

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: P170932

Luminaire Tested: **LDA4A28940D010TE LAR15SP 4LA1 30° Tilt**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P170932  
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: LDA4A28940D010TE 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: 2220.2 lumens  
Efficiency: N/A  
Efficacy: 49.9 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

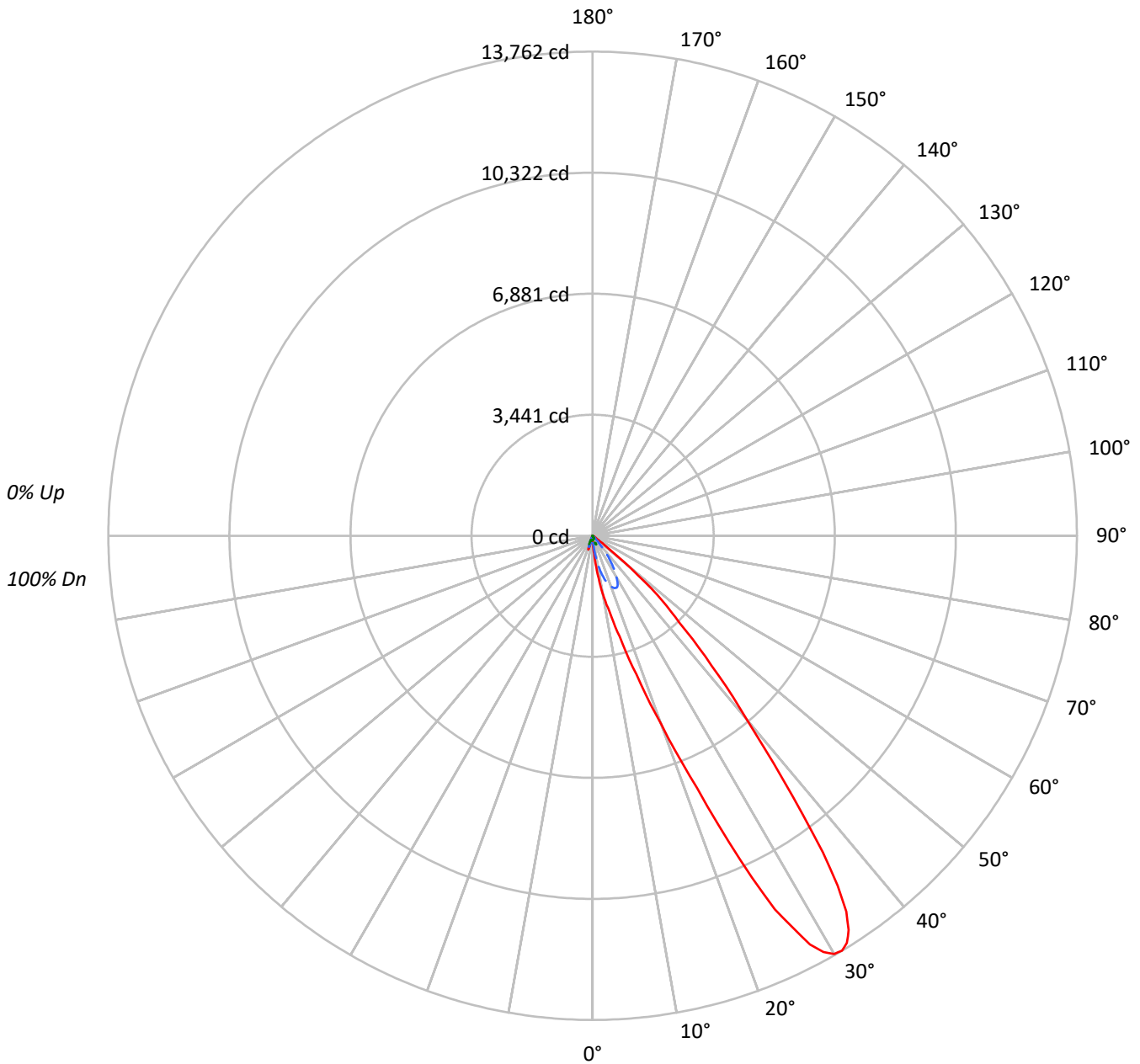
Input Watts (W): 44.49  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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°	15973	15973	15973
5°	71653	15019	9720
10°	212096	13802	12425
15°	378647	16358	35014
20°	750042	32198	37620
25°	1459516	21000	10684
30°	1955028	7848	3732
35°	1829332	3313	1446
40°	1096215	1546	451
45°	608332	959	0
50°	223151	787	0
55°	34085	602	0
60°	7475	691	0
65°	2422	817	0
70°	505	1010	0
75°	0	1954	0
80°	0	2912	0
85°	0	5802	0



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	28.5	1.3
10°-20°	239.8	10.8
20°-30°	715.8	32.2
30°-40°	847.8	38.2
40°-50°	351.7	15.8
50°-60°	27.3	1.2
60°-70°	3.7	0.2
70°-80°	2.9	0.1
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°	984.1	44.3
0°-40°	1831.9	82.5
0°-60°	2210.9	99.6
0°-90°	2220.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2220.2	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	130	130	130	130	130	
5°	579	292	121	84	78	92
15°	2965	1252	128	192	274	979
25°	10724	1627	154	90	78	4898
35°	12149	907	22	12	10	7040
45°	3487	80	6	4	0	2843
55°	158	11	3	1	0	232
65°	8	3	3	3	0	10
75°	0	3	4	3	0	0
85°	0	3	4	3	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°	129.5	129.5	129.5	129.5	129.5	129.5	129.5	129.5	129.5	129.5	129.5
2.5°	224.6	213.6	219.1	209.4	214.9	205.3	198.4	205.3	205.3	199.8	191.5
5°	578.7	576.0	587.0	560.8	567.7	538.8	514.0	520.8	515.3	497.4	465.7
7.5°	1102.3	1091.3	1103.7	1066.5	1067.9	1019.6	982.4	990.7	965.9	935.6	880.5
10°	1693.4	1678.3	1692.0	1647.9	1639.7	1572.2	1519.8	1528.1	1471.6	1422.0	1337.9
12.5°	2206.0	2204.6	2160.5	2168.8	2152.3	2048.9	2015.8	2018.6	1941.4	1886.3	1785.7
15°	2965.2	2994.1	3002.4	2945.9	2844.0	2656.6	2573.9	2542.2	2416.8	2324.5	2179.8
17.5°	4132.3	4172.2	4035.8	4068.9	3900.8	3607.3	3443.3	3345.5	3109.9	2936.3	2674.5
20°	5714.1	5679.6	5482.6	5457.8	5171.2	4793.7	4449.2	4264.5	3902.2	3648.6	3267.0
22.5°	7756.1	7729.9	7392.3	7242.2	6642.8	6110.9	5664.5	5201.5	4662.8	4323.8	3805.7
25°	10724.1	10604.2	9953.8	9526.7	8472.6	7568.7	6824.7	6105.4	5280.0	4912.2	4253.5
26°	11816.7	11787.8	11109.9	10547.7	9277.3	8155.7	7152.6	6432.0	5522.6	5092.7	4380.3
27°	12472.6	12702.7	12071.6	11435.1	10046.1	8702.7	7539.8	6695.1	5711.3	5219.4	4461.6
28°	13153.3	13302.1	12737.2	11938.0	10662.1	9138.1	7833.3	6872.9	5827.1	5281.4	4489.1
29°	13528.1	13671.4	13146.4	12396.8	11065.8	9420.6	8006.9	6951.4	5869.8	5280.0	4464.3
30°	13726.5	13860.1	13347.6	12620.0	11232.5	9508.8	8044.1	6919.7	5828.4	5216.7	4394.1
31°	13762.3	13873.9	13368.2	12613.1	11169.1	9399.9	7939.4	6788.8	5718.2	5099.5	4288.0
32°	13641.0	13727.9	13213.9	12409.2	10883.9	9124.3	7721.7	6586.3	5550.1	4953.5	4151.6
33°	13357.2	13512.9	12886.0	11997.2	10387.9	8716.5	7413.0	6321.7	5340.7	4763.3	3984.8
34°	12887.3	12986.6	12337.6	11352.4	9726.5	8220.5	7034.1	6014.5	5100.9	4538.7	3796.1
35°	12148.8	12237.0	11519.1	10481.6	8972.8	7661.0	6601.4	5675.5	4832.2	4286.6	3586.6
36°	11126.4	11210.5	10459.5	9514.3	8212.2	7078.2	6145.4	5306.2	4541.5	4016.5	3364.8
37°	9931.8	10004.8	9336.5	8564.9	7465.4	6488.5	5683.8	4931.4	4234.2	3741.0	3154.0
38°	8777.1	8843.3	8303.1	7674.8	6744.7	5912.5	5223.6	4542.9	3917.3	3464.0	2932.1
39°	7735.4	7793.3	7357.9	6839.8	6058.6	5360.0	4764.7	4157.1	3599.0	3187.0	2703.4
40°	6808.1	6857.7	6499.5	6073.7	5435.7	4843.3	4318.3	3783.7	3287.6	2918.4	2489.8
42.5°	4997.6	5008.6	4795.0	4544.3	4048.2	3707.9	3334.5	2948.7	2586.3	2332.8	2059.9
45°	3487.4	3623.8	3484.7	3317.9	2962.4	2748.9	2510.5	2277.6	2068.2	1824.3	1554.3
47.5°	2507.7	2513.3	2430.6	2325.9	2044.8	1898.7	1703.1	1420.6	1212.5	866.7	643.5
50°	1162.9	1098.2	1102.3	1030.7	919.0	730.3	610.4	435.4	347.2	248.0	199.8
51°	691.7	643.5	650.4	599.4	525.0	409.2	347.2	278.3	241.1	187.4	154.3
52°	403.7	387.2	385.8	362.4	308.6	283.8	250.8	209.4	183.3	144.7	119.9
53°	293.5	282.5	282.5	267.3	230.1	213.6	190.1	161.2	140.5	110.2	90.9
54°	219.1	210.8	210.8	201.2	186.0	159.8	143.3	119.9	104.7	85.4	67.5
55°	158.5	152.9	152.9	146.1	135.0	115.7	103.3	86.8	77.2	62.0	49.6
57.5°	66.1	63.4	63.4	60.6	57.9	49.6	46.8	40.0	34.4	30.3	24.8
60°	30.3	28.9	30.3	28.9	26.2	27.6	23.4	20.7	19.3	16.5	13.8
61°	23.4	22.0	22.0	22.0	19.3	19.3	17.9	16.5	15.2	12.4	11.0
62°	17.9	16.5	16.5	16.5	15.2	15.2	13.8	12.4	12.4	9.6	8.3
63°	13.8	12.4	12.4	12.4	11.0	11.0	11.0	9.6	9.6	8.3	6.9
64°	9.6	9.6	9.6	9.6	9.6	8.3	8.3	8.3	6.9	5.5	5.5
65°	8.3	6.9	8.3	6.9	6.9	6.9	6.9	6.9	5.5	4.1	4.1
66°	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	4.1	2.8



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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	1.4	1.4	1.4	1.4	1.4	1.4	1.4
75°	0.0	0.0	0.0	0.0	0.0	1.4	1.4	1.4	1.4	1.4	1.4
77.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4	1.4	1.4	1.4
80°	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4	1.4	1.4	1.4
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4	1.4	1.4	1.4
85°	0.0	0.0	0.0	0.0	0.0	1.4	1.4	1.4	1.4	1.4	1.4
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4	1.4	1.4	1.4
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):**

	27.5°	30°	32.5°	35°	37.5°	40°	42.5°	45°	67.5°	90°	112.5°
0°	129.5	129.5	129.5	129.5	129.5	129.5	129.5	129.5	129.5	129.5	129.5
2.5°	187.4	192.9	188.8	177.7	183.3	180.5	175.0	170.9	146.1	126.8	107.5
5°	442.3	446.4	423.0	381.7	367.9	345.8	314.2	292.1	165.3	121.3	95.1
7.5°	836.4	808.8	786.8	709.6	676.5	625.6	564.9	522.2	188.8	114.4	88.2
10°	1266.3	1222.2	1176.7	1063.7	1004.5	925.9	839.1	789.5	213.6	110.2	88.2
12.5°	1692.0	1632.8	1550.1	1426.1	1342.1	1236.0	1117.5	1029.3	231.5	113.0	102.0
15°	2061.3	1989.7	1898.7	1758.2	1660.3	1528.1	1373.7	1252.5	239.8	128.1	141.9
17.5°	2463.7	2334.1	2183.9	2004.8	1897.3	1744.4	1570.8	1423.4	239.8	162.6	227.4
20°	2926.6	2689.6	2448.5	2197.7	2046.2	1886.3	1700.3	1541.9	249.4	245.3	312.8
22.5°	3357.9	3031.3	2691.0	2364.4	2153.6	1980.0	1791.2	1609.4	289.4	270.1	208.1
25°	3692.7	3278.0	2877.0	2480.2	2241.8	2048.9	1846.4	1627.3	264.6	154.3	113.0
26°	3779.5	3331.7	2914.2	2494.0	2245.9	2047.5	1840.9	1608.0	221.8	122.6	90.9
27°	3825.0	3349.6	2917.0	2481.6	2229.4	2024.1	1810.5	1568.0	177.7	99.2	74.4
28°	3825.0	3329.0	2888.0	2447.1	2186.7	1980.0	1758.2	1504.6	144.7	81.3	59.2
29°	3786.4	3275.2	2830.2	2394.8	2128.8	1918.0	1686.5	1430.2	122.6	67.5	48.2
30°	3712.0	3196.7	2753.0	2327.2	2054.4	1847.7	1608.0	1353.1	106.1	55.1	38.6
31°	3607.3	3108.5	2657.9	2254.2	1985.5	1783.0	1536.3	1274.5	92.3	44.1	31.7
32°	3481.9	2998.3	2560.1	2178.4	1929.0	1722.4	1461.9	1191.9	79.9	37.2	27.6
33°	3337.2	2874.3	2458.1	2104.0	1873.9	1653.5	1380.6	1102.3	68.9	30.3	23.4
34°	3177.4	2737.9	2353.4	2024.1	1806.4	1566.7	1285.6	1007.2	59.2	26.2	19.3
35°	3003.8	2584.9	2245.9	1942.8	1730.6	1470.2	1183.6	906.6	51.0	22.0	16.5
36°	2816.4	2441.6	2141.2	1861.5	1636.9	1365.5	1072.0	803.3	44.1	17.9	15.2
37°	2629.0	2306.6	2037.9	1774.7	1528.1	1247.0	954.9	695.8	38.6	15.2	12.4
38°	2451.3	2175.7	1935.9	1674.1	1401.3	1116.1	833.6	588.4	33.1	13.8	11.0
39°	2284.5	2048.9	1831.2	1554.3	1270.4	989.3	716.5	476.7	28.9	12.4	9.6
40°	2134.3	1929.0	1716.8	1420.6	1135.4	859.8	598.0	355.5	24.8	9.6	8.3
42.5°	1817.4	1599.7	1320.0	990.7	767.5	498.8	278.3	132.3	17.9	6.9	6.9
45°	1200.1	923.2	626.9	373.4	252.2	151.6	113.0	79.9	13.8	5.5	5.5
47.5°	401.0	254.9	186.0	133.7	114.4	90.9	73.0	49.6	9.6	4.1	4.1
50°	152.9	124.0	102.0	77.2	68.9	55.1	44.1	28.9	6.9	4.1	4.1
51°	119.9	97.8	79.9	60.6	55.1	44.1	35.8	24.8	5.5	4.1	4.1
52°	92.3	75.8	62.0	46.8	44.1	35.8	30.3	20.7	5.5	2.8	4.1
53°	70.3	57.9	46.8	35.8	34.4	28.9	24.8	16.5	4.1	2.8	4.1
54°	52.4	44.1	37.2	28.9	28.9	24.8	20.7	13.8	4.1	2.8	4.1
55°	40.0	33.1	28.9	22.0	23.4	20.7	17.9	11.0	4.1	2.8	4.1
57.5°	20.7	19.3	16.5	13.8	15.2	13.8	12.4	6.9	4.1	2.8	4.1
60°	12.4	11.0	9.6	8.3	9.6	9.6	9.6	4.1	4.1	2.8	4.1
61°	9.6	8.3	6.9	6.9	8.3	8.3	8.3	4.1	4.1	2.8	4.1
62°	6.9	6.9	5.5	5.5	8.3	6.9	6.9	4.1	4.1	2.8	4.1
63°	5.5	5.5	5.5	4.1	6.9	6.9	6.9	4.1	4.1	2.8	4.1
64°	4.1	4.1	4.1	4.1	5.5	6.9	6.9	2.8	4.1	2.8	4.1
65°	4.1	4.1	2.8	2.8	5.5	5.5	5.5	2.8	4.1	2.8	4.1
66°	2.8	2.8	2.8	2.8	5.5	5.5	5.5	2.8	4.1	2.8	4.1





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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°	1.4	1.4	1.4	1.4	4.1	4.1	5.5	2.8	4.1	4.1	4.1
75°	1.4	1.4	1.4	1.4	4.1	4.1	5.5	2.8	4.1	4.1	4.1
77.5°	1.4	1.4	1.4	1.4	4.1	4.1	5.5	2.8	4.1	4.1	5.5
80°	1.4	1.4	1.4	1.4	4.1	4.1	5.5	2.8	4.1	4.1	5.5
82.5°	1.4	1.4	1.4	1.4	4.1	4.1	5.5	2.8	4.1	4.1	5.5
85°	1.4	1.4	1.4	1.4	4.1	4.1	5.5	2.8	4.1	4.1	5.5
87.5°	1.4	1.4	1.4	1.4	4.1	4.1	5.5	2.8	4.1	4.1	4.1
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: P170932

CATALOG NUMBER: LDA4A28940D010TE LAR15SP 4LA1 30° Tilt

**CANDELA DISTRIBUTION (continued):**

	135°	157.5°	180°
0°	129.5	129.5	129.5
2.5°	97.8	93.7	90.9
5°	84.1	79.9	78.5
7.5°	78.5	77.2	78.5
10°	86.8	92.3	99.2
12.5°	115.7	136.4	147.4
15°	191.5	249.4	274.2
17.5°	337.6	384.4	412.0
20°	297.6	271.4	286.6
22.5°	161.2	140.5	144.7
25°	89.6	77.2	78.5
26°	71.6	62.0	62.0
27°	57.9	49.6	49.6
28°	46.8	40.0	40.0
29°	37.2	31.7	31.7
30°	30.3	26.2	26.2
31°	24.8	20.7	20.7
32°	20.7	17.9	16.5
33°	17.9	15.2	13.8
34°	15.2	12.4	11.0
35°	12.4	9.6	9.6
36°	11.0	8.3	8.3
37°	9.6	6.9	6.9
38°	8.3	5.5	5.5
39°	6.9	5.5	4.1
40°	5.5	4.1	2.8
42.5°	4.1	2.8	1.4
45°	4.1	1.4	0.0
47.5°	2.8	1.4	0.0
50°	2.8	0.0	0.0
51°	2.8	0.0	0.0
52°	2.8	0.0	0.0
53°	1.4	0.0	0.0
54°	2.8	0.0	0.0
55°	1.4	0.0	0.0
57.5°	2.8	0.0	0.0
60°	2.8	0.0	0.0
61°	2.8	0.0	0.0
62°	2.8	0.0	0.0
63°	2.8	0.0	0.0
64°	2.8	1.4	0.0
65°	2.8	1.4	0.0
66°	2.8	1.4	0.0



TEST NUMBER: P170932

CATALOG NUMBER: LDA4A28940D010TE LAR15SP 4LA1 30° Tilt

**CANDELA DISTRIBUTION (continued):**

	135°	157.5°	180°
72.5°	2.8	1.4	0.0
75°	2.8	1.4	0.0
77.5°	2.8	1.4	0.0
80°	2.8	1.4	0.0
82.5°	2.8	1.4	0.0
85°	2.8	1.4	0.0
87.5°	2.8	1.4	0.0
90°	0.0	0.0	0.0



Report Generated By E9808895 / USPTCWHP6082093





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









67.5°	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	2.8	2.8
70°	1.4	1.4	1.4	1.4	1.4	1.4	1.4	2.8	2.8	1.4	1.4





67.5°	2.8	1.4	2.8	2.8	4.1	5.5	5.5	2.8	4.1	2.8	4.1
70°	1.4	1.4	1.4	1.4	4.1	4.1	5.5	2.8	4.1	2.8	4.1





67.5°	2.8	1.4	0.0
70°	2.8	1.4	0.0



(END OF REPORT)