

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: P182657

Luminaire Tested: **LDSQA4A13840D010TE LAR15SP 4LSQA1H-LSF-20 30°**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P182657  
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: LDSQA4A13840D010TE 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 / 4000K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1528.6 lumens  
Efficiency: N/A  
Efficacy: 68.6 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

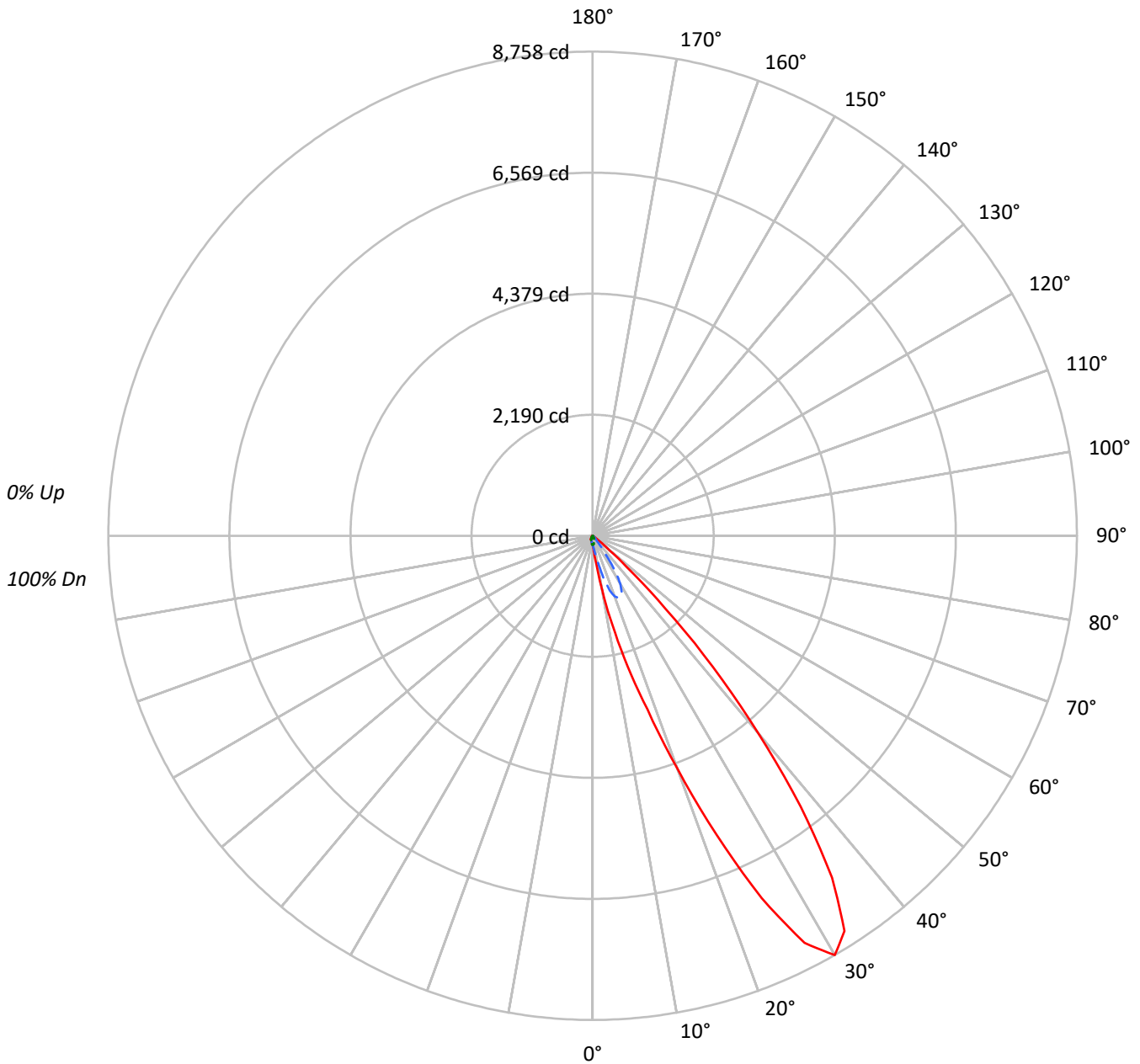
Input Watts (W): 22.27  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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°	15984	15984	15984
5°	30623	15229	12360
10°	100121	13496	10516
15°	245186	11143	9287
20°	461979	8505	8330
25°	773329	6029	7290
30°	979655	4139	6220
35°	892650	2685	5275
40°	587883	1922	4477
45°	254660	1274	3685
50°	45168	889	3044
55°	7246	709	2567
60°	1802	659	1957
65°	573	779	1536
70°	482	963	1190
75°	636	936	936
80°	0	1395	948
85°	0	2779	889



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	21.2	1.4
10°-20°	170.0	11.1
20°-30°	512.2	33.5
30°-40°	582.9	38.1
40°-50°	215.5	14.1
50°-60°	17.1	1.1
60°-70°	4.6	0.3
70°-80°	3.2	0.2
80°-90°	1.8	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°	703.4	46.0
0°-40°	1286.3	84.1
0°-60°	1519.0	99.4
0°-90°	1528.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1528.6	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	165	165	165	165	165	
5°	315	232	157	131	127	51
15°	2445	826	111	88	93	767
25°	7235	1207	56	55	68	3302
35°	7548	423	23	31	45	4488
45°	1859	50	9	17	27	1574
55°	43	9	4	10	15	70
65°	2	2	3	7	7	3
75°	2	2	2	4	2	1
85°	0	2	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°	165.0	165.0	165.0	165.0	165.0	165.0	165.0	165.0	165.0	165.0	165.0
2.5°	212.1	213.8	212.1	208.8	208.8	204.6	202.9	201.2	197.0	194.5	191.1
5°	314.9	309.8	305.6	295.5	292.1	282.9	276.1	266.9	254.2	243.3	231.5
7.5°	538.8	531.2	515.2	484.9	466.4	443.7	426.0	396.5	358.6	327.5	296.3
10°	1017.8	985.0	947.1	878.9	829.2	776.2	734.1	655.0	559.8	481.5	405.8
12.5°	1639.9	1642.4	1571.7	1456.4	1364.6	1271.2	1198.8	1052.3	883.9	736.6	591.0
15°	2444.7	2398.4	2325.2	2148.4	1964.9	1829.3	1714.0	1491.8	1253.5	1038.0	825.9
17.5°	3292.5	3311.8	3140.9	2852.2	2561.7	2358.9	2184.6	1847.9	1565.0	1298.1	1038.8
20°	4481.2	4348.1	4104.0	3635.9	3184.7	2890.9	2632.5	2195.5	1800.7	1461.4	1170.2
22.5°	5851.7	5637.0	5140.3	4481.2	3798.4	3391.8	3031.5	2430.4	1950.6	1544.8	1214.8
25°	7234.8	7070.7	6279.3	5294.4	4316.2	3789.2	3322.8	2589.5	2022.1	1564.2	1207.2
27.5°	8302.3	8034.6	7133.0	5849.2	4625.1	4003.0	3458.3	2638.4	2007.0	1517.0	1135.7
30°	8757.7	8419.3	7420.1	5975.4	4627.6	3967.6	3391.0	2541.5	1899.2	1397.5	1001.0
32.5°	8476.6	8086.0	7078.3	5626.1	4311.1	3691.5	3130.8	2331.9	1720.7	1209.7	751.8
35°	7548.0	7159.1	6225.5	4936.6	3806.0	3264.7	2777.3	2058.3	1465.7	896.6	422.6
37.5°	6180.9	5849.2	5181.6	4137.7	3207.4	2768.0	2362.2	1734.2	1091.9	514.4	212.1
40°	4648.7	4415.5	4014.8	3281.5	2596.3	2262.0	1935.4	1328.4	663.4	258.4	120.4
42.5°	3222.6	3071.1	2869.9	2427.9	2002.8	1772.9	1511.1	887.3	340.9	142.3	74.9
45°	1858.8	1763.7	1708.1	1519.5	1353.7	1241.7	1010.2	478.2	172.6	85.0	49.7
47.5°	820.8	757.7	730.7	651.6	606.1	575.8	457.1	203.7	92.6	54.7	41.3
50°	299.7	299.7	300.5	264.3	216.4	194.5	152.4	90.1	52.2	42.9	30.3
52.5°	106.1	104.4	108.6	102.7	90.1	80.8	67.3	45.5	32.0	26.9	16.8
55°	42.9	41.3	42.9	40.4	37.9	35.4	31.1	24.4	20.2	16.8	9.3
57.5°	19.4	19.4	20.2	19.4	19.4	17.7	16.0	18.5	14.3	9.3	5.9
60°	9.3	9.3	10.1	10.1	10.1	9.3	9.3	10.1	8.4	5.9	4.2
62.5°	4.2	4.2	5.1	5.1	5.1	5.1	5.1	5.9	4.2	3.4	2.5
65°	2.5	1.7	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
67.5°	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	2.5	2.5
70°	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	2.5
72.5°	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	2.5
75°	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	2.5
77.5°	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	1.7	1.7	2.5
80°	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	1.7	1.7	1.7
82.5°	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	1.7	1.7	1.7
85°	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	1.7	1.7
87.5°	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	1.7	1.7
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):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	165.0	165.0	165.0	165.0	165.0	165.0	165.0	165.0	165.0	165.0	165.0
2.5°	187.7	185.2	180.2	177.6	174.3	171.7	170.1	166.7	163.3	160.8	159.1
5°	220.6	211.3	200.4	191.9	185.2	181.0	174.3	168.4	161.6	156.6	152.4
7.5°	268.5	245.8	221.4	204.6	195.3	186.9	175.1	165.0	155.7	149.0	143.1
10°	343.5	294.6	251.7	218.9	202.9	191.1	172.6	158.3	146.5	137.2	131.3
12.5°	468.1	367.9	292.1	236.6	212.1	194.5	168.4	149.0	134.7	125.4	117.9
15°	639.0	475.6	347.7	257.6	223.1	197.8	161.6	138.1	122.1	111.1	104.4
17.5°	799.8	588.5	410.8	282.9	234.0	199.5	152.4	123.8	106.9	96.8	90.1
20°	900.8	661.7	452.9	297.2	237.4	194.5	139.7	108.6	91.8	82.5	75.8
22.5°	924.3	670.1	449.5	283.7	223.1	179.3	122.1	93.4	77.5	69.0	63.1
25°	889.8	623.0	402.4	245.0	190.3	150.7	101.9	75.8	64.0	56.4	52.2
27.5°	803.1	530.4	318.2	184.4	142.3	111.1	77.5	58.9	51.4	45.5	42.9
30°	647.4	372.9	199.5	114.5	90.9	73.2	55.6	45.5	39.6	37.0	34.5
32.5°	392.3	191.9	105.2	68.2	57.2	49.7	40.4	33.7	30.3	28.6	27.8
35°	186.9	101.0	64.8	46.3	40.4	35.4	29.5	25.3	23.6	22.7	22.7
37.5°	106.1	65.7	43.8	31.1	27.8	24.4	21.9	19.4	18.5	18.5	18.5
40°	67.3	42.1	28.6	22.7	20.2	18.5	16.8	15.2	15.2	15.2	15.2
42.5°	43.8	30.3	21.9	16.8	15.2	14.3	12.6	11.8	11.8	11.8	12.6
45°	34.5	25.3	17.7	13.5	11.8	10.9	10.1	9.3	9.3	9.3	10.1
47.5°	29.5	17.7	11.8	9.3	7.6	7.6	6.7	6.7	6.7	7.6	8.4
50°	17.7	10.9	7.6	5.9	5.1	5.1	5.1	5.1	5.1	5.9	6.7
52.5°	10.1	6.7	5.1	4.2	3.4	3.4	3.4	3.4	4.2	5.1	5.1
55°	6.7	5.1	3.4	3.4	2.5	2.5	2.5	3.4	3.4	4.2	5.1
57.5°	4.2	3.4	2.5	2.5	2.5	2.5	2.5	2.5	3.4	4.2	4.2
60°	3.4	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3.4	3.4	4.2
62.5°	2.5	2.5	3.4	2.5	2.5	2.5	2.5	2.5	3.4	3.4	4.2
65°	2.5	2.5	3.4	3.4	2.5	2.5	2.5	2.5	2.5	3.4	4.2
67.5°	2.5	2.5	3.4	3.4	3.4	3.4	2.5	2.5	2.5	3.4	3.4
70°	2.5	3.4	3.4	3.4	3.4	3.4	3.4	2.5	2.5	3.4	3.4
72.5°	2.5	3.4	3.4	3.4	3.4	3.4	3.4	2.5	2.5	3.4	3.4
75°	2.5	2.5	3.4	3.4	3.4	3.4	3.4	2.5	2.5	2.5	3.4
77.5°	2.5	2.5	3.4	3.4	3.4	3.4	3.4	2.5	2.5	2.5	3.4
80°	2.5	2.5	2.5	3.4	2.5	3.4	2.5	2.5	2.5	2.5	2.5
82.5°	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
85°	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
87.5°	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
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):**

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	165.0	165.0	165.0	165.0	165.0	165.0	165.0	165.0	165.0	165.0	165.0
2.5°	156.6	154.9	152.4	151.5	152.4	151.5	147.3	146.5	144.8	144.8	144.8
5°	148.2	145.6	142.3	140.6	140.6	138.9	134.7	133.9	131.3	131.3	130.5
7.5°	138.1	134.7	130.5	128.8	128.8	127.1	122.9	121.2	119.5	119.5	118.7
10°	126.3	122.1	117.9	117.0	116.2	113.6	111.1	110.3	107.8	108.6	107.8
12.5°	112.8	109.4	106.1	104.4	104.4	101.9	100.2	99.3	98.5	98.5	98.5
15°	100.2	96.0	92.6	91.8	91.8	90.9	89.2	89.2	87.6	89.2	89.2
17.5°	85.9	82.5	81.7	80.0	80.8	80.0	78.3	79.1	79.1	80.0	80.8
20°	72.4	69.9	69.0	68.2	69.0	69.0	68.2	69.0	69.9	72.4	74.1
22.5°	60.6	58.9	58.9	58.1	58.9	59.8	58.9	60.6	62.3	64.0	66.5
25°	50.5	49.7	49.7	49.7	50.5	51.4	52.2	53.9	54.7	57.2	58.9
27.5°	41.3	41.3	41.3	42.1	42.9	43.8	44.6	47.1	48.0	50.5	52.2
30°	34.5	33.7	34.5	35.4	36.2	37.9	38.7	40.4	41.3	43.8	45.5
32.5°	27.8	28.6	29.5	30.3	31.1	32.0	32.8	34.5	36.2	37.9	39.6
35°	23.6	23.6	24.4	25.3	26.1	27.8	28.6	29.5	31.1	32.8	33.7
37.5°	19.4	20.2	21.0	21.9	22.7	23.6	24.4	25.3	26.1	27.8	29.5
40°	16.0	16.8	17.7	18.5	18.5	20.2	20.2	21.9	22.7	24.4	26.1
42.5°	13.5	14.3	15.2	16.0	16.0	16.8	17.7	18.5	19.4	21.0	22.7
45°	10.9	11.8	12.6	13.5	13.5	14.3	15.2	16.0	16.8	18.5	19.4
47.5°	9.3	10.1	10.9	11.8	11.8	12.6	13.5	14.3	14.3	16.0	16.8
50°	7.6	8.4	9.3	10.1	10.1	10.9	11.8	12.6	12.6	13.5	14.3
52.5°	5.9	6.7	8.4	8.4	9.3	10.1	10.1	10.9	10.9	11.8	12.6
55°	5.9	6.7	7.6	7.6	8.4	9.3	9.3	10.1	10.1	10.1	10.9
57.5°	5.1	5.9	6.7	7.6	7.6	8.4	8.4	8.4	8.4	9.3	9.3
60°	5.1	5.9	5.9	6.7	6.7	7.6	7.6	7.6	7.6	8.4	8.4
62.5°	5.1	5.1	5.9	5.9	6.7	6.7	6.7	7.6	7.6	7.6	7.6
65°	4.2	5.1	5.9	5.9	5.9	6.7	6.7	6.7	6.7	6.7	6.7
67.5°	4.2	5.1	5.1	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9
70°	4.2	4.2	5.1	5.1	5.1	5.9	5.9	5.9	5.1	5.9	5.1
72.5°	3.4	4.2	4.2	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
75°	3.4	4.2	4.2	4.2	4.2	5.1	5.1	4.2	4.2	4.2	4.2
77.5°	3.4	3.4	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	3.4
80°	3.4	3.4	3.4	3.4	4.2	4.2	3.4	3.4	3.4	3.4	3.4
82.5°	2.5	3.4	3.4	3.4	3.4	3.4	3.4	3.4	2.5	2.5	2.5
85°	2.5	2.5	3.4	3.4	3.4	3.4	2.5	2.5	2.5	2.5	1.7
87.5°	2.5	2.5	2.5	3.4	2.5	2.5	2.5	2.5	1.7	1.7	1.7
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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CATALOG NUMBER: LDSQA4A13840D010TE LAR15SP 4LSQA1H-LSF-20 30°

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	165.0	165.0	165.0	165.0	165.0	165.0	165.0	165.0
2.5°	142.3	141.4	142.3	141.4	141.4	142.3	139.7	141.4
5°	128.8	127.1	128.0	127.1	126.3	127.1	125.4	127.1
7.5°	117.0	116.2	116.2	116.2	115.3	116.2	114.5	116.2
10°	106.9	106.1	106.1	106.1	106.1	106.9	105.2	106.9
12.5°	96.8	96.8	97.7	96.8	97.7	98.5	96.8	98.5
15°	88.4	89.2	90.1	90.1	90.9	91.8	90.9	92.6
17.5°	81.7	82.5	84.2	84.2	85.0	86.7	85.9	87.6
20°	74.9	75.8	77.5	77.5	78.3	80.0	79.1	80.8
22.5°	67.3	69.0	69.9	70.7	71.6	73.2	72.4	74.1
25°	59.8	62.3	63.1	64.0	64.8	66.5	66.5	68.2
27.5°	53.9	55.6	56.4	57.2	58.9	60.6	60.6	61.5
30°	47.1	48.8	50.5	51.4	52.2	53.9	53.9	55.6
32.5°	41.3	42.9	43.8	44.6	46.3	48.0	48.8	49.7
35°	35.4	37.9	38.7	40.4	41.3	43.8	43.8	44.6
37.5°	31.1	32.8	34.5	35.4	37.0	38.7	38.7	40.4
40°	27.8	29.5	30.3	31.1	32.8	34.5	34.5	35.4
42.5°	23.6	26.1	26.9	27.8	28.6	30.3	31.1	32.0
45°	21.0	21.9	22.7	23.6	24.4	26.1	26.1	26.9
47.5°	17.7	18.5	19.4	20.2	21.0	21.9	22.7	23.6
50°	15.2	16.0	16.8	16.8	17.7	19.4	19.4	20.2
52.5°	12.6	13.5	14.3	14.3	15.2	16.8	16.8	17.7
55°	10.9	11.8	12.6	12.6	13.5	14.3	14.3	15.2
57.5°	10.1	10.1	10.9	10.9	11.8	11.8	12.6	12.6
60°	8.4	9.3	9.3	9.3	10.1	10.1	10.1	10.1
62.5°	7.6	7.6	7.6	7.6	7.6	7.6	7.6	8.4
65°	6.7	6.7	6.7	6.7	6.7	6.7	5.9	6.7
67.5°	5.9	5.9	5.9	5.9	5.1	5.1	5.1	5.1
70°	5.1	5.1	5.1	5.1	5.1	4.2	4.2	4.2
72.5°	4.2	4.2	4.2	4.2	4.2	3.4	3.4	3.4
75°	4.2	4.2	3.4	3.4	3.4	3.4	3.4	2.5
77.5°	3.4	3.4	3.4	3.4	2.5	2.5	2.5	2.5
80°	2.5	2.5	2.5	2.5	2.5	2.5	1.7	1.7
82.5°	2.5	1.7	1.7	1.7	1.7	1.7	1.7	1.7
85°	1.7	1.7	1.7	1.7	0.8	0.8	0.8	0.8
87.5°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
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)