

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: P182645

Luminaire Tested: **LDSQA4A18940D010TE LAR15SP 4LSQA1H-LSF-20 30°**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P182645  
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: LDSQA4A18940D010TE 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 / 4000K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1600.0 lumens  
Efficiency: N/A  
Efficacy: 54.9 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

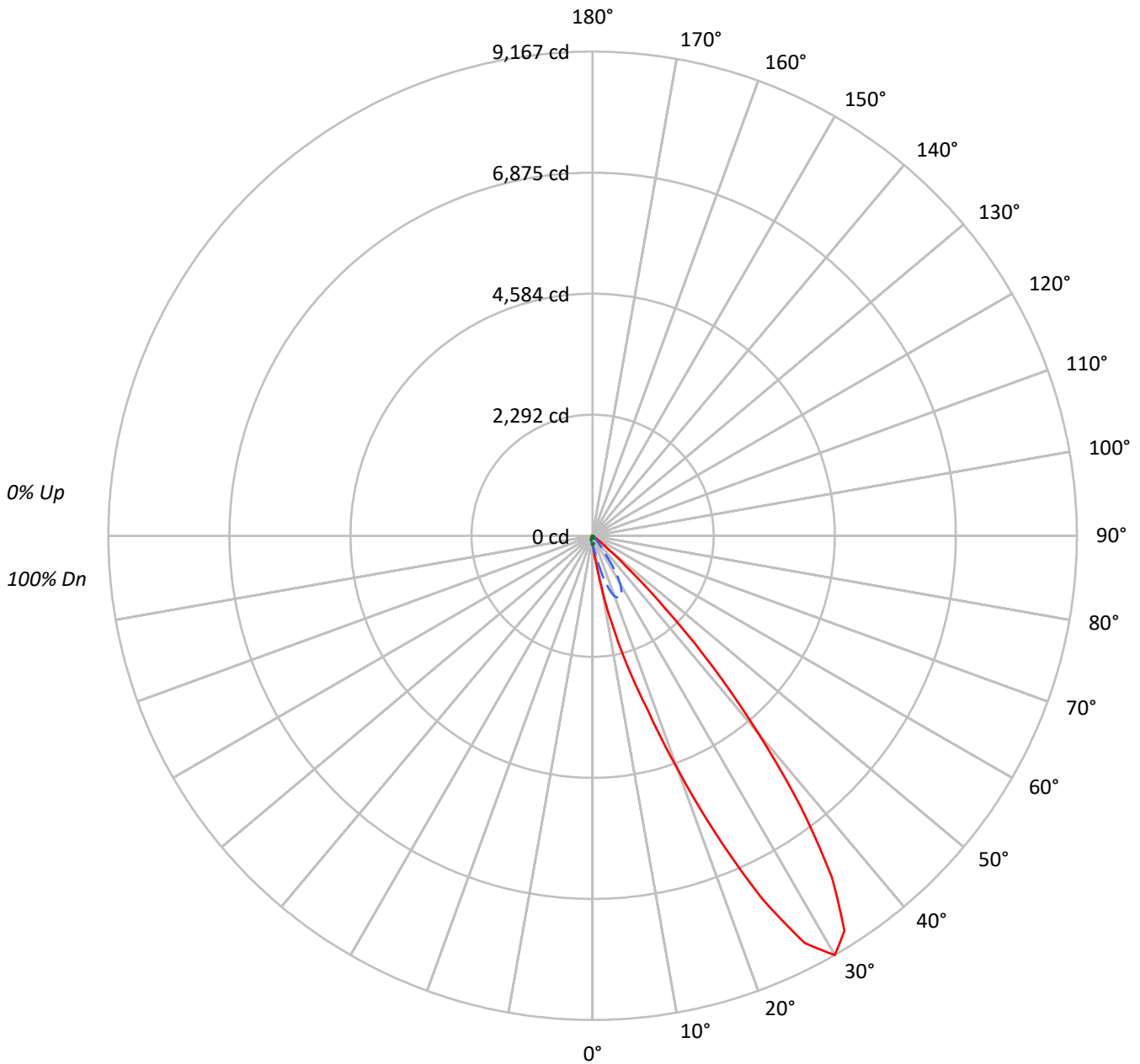
Input Watts (W): 29.12  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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°	16730	16730	16730
5°	32052	15939	12943
10°	104803	14126	11008
15°	256649	11664	9718
20°	483567	8907	8722
25°	809469	6307	7632
30°	1025440	4340	6510
35°	934361	2815	5523
40°	615351	2011	4679
45°	266566	1329	3863
50°	47278	934	3180
55°	7583	743	2685
60°	1879	678	2054
65°	596	802	1605
70°	510	991	1246
75°	674	973	973
80°	0	1450	1004
85°	0	2890	1000



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	22.2	1.4
10°-20°	178.0	11.1
20°-30°	536.1	33.5
30°-40°	610.2	38.1
40°-50°	225.6	14.1
50°-60°	17.9	1.1
60°-70°	4.8	0.3
70°-80°	3.4	0.2
80°-90°	1.9	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°	736.2	46.0
0°-40°	1346.4	84.2
0°-60°	1589.9	99.4
0°-90°	1600.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1600.0	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	173	173	173	173	173	
5°	330	242	164	138	133	53
15°	2559	864	116	92	97	803
25°	7573	1264	59	57	71	3457
35°	7901	442	24	33	47	4697
45°	1946	52	10	18	28	1647
55°	45	10	4	11	16	74
65°	3	3	4	7	7	4
75°	2	3	3	4	3	1
85°	0	2	3	3	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°	172.7	172.7	172.7	172.7	172.7	172.7	172.7	172.7	172.7	172.7	172.7
2.5°	222.1	223.8	222.1	218.5	218.5	214.1	212.4	210.6	206.2	203.6	200.0
5°	329.6	324.3	319.9	309.3	305.8	296.1	289.0	279.3	266.1	254.7	242.3
7.5°	564.0	556.0	539.3	507.6	488.2	464.4	445.9	415.0	375.4	342.8	310.2
10°	1065.4	1031.0	991.3	920.0	868.0	812.5	768.4	685.6	586.0	504.0	424.7
12.5°	1716.6	1719.2	1645.2	1524.5	1428.4	1330.6	1254.8	1101.5	925.2	771.0	618.6
15°	2559.0	2510.5	2433.8	2248.8	2056.7	1914.8	1794.1	1561.5	1312.1	1086.5	864.4
17.5°	3446.3	3466.6	3287.7	2985.5	2681.5	2469.1	2286.7	1934.2	1638.1	1358.8	1087.4
20°	4690.6	4551.3	4295.8	3805.9	3333.5	3026.0	2755.5	2298.1	1884.9	1529.7	1224.9
22.5°	6125.1	5900.4	5380.5	4690.6	3975.9	3550.3	3173.2	2544.0	2041.7	1617.0	1271.6
25°	7572.9	7401.1	6572.8	5541.8	4517.9	3966.2	3478.1	2710.5	2116.6	1637.2	1263.6
27.5°	8690.3	8410.1	7466.3	6122.5	4841.3	4190.1	3619.9	2761.6	2100.8	1587.9	1188.7
30°	9167.0	8812.8	7766.8	6254.7	4843.9	4153.0	3549.4	2660.3	1988.0	1462.8	1047.7
32.5°	8872.7	8463.8	7409.0	5889.0	4512.6	3864.0	3277.1	2440.9	1801.1	1266.3	786.9
35°	7900.7	7493.6	6516.4	5167.3	3983.9	3417.3	2907.0	2154.5	1534.1	938.5	442.4
37.5°	6469.7	6122.5	5423.7	4331.0	3357.3	2897.3	2472.6	1815.2	1142.9	538.4	222.1
40°	4865.9	4621.8	4202.4	3434.9	2717.6	2367.8	2025.9	1390.5	694.4	270.5	126.0
42.5°	3373.2	3214.6	3004.0	2541.3	2096.3	1855.8	1581.7	928.8	356.9	148.9	78.4
45°	1945.7	1846.1	1787.9	1590.5	1417.0	1299.8	1057.4	500.5	180.6	89.0	52.0
47.5°	859.2	793.1	764.9	682.0	634.5	602.7	478.5	213.2	96.9	57.3	43.2
50°	313.7	313.7	314.6	276.7	226.5	203.6	159.5	94.3	54.6	44.9	31.7
52.5°	111.0	109.3	113.7	107.5	94.3	84.6	70.5	47.6	33.5	28.2	17.6
55°	44.9	43.2	44.9	42.3	39.7	37.0	32.6	25.6	21.1	17.6	9.7
57.5°	20.3	20.3	21.1	20.3	20.3	18.5	16.7	19.4	15.0	9.7	6.2
60°	9.7	9.7	10.6	10.6	10.6	9.7	9.7	10.6	8.8	6.2	4.4
62.5°	4.4	4.4	5.3	5.3	5.3	5.3	5.3	6.2	4.4	3.5	2.6
65°	2.6	1.8	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
67.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	2.6	2.6
70°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	2.6
72.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	2.6
75°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	2.6
77.5°	0.0	0.0	0.0	0.9	0.9	0.9	0.9	0.9	1.8	1.8	2.6
80°	0.0	0.0	0.0	0.0	0.9	0.9	0.9	0.9	1.8	1.8	1.8
82.5°	0.0	0.0	0.0	0.0	0.9	0.9	0.9	0.9	1.8	1.8	1.8
85°	0.0	0.0	0.0	0.0	0.9	0.9	0.9	0.9	0.9	1.8	1.8
87.5°	0.0	0.0	0.0	0.0	0.9	0.9	0.9	0.9	0.9	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):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	172.7	172.7	172.7	172.7	172.7	172.7	172.7	172.7	172.7	172.7	172.7
2.5°	196.5	193.9	188.6	185.9	182.4	179.8	178.0	174.5	171.0	168.3	166.5
5°	230.9	221.2	209.7	200.9	193.9	189.5	182.4	176.2	169.2	163.9	159.5
7.5°	281.1	257.3	231.8	214.1	204.4	195.6	183.3	172.7	163.0	156.0	149.8
10°	359.5	308.4	263.5	229.1	212.4	200.0	180.6	165.7	153.3	143.6	137.5
12.5°	489.9	385.1	305.8	247.6	222.1	203.6	176.2	156.0	141.0	131.3	123.4
15°	668.8	497.9	363.9	269.6	233.5	207.1	169.2	144.5	127.8	116.3	109.3
17.5°	837.1	616.0	430.0	296.1	245.0	208.8	159.5	129.5	111.9	101.3	94.3
20°	942.9	692.6	474.1	311.1	248.5	203.6	146.3	113.7	96.0	86.4	79.3
22.5°	967.5	701.4	470.6	297.0	233.5	187.7	127.8	97.8	81.1	72.3	66.1
25°	931.4	652.1	421.2	256.4	199.1	157.7	106.6	79.3	67.0	59.0	54.6
27.5°	840.7	555.1	333.1	193.0	148.9	116.3	81.1	61.7	53.8	47.6	44.9
30°	677.6	390.4	208.8	119.8	95.2	76.7	58.2	47.6	41.4	38.8	36.1
32.5°	410.6	200.9	110.1	71.4	59.9	52.0	42.3	35.2	31.7	30.0	29.1
35°	195.6	105.7	67.9	48.5	42.3	37.0	30.8	26.4	24.7	23.8	23.8
37.5°	111.0	68.7	45.8	32.6	29.1	25.6	22.9	20.3	19.4	19.4	19.4
40°	70.5	44.1	30.0	23.8	21.1	19.4	17.6	15.9	15.9	15.9	15.9
42.5°	45.8	31.7	22.9	17.6	15.9	15.0	13.2	12.3	12.3	12.3	13.2
45°	36.1	26.4	18.5	14.1	12.3	11.5	10.6	9.7	9.7	9.7	10.6
47.5°	30.8	18.5	12.3	9.7	7.9	7.9	7.0	7.0	7.0	7.9	8.8
50°	18.5	11.5	7.9	6.2	5.3	5.3	5.3	5.3	5.3	6.2	7.0
52.5°	10.6	7.0	5.3	4.4	3.5	3.5	3.5	3.5	4.4	5.3	5.3
55°	7.0	5.3	3.5	3.5	2.6	2.6	2.6	3.5	3.5	4.4	5.3
57.5°	4.4	3.5	2.6	2.6	2.6	2.6	2.6	2.6	3.5	4.4	4.4
60°	3.5	2.6	2.6	2.6	2.6	2.6	2.6	2.6	3.5	3.5	4.4
62.5°	2.6	2.6	3.5	2.6	2.6	2.6	2.6	2.6	3.5	3.5	4.4
65°	2.6	2.6	3.5	3.5	2.6	2.6	2.6	2.6	2.6	3.5	4.4
67.5°	2.6	2.6	3.5	3.5	3.5	3.5	2.6	2.6	2.6	3.5	3.5
70°	2.6	3.5	3.5	3.5	3.5	3.5	3.5	2.6	2.6	3.5	3.5
72.5°	2.6	3.5	3.5	3.5	3.5	3.5	3.5	2.6	2.6	3.5	3.5
75°	2.6	2.6	3.5	3.5	3.5	3.5	3.5	2.6	2.6	2.6	3.5
77.5°	2.6	2.6	3.5	3.5	3.5	3.5	3.5	2.6	2.6	2.6	3.5
80°	2.6	2.6	2.6	3.5	2.6	3.5	2.6	2.6	2.6	2.6	2.6
82.5°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
85°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
87.5°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
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°	172.7	172.7	172.7	172.7	172.7	172.7	172.7	172.7	172.7	172.7	172.7
2.5°	163.9	162.1	159.5	158.6	159.5	158.6	154.2	153.3	151.6	151.6	151.6
5°	155.1	152.4	148.9	147.2	147.2	145.4	141.0	140.1	137.5	137.5	136.6
7.5°	144.5	141.0	136.6	134.8	134.8	133.1	128.7	126.9	125.1	125.1	124.2
10°	132.2	127.8	123.4	122.5	121.6	119.0	116.3	115.4	112.8	113.7	112.8
12.5°	118.1	114.6	111.0	109.3	109.3	106.6	104.9	104.0	103.1	103.1	103.1
15°	104.9	100.5	96.9	96.0	96.0	95.2	93.4	93.4	91.6	93.4	93.4
17.5°	89.9	86.4	85.5	83.7	84.6	83.7	82.0	82.8	82.8	83.7	84.6
20°	75.8	73.1	72.3	71.4	72.3	72.3	71.4	72.3	73.1	75.8	77.5
22.5°	63.4	61.7	61.7	60.8	61.7	62.6	61.7	63.4	65.2	67.0	69.6
25°	52.9	52.0	52.0	52.0	52.9	53.8	54.6	56.4	57.3	59.9	61.7
27.5°	43.2	43.2	43.2	44.1	44.9	45.8	46.7	49.3	50.2	52.9	54.6
30°	36.1	35.2	36.1	37.0	37.9	39.7	40.5	42.3	43.2	45.8	47.6
32.5°	29.1	30.0	30.8	31.7	32.6	33.5	34.4	36.1	37.9	39.7	41.4
35°	24.7	24.7	25.6	26.4	27.3	29.1	30.0	30.8	32.6	34.4	35.2
37.5°	20.3	21.1	22.0	22.9	23.8	24.7	25.6	26.4	27.3	29.1	30.8
40°	16.7	17.6	18.5	19.4	19.4	21.1	21.1	22.9	23.8	25.6	27.3
42.5°	14.1	15.0	15.9	16.7	16.7	17.6	18.5	19.4	20.3	22.0	23.8
45°	11.5	12.3	13.2	14.1	14.1	15.0	15.9	16.7	17.6	19.4	20.3
47.5°	9.7	10.6	11.5	12.3	12.3	13.2	14.1	15.0	15.0	16.7	17.6
50°	7.9	8.8	9.7	10.6	10.6	11.5	12.3	13.2	13.2	14.1	15.0
52.5°	6.2	7.0	8.8	8.8	9.7	10.6	10.6	11.5	11.5	12.3	13.2
55°	6.2	7.0	7.9	7.9	8.8	9.7	9.7	10.6	10.6	10.6	11.5
57.5°	5.3	6.2	7.0	7.9	7.9	8.8	8.8	8.8	8.8	9.7	9.7
60°	5.3	6.2	6.2	7.0	7.0	7.9	7.9	7.9	7.9	8.8	8.8
62.5°	5.3	5.3	6.2	6.2	7.0	7.0	7.0	7.9	7.9	7.9	7.9
65°	4.4	5.3	6.2	6.2	6.2	7.0	7.0	7.0	7.0	7.0	7.0
67.5°	4.4	5.3	5.3	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2
70°	4.4	4.4	5.3	5.3	5.3	6.2	6.2	6.2	5.3	6.2	5.3
72.5°	3.5	4.4	4.4	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
75°	3.5	4.4	4.4	4.4	4.4	5.3	5.3	4.4	4.4	4.4	4.4
77.5°	3.5	3.5	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	3.5
80°	3.5	3.5	3.5	3.5	4.4	4.4	3.5	3.5	3.5	3.5	3.5
82.5°	2.6	3.5	3.5	3.5	3.5	3.5	3.5	3.5	2.6	2.6	2.6
85°	2.6	2.6	3.5	3.5	3.5	3.5	2.6	2.6	2.6	2.6	1.8
87.5°	2.6	2.6	2.6	3.5	2.6	2.6	2.6	2.6	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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CATALOG NUMBER: LDSQA4A18940D010TE LAR15SP 4LSQA1H-LSF-20 30°

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	172.7	172.7	172.7	172.7	172.7	172.7	172.7	172.7
2.5°	148.9	148.0	148.9	148.0	148.0	148.9	146.3	148.0
5°	134.8	133.1	133.9	133.1	132.2	133.1	131.3	133.1
7.5°	122.5	121.6	121.6	121.6	120.7	121.6	119.8	121.6
10°	111.9	111.0	111.0	111.0	111.0	111.9	110.1	111.9
12.5°	101.3	101.3	102.2	101.3	102.2	103.1	101.3	103.1
15°	92.5	93.4	94.3	94.3	95.2	96.0	95.2	96.9
17.5°	85.5	86.4	88.1	88.1	89.0	90.8	89.9	91.6
20°	78.4	79.3	81.1	81.1	82.0	83.7	82.8	84.6
22.5°	70.5	72.3	73.1	74.0	74.9	76.7	75.8	77.5
25°	62.6	65.2	66.1	67.0	67.9	69.6	69.6	71.4
27.5°	56.4	58.2	59.0	59.9	61.7	63.4	63.4	64.3
30°	49.3	51.1	52.9	53.8	54.6	56.4	56.4	58.2
32.5°	43.2	44.9	45.8	46.7	48.5	50.2	51.1	52.0
35°	37.0	39.7	40.5	42.3	43.2	45.8	45.8	46.7
37.5°	32.6	34.4	36.1	37.0	38.8	40.5	40.5	42.3
40°	29.1	30.8	31.7	32.6	34.4	36.1	36.1	37.0
42.5°	24.7	27.3	28.2	29.1	30.0	31.7	32.6	33.5
45°	22.0	22.9	23.8	24.7	25.6	27.3	27.3	28.2
47.5°	18.5	19.4	20.3	21.1	22.0	22.9	23.8	24.7
50°	15.9	16.7	17.6	17.6	18.5	20.3	20.3	21.1
52.5°	13.2	14.1	15.0	15.0	15.9	17.6	17.6	18.5
55°	11.5	12.3	13.2	13.2	14.1	15.0	15.0	15.9
57.5°	10.6	10.6	11.5	11.5	12.3	12.3	13.2	13.2
60°	8.8	9.7	9.7	9.7	10.6	10.6	10.6	10.6
62.5°	7.9	7.9	7.9	7.9	7.9	7.9	7.9	8.8
65°	7.0	7.0	7.0	7.0	7.0	7.0	6.2	7.0
67.5°	6.2	6.2	6.2	6.2	5.3	5.3	5.3	5.3
70°	5.3	5.3	5.3	5.3	5.3	4.4	4.4	4.4
72.5°	4.4	4.4	4.4	4.4	4.4	3.5	3.5	3.5
75°	4.4	4.4	3.5	3.5	3.5	3.5	3.5	2.6
77.5°	3.5	3.5	3.5	3.5	2.6	2.6	2.6	2.6
80°	2.6	2.6	2.6	2.6	2.6	2.6	1.8	1.8
82.5°	2.6	1.8	1.8	1.8	1.8	1.8	1.8	1.8
85°	1.8	1.8	1.8	1.8	0.9	0.9	0.9	0.9
87.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
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)