

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: P182659

Luminaire Tested: **LDSQA4A13930D010TE LAR15SP 4LSQA1H-LSF-20 30°**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P182659  
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: LDSQA4A13930D010TE 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 90CRI / 3000K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1178.1 lumens  
Efficiency: N/A  
Efficacy: 52.9 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

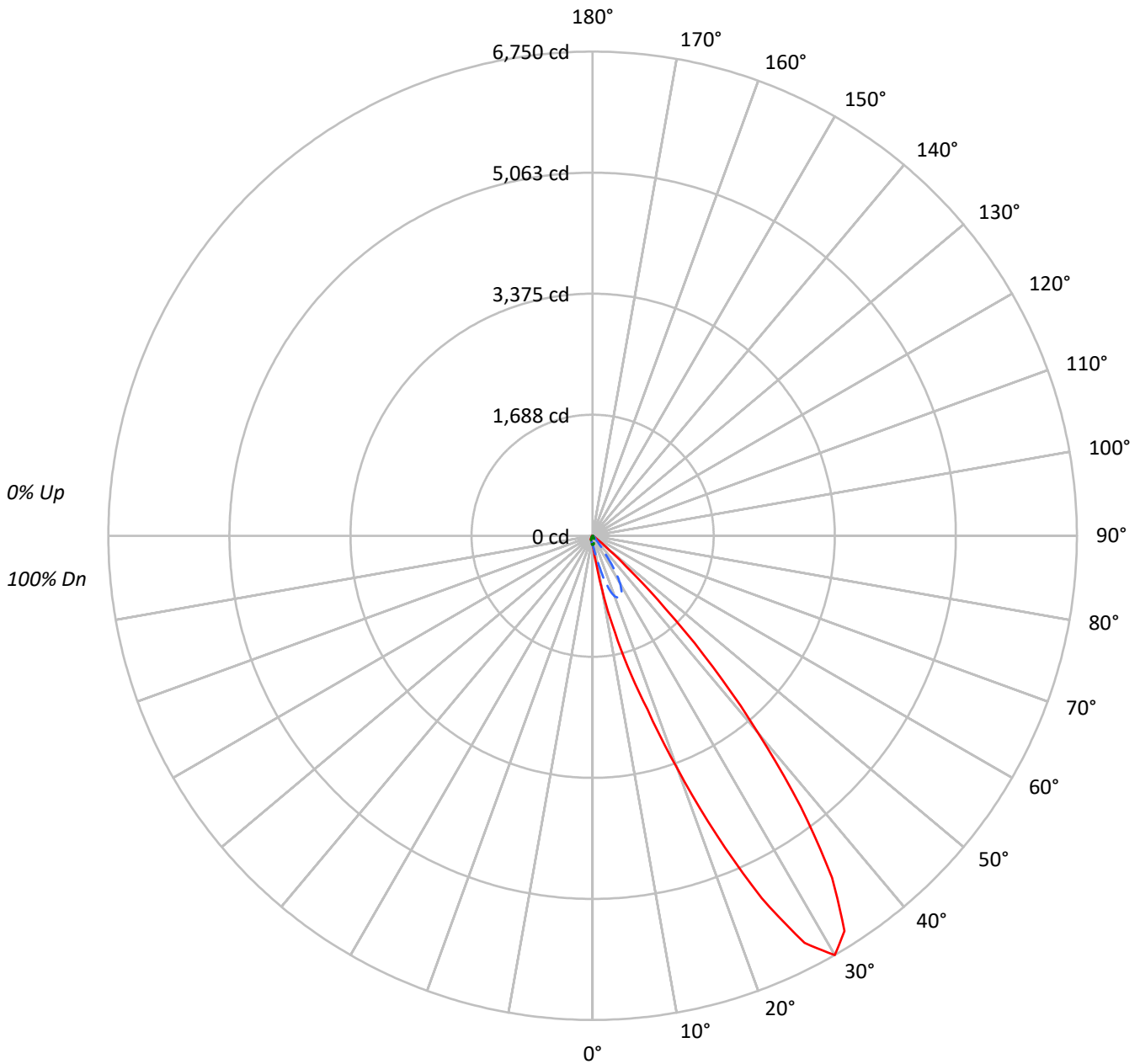
Input Watts (W): 22.27  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	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	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°	12323	12323	12323
5°	23601	11738	9530
10°	77171	10408	8106
15°	188982	8585	7161
20°	356061	6557	6423
25°	596041	4650	5622
30°	755069	3188	4788
35°	688007	2070	4068
40°	453113	1480	3452
45°	196284	973	2850
50°	34814	678	2351
55°	5590	540	1976
60°	1376	504	1511
65°	436	596	1192
70°	368	736	906
75°	487	711	711
80°	0	1060	725
85°	0	2112	667



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	16.3	1.4
10°-20°	131.1	11.1
20°-30°	394.8	33.5
30°-40°	449.3	38.1
40°-50°	166.1	14.1
50°-60°	13.2	1.1
60°-70°	3.5	0.3
70°-80°	2.5	0.2
80°-90°	1.4	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°	542.1	46.0
0°-40°	991.4	84.2
0°-60°	1170.7	99.4
0°-90°	1178.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1178.1	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	127	127	127	127	127	
5°	243	178	121	101	98	39
15°	1884	636	86	68	71	591
25°	5576	930	44	42	53	2545
35°	5818	326	18	24	34	3459
45°	1433	38	7	13	21	1213
55°	33	7	3	8	12	54
65°	2	2	3	5	5	3
75°	1	2	2	3	2	1
85°	0	1	2	2	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°	127.2	127.2	127.2	127.2	127.2	127.2	127.2	127.2	127.2	127.2	127.2
2.5°	163.5	164.8	163.5	160.9	160.9	157.7	156.4	155.1	151.8	149.9	147.3
5°	242.7	238.8	235.5	227.7	225.2	218.0	212.8	205.7	196.0	187.5	178.4
7.5°	415.3	409.4	397.1	373.7	359.5	341.9	328.3	305.6	276.4	252.4	228.4
10°	784.5	759.2	730.0	677.4	639.1	598.2	565.8	504.8	431.5	371.1	312.7
12.5°	1264.0	1265.9	1211.4	1122.5	1051.8	979.8	924.0	811.1	681.3	567.7	455.5
15°	1884.3	1848.6	1792.1	1655.9	1514.4	1410.0	1321.1	1149.8	966.1	800.0	636.5
17.5°	2537.7	2552.6	2420.9	2198.3	1974.5	1818.1	1683.8	1424.2	1206.2	1000.5	800.7
20°	3453.8	3351.3	3163.2	2802.4	2454.6	2228.2	2029.0	1692.2	1387.9	1126.4	901.9
22.5°	4510.2	4344.7	3961.9	3453.8	2927.6	2614.2	2336.5	1873.2	1503.4	1190.6	936.3
25°	5576.2	5449.7	4839.8	4080.6	3326.7	2920.5	2561.0	1995.9	1558.5	1205.6	930.5
27.5°	6399.0	6192.7	5497.7	4508.2	3564.8	3085.3	2665.5	2033.5	1546.9	1169.2	875.3
30°	6750.0	6489.2	5719.0	4605.6	3566.7	3058.0	2613.6	1958.9	1463.8	1077.1	771.5
32.5°	6533.3	6232.2	5455.6	4336.3	3322.8	2845.2	2413.1	1797.3	1326.3	932.4	579.4
35°	5817.6	5517.8	4798.3	3804.9	2933.5	2516.3	2140.6	1586.4	1129.7	691.0	325.7
37.5°	4763.9	4508.2	3993.7	3189.1	2472.1	2133.4	1820.7	1336.6	841.6	396.4	163.5
40°	3583.0	3403.2	3094.4	2529.2	2001.1	1743.5	1491.7	1023.9	511.3	199.2	92.8
42.5°	2483.8	2367.0	2211.9	1871.3	1543.6	1366.5	1164.7	683.9	262.8	109.7	57.7
45°	1432.7	1359.3	1316.5	1171.2	1043.4	957.1	778.6	368.5	133.0	65.5	38.3
47.5°	632.6	584.0	563.2	502.2	467.2	443.8	352.3	157.0	71.4	42.2	31.8
50°	231.0	231.0	231.6	203.7	166.8	149.9	117.4	69.4	40.2	33.1	23.4
52.5°	81.8	80.5	83.7	79.2	69.4	62.3	51.9	35.0	24.7	20.8	13.0
55°	33.1	31.8	33.1	31.1	29.2	27.3	24.0	18.8	15.6	13.0	7.1
57.5°	14.9	14.9	15.6	14.9	14.9	13.6	12.3	14.3	11.0	7.1	4.5
60°	7.1	7.1	7.8	7.8	7.8	7.1	7.1	7.8	6.5	4.5	3.2
62.5°	3.2	3.2	3.9	3.9	3.9	3.9	3.9	4.5	3.2	2.6	1.9
65°	1.9	1.3	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
67.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.9	1.9
70°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.9
72.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.9
75°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.9
77.5°	0.0	0.0	0.0	0.6	0.6	0.6	0.6	0.6	1.3	1.3	1.9
80°	0.0	0.0	0.0	0.0	0.6	0.6	0.6	0.6	1.3	1.3	1.3
82.5°	0.0	0.0	0.0	0.0	0.6	0.6	0.6	0.6	1.3	1.3	1.3
85°	0.0	0.0	0.0	0.0	0.6	0.6	0.6	0.6	0.6	1.3	1.3
87.5°	0.0	0.0	0.0	0.0	0.6	0.6	0.6	0.6	0.6	1.3	1.3
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°	127.2	127.2	127.2	127.2	127.2	127.2	127.2	127.2	127.2	127.2	127.2
2.5°	144.7	142.7	138.9	136.9	134.3	132.4	131.1	128.5	125.9	123.9	122.6
5°	170.0	162.9	154.4	147.9	142.7	139.5	134.3	129.8	124.6	120.7	117.4
7.5°	207.0	189.5	170.6	157.7	150.5	144.0	135.0	127.2	120.0	114.8	110.3
10°	264.7	227.1	194.0	168.7	156.4	147.3	133.0	122.0	112.9	105.8	101.2
12.5°	360.8	283.5	225.2	182.3	163.5	149.9	129.8	114.8	103.8	96.7	90.8
15°	492.5	366.6	268.0	198.5	171.9	152.5	124.6	106.4	94.1	85.6	80.5
17.5°	616.4	453.5	316.6	218.0	180.4	153.8	117.4	95.4	82.4	74.6	69.4
20°	694.3	510.0	349.1	229.0	183.0	149.9	107.7	83.7	70.7	63.6	58.4
22.5°	712.4	516.5	346.5	218.7	171.9	138.2	94.1	72.0	59.7	53.2	48.7
25°	685.8	480.2	310.2	188.8	146.6	116.1	78.5	58.4	49.3	43.5	40.2
27.5°	619.0	408.8	245.3	142.1	109.7	85.6	59.7	45.4	39.6	35.0	33.1
30°	499.0	287.4	153.8	88.2	70.1	56.5	42.8	35.0	30.5	28.5	26.6
32.5°	302.4	147.9	81.1	52.6	44.1	38.3	31.1	26.0	23.4	22.1	21.4
35°	144.0	77.9	50.0	35.7	31.1	27.3	22.7	19.5	18.2	17.5	17.5
37.5°	81.8	50.6	33.7	24.0	21.4	18.8	16.9	14.9	14.3	14.3	14.3
40°	51.9	32.4	22.1	17.5	15.6	14.3	13.0	11.7	11.7	11.7	11.7
42.5°	33.7	23.4	16.9	13.0	11.7	11.0	9.7	9.1	9.1	9.1	9.7
45°	26.6	19.5	13.6	10.4	9.1	8.4	7.8	7.1	7.1	7.1	7.8
47.5°	22.7	13.6	9.1	7.1	5.8	5.8	5.2	5.2	5.2	5.8	6.5
50°	13.6	8.4	5.8	4.5	3.9	3.9	3.9	3.9	3.9	4.5	5.2
52.5°	7.8	5.2	3.9	3.2	2.6	2.6	2.6	2.6	3.2	3.9	3.9
55°	5.2	3.9	2.6	2.6	1.9	1.9	1.9	2.6	2.6	3.2	3.9
57.5°	3.2	2.6	1.9	1.9	1.9	1.9	1.9	1.9	2.6	3.2	3.2
60°	2.6	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.6	2.6	3.2
62.5°	1.9	1.9	2.6	1.9	1.9	1.9	1.9	1.9	2.6	2.6	3.2
65°	1.9	1.9	2.6	2.6	1.9	1.9	1.9	1.9	1.9	2.6	3.2
67.5°	1.9	1.9	2.6	2.6	2.6	2.6	1.9	1.9	1.9	2.6	2.6
70°	1.9	2.6	2.6	2.6	2.6	2.6	2.6	1.9	1.9	2.6	2.6
72.5°	1.9	2.6	2.6	2.6	2.6	2.6	2.6	1.9	1.9	2.6	2.6
75°	1.9	1.9	2.6	2.6	2.6	2.6	2.6	1.9	1.9	1.9	2.6
77.5°	1.9	1.9	2.6	2.6	2.6	2.6	2.6	1.9	1.9	1.9	2.6
80°	1.9	1.9	1.9	2.6	1.9	2.6	1.9	1.9	1.9	1.9	1.9
82.5°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
85°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
87.5°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
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):**

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	127.2	127.2	127.2	127.2	127.2	127.2	127.2	127.2	127.2	127.2	127.2
2.5°	120.7	119.4	117.4	116.8	117.4	116.8	113.5	112.9	111.6	111.6	111.6
5°	114.2	112.3	109.7	108.4	108.4	107.1	103.8	103.2	101.2	101.2	100.6
7.5°	106.4	103.8	100.6	99.3	99.3	98.0	94.7	93.4	92.1	92.1	91.5
10°	97.3	94.1	90.8	90.2	89.5	87.6	85.6	85.0	83.1	83.7	83.1
12.5°	86.9	84.4	81.8	80.5	80.5	78.5	77.2	76.6	75.9	75.9	75.9
15°	77.2	74.0	71.4	70.7	70.7	70.1	68.8	68.8	67.5	68.8	68.8
17.5°	66.2	63.6	62.9	61.6	62.3	61.6	60.3	61.0	61.0	61.6	62.3
20°	55.8	53.9	53.2	52.6	53.2	53.2	52.6	53.2	53.9	55.8	57.1
22.5°	46.7	45.4	45.4	44.8	45.4	46.1	45.4	46.7	48.0	49.3	51.3
25°	38.9	38.3	38.3	38.3	38.9	39.6	40.2	41.5	42.2	44.1	45.4
27.5°	31.8	31.8	31.8	32.4	33.1	33.7	34.4	36.3	37.0	38.9	40.2
30°	26.6	26.0	26.6	27.3	27.9	29.2	29.8	31.1	31.8	33.7	35.0
32.5°	21.4	22.1	22.7	23.4	24.0	24.7	25.3	26.6	27.9	29.2	30.5
35°	18.2	18.2	18.8	19.5	20.1	21.4	22.1	22.7	24.0	25.3	26.0
37.5°	14.9	15.6	16.2	16.9	17.5	18.2	18.8	19.5	20.1	21.4	22.7
40°	12.3	13.0	13.6	14.3	14.3	15.6	15.6	16.9	17.5	18.8	20.1
42.5°	10.4	11.0	11.7	12.3	12.3	13.0	13.6	14.3	14.9	16.2	17.5
45°	8.4	9.1	9.7	10.4	10.4	11.0	11.7	12.3	13.0	14.3	14.9
47.5°	7.1	7.8	8.4	9.1	9.1	9.7	10.4	11.0	11.0	12.3	13.0
50°	5.8	6.5	7.1	7.8	7.8	8.4	9.1	9.7	9.7	10.4	11.0
52.5°	4.5	5.2	6.5	6.5	7.1	7.8	7.8	8.4	8.4	9.1	9.7
55°	4.5	5.2	5.8	5.8	6.5	7.1	7.1	7.8	7.8	7.8	8.4
57.5°	3.9	4.5	5.2	5.8	5.8	6.5	6.5	6.5	6.5	7.1	7.1
60°	3.9	4.5	4.5	5.2	5.2	5.8	5.8	5.8	5.8	6.5	6.5
62.5°	3.9	3.9	4.5	4.5	5.2	5.2	5.2	5.8	5.8	5.8	5.8
65°	3.2	3.9	4.5	4.5	4.5	5.2	5.2	5.2	5.2	5.2	5.2
67.5°	3.2	3.9	3.9	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
70°	3.2	3.2	3.9	3.9	3.9	4.5	4.5	4.5	3.9	4.5	3.9
72.5°	2.6	3.2	3.2	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
75°	2.6	3.2	3.2	3.2	3.2	3.9	3.9	3.2	3.2	3.2	3.2
77.5°	2.6	2.6	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	2.6
80°	2.6	2.6	2.6	2.6	3.2	3.2	2.6	2.6	2.6	2.6	2.6
82.5°	1.9	2.6	2.6	2.6	2.6	2.6	2.6	2.6	1.9	1.9	1.9
85°	1.9	1.9	2.6	2.6	2.6	2.6	1.9	1.9	1.9	1.9	1.3
87.5°	1.9	1.9	1.9	2.6	1.9	1.9	1.9	1.9	1.3	1.3	1.3
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: LDSQA4A13930D010TE LAR15SP 4LSQA1H-LSF-20 30°

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	127.2	127.2	127.2	127.2	127.2	127.2	127.2	127.2
2.5°	109.7	109.0	109.7	109.0	109.0	109.7	107.7	109.0
5°	99.3	98.0	98.6	98.0	97.3	98.0	96.7	98.0
7.5°	90.2	89.5	89.5	89.5	88.9	89.5	88.2	89.5
10°	82.4	81.8	81.8	81.8	81.8	82.4	81.1	82.4
12.5°	74.6	74.6	75.3	74.6	75.3	75.9	74.6	75.9
15°	68.1	68.8	69.4	69.4	70.1	70.7	70.1	71.4
17.5°	62.9	63.6	64.9	64.9	65.5	66.8	66.2	67.5
20°	57.7	58.4	59.7	59.7	60.3	61.6	61.0	62.3
22.5°	51.9	53.2	53.9	54.5	55.2	56.5	55.8	57.1
25°	46.1	48.0	48.7	49.3	50.0	51.3	51.3	52.6
27.5°	41.5	42.8	43.5	44.1	45.4	46.7	46.7	47.4
30°	36.3	37.6	38.9	39.6	40.2	41.5	41.5	42.8
32.5°	31.8	33.1	33.7	34.4	35.7	37.0	37.6	38.3
35°	27.3	29.2	29.8	31.1	31.8	33.7	33.7	34.4
37.5°	24.0	25.3	26.6	27.3	28.5	29.8	29.8	31.1
40°	21.4	22.7	23.4	24.0	25.3	26.6	26.6	27.3
42.5°	18.2	20.1	20.8	21.4	22.1	23.4	24.0	24.7
45°	16.2	16.9	17.5	18.2	18.8	20.1	20.1	20.8
47.5°	13.6	14.3	14.9	15.6	16.2	16.9	17.5	18.2
50°	11.7	12.3	13.0	13.0	13.6	14.9	14.9	15.6
52.5°	9.7	10.4	11.0	11.0	11.7	13.0	13.0	13.6
55°	8.4	9.1	9.7	9.7	10.4	11.0	11.0	11.7
57.5°	7.8	7.8	8.4	8.4	9.1	9.1	9.7	9.7
60°	6.5	7.1	7.1	7.1	7.8	7.8	7.8	7.8
62.5°	5.8	5.8	5.8	5.8	5.8	5.8	5.8	6.5
65°	5.2	5.2	5.2	5.2	5.2	5.2	4.5	5.2
67.5°	4.5	4.5	4.5	4.5	3.9	3.9	3.9	3.9
70°	3.9	3.9	3.9	3.9	3.9	3.2	3.2	3.2
72.5°	3.2	3.2	3.2	3.2	3.2	2.6	2.6	2.6
75°	3.2	3.2	2.6	2.6	2.6	2.6	2.6	1.9
77.5°	2.6	2.6	2.6	2.6	1.9	1.9	1.9	1.9
80°	1.9	1.9	1.9	1.9	1.9	1.9	1.3	1.3
82.5°	1.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3
85°	1.3	1.3	1.3	1.3	0.6	0.6	0.6	0.6
87.5°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
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)