

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: P182669

Luminaire Tested: **LDSQA4A28940D010TE LAR15SP 4LSQA1H-LSF-20 30°**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P182669
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: LDSQA4A28940D010TE 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: 2191.5 lumens
Efficiency: N/A
Efficacy: 49.3 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

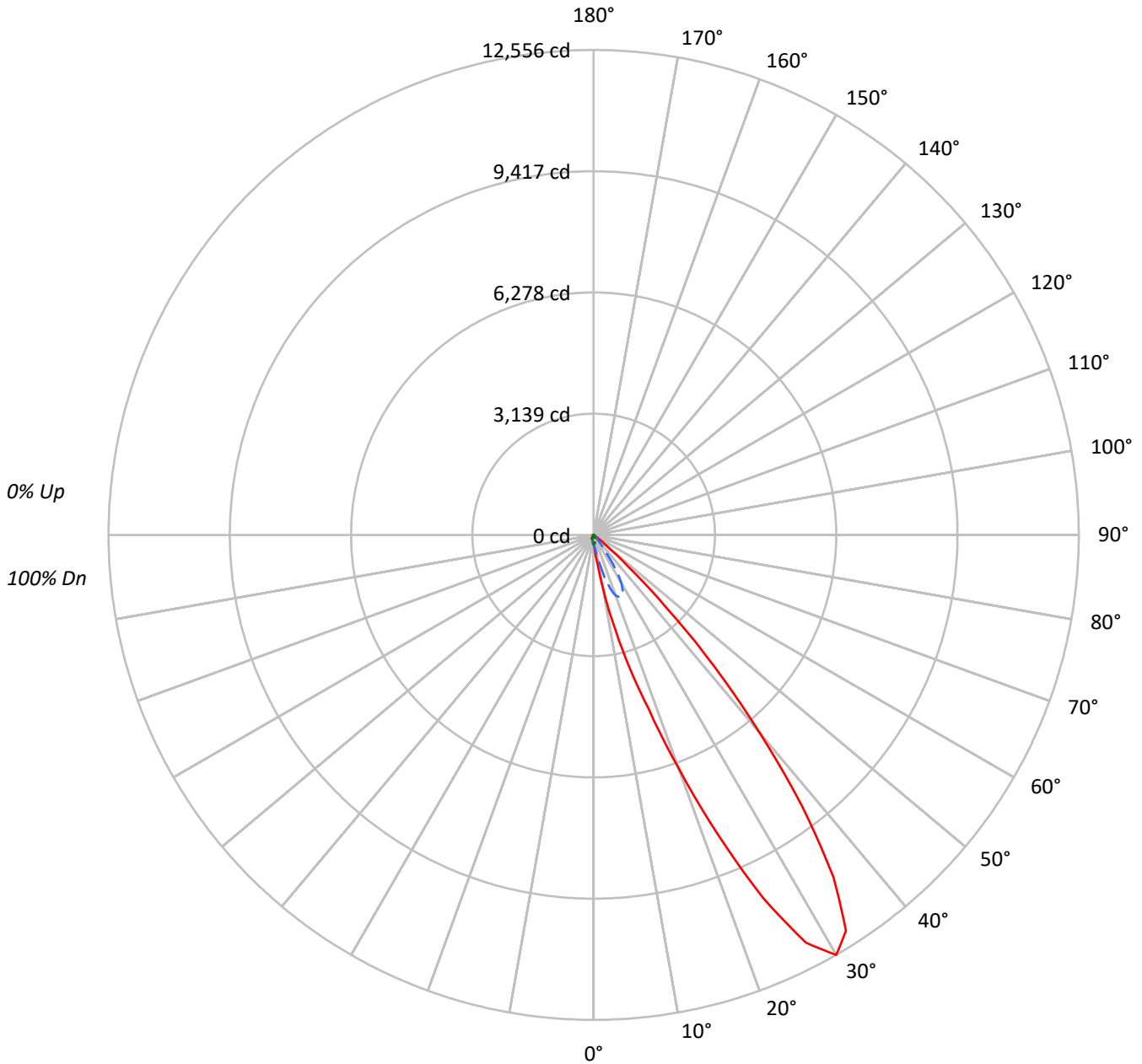
Input Watts (W): 44.49
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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°	22921	22921	22921
5°	43897	21832	17718
10°	143541	19349	15080
15°	351516	15977	13319
20°	662319	12196	11948
25°	1108708	8647	10454
30°	1404518	5940	8915
35°	1279772	3855	7569
40°	842831	2744	6412
45°	365098	1822	5288
50°	64761	1266	4371
55°	10404	1013	3665
60°	2577	930	2809
65°	825	1100	2223
70°	680	1360	1699
75°	898	1347	1347
80°	0	2008	1339
85°	0	4001	1334



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	30.3	1.4
10°-20°	243.8	11.1
20°-30°	734.3	33.5
30°-40°	835.7	38.1
40°-50°	309.0	14.1
50°-60°	24.5	1.1
60°-70°	6.6	0.3
70°-80°	4.6	0.2
80°-90°	2.6	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°	1008.4	46.0
0°-40°	1844.1	84.2
0°-60°	2177.7	99.4
0°-90°	2191.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2191.5	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	237	237	237	237	237	
5°	451	332	224	188	182	73
15°	3505	1184	159	126	133	1099
25°	10372	1731	81	78	98	4735
35°	10821	606	33	45	64	6434
45°	2665	71	13	24	39	2256
55°	62	13	6	14	22	101
65°	4	4	5	10	10	5
75°	2	4	4	6	4	2
85°	0	2	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°	236.6	236.6	236.6	236.6	236.6	236.6	236.6	236.6	236.6	236.6	236.6
2.5°	304.1	306.6	304.1	299.3	299.3	293.3	290.9	288.5	282.4	278.8	274.0
5°	451.4	444.2	438.1	423.6	418.8	405.5	395.9	382.6	364.5	348.8	331.9
7.5°	772.4	761.6	738.6	695.2	668.6	636.1	610.7	568.5	514.2	469.5	424.8
10°	1459.2	1412.1	1357.8	1260.0	1188.8	1112.8	1052.4	939.0	802.6	690.4	581.7
12.5°	2351.1	2354.7	2253.4	2088.0	1956.4	1822.5	1718.7	1508.7	1267.3	1056.1	847.3
15°	3504.9	3438.6	3333.6	3080.1	2817.0	2622.7	2457.3	2138.7	1797.1	1488.2	1184.0
17.5°	4720.3	4748.1	4503.1	4089.1	3672.7	3381.8	3132.0	2649.2	2243.7	1861.1	1489.4
20°	6424.5	6233.8	5883.8	5212.8	4565.8	4144.6	3774.1	3147.7	2581.6	2095.2	1677.6
22.5°	8389.4	8081.6	7369.6	6424.5	5445.7	4862.7	4346.2	3484.4	2796.5	2214.7	1741.6
25°	10372.4	10137.1	9002.5	7590.4	6188.0	5432.4	4763.8	3712.5	2899.1	2242.5	1730.7
27.5°	11902.8	11519.0	10226.4	8385.8	6630.9	5739.0	4958.1	3782.5	2877.3	2174.9	1628.2
30°	12555.8	12070.6	10637.9	8566.8	6634.5	5688.3	4861.5	3643.7	2722.8	2003.5	1435.0
32.5°	12152.6	11592.6	10147.9	8066.0	6180.7	5292.4	4488.6	3343.2	2467.0	1734.4	1077.8
35°	10821.4	10263.8	8925.3	7077.5	5456.6	4680.5	3981.7	2951.0	2101.3	1285.4	605.9
37.5°	8861.3	8385.8	7428.7	5932.1	4598.4	3968.4	3386.7	2486.3	1565.4	737.4	304.1
40°	6664.7	6330.4	5755.9	4704.6	3722.2	3243.0	2774.7	1904.5	951.1	370.5	172.6
42.5°	4620.2	4402.9	4114.4	3480.8	2871.3	2541.8	2166.5	1272.1	488.8	204.0	107.4
45°	2664.9	2528.5	2448.9	2178.5	1940.8	1780.2	1448.3	685.5	247.4	121.9	71.2
47.5°	1176.8	1086.2	1047.6	934.2	869.0	825.5	655.4	292.1	132.8	78.5	59.1
50°	429.7	429.7	430.9	379.0	310.2	278.8	218.5	129.1	74.8	61.6	43.4
52.5°	152.1	149.7	155.7	147.2	129.1	115.9	96.6	65.2	45.9	38.6	24.1
55°	61.6	59.1	61.6	57.9	54.3	50.7	44.7	35.0	29.0	24.1	13.3
57.5°	27.8	27.8	29.0	27.8	27.8	25.3	22.9	26.6	20.5	13.3	8.4
60°	13.3	13.3	14.5	14.5	14.5	13.3	13.3	14.5	12.1	8.4	6.0
62.5°	6.0	6.0	7.2	7.2	7.2	7.2	7.2	8.4	6.0	4.8	3.6
65°	3.6	2.4	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
67.5°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	3.6	3.6
70°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	3.6
72.5°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	3.6
75°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	3.6
77.5°	0.0	0.0	0.0	1.2	1.2	1.2	1.2	1.2	2.4	2.4	3.6
80°	0.0	0.0	0.0	0.0	1.2	1.2	1.2	1.2	2.4	2.4	2.4
82.5°	0.0	0.0	0.0	0.0	1.2	1.2	1.2	1.2	2.4	2.4	2.4
85°	0.0	0.0	0.0	0.0	1.2	1.2	1.2	1.2	1.2	2.4	2.4
87.5°	0.0	0.0	0.0	0.0	1.2	1.2	1.2	1.2	1.2	2.4	2.4
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):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	236.6	236.6	236.6	236.6	236.6	236.6	236.6	236.6	236.6	236.6	236.6
2.5°	269.1	265.5	258.3	254.7	249.8	246.2	243.8	239.0	234.1	230.5	228.1
5°	316.2	302.9	287.3	275.2	265.5	259.5	249.8	241.4	231.7	224.5	218.5
7.5°	385.0	352.4	317.4	293.3	280.0	267.9	251.0	236.6	223.3	213.6	205.2
10°	492.4	422.4	360.9	313.8	290.9	274.0	247.4	226.9	210.0	196.7	188.3
12.5°	671.1	527.4	418.8	339.1	304.1	278.8	241.4	213.6	193.1	179.8	169.0
15°	916.1	681.9	498.5	369.3	319.8	283.6	231.7	197.9	175.0	159.3	149.7
17.5°	1146.6	843.6	589.0	405.5	335.5	286.0	218.5	177.4	153.3	138.8	129.1
20°	1291.4	948.7	649.3	426.0	340.4	278.8	200.4	155.7	131.6	118.3	108.6
22.5°	1325.2	960.7	644.5	406.7	319.8	257.1	175.0	134.0	111.0	99.0	90.5
25°	1275.7	893.1	576.9	351.2	272.8	216.0	146.0	108.6	91.7	80.9	74.8
27.5°	1151.4	760.4	456.2	264.3	204.0	159.3	111.0	84.5	73.6	65.2	61.6
30°	928.1	534.7	286.0	164.1	130.3	105.0	79.7	65.2	56.7	53.1	49.5
32.5°	562.4	275.2	150.9	97.8	82.1	71.2	57.9	48.3	43.4	41.0	39.8
35°	267.9	144.8	92.9	66.4	57.9	50.7	42.2	36.2	33.8	32.6	32.6
37.5°	152.1	94.1	62.8	44.7	39.8	35.0	31.4	27.8	26.6	26.6	26.6
40°	96.6	60.3	41.0	32.6	29.0	26.6	24.1	21.7	21.7	21.7	21.7
42.5°	62.8	43.4	31.4	24.1	21.7	20.5	18.1	16.9	16.9	16.9	18.1
45°	49.5	36.2	25.3	19.3	16.9	15.7	14.5	13.3	13.3	13.3	14.5
47.5°	42.2	25.3	16.9	13.3	10.9	10.9	9.7	9.7	9.7	10.9	12.1
50°	25.3	15.7	10.9	8.4	7.2	7.2	7.2	7.2	7.2	8.4	9.7
52.5°	14.5	9.7	7.2	6.0	4.8	4.8	4.8	4.8	6.0	7.2	7.2
55°	9.7	7.2	4.8	4.8	3.6	3.6	3.6	4.8	4.8	6.0	7.2
57.5°	6.0	4.8	3.6	3.6	3.6	3.6	3.6	3.6	4.8	6.0	6.0
60°	4.8	3.6	3.6	3.6	3.6	3.6	3.6	3.6	4.8	4.8	6.0
62.5°	3.6	3.6	4.8	3.6	3.6	3.6	3.6	3.6	4.8	4.8	6.0
65°	3.6	3.6	4.8	4.8	3.6	3.6	3.6	3.6	3.6	4.8	6.0
67.5°	3.6	3.6	4.8	4.8	4.8	4.8	3.6	3.6	3.6	4.8	4.8
70°	3.6	4.8	4.8	4.8	4.8	4.8	4.8	3.6	3.6	4.8	4.8
72.5°	3.6	4.8	4.8	4.8	4.8	4.8	4.8	3.6	3.6	4.8	4.8
75°	3.6	3.6	4.8	4.8	4.8	4.8	4.8	3.6	3.6	3.6	4.8
77.5°	3.6	3.6	4.8	4.8	4.8	4.8	4.8	3.6	3.6	3.6	4.8
80°	3.6	3.6	3.6	4.8	3.6	4.8	3.6	3.6	3.6	3.6	3.6
82.5°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
85°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
87.5°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
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°	236.6	236.6	236.6	236.6	236.6	236.6	236.6	236.6	236.6	236.6	236.6
2.5°	224.5	222.1	218.5	217.2	218.5	217.2	211.2	210.0	207.6	207.6	207.6
5°	212.4	208.8	204.0	201.6	201.6	199.1	193.1	191.9	188.3	188.3	187.1
7.5°	197.9	193.1	187.1	184.7	184.7	182.2	176.2	173.8	171.4	171.4	170.2
10°	181.0	175.0	169.0	167.8	166.6	162.9	159.3	158.1	154.5	155.7	154.5
12.5°	161.7	156.9	152.1	149.7	149.7	146.0	143.6	142.4	141.2	141.2	141.2
15°	143.6	137.6	132.8	131.6	131.6	130.3	127.9	127.9	125.5	127.9	127.9
17.5°	123.1	118.3	117.1	114.7	115.9	114.7	112.2	113.5	113.5	114.7	115.9
20°	103.8	100.2	99.0	97.8	99.0	99.0	97.8	99.0	100.2	103.8	106.2
22.5°	86.9	84.5	84.5	83.3	84.5	85.7	84.5	86.9	89.3	91.7	95.3
25°	72.4	71.2	71.2	71.2	72.4	73.6	74.8	77.2	78.5	82.1	84.5
27.5°	59.1	59.1	59.1	60.3	61.6	62.8	64.0	67.6	68.8	72.4	74.8
30°	49.5	48.3	49.5	50.7	51.9	54.3	55.5	57.9	59.1	62.8	65.2
32.5°	39.8	41.0	42.2	43.4	44.7	45.9	47.1	49.5	51.9	54.3	56.7
35°	33.8	33.8	35.0	36.2	37.4	39.8	41.0	42.2	44.7	47.1	48.3
37.5°	27.8	29.0	30.2	31.4	32.6	33.8	35.0	36.2	37.4	39.8	42.2
40°	22.9	24.1	25.3	26.6	26.6	29.0	29.0	31.4	32.6	35.0	37.4
42.5°	19.3	20.5	21.7	22.9	22.9	24.1	25.3	26.6	27.8	30.2	32.6
45°	15.7	16.9	18.1	19.3	19.3	20.5	21.7	22.9	24.1	26.6	27.8
47.5°	13.3	14.5	15.7	16.9	16.9	18.1	19.3	20.5	20.5	22.9	24.1
50°	10.9	12.1	13.3	14.5	14.5	15.7	16.9	18.1	18.1	19.3	20.5
52.5°	8.4	9.7	12.1	12.1	13.3	14.5	14.5	15.7	15.7	16.9	18.1
55°	8.4	9.7	10.9	10.9	12.1	13.3	13.3	14.5	14.5	14.5	15.7
57.5°	7.2	8.4	9.7	10.9	10.9	12.1	12.1	12.1	12.1	13.3	13.3
60°	7.2	8.4	8.4	9.7	9.7	10.9	10.9	10.9	10.9	12.1	12.1
62.5°	7.2	7.2	8.4	8.4	9.7	9.7	9.7	10.9	10.9	10.9	10.9
65°	6.0	7.2	8.4	8.4	8.4	9.7	9.7	9.7	9.7	9.7	9.7
67.5°	6.0	7.2	7.2	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4
70°	6.0	6.0	7.2	7.2	7.2	8.4	8.4	8.4	7.2	8.4	7.2
72.5°	4.8	6.0	6.0	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2
75°	4.8	6.0	6.0	6.0	6.0	7.2	7.2	6.0	6.0	6.0	6.0
77.5°	4.8	4.8	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	4.8
80°	4.8	4.8	4.8	4.8	6.0	6.0	4.8	4.8	4.8	4.8	4.8
82.5°	3.6	4.8	4.8	4.8	4.8	4.8	4.8	4.8	3.6	3.6	3.6
85°	3.6	3.6	4.8	4.8	4.8	4.8	3.6	3.6	3.6	3.6	2.4
87.5°	3.6	3.6	3.6	4.8	3.6	3.6	3.6	3.6	2.4	2.4	2.4
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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CATALOG NUMBER: LDSQA4A28940D010TE LAR15SP 4LSQA1H-LSF-20 30°

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	236.6	236.6	236.6	236.6	236.6	236.6	236.6	236.6
2.5°	204.0	202.8	204.0	202.8	202.8	204.0	200.4	202.8
5°	184.7	182.2	183.5	182.2	181.0	182.2	179.8	182.2
7.5°	167.8	166.6	166.6	166.6	165.4	166.6	164.1	166.6
10°	153.3	152.1	152.1	152.1	152.1	153.3	150.9	153.3
12.5°	138.8	138.8	140.0	138.8	140.0	141.2	138.8	141.2
15°	126.7	127.9	129.1	129.1	130.3	131.6	130.3	132.8
17.5°	117.1	118.3	120.7	120.7	121.9	124.3	123.1	125.5
20°	107.4	108.6	111.0	111.0	112.2	114.7	113.5	115.9
22.5°	96.6	99.0	100.2	101.4	102.6	105.0	103.8	106.2
25°	85.7	89.3	90.5	91.7	92.9	95.3	95.3	97.8
27.5°	77.2	79.7	80.9	82.1	84.5	86.9	86.9	88.1
30°	67.6	70.0	72.4	73.6	74.8	77.2	77.2	79.7
32.5°	59.1	61.6	62.8	64.0	66.4	68.8	70.0	71.2
35°	50.7	54.3	55.5	57.9	59.1	62.8	62.8	64.0
37.5°	44.7	47.1	49.5	50.7	53.1	55.5	55.5	57.9
40°	39.8	42.2	43.4	44.7	47.1	49.5	49.5	50.7
42.5°	33.8	37.4	38.6	39.8	41.0	43.4	44.7	45.9
45°	30.2	31.4	32.6	33.8	35.0	37.4	37.4	38.6
47.5°	25.3	26.6	27.8	29.0	30.2	31.4	32.6	33.8
50°	21.7	22.9	24.1	24.1	25.3	27.8	27.8	29.0
52.5°	18.1	19.3	20.5	20.5	21.7	24.1	24.1	25.3
55°	15.7	16.9	18.1	18.1	19.3	20.5	20.5	21.7
57.5°	14.5	14.5	15.7	15.7	16.9	16.9	18.1	18.1
60°	12.1	13.3	13.3	13.3	14.5	14.5	14.5	14.5
62.5°	10.9	10.9	10.9	10.9	10.9	10.9	10.9	12.1
65°	9.7	9.7	9.7	9.7	9.7	9.7	8.4	9.7
67.5°	8.4	8.4	8.4	8.4	7.2	7.2	7.2	7.2
70°	7.2	7.2	7.2	7.2	7.2	6.0	6.0	6.0
72.5°	6.0	6.0	6.0	6.0	6.0	4.8	4.8	4.8
75°	6.0	6.0	4.8	4.8	4.8	4.8	4.8	3.6
77.5°	4.8	4.8	4.8	4.8	3.6	3.6	3.6	3.6
80°	3.6	3.6	3.6	3.6	3.6	3.6	2.4	2.4
82.5°	3.6	2.4	2.4	2.4	2.4	2.4	2.4	2.4
85°	2.4	2.4	2.4	2.4	1.2	1.2	1.2	1.2
87.5°	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
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)