

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: P182646

Luminaire Tested: **LDSQA4A09827D010TE LAR15SP 4LSQA1H-LSF-20 30°**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P182646  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P26830)  
Test Lab: INNOVATION CENTER-P2  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: io LED  
Catalog Number: LDSQA4A09827D010TE LAR15SP 4LSQA1H-LSF-20 30°  
Description: PORTFOLIO 4" SQUARE ADJUSTABLE REFLECTOR, ANGLE-CUT TRIM,  
SELF-FLANGED, 15° SPOT WITH SOLITE LENS, 30° Tilt  
Light Source: (1) HIGH LUMEN LED 80CRI / 2700K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 947.4 lumens  
Efficiency: N/A  
Efficacy: 68.5 lumens/watt  
Spacing Criteria (0/90/45): 2.28 / 0.64 / 1.15  
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
CIE Type: Direct

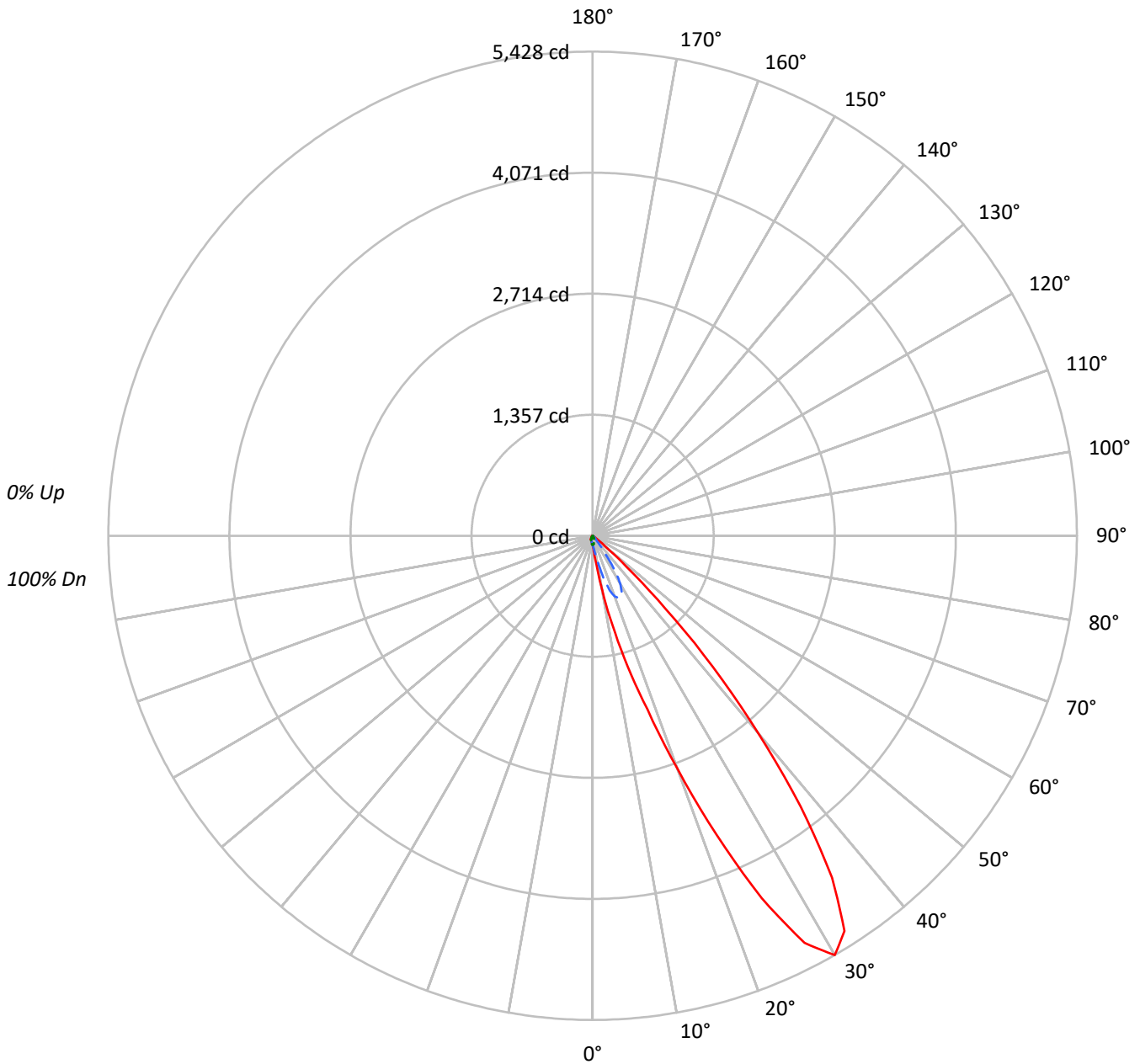
Input Watts (W): 13.84  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	104	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	90	82	76	71	80	75	70	78	73	70	76	72	69	67					67			
5	86	76	69	64	85	75	69	64	73	68	63	72	67	63	70	66	62	60					60			
6	81	70	63	58	79	69	62	57	67	61	57	66	61	57	64	60	56	54					54			
7	75	64	57	52	74	63	57	52	62	56	51	61	55	51	59	55	51	49					49			
8	70	59	52	47	69	58	51	47	57	51	46	56	50	46	55	50	46	44					44			
9	66	54	47	42	65	54	47	42	53	46	42	52	46	42	51	46	42	40					40			
10	62	50	43	38	60	50	43	38	49	42	38	48	42	38	47	42	38	36					36			

**AVERAGE LUMINANCE (cd/sqm):**

	0°	90°	180°
0°	9910	9910	9910
5°	18973	9433	7663
10°	62052	8361	6522
15°	151964	6910	5757
20°	286319	5268	5165
25°	479285	3741	4521
30°	607165	2573	3848
35°	553235	1668	3276
40°	364349	1189	2770
45°	157827	781	2288
50°	27987	558	1884
55°	4493	439	1588
60°	1104	407	1221
65°	367	481	963
70°	283	595	736
75°	374	599	599
80°	0	893	558
85°	0	1778	556



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	13.1	1.4
10°-20°	105.4	11.1
20°-30°	317.4	33.5
30°-40°	361.3	38.1
40°-50°	133.6	14.1
50°-60°	10.6	1.1
60°-70°	2.9	0.3
70°-80°	2.0	0.2
80°-90°	1.2	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°	435.9	46.0
0°-40°	797.2	84.1
0°-60°	941.4	99.4
0°-90°	947.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	947.4	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	102	102	102	102	102	
5°	195	144	97	81	79	32
15°	1515	512	69	54	57	475
25°	4484	748	35	34	42	2047
35°	4678	262	14	19	28	2781
45°	1152	31	6	10	17	975
55°	27	6	3	6	9	44
65°	2	2	2	4	4	2
75°	1	2	2	3	2	1
85°	0	1	2	2	0	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°	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3
2.5°	131.5	132.5	131.5	129.4	129.4	126.8	125.7	124.7	122.1	120.5	118.4
5°	195.1	192.0	189.4	183.1	181.0	175.3	171.1	165.4	157.6	150.8	143.5
7.5°	333.9	329.2	319.3	300.5	289.1	275.0	264.0	245.7	222.3	203.0	183.7
10°	630.8	610.5	587.0	544.7	513.9	481.1	455.0	405.9	347.0	298.4	251.5
12.5°	1016.4	1017.9	974.1	902.6	845.8	787.8	743.0	652.2	547.8	456.5	366.3
15°	1515.2	1486.5	1441.1	1331.5	1217.8	1133.8	1062.3	924.5	776.9	643.3	511.8
17.5°	2040.6	2052.6	1946.7	1767.7	1587.7	1461.9	1353.9	1145.2	969.9	804.5	643.8
20°	2777.3	2694.9	2543.5	2253.4	1973.8	1791.7	1631.5	1360.7	1116.0	905.8	725.2
22.5°	3626.7	3493.7	3185.8	2777.3	2354.1	2102.1	1878.8	1506.3	1208.9	957.4	752.9
25°	4483.9	4382.2	3891.7	3281.3	2675.0	2348.4	2059.4	1604.9	1253.2	969.4	748.2
27.5°	5145.5	4979.6	4420.8	3625.1	2866.5	2480.9	2143.4	1635.2	1243.9	940.2	703.8
30°	5427.8	5218.0	4598.7	3703.4	2868.1	2459.0	2101.6	1575.2	1177.1	866.1	620.4
32.5°	5253.5	5011.4	4386.9	3486.9	2671.9	2287.9	1940.4	1445.3	1066.5	749.8	465.9
35°	4678.0	4437.0	3858.4	3059.6	2358.8	2023.4	1721.3	1275.7	908.4	555.7	261.9
37.5°	3830.7	3625.1	3211.4	2564.4	1987.9	1715.5	1464.0	1074.8	676.7	318.8	131.5
40°	2881.1	2736.6	2488.2	2033.8	1609.1	1401.9	1199.5	823.3	411.1	160.2	74.6
42.5°	1997.3	1903.4	1778.7	1504.7	1241.2	1098.8	936.5	549.9	211.3	88.2	46.4
45°	1152.0	1093.1	1058.6	941.8	839.0	769.6	626.1	296.4	107.0	52.7	30.8
47.5°	508.7	469.6	452.9	403.8	375.7	356.9	283.3	126.3	57.4	33.9	25.6
50°	185.7	185.7	186.3	163.8	134.1	120.5	94.4	55.8	32.3	26.6	18.8
52.5°	65.7	64.7	67.3	63.7	55.8	50.1	41.7	28.2	19.8	16.7	10.4
55°	26.6	25.6	26.6	25.0	23.5	21.9	19.3	15.1	12.5	10.4	5.7
57.5°	12.0	12.0	12.5	12.0	12.0	11.0	9.9	11.5	8.9	5.7	3.7
60°	5.7	5.7	6.3	6.3	6.3	5.7	5.7	6.3	5.2	3.7	2.6
62.5°	2.6	2.6	3.1	3.1	3.1	3.1	3.1	3.7	2.6	2.1	1.6
65°	1.6	1.0	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
67.5°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.6	1.6
70°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.6
72.5°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.6
75°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.6
77.5°	0.0	0.0	0.0	0.5	0.5	0.5	0.5	0.5	1.0	1.0	1.6
80°	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.5	1.0	1.0	1.0
82.5°	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.5	1.0	1.0	1.0
85°	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.5	0.5	1.0	1.0
87.5°	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.5	0.5	1.0	1.0
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):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3
2.5°	116.4	114.8	111.7	110.1	108.0	106.4	105.4	103.3	101.2	99.7	98.6
5°	136.7	131.0	124.2	119.0	114.8	112.2	108.0	104.4	100.2	97.0	94.4
7.5°	166.4	152.4	137.2	126.8	121.0	115.8	108.5	102.3	96.5	92.4	88.7
10°	212.9	182.6	156.0	135.7	125.7	118.4	107.0	98.1	90.8	85.0	81.4
12.5°	290.1	228.0	181.0	146.6	131.5	120.5	104.4	92.4	83.5	77.7	73.0
15°	396.0	294.8	215.5	159.7	138.3	122.6	100.2	85.6	75.7	68.9	64.7
17.5°	495.7	364.7	254.6	175.3	145.0	123.7	94.4	76.7	66.3	60.0	55.8
20°	558.3	410.1	280.7	184.2	147.1	120.5	86.6	67.3	56.9	51.1	47.0
22.5°	572.9	415.3	278.6	175.8	138.3	111.1	75.7	57.9	48.0	42.8	39.1
25°	551.5	386.1	249.4	151.8	117.9	93.4	63.1	47.0	39.7	35.0	32.3
27.5°	497.8	328.7	197.2	114.3	88.2	68.9	48.0	36.5	31.8	28.2	26.6
30°	401.2	231.1	123.7	71.0	56.3	45.4	34.4	28.2	24.5	23.0	21.4
32.5°	243.1	119.0	65.2	42.3	35.5	30.8	25.0	20.9	18.8	17.7	17.2
35°	115.8	62.6	40.2	28.7	25.0	21.9	18.3	15.7	14.6	14.1	14.1
37.5°	65.7	40.7	27.1	19.3	17.2	15.1	13.6	12.0	11.5	11.5	11.5
40°	41.7	26.1	17.7	14.1	12.5	11.5	10.4	9.4	9.4	9.4	9.4
42.5°	27.1	18.8	13.6	10.4	9.4	8.9	7.8	7.3	7.3	7.3	7.8
45°	21.4	15.7	11.0	8.3	7.3	6.8	6.3	5.7	5.7	5.7	6.3
47.5°	18.3	11.0	7.3	5.7	4.7	4.7	4.2	4.2	4.2	4.7	5.2
50°	11.0	6.8	4.7	3.7	3.1	3.1	3.1	3.1	3.1	3.7	4.2
52.5°	6.3	4.2	3.1	2.6	2.1	2.1	2.1	2.1	2.6	3.1	3.1
55°	4.2	3.1	2.1	2.1	1.6	1.6	1.6	2.1	2.1	2.6	3.1
57.5°	2.6	2.1	1.6	1.6	1.6	1.6	1.6	1.6	2.1	2.6	2.6
60°	2.1	1.6	1.6	1.6	1.6	1.6	1.6	1.6	2.1	2.1	2.6
62.5°	1.6	1.6	2.1	1.6	1.6	1.6	1.6	1.6	2.1	2.1	2.6
65°	1.6	1.6	2.1	2.1	1.6	1.6	1.6	1.6	1.6	2.1	2.6
67.5°	1.6	1.6	2.1	2.1	2.1	2.1	1.6	1.6	1.6	2.1	2.1
70°	1.6	2.1	2.1	2.1	2.1	2.1	2.1	1.6	1.6	2.1	2.1
72.5°	1.6	2.1	2.1	2.1	2.1	2.1	2.1	1.6	1.6	2.1	2.1
75°	1.6	1.6	2.1	2.1	2.1	2.1	2.1	1.6	1.6	1.6	2.1
77.5°	1.6	1.6	2.1	2.1	2.1	2.1	2.1	1.6	1.6	1.6	2.1
80°	1.6	1.6	1.6	2.1	1.6	2.1	1.6	1.6	1.6	1.6	1.6
82.5°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
85°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
87.5°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
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):**

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3
2.5°	97.0	96.0	94.4	93.9	94.4	93.9	91.3	90.8	89.7	89.7	89.7
5°	91.8	90.3	88.2	87.1	87.1	86.1	83.5	83.0	81.4	81.4	80.9
7.5°	85.6	83.5	80.9	79.8	79.8	78.8	76.2	75.1	74.1	74.1	73.6
10°	78.3	75.7	73.0	72.5	72.0	70.4	68.9	68.3	66.8	67.3	66.8
12.5°	69.9	67.8	65.7	64.7	64.7	63.1	62.1	61.6	61.0	61.0	61.0
15°	62.1	59.5	57.4	56.9	56.9	56.3	55.3	55.3	54.3	55.3	55.3
17.5°	53.2	51.1	50.6	49.6	50.1	49.6	48.5	49.0	49.0	49.6	50.1
20°	44.9	43.3	42.8	42.3	42.8	42.8	42.3	42.8	43.3	44.9	45.9
22.5°	37.6	36.5	36.5	36.0	36.5	37.0	36.5	37.6	38.6	39.7	41.2
25°	31.3	30.8	30.8	30.8	31.3	31.8	32.3	33.4	33.9	35.5	36.5
27.5°	25.6	25.6	25.6	26.1	26.6	27.1	27.7	29.2	29.7	31.3	32.3
30°	21.4	20.9	21.4	21.9	22.4	23.5	24.0	25.0	25.6	27.1	28.2
32.5°	17.2	17.7	18.3	18.8	19.3	19.8	20.3	21.4	22.4	23.5	24.5
35°	14.6	14.6	15.1	15.7	16.2	17.2	17.7	18.3	19.3	20.3	20.9
37.5°	12.0	12.5	13.0	13.6	14.1	14.6	15.1	15.7	16.2	17.2	18.3
40°	9.9	10.4	11.0	11.5	11.5	12.5	12.5	13.6	14.1	15.1	16.2
42.5°	8.3	8.9	9.4	9.9	9.9	10.4	11.0	11.5	12.0	13.0	14.1
45°	6.8	7.3	7.8	8.3	8.3	8.9	9.4	9.9	10.4	11.5	12.0
47.5°	5.7	6.3	6.8	7.3	7.3	7.8	8.3	8.9	8.9	9.9	10.4
50°	4.7	5.2	5.7	6.3	6.3	6.8	7.3	7.8	7.8	8.3	8.9
52.5°	3.7	4.2	5.2	5.2	5.7	6.3	6.3	6.8	6.8	7.3	7.8
55°	3.7	4.2	4.7	4.7	5.2	5.7	5.7	6.3	6.3	6.3	6.8
57.5°	3.1	3.7	4.2	4.7	4.7	5.2	5.2	5.2	5.2	5.7	5.7
60°	3.1	3.7	3.7	4.2	4.2	4.7	4.7	4.7	4.7	5.2	5.2
62.5°	3.1	3.1	3.7	3.7	4.2	4.2	4.2	4.7	4.7	4.7	4.7
65°	2.6	3.1	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	4.2
67.5°	2.6	3.1	3.1	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
70°	2.6	2.6	3.1	3.1	3.1	3.7	3.7	3.7	3.1	3.7	3.1
72.5°	2.1	2.6	2.6	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
75°	2.1	2.6	2.6	2.6	2.6	3.1	3.1	2.6	2.6	2.6	2.6
77.5°	2.1	2.1	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.1
80°	2.1	2.1	2.1	2.1	2.6	2.6	2.1	2.1	2.1	2.1	2.1
82.5°	1.6	2.1	2.1	2.1	2.1	2.1	2.1	2.1	1.6	1.6	1.6
85°	1.6	1.6	2.1	2.1	2.1	2.1	1.6	1.6	1.6	1.6	1.0
87.5°	1.6	1.6	1.6	2.1	1.6	1.6	1.6	1.6	1.0	1.0	1.0
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):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3
2.5°	88.2	87.7	88.2	87.7	87.7	88.2	86.6	87.7
5°	79.8	78.8	79.3	78.8	78.3	78.8	77.7	78.8
7.5°	72.5	72.0	72.0	72.0	71.5	72.0	71.0	72.0
10°	66.3	65.7	65.7	65.7	65.7	66.3	65.2	66.3
12.5°	60.0	60.0	60.5	60.0	60.5	61.0	60.0	61.0
15°	54.8	55.3	55.8	55.8	56.3	56.9	56.3	57.4
17.5°	50.6	51.1	52.2	52.2	52.7	53.7	53.2	54.3
20°	46.4	47.0	48.0	48.0	48.5	49.6	49.0	50.1
22.5°	41.7	42.8	43.3	43.8	44.3	45.4	44.9	45.9
25°	37.0	38.6	39.1	39.7	40.2	41.2	41.2	42.3
27.5°	33.4	34.4	35.0	35.5	36.5	37.6	37.6	38.1
30°	29.2	30.3	31.3	31.8	32.3	33.4	33.4	34.4
32.5°	25.6	26.6	27.1	27.7	28.7	29.7	30.3	30.8
35°	21.9	23.5	24.0	25.0	25.6	27.1	27.1	27.7
37.5°	19.3	20.3	21.4	21.9	23.0	24.0	24.0	25.0
40°	17.2	18.3	18.8	19.3	20.3	21.4	21.4	21.9
42.5°	14.6	16.2	16.7	17.2	17.7	18.8	19.3	19.8
45°	13.0	13.6	14.1	14.6	15.1	16.2	16.2	16.7
47.5°	11.0	11.5	12.0	12.5	13.0	13.6	14.1	14.6
50°	9.4	9.9	10.4	10.4	11.0	12.0	12.0	12.5
52.5°	7.8	8.3	8.9	8.9	9.4	10.4	10.4	11.0
55°	6.8	7.3	7.8	7.8	8.3	8.9	8.9	9.4
57.5°	6.3	6.3	6.8	6.8	7.3	7.3	7.8	7.8
60°	5.2	5.7	5.7	5.7	6.3	6.3	6.3	6.3
62.5°	4.7	4.7	4.7	4.7	4.7	4.7	4.7	5.2
65°	4.2	4.2	4.2	4.2	4.2	4.2	3.7	4.2
67.5°	3.7	3.7	3.7	3.7	3.1	3.1	3.1	3.1
70°	3.1	3.1	3.1	3.1	3.1	2.6	2.6	2.6
72.5°	2.6	2.6	2.6	2.6	2.6	2.1	2.1	2.1
75°	2.6	2.6	2.1	2.1	2.1	2.1	2.1	1.6
77.5°	2.1	2.1	2.1	2.1	1.6	1.6	1.6	1.6
80°	1.6	1.6	1.6	1.6	1.6	1.6	1.0	1.0
82.5°	1.6	1.0	1.0	1.0	1.0	1.0	1.0	1.0
85°	1.0	1.0	1.0	1.0	0.5	0.5	0.5	0.5
87.5°	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
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)