	28726	10405	6797
10°	112624	9001	5656
15°	207345	7101	5015
20°	260546	5010	4557
25°	311649	3314	4062
30°	327734	2081	3557
35°	330368	1254	3087
40°	304002	835	2630
45°	216286	603	2178
50°	89372	467	1793
55°	5151	456	1571
60°	601	426	1279
65°	206	504	917
70°	255	510	623
75°	337	674	674
80°	0	1004	725
85°	0	2001	1000



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	17.7	1.8
10°-20°	141.6	14.7
20°-30°	292.9	30.3
30°-40°	318.9	33.0
40°-50°	174.8	18.1
50°-60°	15.1	1.6
60°-70°	2.5	0.3
70°-80°	1.8	0.2
80°-90°	1.1	0.1
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°	452.2	46.8
0°-40°	771.1	79.8
0°-60°	961.1	99.4
0°-90°	966.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	966.4	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	113	113	113	113	113	
5°	295	202	107	74	70	54
15°	2067	869	71	48	50	577
25°	2916	1156	31	29	38	1317
35°	2794	316	11	17	26	1714
45°	1579	32	4	9	16	1205
55°	30	4	3	6	9	104
65°	1	1	2	4	4	1
75°	1	1	2	3	2	1
85°	0	1	2	1	1	0
90°	0	0	0	0	0	



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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	112.8	112.8	112.8	112.8	112.8	112.8	112.8	112.8	112.8	112.8	112.8
2.5°	177.3	171.1	170.3	171.1	166.7	166.3	167.2	163.6	160.5	157.4	154.8
5°	295.4	282.6	278.6	273.3	260.0	255.6	254.7	240.6	226.9	214.0	202.1
7.5°	574.0	548.4	534.7	508.1	467.4	449.3	439.6	393.1	349.8	310.4	274.6
10°	1144.9	1077.7	1045.0	995.0	906.1	862.3	830.5	713.8	598.8	488.2	390.9
12.5°	1670.7	1633.6	1585.4	1558.8	1414.7	1359.4	1306.8	1144.9	969.8	791.1	613.8
15°	2067.4	2013.0	1961.7	1949.3	1836.1	1771.6	1713.2	1545.6	1337.3	1110.0	869.0
17.5°	2300.5	2261.5	2212.9	2189.5	2056.8	2004.6	1938.3	1776.0	1573.4	1347.0	1067.1
20°	2527.3	2469.8	2401.3	2365.9	2219.1	2159.0	2083.8	1913.1	1698.6	1458.0	1178.1
22.5°	2734.7	2660.4	2563.1	2508.3	2343.4	2277.0	2193.0	2008.2	1776.0	1500.9	1187.4
25°	2915.6	2848.4	2718.8	2622.8	2428.3	2350.0	2252.3	2059.0	1803.8	1497.4	1156.0
27.5°	2950.1	2905.0	2788.7	2677.7	2457.9	2370.8	2269.5	2069.6	1784.4	1448.3	1071.5
30°	2929.8	2881.1	2787.8	2674.6	2445.5	2357.5	2252.3	2024.5	1708.3	1333.8	916.7
32.5°	2880.7	2838.7	2727.2	2607.8	2384.5	2292.9	2181.9	1918.8	1577.9	1151.6	674.4
35°	2793.5	2730.3	2595.9	2497.7	2287.6	2193.4	2057.7	1777.8	1382.8	827.8	316.2
37.5°	2616.2	2554.7	2457.9	2367.2	2162.5	2051.5	1908.2	1581.4	1025.1	451.5	195.5
40°	2403.9	2350.9	2266.4	2178.4	1967.5	1839.7	1681.8	1236.0	603.2	254.3	120.3
42.5°	2173.1	2118.3	2022.7	1920.1	1690.2	1555.3	1384.6	800.0	318.0	149.9	65.4
45°	1578.7	1529.7	1460.2	1386.4	1253.3	1156.0	931.3	420.1	176.0	79.6	32.3
47.5°	1080.4	1022.0	893.7	738.5	598.8	512.1	385.2	182.2	90.2	39.8	19.0
50°	593.0	531.1	465.7	362.6	242.8	199.4	155.2	88.0	40.7	19.9	10.6
52.5°	145.5	128.7	117.6	108.3	85.8	77.4	65.4	36.7	18.6	11.1	7.5
55°	30.5	28.3	27.0	26.5	24.3	23.4	20.3	14.2	10.2	7.1	3.5
57.5°	8.8	8.4	8.8	8.8	8.8	8.4	8.4	6.2	5.7	3.5	2.2
60°	3.1	3.1	3.1	3.5	3.5	3.5	4.0	4.0	3.1	2.2	1.8
62.5°	1.3	1.3	1.3	1.8	1.8	2.2	2.2	2.2	1.8	1.8	1.3
65°	0.9	0.9	0.9	0.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3
67.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.3
70°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.3
72.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.3
75°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.3
77.5°	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.9	0.9	0.9	1.3
80°	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.9	0.9	0.9	0.9
82.5°	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.4	0.9	0.9	0.9
85°	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.4	0.9	0.9	0.9
87.5°	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.4	0.9	0.9	0.9
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):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	112.8	112.8	112.8	112.8	112.8	112.8	112.8	112.8	112.8	112.8	112.8
2.5°	147.3	142.8	137.5	131.8	130.9	127.8	123.4	117.2	115.0	110.6	106.6
5°	184.9	172.9	160.5	149.5	145.9	141.1	133.1	122.1	115.0	107.0	100.4
7.5°	235.3	207.8	182.6	162.7	156.5	148.6	136.2	122.1	111.4	100.4	91.5
10°	302.5	246.8	203.4	171.1	161.0	150.4	134.0	116.7	104.4	91.5	82.3
12.5°	432.1	303.8	222.9	175.6	161.4	147.7	126.9	108.3	94.2	81.4	72.1
15°	614.3	412.2	262.2	178.7	157.0	140.2	115.9	96.8	82.7	70.8	61.9
17.5°	768.1	514.8	314.9	187.5	153.9	130.5	103.0	83.6	69.9	59.3	52.2
20°	843.3	560.7	338.7	188.8	145.1	115.9	88.0	69.4	57.5	48.6	42.5
22.5°	834.5	545.3	316.6	165.4	122.5	97.7	73.0	56.2	46.0	38.9	34.5
25°	775.2	478.0	258.3	126.5	95.5	79.2	57.0	43.8	35.8	31.0	27.4
27.5°	675.7	383.9	188.4	89.3	72.5	60.1	42.5	33.6	27.4	23.9	21.7
30°	520.5	245.4	108.3	64.1	52.6	42.9	31.8	24.3	20.8	18.6	16.8
32.5°	268.4	119.4	72.1	46.0	37.1	31.0	22.1	17.7	15.5	14.2	13.3
35°	147.3	84.9	50.0	29.6	23.9	19.9	15.0	12.4	11.5	10.6	10.6
37.5°	101.3	52.6	27.9	17.7	14.6	12.4	10.2	8.8	8.4	8.4	8.4
40°	58.4	27.9	15.9	11.1	9.3	8.4	7.1	6.6	6.6	6.6	7.1
42.5°	30.1	16.4	10.6	7.5	6.6	5.7	4.9	4.9	4.9	5.3	5.7
45°	17.7	11.1	7.1	4.9	4.4	4.0	3.5	3.5	4.0	4.4	4.9
47.5°	11.1	7.5	4.4	3.1	2.7	2.7	2.7	2.7	3.1	3.5	4.0
50°	7.5	4.0	2.7	1.8	1.8	1.8	1.8	2.2	2.7	3.1	3.5
52.5°	4.0	2.2	1.8	1.3	1.3	1.3	1.8	1.8	2.2	2.7	3.1
55°	2.2	1.8	1.3	1.3	1.3	1.3	1.3	1.8	2.2	2.7	3.1
57.5°	1.8	1.3	1.3	1.3	1.3	1.3	1.3	1.8	1.8	2.2	2.7
60°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.8	1.8	2.2	2.7
62.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.8	1.8	2.2	2.2
65°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.8	1.8	2.2	2.2
67.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.8	1.8	1.8	2.2
70°	1.3	1.3	1.3	1.3	1.3	1.3	1.8	1.8	1.8	1.8	2.2
72.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.8	1.8	1.8	1.8
75°	1.3	1.3	1.3	1.3	1.3	1.8	1.8	1.8	1.8	1.8	2.2
77.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.8	1.8	1.8	1.8	1.8
80°	1.3	1.3	1.3	1.3	1.3	1.3	1.8	1.8	1.8	1.8	1.8
82.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.8	1.8	1.8	1.8	1.8
85°	1.3	1.3	1.3	1.3	1.3	1.8	1.8	1.8	1.8	1.8	1.8
87.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.8	1.8	1.8	1.8	1.8
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):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	112.8	112.8	112.8	112.8	112.8	112.8	112.8	112.8	112.8	112.8	112.8
2.5°	104.4	100.8	97.3	97.3	95.5	92.9	92.0	89.3	87.6	86.7	85.8
5°	95.5	90.2	85.3	84.9	82.7	79.6	78.3	75.6	73.9	73.0	72.5
7.5°	85.3	80.0	75.2	74.3	72.5	70.3	69.0	66.8	65.9	65.0	64.6
10°	75.6	70.3	66.8	65.9	64.6	62.8	61.5	60.1	59.3	58.8	58.8
12.5°	65.9	61.9	58.8	57.9	57.0	55.7	54.8	54.0	53.5	53.5	53.5
15°	57.0	53.5	50.9	50.9	50.0	49.1	49.1	48.2	47.8	48.2	48.6
17.5°	48.2	45.5	43.3	43.3	42.9	42.5	42.5	42.5	42.9	43.3	44.2
20°	39.8	37.6	36.7	36.7	36.3	36.7	36.7	37.1	37.6	38.9	40.2
22.5°	32.3	31.0	30.1	30.5	30.5	31.0	31.4	32.3	33.2	34.5	35.8
25°	26.1	25.2	24.8	25.2	25.6	26.1	27.0	27.9	29.2	30.5	32.3
27.5°	20.8	20.3	20.3	20.8	21.2	22.1	23.4	24.3	25.6	27.0	28.7
30°	16.8	16.4	16.8	17.7	18.1	19.0	19.9	21.2	22.6	23.9	25.6
32.5°	13.3	13.7	14.2	14.6	15.0	16.4	17.2	18.1	19.5	20.8	22.6
35°	11.1	11.5	11.9	12.4	12.8	13.7	14.6	15.5	16.8	18.1	19.9
37.5°	8.8	9.3	9.7	10.6	11.1	11.5	12.8	13.3	14.6	15.5	17.2
40°	7.5	8.0	8.4	8.8	9.3	10.2	11.1	11.5	12.4	13.7	15.0
42.5°	6.2	6.6	7.1	7.5	8.0	8.8	9.3	10.2	11.1	11.9	12.8
45°	5.3	5.7	6.2	6.6	7.1	7.5	8.0	8.8	9.3	10.2	11.1
47.5°	4.4	4.9	5.7	5.7	6.2	6.6	7.1	7.5	8.4	8.8	9.7
50°	4.0	4.4	4.9	5.3	5.3	5.7	6.2	6.6	7.1	7.5	8.4
52.5°	3.5	4.0	4.4	4.4	4.9	5.3	5.7	5.7	6.2	6.6	7.1
55°	3.1	3.5	4.0	4.0	4.4	4.9	4.9	5.3	5.7	5.7	6.2
57.5°	3.1	3.1	3.5	3.5	4.0	4.0	4.4	4.9	4.9	5.3	5.7
60°	2.7	3.1	3.1	3.5	3.5	4.0	4.0	4.4	4.4	4.9	4.9
62.5°	2.7	2.7	3.1	3.1	3.5	3.5	4.0	4.0	4.0	4.4	4.4
65°	2.7	2.7	3.1	3.1	3.1	3.5	3.5	3.5	3.5	4.0	4.0
67.5°	2.2	2.7	2.7	3.1	3.1	3.1	3.1	3.1	3.5	3.5	3.5
70°	2.2	2.7	2.7	2.7	2.7	3.1	3.1	3.1	3.1	3.1	3.1
72.5°	2.2	2.2	2.2	2.2	2.7	2.7	2.7	2.7	2.7	2.7	2.7
75°	2.2	2.2	2.2	2.2	2.2	2.7	2.7	2.7	2.7	2.7	2.7
77.5°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
80°	1.8	1.8	1.8	1.8	1.8	2.2	1.8	1.8	1.8	1.8	1.8
82.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.3	1.3
85°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.3	1.3	1.3	1.3
87.5°	1.8	1.8	1.8	1.3	1.3	1.3	1.3	1.3	1.3	0.9	0.9
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):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	112.8	112.8	112.8	112.8	112.8	112.8	112.8	112.8
2.5°	84.5	83.6	84.5	83.6	83.6	81.8	83.1	82.3
5°	71.2	70.3	71.2	70.8	69.9	69.4	70.3	69.9
7.5°	63.7	62.8	63.7	63.7	62.8	62.4	63.2	62.8
10°	57.9	57.5	57.9	57.9	57.5	57.0	57.9	57.5
12.5°	53.1	52.6	53.5	53.5	53.1	53.1	54.0	53.1
15°	48.6	48.6	49.5	49.5	49.5	49.5	50.4	50.0
17.5°	44.2	45.1	46.0	46.4	46.4	46.4	47.3	47.3
20°	40.7	41.6	42.5	42.9	43.3	43.3	44.2	44.2
22.5°	36.7	37.6	38.9	39.4	39.8	40.2	41.1	41.1
25°	33.2	34.1	35.4	35.8	36.7	37.1	38.0	38.0
27.5°	29.6	31.0	31.8	32.7	33.2	34.1	34.9	34.9
30°	26.5	27.9	28.7	29.6	30.1	31.0	31.8	31.8
32.5°	23.4	24.8	25.6	26.5	27.4	27.9	29.2	29.2
35°	20.8	21.7	23.0	23.4	24.3	25.2	26.1	26.1
37.5°	18.1	19.0	19.9	20.8	21.7	22.1	23.0	23.4
40°	15.9	16.8	17.7	18.1	19.0	19.9	20.3	20.8
42.5°	13.7	14.6	15.5	15.9	16.8	17.2	18.1	18.1
45°	11.9	12.8	13.3	13.7	14.6	15.0	15.9	15.9
47.5°	10.2	11.1	11.5	11.9	12.4	12.8	13.7	13.7
50°	8.8	9.3	9.7	10.2	10.6	11.5	11.9	11.9
52.5°	7.5	8.4	8.4	8.8	9.3	9.7	10.2	10.6
55°	6.6	7.1	7.5	7.5	8.0	8.4	8.8	9.3
57.5°	5.7	6.2	6.6	6.6	7.1	7.1	7.5	8.0
60°	5.3	5.3	5.7	5.7	5.7	6.2	6.2	6.6
62.5°	4.4	4.4	4.9	4.9	4.9	4.9	4.9	4.9
65°	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
67.5°	3.5	3.5	3.5	3.5	3.1	3.1	3.1	3.1
70°	3.1	3.1	3.1	3.1	2.7	2.7	2.7	2.2
72.5°	2.7	2.7	2.7	2.7	2.2	2.2	1.8	1.8
75°	2.2	2.2	2.2	2.2	2.2	1.8	1.8	1.8
77.5°	2.2	1.8	1.8	1.8	1.8	1.8	1.8	1.3
80°	1.8	1.8	1.3	1.3	1.3	1.3	1.3	1.3
82.5°	1.3	1.3	1.3	1.3	0.9	0.9	0.9	0.9
85°	1.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9
87.5°	0.9	0.4	0.4	0.4	0.4	0.4	0.4	0.4
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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— 0°-180° - - 45°-225° - - - - 90°-270°













(END OF REPORT)