

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: P170908

Luminaire Tested: **LDA4A18940D010TE LAR15SP 4LA1 30° Tilt**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P170908  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P25648)  
Test Lab: INNOVATION CENTER-P2  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: io LED  
Catalog Number: LDA4A18940D010TE LAR15SP 4LA1 30° Tilt  
Description: PORTFOLIO 4" Adjustable Reflector, Self-flanged Trim Ring, 15° Spot  
Optic, at 30° tilt  
Light Source: (1) HIGH LUMEN LED 90CRI / 4000K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1417.9 lumens  
Efficiency: N/A  
Efficacy: 48.7 lumens/watt  
Spacing Criteria (0/90/45): 2.52 / 1.04 / 1.28  
Luminous Opening: Circular (Dia: 0.33' x H: 0')  
CIE Type: Direct

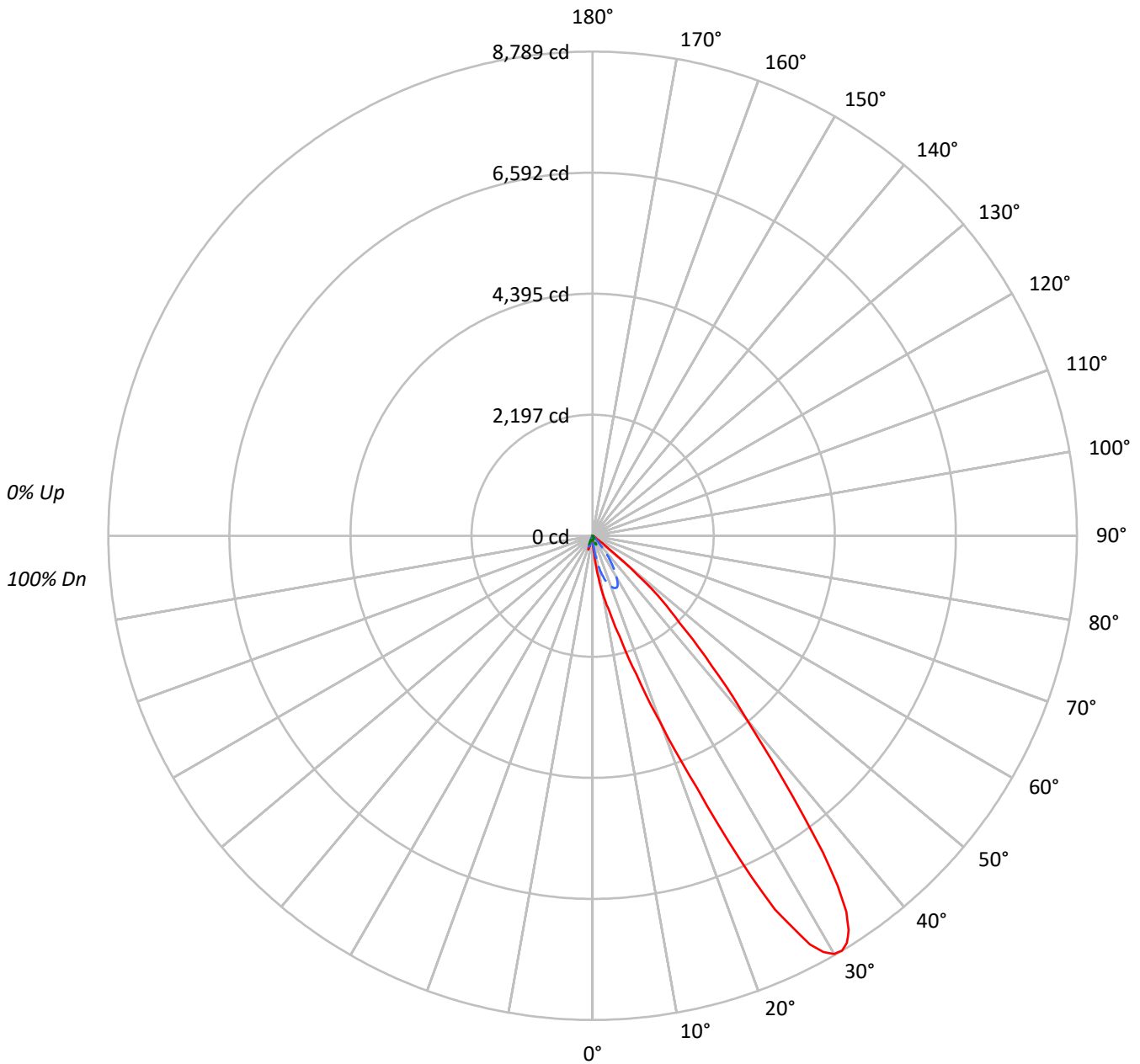
Input Watts (W): 29.12  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	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	86	84	82								
3	99	91	85	80	97	90	84	80	87	82	78	84	80	77	82	79	76	74								
4	92	83	77	71	90	82	76	71	80	74	70	78	73	69	76	72	68	67								
5	86	76	69	64	84	75	68	63	73	67	63	71	66	62	70	65	62	60								
6	80	69	62	57	79	69	62	57	67	61	56	65	60	56	64	59	56	54								
7	75	64	56	51	73	63	56	51	62	55	51	60	55	50	59	54	50	49								
8	70	58	51	46	69	58	51	46	57	50	46	55	50	46	54	49	45	44								
9	65	54	47	42	64	53	46	42	52	46	41	51	45	41	50	45	41	40								
10	61	49	42	38	60	49	42	38	48	42	38	47	41	37	46	41	37	36								

**AVERAGE LUMINANCE (cd/sqm):**

	0°	90°	180°
0°	10201	10201	10201
5°	45763	9583	6216
10°	135456	8817	7941
15°	241819	10446	22360
20°	479013	20556	24021
25°	932114	13419	6832
30°	1248560	5013	2379
35°	1168283	2123	934
40°	700099	998	290
45°	388506	611	0
50°	142518	499	0
55°	21763	387	0
60°	4786	444	0
65°	1547	525	0
70°	325	649	0
75°	0	1239	0
80°	0	1847	0
85°	0	3680	0



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	18.2	1.3
10°-20°	153.2	10.8
20°-30°	457.2	32.2
30°-40°	541.4	38.2
40°-50°	224.6	15.8
50°-60°	17.5	1.2
60°-70°	2.4	0.2
70°-80°	1.8	0.1
80°-90°	1.7	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°	628.5	44.3
0°-40°	1169.9	82.5
0°-60°	1412.0	99.6
0°-90°	1417.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1417.9	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	83	83	83	83	83	
5°	370	187	77	54	50	59
15°	1894	800	82	122	175	625
25°	6849	1039	99	57	50	3128
35°	7759	579	14	8	6	4496
45°	2227	51	4	3	0	1816
55°	101	7	2	1	0	148
65°	5	2	2	2	0	7
75°	0	2	3	2	0	0
85°	0	2	3	2	0	0
90°	0	0	0	0	0	



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**CANDELA DISTRIBUTION (FULL):**

	0°	2.5°	5°	7.5°	10°	12.5°	15°	17.5°	20°	22.5°	25°
0°	82.7	82.7	82.7	82.7	82.7	82.7	82.7	82.7	82.7	82.7	82.7
2.5°	143.4	136.4	139.9	133.8	137.3	131.1	126.7	131.1	131.1	127.6	122.3
5°	369.6	367.8	374.9	358.2	362.5	344.1	328.2	332.6	329.1	317.7	297.4
7.5°	704.0	696.9	704.9	681.1	682.0	651.2	627.4	632.7	616.9	597.5	562.3
10°	1081.5	1071.8	1080.6	1052.5	1047.2	1004.1	970.6	975.9	939.8	908.1	854.5
12.5°	1408.8	1408.0	1379.8	1385.1	1374.5	1308.5	1287.4	1289.2	1239.9	1204.7	1140.4
15°	1893.7	1912.2	1917.5	1881.4	1816.3	1696.6	1643.8	1623.6	1543.5	1484.5	1392.1
17.5°	2639.0	2664.6	2577.4	2598.6	2491.2	2303.8	2199.1	2136.6	1986.1	1875.2	1708.0
20°	3649.3	3627.3	3501.4	3485.6	3302.5	3061.4	2841.4	2723.5	2492.1	2330.2	2086.4
22.5°	4953.4	4936.7	4721.1	4625.2	4242.4	3902.7	3617.6	3321.9	2977.8	2761.4	2430.5
25°	6848.9	6772.3	6356.9	6084.2	5411.0	4833.7	4358.5	3899.2	3372.1	3137.1	2716.5
26°	7546.7	7528.2	7095.2	6736.2	5924.9	5208.6	4568.0	4107.7	3526.9	3252.4	2797.4
27°	7965.5	8112.5	7709.5	7302.9	6415.9	5557.9	4815.2	4275.8	3647.5	3333.3	2849.4
28°	8400.2	8495.3	8134.5	7624.1	6809.3	5836.0	5002.7	4389.3	3721.4	3372.9	2867.0
29°	8639.6	8731.1	8395.8	7917.1	7067.1	6016.4	5113.5	4439.5	3748.7	3372.1	2851.1
30°	8766.3	8851.7	8524.3	8059.7	7173.6	6072.7	5137.3	4419.2	3722.3	3331.6	2806.2
31°	8789.2	8860.5	8537.5	8055.3	7133.1	6003.2	5070.4	4335.6	3651.9	3256.8	2738.5
32°	8711.8	8767.2	8439.0	7925.1	6950.9	5827.2	4931.4	4206.3	3544.5	3163.5	2651.4
33°	8530.5	8629.9	8229.5	7661.9	6634.1	5566.7	4734.3	4037.3	3410.8	3042.1	2544.9
34°	8230.4	8293.8	7879.3	7250.1	6211.7	5249.9	4492.3	3841.1	3257.7	2898.6	2424.3
35°	7758.7	7815.1	7356.6	6694.0	5730.4	4892.7	4216.0	3624.6	3086.1	2737.6	2290.6
36°	7105.8	7159.5	6679.9	6076.2	5244.7	4520.4	3924.7	3388.8	2900.4	2565.1	2148.9
37°	6342.9	6389.5	5962.7	5469.9	4767.7	4143.8	3629.9	3149.4	2704.2	2389.1	2014.3
38°	5605.4	5647.7	5302.7	4901.5	4307.5	3776.0	3336.0	2901.3	2501.8	2212.3	1872.6
39°	4940.2	4977.1	4699.1	4368.2	3869.3	3423.1	3043.0	2654.9	2298.5	2035.4	1726.5
40°	4348.0	4379.6	4150.8	3878.9	3471.5	3093.1	2757.8	2416.4	2099.6	1863.8	1590.1
42.5°	3191.7	3198.7	3062.3	2902.2	2585.4	2368.0	2129.5	1883.1	1651.7	1489.8	1315.6
45°	2227.2	2314.3	2225.5	2119.0	1891.9	1755.6	1603.3	1454.6	1320.8	1165.1	992.6
47.5°	1601.6	1605.1	1552.3	1485.4	1305.9	1212.6	1087.6	907.3	774.4	553.5	410.9
50°	742.7	701.3	704.0	658.2	586.9	466.4	389.8	278.1	221.8	158.4	127.6
51°	441.7	410.9	415.3	382.8	335.3	261.4	221.8	177.8	154.0	119.7	98.6
52°	257.8	247.3	246.4	231.4	197.1	181.3	160.2	133.8	117.0	92.4	76.6
53°	187.4	180.4	180.4	170.7	147.0	136.4	121.4	103.0	89.8	70.4	58.1
54°	139.9	134.6	134.6	128.5	118.8	102.1	91.5	76.6	66.9	54.6	43.1
55°	101.2	97.7	97.7	93.3	86.2	73.9	66.0	55.4	49.3	39.6	31.7
57.5°	42.2	40.5	40.5	38.7	37.0	31.7	29.9	25.5	22.0	19.4	15.8
60°	19.4	18.5	19.4	18.5	16.7	17.6	15.0	13.2	12.3	10.6	8.8
61°	15.0	14.1	14.1	14.1	12.3	12.3	11.4	10.6	9.7	7.9	7.0
62°	11.4	10.6	10.6	10.6	9.7	9.7	8.8	7.9	7.9	6.2	5.3
63°	8.8	7.9	7.9	7.9	7.0	7.0	7.0	6.2	6.2	5.3	4.4
64°	6.2	6.2	6.2	6.2	6.2	5.3	5.3	5.3	4.4	3.5	3.5
65°	5.3	4.4	5.3	4.4	4.4	4.4	4.4	4.4	3.5	2.6	2.6
66°	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	2.6	1.8



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**CANDELA DISTRIBUTION (continued):**

	0°	2.5°	5°	7.5°	10°	12.5°	15°	17.5°	20°	22.5°	25°
72.5°	0.0	0.0	0.0	0.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9
75°	0.0	0.0	0.0	0.0	0.0	0.9	0.9	0.9	0.9	0.9	0.9
77.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.9	0.9	0.9	0.9
80°	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.9	0.9	0.9	0.9
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.9	0.9	0.9	0.9
85°	0.0	0.0	0.0	0.0	0.0	0.9	0.9	0.9	0.9	0.9	0.9
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0



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**CANDELA DISTRIBUTION (continued):**

	27.5°	30°	32.5°	35°	37.5°	40°	42.5°	45°	67.5°	90°	112.5°
0°	82.7	82.7	82.7	82.7	82.7	82.7	82.7	82.7	82.7	82.7	82.7
2.5°	119.7	123.2	120.6	113.5	117.0	115.3	111.8	109.1	93.3	81.0	68.6
5°	282.5	285.1	270.2	243.8	235.0	220.9	200.6	186.6	105.6	77.4	60.7
7.5°	534.1	516.5	502.5	453.2	432.1	399.5	360.8	333.5	120.6	73.0	56.3
10°	808.7	780.5	751.5	679.3	641.5	591.3	535.9	504.2	136.4	70.4	56.3
12.5°	1080.6	1042.8	990.0	910.8	857.1	789.3	713.7	657.3	147.8	72.2	65.1
15°	1316.4	1270.7	1212.6	1122.8	1060.4	975.9	877.3	799.9	153.1	81.8	90.6
17.5°	1573.4	1490.7	1394.8	1280.4	1211.7	1114.0	1003.2	909.0	153.1	103.8	145.2
20°	1869.1	1717.7	1563.7	1403.6	1306.8	1204.7	1085.9	984.7	159.3	156.6	199.8
22.5°	2144.5	1935.9	1718.6	1510.0	1375.4	1264.5	1144.0	1027.8	184.8	172.5	132.9
25°	2358.3	2093.5	1837.4	1584.0	1431.7	1308.5	1179.2	1039.3	169.0	98.6	72.2
26°	2413.8	2127.8	1861.1	1592.8	1434.4	1307.6	1175.6	1026.9	141.7	78.3	58.1
27°	2442.8	2139.2	1862.9	1584.8	1423.8	1292.7	1156.3	1001.4	113.5	63.4	47.5
28°	2442.8	2126.0	1844.4	1562.8	1396.5	1264.5	1122.8	960.9	92.4	51.9	37.8
29°	2418.2	2091.7	1807.5	1529.4	1359.6	1224.9	1077.1	913.4	78.3	43.1	30.8
30°	2370.7	2041.5	1758.2	1486.3	1312.0	1180.0	1026.9	864.1	67.8	35.2	24.6
31°	2303.8	1985.2	1697.5	1439.6	1268.0	1138.7	981.2	814.0	59.0	28.2	20.2
32°	2223.7	1914.8	1635.0	1391.2	1232.0	1100.0	933.7	761.2	51.0	23.8	17.6
33°	2131.3	1835.6	1569.9	1343.7	1196.8	1056.0	881.7	704.0	44.0	19.4	15.0
34°	2029.2	1748.5	1503.0	1292.7	1153.6	1000.5	821.0	643.3	37.8	16.7	12.3
35°	1918.3	1650.8	1434.4	1240.8	1105.2	938.9	755.9	579.0	32.6	14.1	10.6
36°	1798.7	1559.3	1367.5	1188.8	1045.4	872.1	684.6	513.0	28.2	11.4	9.7
37°	1679.0	1473.1	1301.5	1133.4	975.9	796.4	609.8	444.4	24.6	9.7	7.9
38°	1565.5	1389.5	1236.4	1069.2	894.9	712.8	532.4	375.7	21.1	8.8	7.0
39°	1459.0	1308.5	1169.5	992.6	811.3	631.8	457.6	304.5	18.5	7.9	6.2
40°	1363.1	1232.0	1096.4	907.3	725.1	549.1	381.9	227.0	15.8	6.2	5.3
42.5°	1160.7	1021.7	843.0	632.7	490.1	318.6	177.8	84.5	11.4	4.4	4.4
45°	766.5	589.6	400.4	238.5	161.0	96.8	72.2	51.0	8.8	3.5	3.5
47.5°	256.1	162.8	118.8	85.4	73.0	58.1	46.6	31.7	6.2	2.6	2.6
50°	97.7	79.2	65.1	49.3	44.0	35.2	28.2	18.5	4.4	2.6	2.6
51°	76.6	62.5	51.0	38.7	35.2	28.2	22.9	15.8	3.5	2.6	2.6
52°	59.0	48.4	39.6	29.9	28.2	22.9	19.4	13.2	3.5	1.8	2.6
53°	44.9	37.0	29.9	22.9	22.0	18.5	15.8	10.6	2.6	1.8	2.6
54°	33.4	28.2	23.8	18.5	18.5	15.8	13.2	8.8	2.6	1.8	2.6
55°	25.5	21.1	18.5	14.1	15.0	13.2	11.4	7.0	2.6	1.8	2.6
57.5°	13.2	12.3	10.6	8.8	9.7	8.8	7.9	4.4	2.6	1.8	2.6
60°	7.9	7.0	6.2	5.3	6.2	6.2	6.2	2.6	2.6	1.8	2.6
61°	6.2	5.3	4.4	4.4	5.3	5.3	5.3	2.6	2.6	1.8	2.6
62°	4.4	4.4	3.5	3.5	5.3	4.4	4.4	2.6	2.6	1.8	2.6
63°	3.5	3.5	3.5	2.6	4.4	4.4	4.4	2.6	2.6	1.8	2.6
64°	2.6	2.6	2.6	2.6	3.5	4.4	4.4	1.8	2.6	1.8	2.6
65°	2.6	2.6	1.8	1.8	3.5	3.5	3.5	1.8	2.6	1.8	2.6
66°	1.8	1.8	1.8	1.8	3.5	3.5	3.5	1.8	2.6	1.8	2.6





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**CANDELA DISTRIBUTION (continued):**

	27.5°	30°	32.5°	35°	37.5°	40°	42.5°	45°	67.5°	90°	112.5°
72.5°	0.9	0.9	0.9	0.9	2.6	2.6	3.5	1.8	2.6	2.6	2.6
75°	0.9	0.9	0.9	0.9	2.6	2.6	3.5	1.8	2.6	2.6	2.6
77.5°	0.9	0.9	0.9	0.9	2.6	2.6	3.5	1.8	2.6	2.6	3.5
80°	0.9	0.9	0.9	0.9	2.6	2.6	3.5	1.8	2.6	2.6	3.5
82.5°	0.9	0.9	0.9	0.9	2.6	2.6	3.5	1.8	2.6	2.6	3.5
85°	0.9	0.9	0.9	0.9	2.6	2.6	3.5	1.8	2.6	2.6	3.5
87.5°	0.9	0.9	0.9	0.9	2.6	2.6	3.5	1.8	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):**

	135°	157.5°	180°
0°	82.7	82.7	82.7
2.5°	62.5	59.8	58.1
5°	53.7	51.0	50.2
7.5°	50.2	49.3	50.2
10°	55.4	59.0	63.4
12.5°	73.9	87.1	94.2
15°	122.3	159.3	175.1
17.5°	215.6	245.5	263.1
20°	190.1	173.4	183.0
22.5°	103.0	89.8	92.4
25°	57.2	49.3	50.2
26°	45.8	39.6	39.6
27°	37.0	31.7	31.7
28°	29.9	25.5	25.5
29°	23.8	20.2	20.2
30°	19.4	16.7	16.7
31°	15.8	13.2	13.2
32°	13.2	11.4	10.6
33°	11.4	9.7	8.8
34°	9.7	7.9	7.0
35°	7.9	6.2	6.2
36°	7.0	5.3	5.3
37°	6.2	4.4	4.4
38°	5.3	3.5	3.5
39°	4.4	3.5	2.6
40°	3.5	2.6	1.8
42.5°	2.6	1.8	0.9
45°	2.6	0.9	0.0
47.5°	1.8	0.9	0.0
50°	1.8	0.0	0.0
51°	1.8	0.0	0.0
52°	1.8	0.0	0.0
53°	0.9	0.0	0.0
54°	1.8	0.0	0.0
55°	0.9	0.0	0.0
57.5°	1.8	0.0	0.0
60°	1.8	0.0	0.0
61°	1.8	0.0	0.0
62°	1.8	0.0	0.0
63°	1.8	0.0	0.0
64°	1.8	0.9	0.0
65°	1.8	0.9	0.0
66°	1.8	0.9	0.0



TEST NUMBER: P170908

CATALOG NUMBER: LDA4A18940D010TE LAR15SP 4LA1 30° Tilt

**CANDELA DISTRIBUTION (continued):**

	135°	157.5°	180°
72.5°	1.8	0.9	0.0
75°	1.8	0.9	0.0
77.5°	1.8	0.9	0.0
80°	1.8	0.9	0.0
82.5°	1.8	0.9	0.0
85°	1.8	0.9	0.0
87.5°	1.8	0.9	0.0
90°	0.0	0.0	0.0



Report Generated By E9808895 / USPTCWHP6082093





— 0°-180°    - - 45°-225°    - - - - 90°-270°









67.5°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	1.8	1.8
70°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.8	1.8	0.9	0.9





67.5°	1.8	0.9	1.8	1.8	2.6	3.5	3.5	1.8	2.6	1.8	2.6
70°	0.9	0.9	0.9	0.9	2.6	2.6	3.5	1.8	2.6	1.8	2.6





67.5°	1.8	0.9	0.0
70°	1.8	0.9	0.0



(END OF REPORT)