

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: P182668

Luminaire Tested: **LDSQA4A28935D010TE LAR15SP 4LSQA1H-LSF-20 30°**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P182668
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: LDSQA4A28935D010TE 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 / 3500K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2029.8 lumens
Efficiency: N/A
Efficacy: 45.6 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

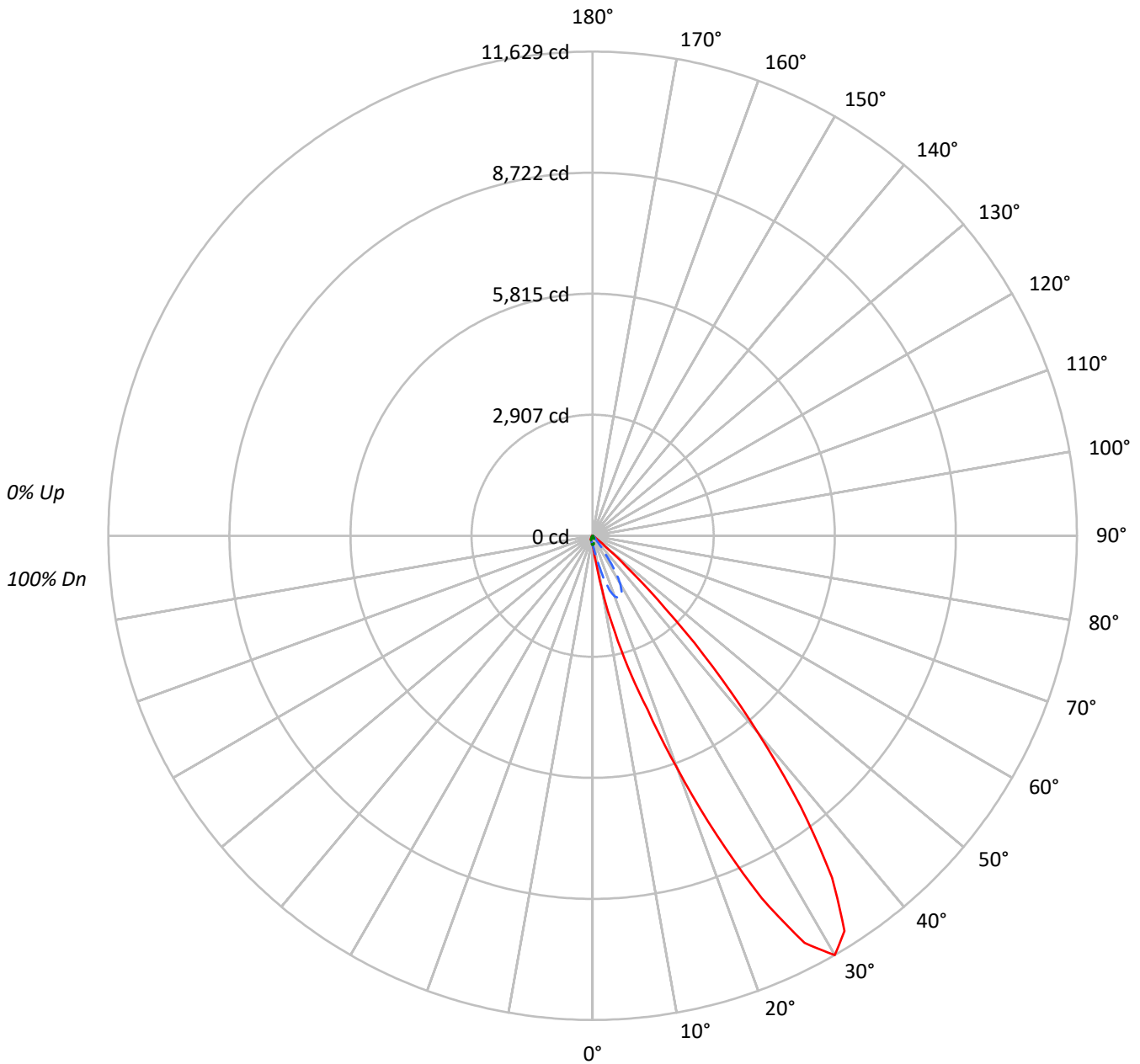
Input Watts (W): 44.49
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20									20									20									20									
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	104	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	90	82	76	71	80	75	70	78	73	70	76	72	69	67																			
5	86	76	69	64	85	75	69	64	73	68	63	72	67	63	70	66	62	60																			
6	81	70	63	58	79	69	62	57	67	61	57	66	61	57	64	60	56	54																			
7	75	64	57	52	74	63	57	52	62	56	51	61	55	51	59	55	51	49																			
8	70	59	52	47	69	58	51	47	57	51	46	56	50	46	55	50	46	44																			
9	66	54	47	42	65	54	47	42	53	46	42	52	46	42	51	46	42	40																			
10	62	50	43	38	60	50	43	38	49	42	38	48	42	38	47	42	38	36																			

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	21225	21225	21225
5°	40658	20217	16415
10°	132937	17923	13969
15°	325561	14803	12336
20°	613412	11289	11062
25°	1026841	8006	9674
30°	1300811	5504	8255
35°	1185280	3572	7001
40°	780599	2542	5931
45°	338136	1685	4905
50°	59968	1176	4039
55°	9627	946	3395
60°	2383	872	2596
65°	779	1032	2040
70°	623	1275	1586
75°	823	1273	1273
80°	0	1897	1227
85°	0	3779	1223



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	28.1	1.4
10°-20°	225.8	11.1
20°-30°	680.1	33.5
30°-40°	774.0	38.1
40°-50°	286.2	14.1
50°-60°	22.7	1.1
60°-70°	6.1	0.3
70°-80°	4.3	0.2
80°-90°	2.5	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°	933.9	46.0
0°-40°	1708.0	84.1
0°-60°	2016.9	99.4
0°-90°	2029.8	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2029.8	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	219	219	219	219	219	
5°	418	307	208	174	169	68
15°	3246	1097	148	116	123	1018
25°	9606	1603	75	73	90	4385
35°	10022	561	30	41	59	5959
45°	2468	66	12	22	36	2090
55°	57	12	6	13	20	93
65°	3	3	4	9	9	5
75°	2	3	3	6	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°	219.1	219.1	219.1	219.1	219.1	219.1	219.1	219.1	219.1	219.1	219.1
2.5°	281.7	283.9	281.7	277.2	277.2	271.6	269.4	267.2	261.6	258.2	253.7
5°	418.1	411.4	405.8	392.4	387.9	375.6	366.6	354.3	337.6	323.0	307.4
7.5°	715.4	705.3	684.1	643.9	619.3	589.1	565.6	526.5	476.2	434.8	393.5
10°	1351.4	1307.8	1257.5	1167.0	1101.1	1030.6	974.7	869.7	743.3	639.4	538.8
12.5°	2177.5	2180.9	2087.0	1933.8	1812.0	1687.9	1591.8	1397.3	1173.7	978.1	784.7
15°	3246.1	3184.7	3087.4	2852.7	2609.0	2429.0	2275.9	1980.8	1664.4	1378.3	1096.6
17.5°	4371.8	4397.5	4170.6	3787.2	3401.5	3132.1	2900.7	2453.6	2078.0	1723.7	1379.4
20°	5950.1	5773.5	5449.4	4827.9	4228.7	3838.6	3495.4	2915.3	2391.0	1940.5	1553.8
22.5°	7770.0	7484.9	6825.4	5950.1	5043.6	4503.7	4025.3	3227.1	2590.0	2051.2	1613.0
25°	9606.5	9388.6	8337.8	7030.0	5731.1	5031.3	4412.0	3438.4	2685.0	2076.9	1603.0
27.5°	11023.9	10668.5	9471.3	7766.6	6141.3	5315.2	4592.0	3503.2	2664.9	2014.3	1507.9
30°	11628.7	11179.3	9852.4	7934.3	6144.6	5268.3	4502.6	3374.7	2521.8	1855.6	1329.1
32.5°	11255.3	10736.6	9398.6	7470.4	5724.3	4901.6	4157.2	3096.4	2284.8	1606.3	998.2
35°	10022.4	9505.9	8266.3	6554.9	5053.7	4334.9	3687.7	2733.1	1946.1	1190.5	561.1
37.5°	8207.0	7766.6	6880.2	5494.1	4258.9	3675.4	3136.6	2302.7	1449.8	683.0	281.7
40°	6172.6	5863.0	5330.9	4357.3	3447.3	3003.6	2569.9	1763.9	880.8	343.2	159.8
42.5°	4279.0	4077.8	3810.6	3223.8	2659.3	2354.1	2006.5	1178.2	452.7	188.9	99.5
45°	2468.1	2341.8	2268.1	2017.7	1797.5	1648.8	1341.4	634.9	229.2	112.9	66.0
47.5°	1089.9	1006.0	970.3	865.2	804.8	764.6	607.0	270.5	123.0	72.7	54.8
50°	397.9	397.9	399.1	351.0	287.3	258.2	202.3	119.6	69.3	57.0	40.2
52.5°	140.8	138.6	144.2	136.4	119.6	107.3	89.4	60.4	42.5	35.8	22.4
55°	57.0	54.8	57.0	53.7	50.3	46.9	41.4	32.4	26.8	22.4	12.3
57.5°	25.7	25.7	26.8	25.7	25.7	23.5	21.2	24.6	19.0	12.3	7.8
60°	12.3	12.3	13.4	13.4	13.4	12.3	12.3	13.4	11.2	7.8	5.6
62.5°	5.6	5.6	6.7	6.7	6.7	6.7	6.7	7.8	5.6	4.5	3.4
65°	3.4	2.2	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
67.5°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	3.4	3.4
70°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	3.4
72.5°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	3.4
75°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	3.4
77.5°	0.0	0.0	0.0	1.1	1.1	1.1	1.1	1.1	2.2	2.2	3.4
80°	0.0	0.0	0.0	0.0	1.1	1.1	1.1	1.1	2.2	2.2	2.2
82.5°	0.0	0.0	0.0	0.0	1.1	1.1	1.1	1.1	2.2	2.2	2.2
85°	0.0	0.0	0.0	0.0	1.1	1.1	1.1	1.1	1.1	2.2	2.2
87.5°	0.0	0.0	0.0	0.0	1.1	1.1	1.1	1.1	1.1	2.2	2.2
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):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	219.1	219.1	219.1	219.1	219.1	219.1	219.1	219.1	219.1	219.1	219.1
2.5°	249.3	245.9	239.2	235.9	231.4	228.0	225.8	221.3	216.9	213.5	211.3
5°	292.9	280.6	266.0	254.9	245.9	240.3	231.4	223.6	214.6	207.9	202.3
7.5°	356.6	326.4	294.0	271.6	259.3	248.2	232.5	219.1	206.8	197.9	190.0
10°	456.1	391.2	334.2	290.6	269.4	253.7	229.2	210.1	194.5	182.2	174.4
12.5°	621.5	488.5	387.9	314.1	281.7	258.2	223.6	197.9	178.9	166.6	156.5
15°	848.4	631.6	461.7	342.1	296.2	262.7	214.6	183.3	162.1	147.6	138.6
17.5°	1061.9	781.4	545.5	375.6	310.8	264.9	202.3	164.3	142.0	128.5	119.6
20°	1196.1	878.6	601.4	394.6	315.2	258.2	185.6	144.2	121.8	109.5	100.6
22.5°	1227.4	889.8	596.9	376.7	296.2	238.1	162.1	124.1	102.8	91.7	83.8
25°	1181.5	827.2	534.3	325.3	252.6	200.1	135.3	100.6	85.0	74.9	69.3
27.5°	1066.4	704.2	422.5	244.8	188.9	147.6	102.8	78.2	68.2	60.4	57.0
30°	859.6	495.2	264.9	152.0	120.7	97.3	73.8	60.4	52.5	49.2	45.8
32.5°	520.9	254.9	139.7	90.5	76.0	66.0	53.7	44.7	40.2	38.0	36.9
35°	248.2	134.1	86.1	61.5	53.7	46.9	39.1	33.5	31.3	30.2	30.2
37.5°	140.8	87.2	58.1	41.4	36.9	32.4	29.1	25.7	24.6	24.6	24.6
40°	89.4	55.9	38.0	30.2	26.8	24.6	22.4	20.1	20.1	20.1	20.1
42.5°	58.1	40.2	29.1	22.4	20.1	19.0	16.8	15.6	15.6	15.6	16.8
45°	45.8	33.5	23.5	17.9	15.6	14.5	13.4	12.3	12.3	12.3	13.4
47.5°	39.1	23.5	15.6	12.3	10.1	10.1	8.9	8.9	8.9	10.1	11.2
50°	23.5	14.5	10.1	7.8	6.7	6.7	6.7	6.7	6.7	7.8	8.9
52.5°	13.4	8.9	6.7	5.6	4.5	4.5	4.5	4.5	5.6	6.7	6.7
55°	8.9	6.7	4.5	4.5	3.4	3.4	3.4	4.5	4.5	5.6	6.7
57.5°	5.6	4.5	3.4	3.4	3.4	3.4	3.4	3.4	4.5	5.6	5.6
60°	4.5	3.4	3.4	3.4	3.4	3.4	3.4	3.4	4.5	4.5	5.6
62.5°	3.4	3.4	4.5	3.4	3.4	3.4	3.4	3.4	4.5	4.5	5.6
65°	3.4	3.4	4.5	4.5	3.4	3.4	3.4	3.4	3.4	4.5	5.6
67.5°	3.4	3.4	4.5	4.5	4.5	4.5	3.4	3.4	3.4	4.5	4.5
70°	3.4	4.5	4.5	4.5	4.5	4.5	4.5	3.4	3.4	4.5	4.5
72.5°	3.4	4.5	4.5	4.5	4.5	4.5	4.5	3.4	3.4	4.5	4.5
75°	3.4	3.4	4.5	4.5	4.5	4.5	4.5	3.4	3.4	3.4	4.5
77.5°	3.4	3.4	4.5	4.5	4.5	4.5	4.5	3.4	3.4	3.4	4.5
80°	3.4	3.4	3.4	4.5	3.4	4.5	3.4	3.4	3.4	3.4	3.4
82.5°	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
85°	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
87.5°	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
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°	219.1	219.1	219.1	219.1	219.1	219.1	219.1	219.1	219.1	219.1	219.1
2.5°	207.9	205.7	202.3	201.2	202.3	201.2	195.6	194.5	192.3	192.3	192.3
5°	196.7	193.4	188.9	186.7	186.7	184.4	178.9	177.7	174.4	174.4	173.3
7.5°	183.3	178.9	173.3	171.0	171.0	168.8	163.2	161.0	158.7	158.7	157.6
10°	167.7	162.1	156.5	155.4	154.3	150.9	147.6	146.4	143.1	144.2	143.1
12.5°	149.8	145.3	140.8	138.6	138.6	135.3	133.0	131.9	130.8	130.8	130.8
15°	133.0	127.4	123.0	121.8	121.8	120.7	118.5	118.5	116.3	118.5	118.5
17.5°	114.0	109.5	108.4	106.2	107.3	106.2	104.0	105.1	105.1	106.2	107.3
20°	96.1	92.8	91.7	90.5	91.7	91.7	90.5	91.7	92.8	96.1	98.4
22.5°	80.5	78.2	78.2	77.1	78.2	79.4	78.2	80.5	82.7	85.0	88.3
25°	67.1	66.0	66.0	66.0	67.1	68.2	69.3	71.5	72.7	76.0	78.2
27.5°	54.8	54.8	54.8	55.9	57.0	58.1	59.2	62.6	63.7	67.1	69.3
30°	45.8	44.7	45.8	46.9	48.1	50.3	51.4	53.7	54.8	58.1	60.4
32.5°	36.9	38.0	39.1	40.2	41.4	42.5	43.6	45.8	48.1	50.3	52.5
35°	31.3	31.3	32.4	33.5	34.7	36.9	38.0	39.1	41.4	43.6	44.7
37.5°	25.7	26.8	27.9	29.1	30.2	31.3	32.4	33.5	34.7	36.9	39.1
40°	21.2	22.4	23.5	24.6	24.6	26.8	26.8	29.1	30.2	32.4	34.7
42.5°	17.9	19.0	20.1	21.2	21.2	22.4	23.5	24.6	25.7	27.9	30.2
45°	14.5	15.6	16.8	17.9	17.9	19.0	20.1	21.2	22.4	24.6	25.7
47.5°	12.3	13.4	14.5	15.6	15.6	16.8	17.9	19.0	19.0	21.2	22.4
50°	10.1	11.2	12.3	13.4	13.4	14.5	15.6	16.8	16.8	17.9	19.0
52.5°	7.8	8.9	11.2	11.2	12.3	13.4	13.4	14.5	14.5	15.6	16.8
55°	7.8	8.9	10.1	10.1	11.2	12.3	12.3	13.4	13.4	13.4	14.5
57.5°	6.7	7.8	8.9	10.1	10.1	11.2	11.2	11.2	11.2	12.3	12.3
60°	6.7	7.8	7.8	8.9	8.9	10.1	10.1	10.1	10.1	11.2	11.2
62.5°	6.7	6.7	7.8	7.8	8.9	8.9	8.9	10.1	10.1	10.1	10.1
65°	5.6	6.7	7.8	7.8	7.8	8.9	8.9	8.9	8.9	8.9	8.9
67.5°	5.6	6.7	6.7	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8
70°	5.6	5.6	6.7	6.7	6.7	7.8	7.8	7.8	6.7	7.8	6.7
72.5°	4.5	5.6	5.6	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
75°	4.5	5.6	5.6	5.6	5.6	6.7	6.7	5.6	5.6	5.6	5.6
77.5°	4.5	4.5	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	4.5
80°	4.5	4.5	4.5	4.5	5.6	5.6	4.5	4.5	4.5	4.5	4.5
82.5°	3.4	4.5	4.5	4.5	4.5	4.5	4.5	4.5	3.4	3.4	3.4
85°	3.4	3.4	4.5	4.5	4.5	4.5	3.4	3.4	3.4	3.4	2.2
87.5°	3.4	3.4	3.4	4.5	3.4	3.4	3.4	3.4	2.2	2.2	2.2
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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CATALOG NUMBER: LDSQA4A28935D010TE LAR15SP 4LSQA1H-LSF-20 30°

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	219.1	219.1	219.1	219.1	219.1	219.1	219.1	219.1
2.5°	188.9	187.8	188.9	187.8	187.8	188.9	185.6	187.8
5°	171.0	168.8	169.9	168.8	167.7	168.8	166.6	168.8
7.5°	155.4	154.3	154.3	154.3	153.1	154.3	152.0	154.3
10°	142.0	140.8	140.8	140.8	140.8	142.0	139.7	142.0
12.5°	128.5	128.5	129.7	128.5	129.7	130.8	128.5	130.8
15°	117.4	118.5	119.6	119.6	120.7	121.8	120.7	123.0
17.5°	108.4	109.5	111.8	111.8	112.9	115.1	114.0	116.3
20°	99.5	100.6	102.8	102.8	104.0	106.2	105.1	107.3
22.5°	89.4	91.7	92.8	93.9	95.0	97.3	96.1	98.4
25°	79.4	82.7	83.8	85.0	86.1	88.3	88.3	90.5
27.5°	71.5	73.8	74.9	76.0	78.2	80.5	80.5	81.6
30°	62.6	64.8	67.1	68.2	69.3	71.5	71.5	73.8
32.5°	54.8	57.0	58.1	59.2	61.5	63.7	64.8	66.0
35°	46.9	50.3	51.4	53.7	54.8	58.1	58.1	59.2
37.5°	41.4	43.6	45.8	46.9	49.2	51.4	51.4	53.7
40°	36.9	39.1	40.2	41.4	43.6	45.8	45.8	46.9
42.5°	31.3	34.7	35.8	36.9	38.0	40.2	41.4	42.5
45°	27.9	29.1	30.2	31.3	32.4	34.7	34.7	35.8
47.5°	23.5	24.6	25.7	26.8	27.9	29.1	30.2	31.3
50°	20.1	21.2	22.4	22.4	23.5	25.7	25.7	26.8
52.5°	16.8	17.9	19.0	19.0	20.1	22.4	22.4	23.5
55°	14.5	15.6	16.8	16.8	17.9	19.0	19.0	20.1
57.5°	13.4	13.4	14.5	14.5	15.6	15.6	16.8	16.8
60°	11.2	12.3	12.3	12.3	13.4	13.4	13.4	13.4
62.5°	10.1	10.1	10.1	10.1	10.1	10.1	10.1	11.2
65°	8.9	8.9	8.9	8.9	8.9	8.9	7.8	8.9
67.5°	7.8	7.8	7.8	7.8	6.7	6.7	6.7	6.7
70°	6.7	6.7	6.7	6.7	6.7	5.6	5.6	5.6
72.5°	5.6	5.6	5.6	5.6	5.6	4.5	4.5	4.5
75°	5.6	5.6	4.5	4.5	4.5	4.5	4.5	3.4
77.5°	4.5	4.5	4.5	4.5	3.4	3.4	3.4	3.4
80°	3.4	3.4	3.4	3.4	3.4	3.4	2.2	2.2
82.5°	3.4	2.2	2.2	2.2	2.2	2.2	2.2	2.2
85°	2.2	2.2	2.2	2.2	1.1	1.1	1.1	1.1
87.5°	1.1	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)