

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: P182762

Luminaire Tested: **LDSQA4A28927D010TE LAR35FL 4LSQA1H 30°**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P182762  
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: LDSQA4A28927D010TE 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 / 2700K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 2311.9 lumens  
Efficiency: N/A  
Efficacy: 52.0 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

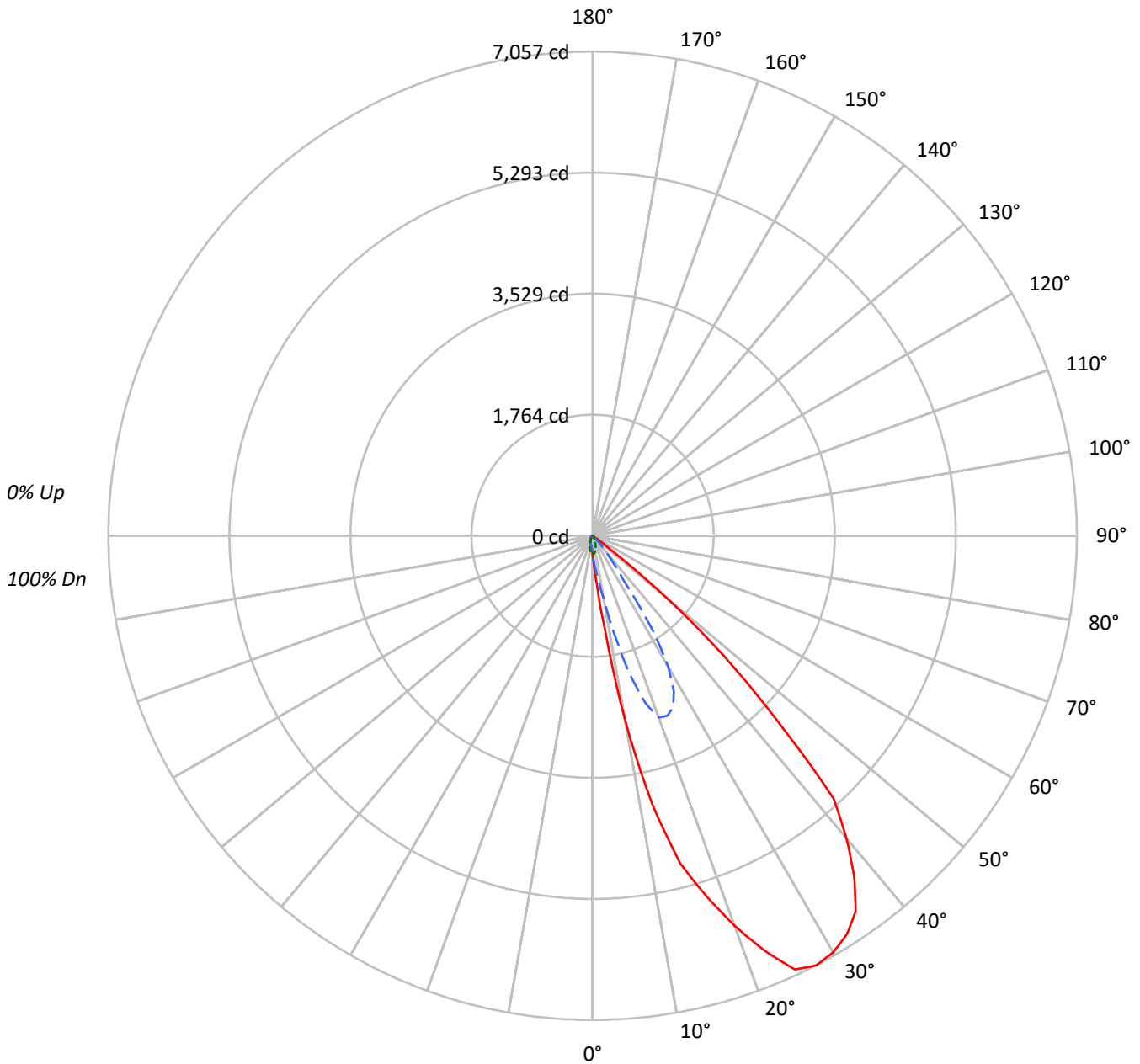
Input Watts (W): 44.49  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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### Luminous Intensity Polar Plot





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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

RF	20									20									20									20									
RC	80									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	0																
RCR																																					
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100																			
1	112	109	106	104	110	107	105	102	103	101	99	99	98	96	96	94	93	91																			
2	106	100	95	91	103	98	94	90	95	91	88	92	89	86	89	87	84	83																			
3	99	91	85	81	97	90	84	80	87	83	79	85	81	77	82	79	76	74																			
4	92	83	77	72	91	82	76	71	80	75	71	78	73	70	76	72	69	67																			
5	86	76	69	64	85	75	69	64	74	68	63	72	67	63	70	66	62	60																			
6	81	70	63	58	79	69	62	58	68	62	57	66	61	57	65	60	56	55																			
7	75	64	57	52	74	64	57	52	62	56	52	61	55	51	60	55	51	49																			
8	71	59	52	47	69	59	52	47	57	51	47	56	51	47	55	50	46	45																			
9	66	55	48	43	65	54	47	43	53	47	43	52	46	42	51	46	42	41																			
10	62	50	44	39	61	50	43	39	49	43	39	48	43	39	47	42	39	37																			

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

	0°	90°	180°
0°	26137	26137	26137
5°	68723	24895	16259
10°	269435	21543	13526
15°	496028	16980	11985
20°	623298	12000	10907
25°	745549	7921	9727
30°	784019	4967	8524
35°	790340	3004	7380
40°	727270	2011	6285
45°	517431	1452	5220
50°	213814	1115	4310
55°	12329	1064	3750
60°	1434	1027	3081
65°	481	1215	2178
70°	595	1190	1501
75°	786	1572	1572
80°	0	2343	1785
85°	0	4668	2334



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	42.4	1.8
10°-20°	338.8	14.7
20°-30°	700.7	30.3
30°-40°	762.8	33.0
40°-50°	418.2	18.1
50°-60°	36.2	1.6
60°-70°	5.9	0.3
70°-80°	4.2	0.2
80°-90°	2.7	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°	1081.9	46.8
0°-40°	1844.7	79.8
0°-60°	2299.1	99.4
0°-90°	2311.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2311.9	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	270	270	270	270	270	
5°	707	484	256	177	167	129
15°	4946	2079	169	114	120	1381
25°	6975	2765	74	70	91	3150
35°	6683	756	25	40	62	4101
45°	3777	77	11	22	38	2883
55°	73	8	6	14	22	249
65°	2	3	5	8	10	3
75°	2	3	4	6	4	1
85°	0	2	4	3	2	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°	269.8	269.8	269.8	269.8	269.8	269.8	269.8	269.8	269.8	269.8	269.8
2.5°	424.2	409.4	407.3	409.4	398.8	397.8	399.9	391.4	384.0	376.6	370.3
5°	706.7	676.0	666.5	653.8	622.1	611.5	609.4	575.5	542.7	512.0	483.5
7.5°	1373.2	1311.8	1279.0	1215.6	1118.2	1074.9	1051.6	940.5	836.8	742.7	657.0
10°	2739.0	2578.2	2499.9	2380.3	2167.7	2063.0	1986.8	1707.5	1432.4	1167.9	935.2
12.5°	3996.8	3908.0	3792.7	3729.2	3384.3	3252.1	3126.2	2739.0	2320.0	1892.6	1468.4
15°	4945.8	4815.7	4693.0	4663.3	4392.5	4238.0	4098.4	3697.4	3199.2	2655.4	2078.8
17.5°	5503.3	5410.2	5293.9	5237.8	4920.4	4795.6	4636.9	4248.6	3764.1	3222.4	2552.8
20°	6046.0	5908.5	5744.5	5659.9	5308.7	5164.8	4984.9	4576.6	4063.5	3488.0	2818.3
22.5°	6542.2	6364.5	6131.7	6000.6	5605.9	5447.3	5246.3	4804.0	4248.6	3590.6	2840.5
25°	6974.9	6814.1	6504.1	6274.6	5809.1	5621.8	5388.0	4925.7	4315.3	3582.1	2765.4
27.5°	7057.4	6949.5	6671.3	6405.7	5879.9	5671.5	5429.3	4951.1	4268.7	3464.7	2563.4
30°	7008.8	6892.4	6669.2	6398.3	5850.3	5639.8	5388.0	4843.2	4086.8	3190.7	2193.1
32.5°	6891.3	6790.8	6524.2	6238.6	5704.3	5485.3	5219.8	4590.3	3774.7	2754.8	1613.3
35°	6682.9	6531.6	6210.0	5975.2	5472.6	5247.3	4922.5	4252.9	3308.1	1980.4	756.4
37.5°	6258.7	6111.6	5879.9	5663.1	5173.3	4907.7	4564.9	3783.1	2452.3	1080.1	467.6
40°	5750.9	5623.9	5421.9	5211.3	4706.7	4401.0	4023.3	2956.9	1443.0	608.3	287.8
42.5°	5198.6	5067.5	4839.0	4593.5	4043.4	3720.7	3312.4	1913.8	760.6	358.6	156.6
45°	3776.8	3659.4	3493.3	3316.6	2998.2	2765.4	2228.0	1005.0	421.1	190.4	77.2
47.5°	2584.5	2444.9	2138.1	1766.7	1432.4	1225.1	921.5	435.9	215.8	95.2	45.5
50°	1418.7	1270.6	1114.0	867.5	580.8	477.1	371.3	210.5	97.3	47.6	25.4
52.5°	348.1	307.9	281.4	259.2	205.2	185.1	156.6	87.8	44.4	26.4	18.0
55°	73.0	67.7	64.5	63.5	58.2	56.1	48.7	33.9	24.3	16.9	8.5
57.5°	21.2	20.1	21.2	21.2	21.2	20.1	20.1	14.8	13.8	8.5	5.3
60°	7.4	7.4	7.4	8.5	8.5	8.5	9.5	9.5	7.4	5.3	4.2
62.5°	3.2	3.2	3.2	4.2	4.2	5.3	5.3	5.3	4.2	4.2	3.2
65°	2.1	2.1	2.1	2.1	3.2	3.2	3.2	3.2	3.2	3.2	3.2
67.5°	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	3.2
70°	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	3.2
72.5°	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	3.2
75°	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	3.2
77.5°	0.0	0.0	0.0	1.1	1.1	1.1	1.1	2.1	2.1	2.1	3.2
80°	0.0	0.0	0.0	1.1	1.1	1.1	1.1	2.1	2.1	2.1	2.1
82.5°	0.0	0.0	0.0	1.1	1.1	1.1	1.1	1.1	2.1	2.1	2.1
85°	0.0	0.0	0.0	1.1	1.1	1.1	1.1	1.1	2.1	2.1	2.1
87.5°	0.0	0.0	0.0	1.1	1.1	1.1	1.1	1.1	2.1	2.1	2.1
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):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	269.8	269.8	269.8	269.8	269.8	269.8	269.8	269.8	269.8	269.8	269.8
2.5°	352.3	341.7	329.0	315.3	313.1	305.7	295.2	280.4	275.1	264.5	255.0
5°	442.2	413.6	384.0	357.6	349.1	337.5	318.4	292.0	275.1	256.0	240.1
7.5°	562.8	497.2	436.9	389.3	374.5	355.5	325.8	292.0	266.6	240.1	219.0
10°	723.6	590.3	486.6	409.4	385.1	359.7	320.6	279.3	249.7	219.0	196.8
12.5°	1033.6	726.8	533.2	420.0	386.1	353.3	303.6	259.2	225.3	194.7	172.4
15°	1469.5	986.0	627.3	427.4	375.6	335.4	277.2	231.7	197.8	169.3	148.1
17.5°	1837.6	1231.4	753.2	448.6	368.2	312.1	246.5	199.9	167.2	141.8	124.8
20°	2017.5	1341.4	810.4	451.7	347.0	277.2	210.5	166.1	137.5	116.4	101.6
22.5°	1996.3	1304.4	757.5	395.7	293.0	233.8	174.6	134.4	110.0	93.1	82.5
25°	1854.5	1143.6	617.8	302.6	228.5	189.4	136.5	104.7	85.7	74.1	65.6
27.5°	1616.5	918.3	450.7	213.7	173.5	143.9	101.6	80.4	65.6	57.1	51.8
30°	1245.2	587.1	259.2	153.4	125.9	102.6	76.2	58.2	49.7	44.4	40.2
32.5°	642.2	285.6	172.4	110.0	88.9	74.1	52.9	42.3	37.0	33.9	31.7
35°	352.3	203.1	119.5	70.9	57.1	47.6	36.0	29.6	27.5	25.4	25.4
37.5°	242.3	125.9	66.6	42.3	34.9	29.6	24.3	21.2	20.1	20.1	20.1
40°	139.6	66.6	38.1	26.4	22.2	20.1	16.9	15.9	15.9	15.9	16.9
42.5°	71.9	39.1	25.4	18.0	15.9	13.8	11.6	11.6	11.6	12.7	13.8
45°	42.3	26.4	16.9	11.6	10.6	9.5	8.5	8.5	9.5	10.6	11.6
47.5°	26.4	18.0	10.6	7.4	6.3	6.3	6.3	6.3	7.4	8.5	9.5
50°	18.0	9.5	6.3	4.2	4.2	4.2	4.2	5.3	6.3	7.4	8.5
52.5°	9.5	5.3	4.2	3.2	3.2	3.2	4.2	4.2	5.3	6.3	7.4
55°	5.3	4.2	3.2	3.2	3.2	3.2	3.2	4.2	5.3	6.3	7.4
57.5°	4.2	3.2	3.2	3.2	3.2	3.2	3.2	4.2	4.2	5.3	6.3
60°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	4.2	4.2	5.3	6.3
62.5°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	4.2	4.2	5.3	5.3
65°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	4.2	4.2	5.3	5.3
67.5°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	4.2	4.2	4.2	5.3
70°	3.2	3.2	3.2	3.2	3.2	3.2	4.2	4.2	4.2	4.2	5.3
72.5°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	4.2	4.2	4.2	4.2
75°	3.2	3.2	3.2	3.2	3.2	4.2	4.2	4.2	4.2	4.2	5.3
77.5°	3.2	3.2	3.2	3.2	3.2	3.2	4.2	4.2	4.2	4.2	4.2
80°	3.2	3.2	3.2	3.2	3.2	3.2	4.2	4.2	4.2	4.2	4.2
82.5°	3.2	3.2	3.2	3.2	3.2	3.2	4.2	4.2	4.2	4.2	4.2
85°	3.2	3.2	3.2	3.2	3.2	4.2	4.2	4.2	4.2	4.2	4.2
87.5°	3.2	3.2	3.2	3.2	3.2	3.2	4.2	4.2	4.2	4.2	4.2
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°	269.8	269.8	269.8	269.8	269.8	269.8	269.8	269.8	269.8	269.8	269.8
2.5°	249.7	241.2	232.7	232.7	228.5	222.2	220.0	213.7	209.5	207.4	205.2
5°	228.5	215.8	204.2	203.1	197.8	190.4	187.3	180.9	176.7	174.6	173.5
7.5°	204.2	191.5	179.8	177.7	173.5	168.2	165.0	159.7	157.6	155.5	154.5
10°	180.9	168.2	159.7	157.6	154.5	150.2	147.1	143.9	141.8	140.7	140.7
12.5°	157.6	148.1	140.7	138.6	136.5	133.3	131.2	129.1	128.0	128.0	128.0
15°	136.5	128.0	121.7	121.7	119.5	117.4	117.4	115.3	114.3	115.3	116.4
17.5°	115.3	109.0	103.7	103.7	102.6	101.6	101.6	101.6	102.6	103.7	105.8
20°	95.2	89.9	87.8	87.8	86.7	87.8	87.8	88.9	89.9	93.1	96.3
22.5°	77.2	74.1	71.9	73.0	73.0	74.1	75.1	77.2	79.3	82.5	85.7
25°	62.4	60.3	59.2	60.3	61.4	62.4	64.5	66.6	69.8	73.0	77.2
27.5°	49.7	48.7	48.7	49.7	50.8	52.9	56.1	58.2	61.4	64.5	68.8
30°	40.2	39.1	40.2	42.3	43.4	45.5	47.6	50.8	54.0	57.1	61.4
32.5°	31.7	32.8	33.9	34.9	36.0	39.1	41.3	43.4	46.5	49.7	54.0
35°	26.4	27.5	28.6	29.6	30.7	32.8	34.9	37.0	40.2	43.4	47.6
37.5°	21.2	22.2	23.3	25.4	26.4	27.5	30.7	31.7	34.9	37.0	41.3
40°	18.0	19.0	20.1	21.2	22.2	24.3	26.4	27.5	29.6	32.8	36.0
42.5°	14.8	15.9	16.9	18.0	19.0	21.2	22.2	24.3	26.4	28.6	30.7
45°	12.7	13.8	14.8	15.9	16.9	18.0	19.0	21.2	22.2	24.3	26.4
47.5°	10.6	11.6	13.8	13.8	14.8	15.9	16.9	18.0	20.1	21.2	23.3
50°	9.5	10.6	11.6	12.7	12.7	13.8	14.8	15.9	16.9	18.0	20.1
52.5°	8.5	9.5	10.6	10.6	11.6	12.7	13.8	13.8	14.8	15.9	16.9
55°	7.4	8.5	9.5	9.5	10.6	11.6	11.6	12.7	13.8	13.8	14.8
57.5°	7.4	7.4	8.5	8.5	9.5	9.5	10.6	11.6	11.6	12.7	13.8
60°	6.3	7.4	7.4	8.5	8.5	9.5	9.5	10.6	10.6	11.6	11.6
62.5°	6.3	6.3	7.4	7.4	8.5	8.5	9.5	9.5	9.5	10.6	10.6
65°	6.3	6.3	7.4	7.4	7.4	8.5	8.5	8.5	8.5	9.5	9.5
67.5°	5.3	6.3	6.3	7.4	7.4	7.4	7.4	7.4	8.5	8.5	8.5
70°	5.3	6.3	6.3	6.3	6.3	7.4	7.4	7.4	7.4	7.4	7.4
72.5°	5.3	5.3	5.3	5.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
75°	5.3	5.3	5.3	5.3	5.3	6.3	6.3	6.3	6.3	6.3	6.3
77.5°	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
80°	4.2	4.2	4.2	4.2	4.2	5.3	4.2	4.2	4.2	4.2	4.2
82.5°	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	3.2	3.2
85°	4.2	4.2	4.2	4.2	4.2	4.2	4.2	3.2	3.2	3.2	3.2
87.5°	4.2	4.2	4.2	3.2	3.2	3.2	3.2	3.2	3.2	2.1	2.1
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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CATALOG NUMBER: LDSQA4A28927D010TE LAR35FL 4LSQA1H 30°

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	269.8	269.8	269.8	269.8	269.8	269.8	269.8	269.8
2.5°	202.1	199.9	202.1	199.9	199.9	195.7	198.9	196.8
5°	170.3	168.2	170.3	169.3	167.2	166.1	168.2	167.2
7.5°	152.3	150.2	152.3	152.3	150.2	149.2	151.3	150.2
10°	138.6	137.5	138.6	138.6	137.5	136.5	138.6	137.5
12.5°	127.0	125.9	128.0	128.0	127.0	127.0	129.1	127.0
15°	116.4	116.4	118.5	118.5	118.5	118.5	120.6	119.5
17.5°	105.8	107.9	110.0	111.1	111.1	111.1	113.2	113.2
20°	97.3	99.4	101.6	102.6	103.7	103.7	105.8	105.8
22.5°	87.8	89.9	93.1	94.2	95.2	96.3	98.4	98.4
25°	79.3	81.5	84.6	85.7	87.8	88.9	91.0	91.0
27.5°	70.9	74.1	76.2	78.3	79.3	81.5	83.6	83.6
30°	63.5	66.6	68.8	70.9	71.9	74.1	76.2	76.2
32.5°	56.1	59.2	61.4	63.5	65.6	66.6	69.8	69.8
35°	49.7	51.8	55.0	56.1	58.2	60.3	62.4	62.4
37.5°	43.4	45.5	47.6	49.7	51.8	52.9	55.0	56.1
40°	38.1	40.2	42.3	43.4	45.5	47.6	48.7	49.7
42.5°	32.8	34.9	37.0	38.1	40.2	41.3	43.4	43.4
45°	28.6	30.7	31.7	32.8	34.9	36.0	38.1	38.1
47.5°	24.3	26.4	27.5	28.6	29.6	30.7	32.8	32.8
50°	21.2	22.2	23.3	24.3	25.4	27.5	28.6	28.6
52.5°	18.0	20.1	20.1	21.2	22.2	23.3	24.3	25.4
55°	15.9	16.9	18.0	18.0	19.0	20.1	21.2	22.2
57.5°	13.8	14.8	15.9	15.9	16.9	16.9	18.0	19.0
60°	12.7	12.7	13.8	13.8	13.8	14.8	14.8	15.9
62.5°	10.6	10.6	11.6	11.6	11.6	11.6	11.6	11.6
65°	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
67.5°	8.5	8.5	8.5	8.5	7.4	7.4	7.4	7.4
70°	7.4	7.4	7.4	7.4	6.3	6.3	6.3	5.3
72.5°	6.3	6.3	6.3	6.3	5.3	5.3	4.2	4.2
75°	5.3	5.3	5.3	5.3	5.3	4.2	4.2	4.2
77.5°	5.3	4.2	4.2	4.2	4.2	4.2	4.2	3.2
80°	4.2	4.2	3.2	3.2	3.2	3.2	3.2	3.2
82.5°	3.2	3.2	3.2	3.2	2.1	2.1	2.1	2.1
85°	3.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
87.5°	2.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
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)