

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: P182651

Luminaire Tested: **LDSQA4A09930D010TE LAR15SP 4LSQA1H-LSF-20 30°**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P182651
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: LDSQA4A09930D010TE 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 / 3000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 795.6 lumens
Efficiency: N/A
Efficacy: 57.5 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

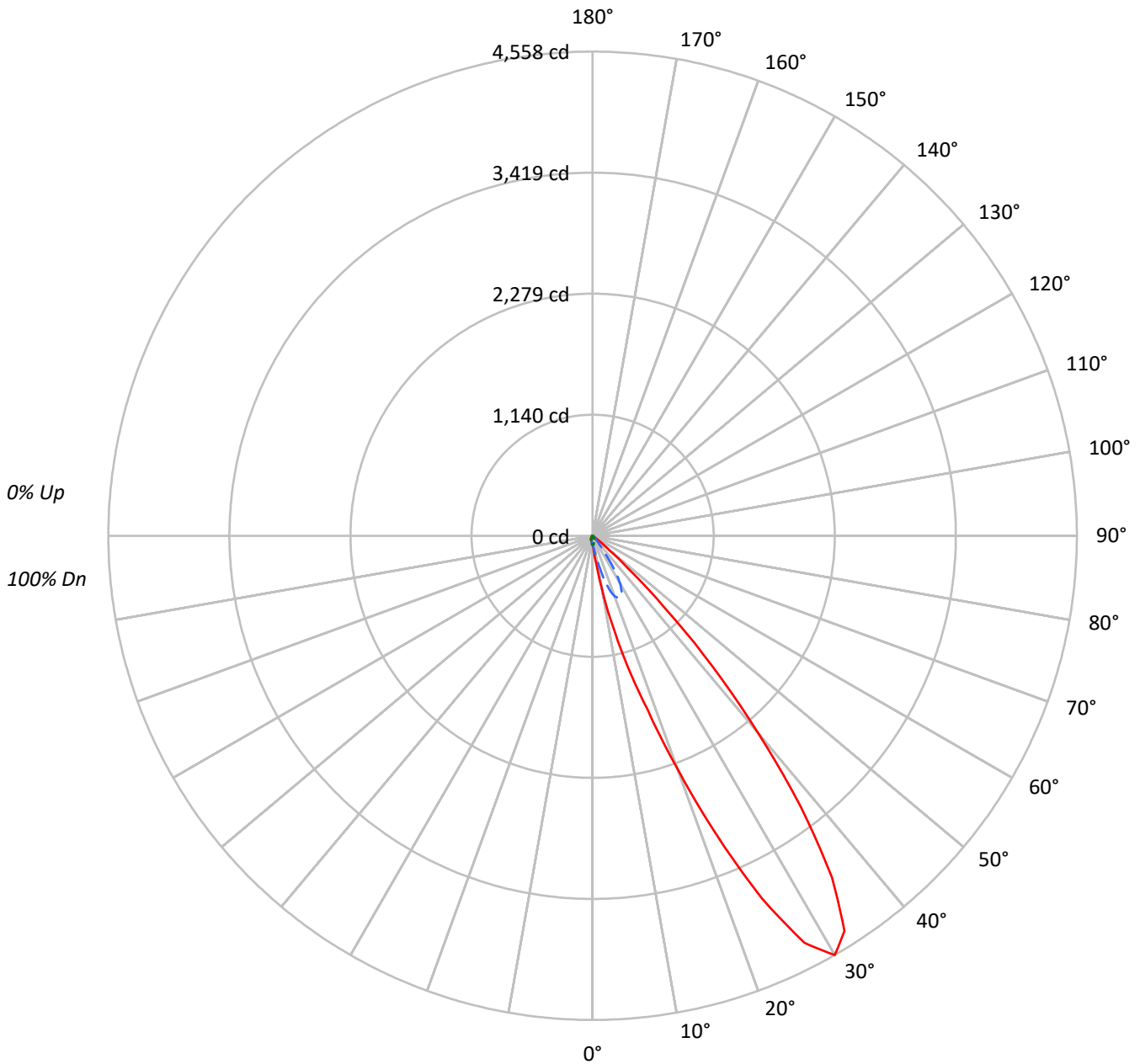
Input Watts (W): 13.84
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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°	8322	8322	8322
5°	15939	7926	6438
10°	52107	7024	5469
15°	127613	5797	4834
20°	240433	4423	4340
25°	402484	3143	3795
30°	509867	2159	3233
35°	464585	1396	2744
40°	305962	999	2327
45°	132536	658	1918
50°	23511	467	1582
55°	3766	372	1334
60°	930	349	1027
65°	298	413	802
70°	255	510	623
75°	337	487	487
80°	0	725	502
85°	0	1445	445



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	11.0	1.4
10°-20°	88.5	11.1
20°-30°	266.6	33.5
30°-40°	303.4	38.1
40°-50°	112.2	14.1
50°-60°	8.9	1.1
60°-70°	2.4	0.3
70°-80°	1.7	0.2
80°-90°	1.0	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°	366.1	46.0
0°-40°	669.5	84.1
0°-60°	790.5	99.4
0°-90°	795.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	795.6	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	86	86	86	86	86	
5°	164	120	82	68	66	27
15°	1272	430	58	46	48	399
25°	3765	628	29	28	36	1719
35°	3928	220	12	16	23	2336
45°	967	26	5	9	14	819
55°	22	5	2	5	8	37
65°	1	1	2	4	4	2
75°	1	1	1	2	1	1
85°	0	1	1	1	0	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°	85.9	85.9	85.9	85.9	85.9	85.9	85.9	85.9	85.9	85.9	85.9
2.5°	110.4	111.3	110.4	108.7	108.7	106.5	105.6	104.7	102.5	101.2	99.5
5°	163.9	161.2	159.0	153.8	152.0	147.2	143.7	138.9	132.3	126.6	120.5
7.5°	280.4	276.5	268.1	252.4	242.7	230.9	221.7	206.4	186.6	170.4	154.2
10°	529.7	512.6	492.9	457.4	431.6	404.0	382.1	340.9	291.4	250.6	211.2
12.5°	853.5	854.8	818.0	758.0	710.2	661.6	623.9	547.7	460.0	383.4	307.6
15°	1272.4	1248.3	1210.1	1118.1	1022.6	952.1	892.1	776.4	652.4	540.2	429.8
17.5°	1713.6	1723.6	1634.7	1484.4	1333.3	1227.7	1137.0	961.7	814.5	675.6	540.7
20°	2332.2	2263.0	2135.9	1892.3	1657.5	1504.6	1370.1	1142.7	937.2	760.6	609.0
22.5°	3045.5	2933.8	2675.3	2332.2	1976.9	1765.3	1577.7	1264.9	1015.2	804.0	632.2
25°	3765.4	3679.9	3268.1	2755.5	2246.3	1972.1	1729.3	1347.7	1052.4	814.1	628.3
27.5°	4320.9	4181.6	3712.4	3044.2	2407.1	2083.4	1799.9	1373.1	1044.5	789.5	591.1
30°	4558.0	4381.8	3861.8	3109.9	2408.5	2065.0	1764.8	1322.7	988.4	727.3	520.9
32.5°	4411.6	4208.3	3683.9	2928.1	2243.7	1921.2	1629.4	1213.7	895.6	629.6	391.3
35°	3928.4	3726.0	3240.1	2569.3	1980.8	1699.1	1445.4	1071.3	762.8	466.6	219.9
37.5°	3216.8	3044.2	2696.8	2153.5	1669.3	1440.6	1229.4	902.6	568.3	267.7	110.4
40°	2419.4	2298.0	2089.5	1707.9	1351.2	1177.3	1007.3	691.4	345.3	134.5	62.7
42.5°	1677.2	1598.3	1493.6	1263.6	1042.3	922.7	786.5	461.8	177.4	74.0	39.0
45°	967.4	917.9	889.0	790.8	704.5	646.3	525.8	248.9	89.8	44.3	25.9
47.5°	427.2	394.3	380.3	339.1	315.5	299.7	237.9	106.0	48.2	28.5	21.5
50°	156.0	156.0	156.4	137.6	112.6	101.2	79.3	46.9	27.2	22.3	15.8
52.5°	55.2	54.3	56.5	53.5	46.9	42.1	35.1	23.7	16.6	14.0	8.8
55°	22.3	21.5	22.3	21.0	19.7	18.4	16.2	12.7	10.5	8.8	4.8
57.5°	10.1	10.1	10.5	10.1	10.1	9.2	8.3	9.6	7.4	4.8	3.1
60°	4.8	4.8	5.3	5.3	5.3	4.8	4.8	5.3	4.4	3.1	2.2
62.5°	2.2	2.2	2.6	2.6	2.6	2.6	2.6	3.1	2.2	1.8	1.3
65°	1.3	0.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
67.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.3	1.3
70°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.3
72.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.3
75°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.3
77.5°	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.4	0.9	0.9	1.3
80°	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.9	0.9	0.9
82.5°	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.9	0.9	0.9
85°	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.4	0.9	0.9
87.5°	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.4	0.9	0.9
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°	85.9	85.9	85.9	85.9	85.9	85.9	85.9	85.9	85.9	85.9	85.9
2.5°	97.7	96.4	93.8	92.4	90.7	89.4	88.5	86.8	85.0	83.7	82.8
5°	114.8	110.0	104.3	99.9	96.4	94.2	90.7	87.6	84.1	81.5	79.3
7.5°	139.8	127.9	115.2	106.5	101.6	97.3	91.1	85.9	81.1	77.6	74.5
10°	178.8	153.3	131.0	113.9	105.6	99.5	89.8	82.4	76.2	71.4	68.4
12.5°	243.6	191.5	152.0	123.1	110.4	101.2	87.6	77.6	70.1	65.3	61.3
15°	332.5	247.5	181.0	134.1	116.1	103.0	84.1	71.9	63.5	57.8	54.3
17.5°	416.2	306.3	213.8	147.2	121.8	103.8	79.3	64.4	55.6	50.4	46.9
20°	468.8	344.4	235.7	154.7	123.6	101.2	72.7	56.5	47.8	42.9	39.4
22.5°	481.1	348.8	234.0	147.7	116.1	93.3	63.5	48.6	40.3	35.9	32.9
25°	463.1	324.2	209.4	127.5	99.0	78.4	53.0	39.4	33.3	29.4	27.2
27.5°	418.0	276.0	165.6	96.0	74.0	57.8	40.3	30.7	26.7	23.7	22.3
30°	336.9	194.1	103.8	59.6	47.3	38.1	28.9	23.7	20.6	19.3	18.0
32.5°	204.2	99.9	54.8	35.5	29.8	25.9	21.0	17.5	15.8	14.9	14.5
35°	97.3	52.6	33.7	24.1	21.0	18.4	15.3	13.1	12.3	11.8	11.8
37.5°	55.2	34.2	22.8	16.2	14.5	12.7	11.4	10.1	9.6	9.6	9.6
40°	35.1	21.9	14.9	11.8	10.5	9.6	8.8	7.9	7.9	7.9	7.9
42.5°	22.8	15.8	11.4	8.8	7.9	7.4	6.6	6.1	6.1	6.1	6.6
45°	18.0	13.1	9.2	7.0	6.1	5.7	5.3	4.8	4.8	4.8	5.3
47.5°	15.3	9.2	6.1	4.8	3.9	3.9	3.5	3.5	3.5	3.9	4.4
50°	9.2	5.7	3.9	3.1	2.6	2.6	2.6	2.6	2.6	3.1	3.5
52.5°	5.3	3.5	2.6	2.2	1.8	1.8	1.8	1.8	2.2	2.6	2.6
55°	3.5	2.6	1.8	1.8	1.3	1.3	1.3	1.8	1.8	2.2	2.6
57.5°	2.2	1.8	1.3	1.3	1.3	1.3	1.3	1.3	1.8	2.2	2.2
60°	1.8	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.8	1.8	2.2
62.5°	1.3	1.3	1.8	1.3	1.3	1.3	1.3	1.3	1.8	1.8	2.2
65°	1.3	1.3	1.8	1.8	1.3	1.3	1.3	1.3	1.3	1.8	2.2
67.5°	1.3	1.3	1.8	1.8	1.8	1.8	1.3	1.3	1.3	1.8	1.8
70°	1.3	1.8	1.8	1.8	1.8	1.8	1.8	1.3	1.3	1.8	1.8
72.5°	1.3	1.8	1.8	1.8	1.8	1.8	1.8	1.3	1.3	1.8	1.8
75°	1.3	1.3	1.8	1.8	1.8	1.8	1.8	1.3	1.3	1.3	1.8
77.5°	1.3	1.3	1.8	1.8	1.8	1.8	1.8	1.3	1.3	1.3	1.8
80°	1.3	1.3	1.3	1.8	1.3	1.8	1.3	1.3	1.3	1.3	1.3
82.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
85°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
87.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
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°	85.9	85.9	85.9	85.9	85.9	85.9	85.9	85.9	85.9	85.9	85.9
2.5°	81.5	80.6	79.3	78.9	79.3	78.9	76.7	76.2	75.4	75.4	75.4
5°	77.1	75.8	74.0	73.2	73.2	72.3	70.1	69.7	68.4	68.4	67.9
7.5°	71.9	70.1	67.9	67.0	67.0	66.2	64.0	63.1	62.2	62.2	61.8
10°	65.7	63.5	61.3	60.9	60.5	59.1	57.8	57.4	56.1	56.5	56.1
12.5°	58.7	57.0	55.2	54.3	54.3	53.0	52.1	51.7	51.3	51.3	51.3
15°	52.1	49.9	48.2	47.8	47.8	47.3	46.4	46.4	45.6	46.4	46.4
17.5°	44.7	42.9	42.5	41.6	42.1	41.6	40.7	41.2	41.2	41.6	42.1
20°	37.7	36.4	35.9	35.5	35.9	35.9	35.5	35.9	36.4	37.7	38.6
22.5°	31.5	30.7	30.7	30.2	30.7	31.1	30.7	31.5	32.4	33.3	34.6
25°	26.3	25.9	25.9	25.9	26.3	26.7	27.2	28.0	28.5	29.8	30.7
27.5°	21.5	21.5	21.5	21.9	22.3	22.8	23.2	24.5	25.0	26.3	27.2
30°	18.0	17.5	18.0	18.4	18.8	19.7	20.2	21.0	21.5	22.8	23.7
32.5°	14.5	14.9	15.3	15.8	16.2	16.6	17.1	18.0	18.8	19.7	20.6
35°	12.3	12.3	12.7	13.1	13.6	14.5	14.9	15.3	16.2	17.1	17.5
37.5°	10.1	10.5	11.0	11.4	11.8	12.3	12.7	13.1	13.6	14.5	15.3
40°	8.3	8.8	9.2	9.6	9.6	10.5	10.5	11.4	11.8	12.7	13.6
42.5°	7.0	7.4	7.9	8.3	8.3	8.8	9.2	9.6	10.1	11.0	11.8
45°	5.7	6.1	6.6	7.0	7.0	7.4	7.9	8.3	8.8	9.6	10.1
47.5°	4.8	5.3	5.7	6.1	6.1	6.6	7.0	7.4	7.4	8.3	8.8
50°	3.9	4.4	4.8	5.3	5.3	5.7	6.1	6.6	6.6	7.0	7.4
52.5°	3.1	3.5	4.4	4.4	4.8	5.3	5.3	5.7	5.7	6.1	6.6
55°	3.1	3.5	3.9	3.9	4.4	4.8	4.8	5.3	5.3	5.3	5.7
57.5°	2.6	3.1	3.5	3.9	3.9	4.4	4.4	4.4	4.4	4.8	4.8
60°	2.6	3.1	3.1	3.5	3.5	3.9	3.9	3.9	3.9	4.4	4.4
62.5°	2.6	2.6	3.1	3.1	3.5	3.5	3.5	3.9	3.9	3.9	3.9
65°	2.2	2.6	3.1	3.1	3.1	3.5	3.5	3.5	3.5	3.5	3.5
67.5°	2.2	2.6	2.6	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
70°	2.2	2.2	2.6	2.6	2.6	3.1	3.1	3.1	2.6	3.1	2.6
72.5°	1.8	2.2	2.2	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
75°	1.8	2.2	2.2	2.2	2.2	2.6	2.6	2.2	2.2	2.2	2.2
77.5°	1.8	1.8	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	1.8
80°	1.8	1.8	1.8	1.8	2.2	2.2	1.8	1.8	1.8	1.8	1.8
82.5°	1.3	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.3	1.3	1.3
85°	1.3	1.3	1.8	1.8	1.8	1.8	1.3	1.3	1.3	1.3	0.9
87.5°	1.3	1.3	1.3	1.8	1.3	1.3	1.3	1.3	0.9	0.9	0.9
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: LDSQA4A09930D010TE LAR15SP 4LSQA1H-LSF-20 30°

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	85.9	85.9	85.9	85.9	85.9	85.9	85.9	85.9
2.5°	74.0	73.6	74.0	73.6	73.6	74.0	72.7	73.6
5°	67.0	66.2	66.6	66.2	65.7	66.2	65.3	66.2
7.5°	60.9	60.5	60.5	60.5	60.0	60.5	59.6	60.5
10°	55.6	55.2	55.2	55.2	55.2	55.6	54.8	55.6
12.5°	50.4	50.4	50.8	50.4	50.8	51.3	50.4	51.3
15°	46.0	46.4	46.9	46.9	47.3	47.8	47.3	48.2
17.5°	42.5	42.9	43.8	43.8	44.3	45.1	44.7	45.6
20°	39.0	39.4	40.3	40.3	40.7	41.6	41.2	42.1
22.5°	35.1	35.9	36.4	36.8	37.2	38.1	37.7	38.6
25°	31.1	32.4	32.9	33.3	33.7	34.6	34.6	35.5
27.5°	28.0	28.9	29.4	29.8	30.7	31.5	31.5	32.0
30°	24.5	25.4	26.3	26.7	27.2	28.0	28.0	28.9
32.5°	21.5	22.3	22.8	23.2	24.1	25.0	25.4	25.9
35°	18.4	19.7	20.2	21.0	21.5	22.8	22.8	23.2
37.5°	16.2	17.1	18.0	18.4	19.3	20.2	20.2	21.0
40°	14.5	15.3	15.8	16.2	17.1	18.0	18.0	18.4
42.5°	12.3	13.6	14.0	14.5	14.9	15.8	16.2	16.6
45°	11.0	11.4	11.8	12.3	12.7	13.6	13.6	14.0
47.5°	9.2	9.6	10.1	10.5	11.0	11.4	11.8	12.3
50°	7.9	8.3	8.8	8.8	9.2	10.1	10.1	10.5
52.5°	6.6	7.0	7.4	7.4	7.9	8.8	8.8	9.2
55°	5.7	6.1	6.6	6.6	7.0	7.4	7.4	7.9
57.5°	5.3	5.3	5.7	5.7	6.1	6.1	6.6	6.6
60°	4.4	4.8	4.8	4.8	5.3	5.3	5.3	5.3
62.5°	3.9	3.9	3.9	3.9	3.9	3.9	3.9	4.4
65°	3.5	3.5	3.5	3.5	3.5	3.5	3.1	3.5
67.5°	3.1	3.1	3.1	3.1	2.6	2.6	2.6	2.6
70°	2.6	2.6	2.6	2.6	2.6	2.2	2.2	2.2
72.5°	2.2	2.2	2.2	2.2	2.2	1.8	1.8	1.8
75°	2.2	2.2	1.8	1.8	1.8	1.8	1.8	1.3
77.5°	1.8	1.8	1.8	1.8	1.3	1.3	1.3	1.3
80°	1.3	1.3	1.3	1.3	1.3	1.3	0.9	0.9
82.5°	1.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9
85°	0.9	0.9	0.9	0.9	0.4	0.4	0.4	0.4
87.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
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)