

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: P182665

Luminaire Tested: **LDSQA4A28840D010TE LAR15SP 4LSQA1H-LSF-20 30°**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P182665
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: LDSQA4A28840D010TE 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: 2608.4 lumens
Efficiency: N/A
Efficacy: 58.6 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

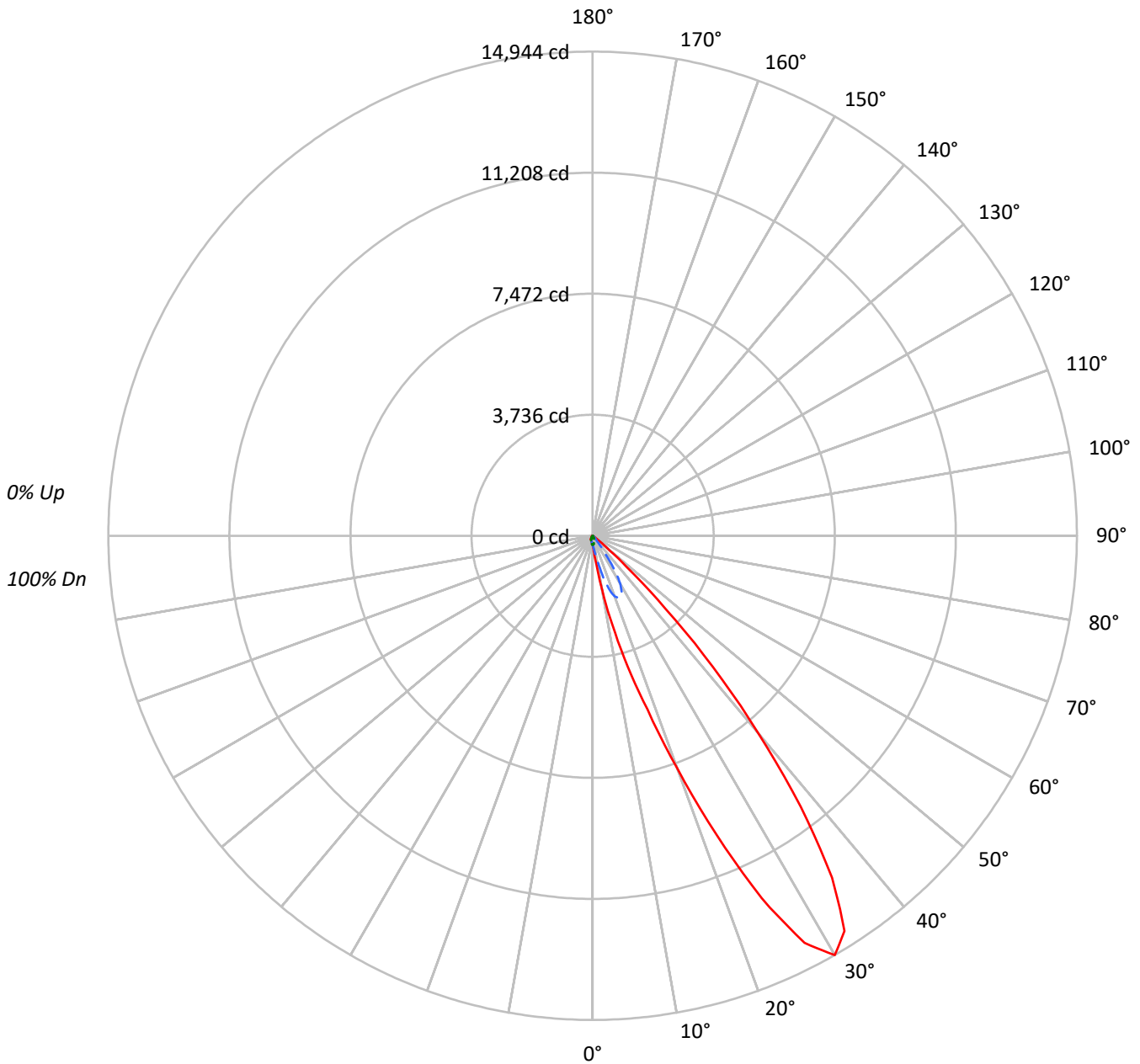
Input Watts (W): 44.49
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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°	27280	27280	27280
5°	52250	25984	21093
10°	170849	23038	17943
15°	418392	19016	15846
20°	788308	14515	14216
25°	1319613	10283	12442
30°	1671679	7070	10605
35°	1523205	4589	9000
40°	1003159	3275	7626
45°	434545	2165	6302
50°	77074	1522	5200
55°	12380	1216	4374
60°	3061	1104	3333
65°	986	1307	2636
70°	821	1614	2039
75°	1085	1609	1609
80°	0	2399	1618
85°	0	4780	1556



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	36.1	1.4
10°-20°	290.2	11.1
20°-30°	874.0	33.5
30°-40°	994.7	38.1
40°-50°	367.8	14.1
50°-60°	29.2	1.1
60°-70°	7.9	0.3
70°-80°	5.5	0.2
80°-90°	3.1	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°	1200.2	46.0
0°-40°	2194.9	84.1
0°-60°	2591.9	99.4
0°-90°	2608.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2608.4	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	282	282	282	282	282	
5°	537	395	267	224	217	87
15°	4172	1409	190	149	158	1308
25°	12346	2060	96	93	116	5635
35°	12880	721	39	53	76	7658
45°	3172	85	16	29	46	2685
55°	73	16	7	17	26	120
65°	4	4	6	12	12	6
75°	3	4	4	7	4	2
85°	0	3	4	4	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°	281.6	281.6	281.6	281.6	281.6	281.6	281.6	281.6	281.6	281.6	281.6
2.5°	362.0	364.9	362.0	356.3	356.3	349.1	346.2	343.3	336.1	331.8	326.1
5°	537.3	528.6	521.5	504.2	498.5	482.7	471.2	455.4	433.8	415.2	395.0
7.5°	919.4	906.4	879.2	827.4	795.8	757.0	726.9	676.6	612.0	558.8	505.7
10°	1736.8	1680.7	1616.1	1499.7	1415.0	1324.5	1252.6	1117.6	955.3	821.7	692.4
12.5°	2798.3	2802.7	2682.0	2485.2	2328.6	2169.1	2045.6	1795.6	1508.3	1257.0	1008.4
15°	4171.7	4092.6	3967.7	3666.0	3352.8	3121.6	2924.8	2545.5	2139.0	1771.2	1409.2
17.5°	5618.2	5651.3	5359.7	4866.9	4371.3	4025.1	3727.8	3153.2	2670.5	2215.1	1772.7
20°	7646.6	7419.6	7003.0	6204.3	5434.4	4933.0	4492.0	3746.4	3072.7	2493.8	1996.8
22.5°	9985.2	9618.9	8771.4	7646.6	6481.6	5787.7	5172.9	4147.2	3328.4	2636.0	2072.9
25°	12345.5	12065.3	10715.0	9034.3	7365.0	6465.8	5669.9	4418.7	3450.5	2669.1	2060.0
27.5°	14167.0	13710.1	12171.6	9980.9	7892.2	6830.7	5901.2	4502.1	3424.7	2588.6	1937.9
30°	14944.1	14366.6	12661.5	10196.4	7896.5	6770.3	5786.3	4336.9	3240.8	2384.6	1708.0
32.5°	14464.3	13797.8	12078.3	9600.3	7356.4	6299.1	5342.4	3979.2	2936.2	2064.3	1282.8
35°	12879.8	12216.2	10623.1	8423.8	6494.5	5570.8	4739.1	3512.3	2501.0	1529.9	721.1
37.5°	10546.9	9980.9	8841.8	7060.5	5473.1	4723.3	4030.9	2959.2	1863.2	877.7	362.0
40°	7932.5	7534.5	6850.8	5599.6	4430.2	3859.9	3302.6	2266.8	1132.0	441.0	205.4
42.5°	5499.0	5240.4	4897.1	4142.9	3417.5	3025.3	2578.6	1514.1	581.8	242.8	127.9
45°	3171.8	3009.5	2914.7	2592.9	2309.9	2118.9	1723.8	815.9	294.5	145.1	84.8
47.5°	1400.6	1292.9	1246.9	1111.9	1034.3	982.6	780.0	347.6	158.0	93.4	70.4
50°	511.4	511.4	512.8	451.1	369.2	331.8	260.0	153.7	89.1	73.3	51.7
52.5°	181.0	178.1	185.3	175.3	153.7	137.9	114.9	77.6	54.6	46.0	28.7
55°	73.3	70.4	73.3	69.0	64.6	60.3	53.2	41.7	34.5	28.7	15.8
57.5°	33.0	33.0	34.5	33.0	33.0	30.2	27.3	31.6	24.4	15.8	10.1
60°	15.8	15.8	17.2	17.2	17.2	15.8	15.8	17.2	14.4	10.1	7.2
62.5°	7.2	7.2	8.6	8.6	8.6	8.6	8.6	10.1	7.2	5.7	4.3
65°	4.3	2.9	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
67.5°	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	4.3	4.3
70°	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	4.3
72.5°	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	4.3
75°	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	4.3
77.5°	0.0	0.0	0.0	1.4	1.4	1.4	1.4	1.4	2.9	2.9	4.3
80°	0.0	0.0	0.0	0.0	1.4	1.4	1.4	1.4	2.9	2.9	2.9
82.5°	0.0	0.0	0.0	0.0	1.4	1.4	1.4	1.4	2.9	2.9	2.9
85°	0.0	0.0	0.0	0.0	1.4	1.4	1.4	1.4	1.4	2.9	2.9
87.5°	0.0	0.0	0.0	0.0	1.4	1.4	1.4	1.4	1.4	2.9	2.9
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):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	281.6	281.6	281.6	281.6	281.6	281.6	281.6	281.6	281.6	281.6	281.6
2.5°	320.3	316.0	307.4	303.1	297.4	293.1	290.2	284.4	278.7	274.4	271.5
5°	376.4	360.6	341.9	327.5	316.0	308.9	297.4	287.3	275.8	267.2	260.0
7.5°	458.2	419.5	377.8	349.1	333.3	318.9	298.8	281.6	265.8	254.3	244.2
10°	586.1	502.8	429.5	373.5	346.2	326.1	294.5	270.1	250.0	234.2	224.1
12.5°	798.7	627.8	498.5	403.7	362.0	331.8	287.3	254.3	229.8	214.0	201.1
15°	1090.3	811.6	593.3	439.6	380.7	337.6	275.8	235.6	208.3	189.6	178.1
17.5°	1364.7	1004.1	701.0	482.7	399.4	340.5	260.0	211.2	182.4	165.2	153.7
20°	1537.1	1129.1	772.8	507.1	405.1	331.8	238.5	185.3	156.6	140.8	129.3
22.5°	1577.3	1143.5	767.1	484.1	380.7	306.0	208.3	159.5	132.2	117.8	107.7
25°	1518.4	1063.0	686.7	418.0	324.7	257.1	173.8	129.3	109.2	96.2	89.1
27.5°	1370.4	905.0	543.0	314.6	242.8	189.6	132.2	100.6	87.6	77.6	73.3
30°	1104.7	636.4	340.5	195.4	155.1	125.0	94.8	77.6	67.5	63.2	58.9
32.5°	669.4	327.5	179.6	116.4	97.7	84.8	69.0	57.5	51.7	48.8	47.4
35°	318.9	172.4	110.6	79.0	69.0	60.3	50.3	43.1	40.2	38.8	38.8
37.5°	181.0	112.0	74.7	53.2	47.4	41.7	37.3	33.0	31.6	31.6	31.6
40°	114.9	71.8	48.8	38.8	34.5	31.6	28.7	25.9	25.9	25.9	25.9
42.5°	74.7	51.7	37.3	28.7	25.9	24.4	21.5	20.1	20.1	20.1	21.5
45°	58.9	43.1	30.2	23.0	20.1	18.7	17.2	15.8	15.8	15.8	17.2
47.5°	50.3	30.2	20.1	15.8	12.9	12.9	11.5	11.5	11.5	12.9	14.4
50°	30.2	18.7	12.9	10.1	8.6	8.6	8.6	8.6	8.6	10.1	11.5
52.5°	17.2	11.5	8.6	7.2	5.7	5.7	5.7	5.7	7.2	8.6	8.6
55°	11.5	8.6	5.7	5.7	4.3	4.3	4.3	5.7	5.7	7.2	8.6
57.5°	7.2	5.7	4.3	4.3	4.3	4.3	4.3	4.3	5.7	7.2	7.2
60°	5.7	4.3	4.3	4.3	4.3	4.3	4.3	4.3	5.7	5.7	7.2
62.5°	4.3	4.3	5.7	4.3	4.3	4.3	4.3	4.3	5.7	5.7	7.2
65°	4.3	4.3	5.7	5.7	4.3	4.3	4.3	4.3	4.3	5.7	7.2
67.5°	4.3	4.3	5.7	5.7	5.7	5.7	4.3	4.3	4.3	5.7	5.7
70°	4.3	5.7	5.7	5.7	5.7	5.7	5.7	4.3	4.3	5.7	5.7
72.5°	4.3	5.7	5.7	5.7	5.7	5.7	5.7	4.3	4.3	5.7	5.7
75°	4.3	4.3	5.7	5.7	5.7	5.7	5.7	4.3	4.3	4.3	5.7
77.5°	4.3	4.3	5.7	5.7	5.7	5.7	5.7	4.3	4.3	4.3	5.7
80°	4.3	4.3	4.3	5.7	4.3	5.7	4.3	4.3	4.3	4.3	4.3
82.5°	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
85°	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
87.5°	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
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):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	281.6	281.6	281.6	281.6	281.6	281.6	281.6	281.6	281.6	281.6	281.6
2.5°	267.2	264.3	260.0	258.6	260.0	258.6	251.4	250.0	247.1	247.1	247.1
5°	252.8	248.5	242.8	239.9	239.9	237.0	229.8	228.4	224.1	224.1	222.7
7.5°	235.6	229.8	222.7	219.8	219.8	216.9	209.7	206.9	204.0	204.0	202.5
10°	215.5	208.3	201.1	199.7	198.2	193.9	189.6	188.2	183.9	185.3	183.9
12.5°	192.5	186.7	181.0	178.1	178.1	173.8	170.9	169.5	168.1	168.1	168.1
15°	170.9	163.8	158.0	156.6	156.6	155.1	152.3	152.3	149.4	152.3	152.3
17.5°	146.5	140.8	139.3	136.5	137.9	136.5	133.6	135.0	135.0	136.5	137.9
20°	123.5	119.2	117.8	116.4	117.8	117.8	116.4	117.8	119.2	123.5	126.4
22.5°	103.4	100.6	100.6	99.1	100.6	102.0	100.6	103.4	106.3	109.2	113.5
25°	86.2	84.8	84.8	84.8	86.2	87.6	89.1	91.9	93.4	97.7	100.6
27.5°	70.4	70.4	70.4	71.8	73.3	74.7	76.1	80.4	81.9	86.2	89.1
30°	58.9	57.5	58.9	60.3	61.8	64.6	66.1	69.0	70.4	74.7	77.6
32.5°	47.4	48.8	50.3	51.7	53.2	54.6	56.0	58.9	61.8	64.6	67.5
35°	40.2	40.2	41.7	43.1	44.5	47.4	48.8	50.3	53.2	56.0	57.5
37.5°	33.0	34.5	35.9	37.3	38.8	40.2	41.7	43.1	44.5	47.4	50.3
40°	27.3	28.7	30.2	31.6	31.6	34.5	34.5	37.3	38.8	41.7	44.5
42.5°	23.0	24.4	25.9	27.3	27.3	28.7	30.2	31.6	33.0	35.9	38.8
45°	18.7	20.1	21.5	23.0	23.0	24.4	25.9	27.3	28.7	31.6	33.0
47.5°	15.8	17.2	18.7	20.1	20.1	21.5	23.0	24.4	24.4	27.3	28.7
50°	12.9	14.4	15.8	17.2	17.2	18.7	20.1	21.5	21.5	23.0	24.4
52.5°	10.1	11.5	14.4	14.4	15.8	17.2	17.2	18.7	18.7	20.1	21.5
55°	10.1	11.5	12.9	12.9	14.4	15.8	15.8	17.2	17.2	17.2	18.7
57.5°	8.6	10.1	11.5	12.9	12.9	14.4	14.4	14.4	14.4	15.8	15.8
60°	8.6	10.1	10.1	11.5	11.5	12.9	12.9	12.9	12.9	14.4	14.4
62.5°	8.6	8.6	10.1	10.1	11.5	11.5	11.5	12.9	12.9	12.9	12.9
65°	7.2	8.6	10.1	10.1	10.1	11.5	11.5	11.5	11.5	11.5	11.5
67.5°	7.2	8.6	8.6	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1
70°	7.2	7.2	8.6	8.6	8.6	10.1	10.1	10.1	8.6	10.1	8.6
72.5°	5.7	7.2	7.2	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6
75°	5.7	7.2	7.2	7.2	7.2	8.6	8.6	7.2	7.2	7.2	7.2
77.5°	5.7	5.7	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	5.7
80°	5.7	5.7	5.7	5.7	7.2	7.2	5.7	5.7	5.7	5.7	5.7
82.5°	4.3	5.7	5.7	5.7	5.7	5.7	5.7	5.7	4.3	4.3	4.3
85°	4.3	4.3	5.7	5.7	5.7	5.7	4.3	4.3	4.3	4.3	2.9
87.5°	4.3	4.3	4.3	5.7	4.3	4.3	4.3	4.3	2.9	2.9	2.9
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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CATALOG NUMBER: LDSQA4A28840D010TE LAR15SP 4LSQA1H-LSF-20 30°

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	281.6	281.6	281.6	281.6	281.6	281.6	281.6	281.6
2.5°	242.8	241.3	242.8	241.3	241.3	242.8	238.5	241.3
5°	219.8	216.9	218.4	216.9	215.5	216.9	214.0	216.9
7.5°	199.7	198.2	198.2	198.2	196.8	198.2	195.4	198.2
10°	182.4	181.0	181.0	181.0	181.0	182.4	179.6	182.4
12.5°	165.2	165.2	166.6	165.2	166.6	168.1	165.2	168.1
15°	150.8	152.3	153.7	153.7	155.1	156.6	155.1	158.0
17.5°	139.3	140.8	143.7	143.7	145.1	148.0	146.5	149.4
20°	127.9	129.3	132.2	132.2	133.6	136.5	135.0	137.9
22.5°	114.9	117.8	119.2	120.7	122.1	125.0	123.5	126.4
25°	102.0	106.3	107.7	109.2	110.6	113.5	113.5	116.4
27.5°	91.9	94.8	96.2	97.7	100.6	103.4	103.4	104.9
30°	80.4	83.3	86.2	87.6	89.1	91.9	91.9	94.8
32.5°	70.4	73.3	74.7	76.1	79.0	81.9	83.3	84.8
35°	60.3	64.6	66.1	69.0	70.4	74.7	74.7	76.1
37.5°	53.2	56.0	58.9	60.3	63.2	66.1	66.1	69.0
40°	47.4	50.3	51.7	53.2	56.0	58.9	58.9	60.3
42.5°	40.2	44.5	46.0	47.4	48.8	51.7	53.2	54.6
45°	35.9	37.3	38.8	40.2	41.7	44.5	44.5	46.0
47.5°	30.2	31.6	33.0	34.5	35.9	37.3	38.8	40.2
50°	25.9	27.3	28.7	28.7	30.2	33.0	33.0	34.5
52.5°	21.5	23.0	24.4	24.4	25.9	28.7	28.7	30.2
55°	18.7	20.1	21.5	21.5	23.0	24.4	24.4	25.9
57.5°	17.2	17.2	18.7	18.7	20.1	20.1	21.5	21.5
60°	14.4	15.8	15.8	15.8	17.2	17.2	17.2	17.2
62.5°	12.9	12.9	12.9	12.9	12.9	12.9	12.9	14.4
65°	11.5	11.5	11.5	11.5	11.5	11.5	10.1	11.5
67.5°	10.1	10.1	10.1	10.1	8.6	8.6	8.6	8.6
70°	8.6	8.6	8.6	8.6	8.6	7.2	7.2	7.2
72.5°	7.2	7.2	7.2	7.2	7.2	5.7	5.7	5.7
75°	7.2	7.2	5.7	5.7	5.7	5.7	5.7	4.3
77.5°	5.7	5.7	5.7	5.7	4.3	4.3	4.3	4.3
80°	4.3	4.3	4.3	4.3	4.3	4.3	2.9	2.9
82.5°	4.3	2.9	2.9	2.9	2.9	2.9	2.9	2.9
85°	2.9	2.9	2.9	2.9	1.4	1.4	1.4	1.4
87.5°	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
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)