

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: P170901

Luminaire Tested: **LDA4A18827D010TE LAR15SP 4LA1 30° Tilt**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P170901  
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: LDA4A18827D010TE 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 80CRI / 2700K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1415.6 lumens  
Efficiency: N/A  
Efficacy: 48.6 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

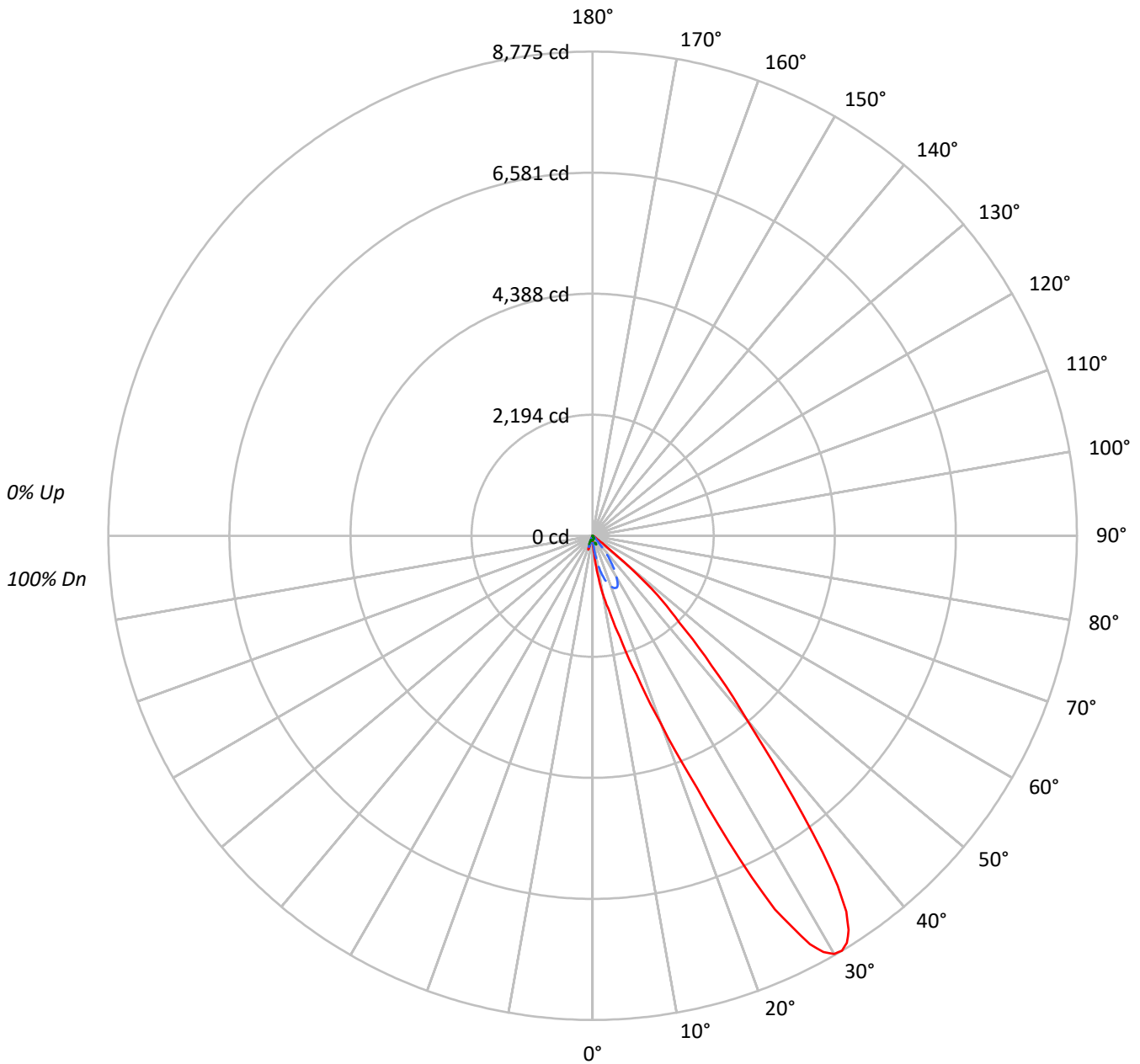
Input Watts (W): 29.12  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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°	10188	10188	10188
5°	45688	9571	6203
10°	135231	8805	7928
15°	241424	10433	22321
20°	478213	20529	23982
25°	930576	13392	6818
30°	1246509	4999	2379
35°	1166371	2123	919
40°	698939	982	290
45°	387861	611	0
50°	142288	499	0
55°	21720	387	0
60°	4761	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°	18.1	1.3
10°-20°	152.9	10.8
20°-30°	456.4	32.2
30°-40°	540.5	38.2
40°-50°	224.2	15.8
50°-60°	17.4	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°	627.5	44.3
0°-40°	1168.0	82.5
0°-60°	1409.7	99.6
0°-90°	1415.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1415.6	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	83	83	83	83	83	
5°	369	186	77	54	50	58
15°	1891	799	82	122	175	624
25°	6838	1038	98	57	50	3123
35°	7746	578	14	8	6	4489
45°	2224	51	4	3	0	1813
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°	82.6	82.6	82.6	82.6	82.6	82.6	82.6	82.6	82.6	82.6	82.6
2.5°	143.2	136.2	139.7	133.5	137.1	130.9	126.5	130.9	130.9	127.4	122.1
5°	369.0	367.2	374.3	357.6	362.0	343.5	327.7	332.1	328.6	317.1	296.9
7.5°	702.8	695.8	703.7	680.0	680.9	650.1	626.4	631.7	615.8	596.5	561.4
10°	1079.7	1070.0	1078.8	1050.7	1045.4	1002.4	969.0	974.3	938.3	906.6	853.0
12.5°	1406.5	1405.6	1377.5	1382.8	1372.3	1306.4	1285.3	1287.0	1237.8	1202.7	1138.6
15°	1890.6	1909.0	1914.3	1878.3	1813.3	1693.8	1641.1	1620.9	1540.9	1482.1	1389.8
17.5°	2634.7	2660.2	2573.2	2594.3	2487.1	2300.0	2195.4	2133.1	1982.8	1872.1	1705.2
20°	3643.2	3621.3	3495.7	3479.8	3297.1	3056.4	2836.8	2719.0	2488.0	2326.3	2083.0
22.5°	4945.2	4928.5	4713.3	4617.5	4235.4	3896.3	3611.6	3316.4	2972.9	2756.8	2426.5
25°	6837.6	6761.1	6346.5	6074.1	5402.1	4825.7	4351.3	3892.7	3366.5	3131.9	2712.0
26°	7534.2	7515.8	7083.6	6725.1	5915.1	5200.0	4560.4	4101.0	3521.1	3247.0	2792.8
27°	7952.4	8099.1	7696.8	7290.9	6405.3	5548.8	4807.3	4268.8	3641.5	3327.9	2844.7
28°	8386.4	8481.3	8121.1	7611.5	6798.0	5826.4	4994.4	4382.1	3715.3	3367.4	2862.2
29°	8625.4	8716.7	8382.0	7904.1	7055.4	6006.5	5105.1	4432.2	3742.5	3366.5	2846.4
30°	8751.9	8837.1	8510.3	8046.4	7161.7	6062.7	5128.8	4412.0	3716.2	3326.1	2801.6
31°	8774.7	8845.9	8523.5	8042.0	7121.3	5993.3	5062.1	4328.5	3645.9	3251.4	2734.0
32°	8697.4	8752.8	8425.1	7912.0	6939.5	5817.6	4923.3	4199.4	3538.7	3158.3	2647.0
33°	8516.4	8615.7	8216.0	7649.3	6623.2	5557.6	4726.5	4030.7	3405.2	3037.1	2540.7
34°	8216.9	8280.1	7866.3	7238.2	6201.5	5241.3	4484.9	3834.8	3252.3	2893.9	2420.3
35°	7746.0	7802.2	7344.5	6682.9	5721.0	4884.6	4209.0	3618.6	3081.0	2733.1	2286.8
36°	7094.1	7147.7	6668.9	6066.2	5236.0	4513.0	3918.2	3383.2	2895.6	2560.9	2145.4
37°	6332.4	6379.0	5952.9	5460.9	4759.9	4137.0	3623.9	3144.2	2699.7	2385.2	2010.9
38°	5596.2	5638.4	5294.0	4893.4	4300.4	3769.8	3330.5	2896.5	2497.6	2208.6	1869.5
39°	4932.0	4968.9	4691.3	4361.0	3862.9	3417.5	3037.9	2650.5	2294.7	2032.0	1723.7
40°	4340.8	4372.4	4144.0	3872.5	3465.8	3088.0	2753.3	2412.4	2096.2	1860.7	1587.5
42.5°	3186.4	3193.4	3057.3	2897.4	2581.1	2364.1	2126.0	1880.0	1649.0	1487.3	1313.4
45°	2223.5	2310.5	2221.8	2115.5	1888.8	1752.7	1600.7	1452.2	1318.7	1163.2	991.0
47.5°	1598.9	1602.4	1549.7	1483.0	1303.7	1210.6	1085.9	905.8	773.1	552.6	410.3
50°	741.5	700.2	702.8	657.1	586.0	465.6	389.2	277.6	221.4	158.1	127.4
51°	441.0	410.3	414.7	382.2	334.7	260.9	221.4	177.5	153.7	119.5	98.4
52°	257.4	246.9	246.0	231.1	196.8	181.0	159.9	133.5	116.8	92.2	76.4
53°	187.1	180.1	180.1	170.4	146.7	136.2	121.2	102.8	89.6	70.3	58.0
54°	139.7	134.4	134.4	128.3	118.6	101.9	91.4	76.4	66.8	54.5	43.0
55°	101.0	97.5	97.5	93.1	86.1	73.8	65.9	55.3	49.2	39.5	31.6
57.5°	42.2	40.4	40.4	38.7	36.9	31.6	29.9	25.5	22.0	19.3	15.8
60°	19.3	18.4	19.3	18.4	16.7	17.6	14.9	13.2	12.3	10.5	8.8
61°	14.9	14.1	14.1	14.1	12.3	12.3	11.4	10.5	9.7	7.9	7.0
62°	11.4	10.5	10.5	10.5	9.7	9.7	8.8	7.9	7.9	6.1	5.3
63°	8.8	7.9	7.9	7.9	7.0	7.0	7.0	6.1	6.1	5.3	4.4
64°	6.1	6.1	6.1	6.1	6.1	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°	82.6	82.6	82.6	82.6	82.6	82.6	82.6	82.6	82.6	82.6	82.6
2.5°	119.5	123.0	120.4	113.3	116.8	115.1	111.6	108.9	93.1	80.8	68.5
5°	282.0	284.6	269.7	243.4	234.6	220.5	200.3	186.2	105.4	77.3	60.6
7.5°	533.3	515.7	501.6	452.4	431.4	398.9	360.2	333.0	120.4	72.9	56.2
10°	807.4	779.3	750.3	678.2	640.4	590.4	535.0	503.4	136.2	70.3	56.2
12.5°	1078.8	1041.1	988.3	909.3	855.7	788.0	712.5	656.3	147.6	72.0	65.0
15°	1314.3	1268.6	1210.6	1121.0	1058.6	974.3	875.9	798.6	152.9	81.7	90.5
17.5°	1570.8	1488.2	1392.5	1278.3	1209.7	1112.2	1001.5	907.5	152.9	103.7	145.0
20°	1866.0	1714.9	1561.1	1401.2	1304.6	1202.7	1084.1	983.1	159.0	156.4	199.4
22.5°	2141.0	1932.8	1715.8	1507.6	1373.1	1262.4	1142.1	1026.1	184.5	172.2	132.7
25°	2354.4	2090.0	1834.4	1581.3	1429.4	1306.4	1177.2	1037.5	168.7	98.4	72.0
26°	2409.8	2124.3	1858.1	1590.1	1432.0	1305.5	1173.7	1025.2	141.4	78.2	58.0
27°	2438.8	2135.7	1859.8	1582.2	1421.5	1290.6	1154.4	999.8	113.3	63.3	47.4
28°	2438.8	2122.5	1841.4	1560.3	1394.2	1262.4	1121.0	959.4	92.2	51.8	37.8
29°	2414.2	2088.3	1804.5	1526.9	1357.3	1222.9	1075.3	911.9	78.2	43.0	30.7
30°	2366.7	2038.2	1755.3	1483.8	1309.9	1178.1	1025.2	862.7	67.6	35.1	24.6
31°	2300.0	1982.0	1694.7	1437.3	1266.0	1136.8	979.6	812.6	58.9	28.1	20.2
32°	2220.0	1911.7	1632.3	1388.9	1229.9	1098.2	932.1	759.9	51.0	23.7	17.6
33°	2127.8	1832.6	1567.3	1341.5	1194.8	1054.2	880.3	702.8	43.9	19.3	14.9
34°	2025.9	1745.6	1500.5	1290.6	1151.7	998.9	819.7	642.2	37.8	16.7	12.3
35°	1915.2	1648.1	1432.0	1238.7	1103.4	937.4	754.7	578.1	32.5	14.1	10.5
36°	1795.7	1556.7	1365.2	1186.9	1043.7	870.6	683.5	512.2	28.1	11.4	9.7
37°	1676.2	1470.7	1299.3	1131.5	974.3	795.1	608.8	443.7	24.6	9.7	7.9
38°	1562.9	1387.2	1234.3	1067.4	893.5	711.6	531.5	375.1	21.1	8.8	7.0
39°	1456.6	1306.4	1167.6	991.0	810.0	630.8	456.8	304.0	18.4	7.9	6.1
40°	1360.8	1229.9	1094.6	905.8	723.9	548.2	381.3	226.7	15.8	6.1	5.3
42.5°	1158.8	1020.0	841.6	631.7	489.3	318.0	177.5	84.3	11.4	4.4	4.4
45°	765.2	588.6	399.7	238.1	160.8	96.6	72.0	51.0	8.8	3.5	3.5
47.5°	255.7	162.5	118.6	85.2	72.9	58.0	46.6	31.6	6.1	2.6	2.6
50°	97.5	79.1	65.0	49.2	43.9	35.1	28.1	18.4	4.4	2.6	2.6
51°	76.4	62.4	51.0	38.7	35.1	28.1	22.8	15.8	3.5	2.6	2.6
52°	58.9	48.3	39.5	29.9	28.1	22.8	19.3	13.2	3.5	1.8	2.6
53°	44.8	36.9	29.9	22.8	22.0	18.4	15.8	10.5	2.6	1.8	2.6
54°	33.4	28.1	23.7	18.4	18.4	15.8	13.2	8.8	2.6	1.8	2.6
55°	25.5	21.1	18.4	14.1	14.9	13.2	11.4	7.0	2.6	1.8	2.6
57.5°	13.2	12.3	10.5	8.8	9.7	8.8	7.9	4.4	2.6	1.8	2.6
60°	7.9	7.0	6.1	5.3	6.1	6.1	6.1	2.6	2.6	1.8	2.6
61°	6.1	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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CATALOG NUMBER: LDA4A18827D010TE LAR15SP 4LA1 30° Tilt

**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



TEST NUMBER: P170901

CATALOG NUMBER: LDA4A18827D010TE LAR15SP 4LA1 30° Tilt

**CANDELA DISTRIBUTION (continued):**

	135°	157.5°	180°
0°	82.6	82.6	82.6
2.5°	62.4	59.7	58.0
5°	53.6	51.0	50.1
7.5°	50.1	49.2	50.1
10°	55.3	58.9	63.3
12.5°	73.8	87.0	94.0
15°	122.1	159.0	174.8
17.5°	215.2	245.1	262.7
20°	189.8	173.1	182.7
22.5°	102.8	89.6	92.2
25°	57.1	49.2	50.1
26°	45.7	39.5	39.5
27°	36.9	31.6	31.6
28°	29.9	25.5	25.5
29°	23.7	20.2	20.2
30°	19.3	16.7	16.7
31°	15.8	13.2	13.2
32°	13.2	11.4	10.5
33°	11.4	9.7	8.8
34°	9.7	7.9	7.0
35°	7.9	6.1	6.1
36°	7.0	5.3	5.3
37°	6.1	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: P170901

CATALOG NUMBER: LDA4A18827D010TE 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)