

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: P170926

Luminaire Tested: **LDA4A28830D010TE LAR15SP 4LA1 30° Tilt**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P170926  
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: LDA4A28830D010TE 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 / 3000K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 2399.5 lumens  
Efficiency: N/A  
Efficacy: 53.9 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

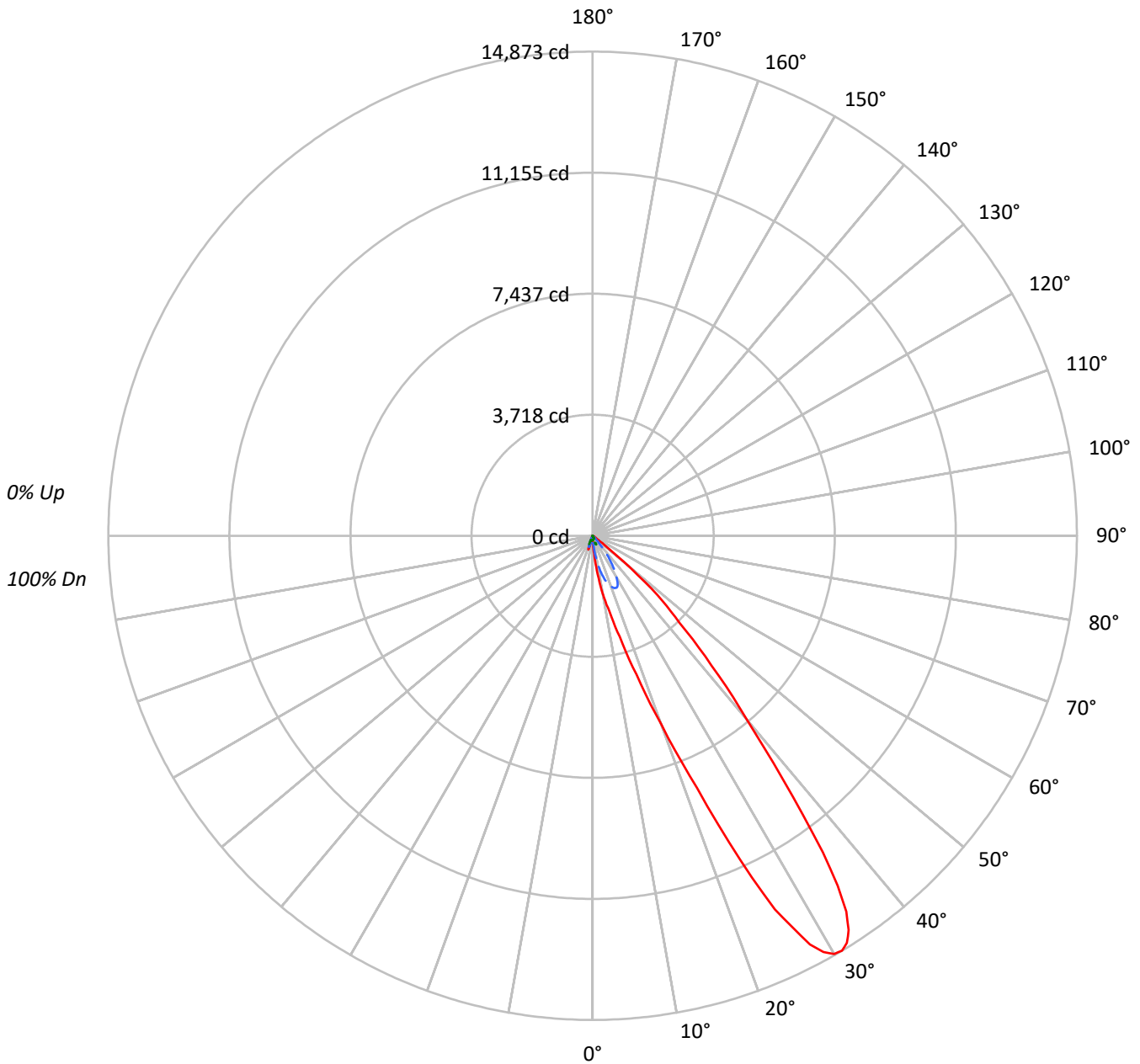
Input Watts (W): 44.49  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



TEST NUMBER: P170926

CATALOG NUMBER: LDA4A28830D010TE LAR15SP 4LA1 30° Tilt

### Luminous Intensity Polar Plot





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CATALOG NUMBER: LDA4A28830D010TE LAR15SP 4LA1 30° Tilt

**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	104	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	86	84	82					82			
3	99	91	85	80	97	90	84	80	87	82	78	84	80	77	82	79	76	74					74			
4	92	83	77	71	90	82	76	71	80	74	70	78	73	69	76	72	68	67					67			
5	86	76	69	64	84	75	68	63	73	67	63	71	66	62	70	65	62	60					60			
6	80	69	62	57	79	69	62	57	67	61	56	65	60	56	64	59	56	54					54			
7	75	64	56	51	73	63	56	51	62	55	51	60	55	50	59	54	50	49					49			
8	70	58	51	46	69	58	51	46	57	50	46	55	50	46	54	49	45	44					44			
9	65	54	47	42	64	53	46	42	52	46	41	51	45	41	50	45	41	40					40			
10	61	49	42	38	60	49	42	38	48	42	38	47	41	37	46	41	37	36					36			

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

	0°	90°	180°
0°	17268	17268	17268
5°	77435	16220	10512
10°	229217	14917	13427
15°	409217	17686	37837
20°	810593	34797	40652
25°	1577335	22701	11555
30°	2112837	8489	4031
35°	1977003	3584	1566
40°	1184709	1675	483
45°	657436	1047	0
50°	241170	864	0
55°	36816	645	0
60°	8091	740	0
65°	2598	876	0
70°	541	1082	0
75°	0	2145	0
80°	0	3196	0
85°	0	6369	0



TEST NUMBER: P170926

CATALOG NUMBER: LDA4A28830D010TE LAR15SP 4LA1 30° Tilt

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	30.7	1.3
10°-20°	259.2	10.8
20°-30°	773.6	32.2
30°-40°	916.2	38.2
40°-50°	380.1	15.8
50°-60°	29.6	1.2
60°-70°	4.1	0.2
70°-80°	3.1	0.1
80°-90°	2.9	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°	1063.6	44.3
0°-40°	1979.8	82.5
0°-60°	2389.4	99.6
0°-90°	2399.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2399.5	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	140	140	140	140	140	
5°	625	316	131	91	85	99
15°	3205	1354	138	207	296	1058
25°	11590	1759	167	97	85	5294
35°	13130	980	24	13	10	7609
45°	3769	86	6	4	0	3073
55°	171	12	3	2	0	251
65°	9	3	3	3	0	11
75°	0	3	4	3	0	0
85°	0	3	4	3	0	0
90°	0	0	0	0	0	



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CATALOG NUMBER: LDA4A28830D010TE LAR15SP 4LA1 30° Tilt

**CANDELA DISTRIBUTION (FULL):**

	0°	2.5°	5°	7.5°	10°	12.5°	15°	17.5°	20°	22.5°	25°
0°	140.0	140.0	140.0	140.0	140.0	140.0	140.0	140.0	140.0	140.0	140.0
2.5°	242.7	230.8	236.8	226.3	232.3	221.9	214.4	221.9	221.9	215.9	207.0
5°	625.4	622.4	634.4	606.1	613.5	582.2	555.4	562.9	556.9	537.6	503.3
7.5°	1191.3	1179.4	1192.8	1152.6	1154.1	1101.9	1061.7	1070.7	1043.9	1011.1	951.5
10°	1830.1	1813.7	1828.6	1781.0	1772.0	1699.1	1642.5	1651.4	1590.4	1536.8	1445.9
12.5°	2384.1	2382.6	2334.9	2343.9	2326.0	2214.3	2178.6	2181.6	2098.2	2038.6	1929.9
15°	3204.6	3235.8	3244.8	3183.7	3073.5	2871.0	2781.7	2747.4	2611.9	2512.1	2355.8
17.5°	4465.8	4509.0	4361.6	4397.3	4215.7	3898.5	3721.3	3615.6	3360.9	3173.3	2890.4
20°	6175.4	6138.1	5925.2	5898.4	5588.6	5180.6	4808.3	4608.8	4217.2	3943.2	3530.7
22.5°	8382.2	8353.9	7989.1	7826.8	7179.0	6604.2	6121.7	5621.4	5039.2	4672.8	4112.9
25°	11589.8	11460.2	10757.4	10295.7	9156.6	8179.7	7375.6	6598.3	5706.3	5308.7	4596.9
26°	12770.6	12739.4	12006.7	11399.2	10026.2	8814.1	7730.0	6951.2	5968.4	5503.8	4733.9
27°	13479.4	13728.1	13046.1	12358.1	10857.1	9405.2	8148.4	7235.6	6172.4	5640.8	4821.7
28°	14215.1	14375.9	13765.4	12901.7	11522.8	9875.8	8465.6	7427.7	6297.5	5707.8	4851.5
29°	14620.1	14775.0	14207.6	13397.5	11959.1	10181.1	8653.2	7512.6	6343.6	5706.3	4824.7
30°	14834.5	14979.0	14425.0	13638.8	12139.2	10276.4	8693.4	7478.3	6298.9	5637.8	4748.8
31°	14873.3	14993.9	14447.4	13631.3	12070.7	10158.7	8580.3	7336.9	6179.8	5511.2	4634.1
32°	14742.2	14836.0	14280.6	13410.9	11762.5	9860.9	8345.0	7118.0	5998.1	5353.4	4486.7
33°	14435.5	14603.7	13926.2	12965.7	11226.4	9420.1	8011.4	6832.0	5771.8	5147.9	4306.5
34°	13927.7	14034.9	13333.5	12268.8	10511.6	8884.0	7601.9	6500.0	5512.7	4905.1	4102.5
35°	13129.5	13224.8	12449.0	11327.7	9697.1	8279.5	7134.3	6133.7	5222.3	4632.6	3876.2
36°	12024.6	12115.4	11303.9	10282.3	8875.1	7649.6	6641.4	5734.6	4908.1	4340.8	3636.4
37°	10733.5	10812.4	10090.2	9256.3	8068.0	7012.2	6142.6	5329.5	4576.0	4042.9	3408.6
38°	9485.6	9557.1	8973.4	8294.4	7289.2	6389.8	5645.2	4909.6	4233.5	3743.6	3168.8
39°	8359.9	8422.4	7951.9	7392.0	6547.6	5792.6	5149.4	4492.7	3889.6	3444.3	2921.6
40°	7357.7	7411.3	7024.1	6564.0	5874.5	5234.2	4666.9	4089.1	3553.0	3153.9	2690.8
42.5°	5401.0	5412.9	5182.1	4911.1	4375.0	4007.2	3603.7	3186.7	2795.1	2521.1	2226.2
45°	3768.9	3916.4	3766.0	3585.8	3201.6	2970.8	2713.2	2461.5	2235.2	1971.6	1679.7
47.5°	2710.2	2716.1	2626.8	2513.6	2209.8	2052.0	1840.5	1535.3	1310.4	936.7	695.4
50°	1256.8	1186.8	1191.3	1113.9	993.2	789.2	659.7	470.6	375.3	268.0	215.9
51°	747.5	695.4	702.9	647.8	567.4	442.3	375.3	300.8	260.6	202.5	166.8
52°	436.3	418.4	417.0	391.6	333.6	306.8	271.0	226.3	198.1	156.4	129.6
53°	317.2	305.3	305.3	288.9	248.7	230.8	205.5	174.2	151.9	119.1	98.3
54°	236.8	227.8	227.8	217.4	201.0	172.7	154.9	129.6	113.2	92.3	73.0
55°	171.2	165.3	165.3	157.8	145.9	125.1	111.7	93.8	83.4	67.0	53.6
57.5°	71.5	68.5	68.5	65.5	62.5	53.6	50.6	43.2	37.2	32.8	26.8
60°	32.8	31.3	32.8	31.3	28.3	29.8	25.3	22.3	20.8	17.9	14.9
61°	25.3	23.8	23.8	23.8	20.8	20.8	19.4	17.9	16.4	13.4	11.9
62°	19.4	17.9	17.9	17.9	16.4	16.4	14.9	13.4	13.4	10.4	8.9
63°	14.9	13.4	13.4	13.4	11.9	11.9	11.9	10.4	10.4	8.9	7.4
64°	10.4	10.4	10.4	10.4	10.4	8.9	8.9	8.9	7.4	6.0	6.0
65°	8.9	7.4	8.9	7.4	7.4	7.4	7.4	7.4	6.0	4.5	4.5
66°	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	4.5	3.0



TEST NUMBER: P170926

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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	1.5	1.5	1.5	1.5	1.5	1.5	1.5
75°	0.0	0.0	0.0	0.0	0.0	1.5	1.5	1.5	1.5	1.5	1.5
77.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.5	1.5	1.5	1.5
80°	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.5	1.5	1.5	1.5
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.5	1.5	1.5	1.5
85°	0.0	0.0	0.0	0.0	0.0	1.5	1.5	1.5	1.5	1.5	1.5
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.5	1.5	1.5	1.5
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°	140.0	140.0	140.0	140.0	140.0	140.0	140.0	140.0	140.0	140.0	140.0
2.5°	202.5	208.5	204.0	192.1	198.1	195.1	189.1	184.6	157.8	137.0	116.2
5°	478.0	482.5	457.2	412.5	397.6	373.8	339.5	315.7	178.7	131.0	102.7
7.5°	903.9	874.1	850.3	766.9	731.2	676.1	610.5	564.4	204.0	123.6	95.3
10°	1368.5	1320.8	1271.7	1149.6	1085.6	1000.7	906.9	853.3	230.8	119.1	95.3
12.5°	1828.6	1764.6	1675.3	1541.2	1450.4	1335.7	1207.7	1112.4	250.2	122.1	110.2
15°	2227.7	2150.3	2052.0	1900.1	1794.4	1651.4	1484.6	1353.6	259.1	138.5	153.4
17.5°	2662.5	2522.6	2360.2	2166.7	2050.5	1885.2	1697.6	1538.3	259.1	175.7	245.7
20°	3162.9	2906.7	2646.2	2375.1	2211.3	2038.6	1837.6	1666.3	269.5	265.1	338.0
22.5°	3629.0	3276.0	2908.2	2555.3	2327.5	2139.9	1935.8	1739.3	312.7	291.9	224.9
25°	3990.8	3542.6	3109.3	2680.4	2422.8	2214.3	1995.4	1758.6	285.9	166.8	122.1
26°	4084.6	3600.7	3149.5	2695.3	2427.3	2212.8	1989.5	1737.8	239.7	132.5	98.3
27°	4133.8	3620.0	3152.5	2681.9	2409.4	2187.5	1956.7	1694.6	192.1	107.2	80.4
28°	4133.8	3597.7	3121.2	2644.7	2363.2	2139.9	1900.1	1626.1	156.4	87.9	64.0
29°	4092.1	3539.6	3058.6	2588.1	2300.7	2072.8	1822.7	1545.7	132.5	73.0	52.1
30°	4011.7	3454.7	2975.2	2515.1	2220.3	1996.9	1737.8	1462.3	114.7	59.6	41.7
31°	3898.5	3359.4	2872.5	2436.2	2145.8	1926.9	1660.4	1377.4	99.8	47.7	34.2
32°	3763.0	3240.3	2766.8	2354.3	2084.8	1861.4	1579.9	1288.1	86.4	40.2	29.8
33°	3606.6	3106.3	2656.6	2273.9	2025.2	1786.9	1492.1	1191.3	74.5	32.8	25.3
34°	3433.9	2958.9	2543.4	2187.5	1952.2	1693.1	1389.3	1088.5	64.0	28.3	20.8
35°	3246.3	2793.6	2427.3	2099.6	1870.3	1588.9	1279.1	979.8	55.1	23.8	17.9
36°	3043.7	2638.7	2314.1	2011.8	1769.1	1475.7	1158.5	868.2	47.7	19.4	16.4
37°	2841.2	2492.8	2202.4	1918.0	1651.4	1347.6	1032.0	752.0	41.7	16.4	13.4
38°	2649.1	2351.3	2092.2	1809.3	1514.4	1206.2	900.9	635.9	35.7	14.9	11.9
39°	2468.9	2214.3	1979.0	1679.7	1373.0	1069.2	774.3	515.2	31.3	13.4	10.4
40°	2306.6	2084.8	1855.4	1535.3	1227.0	929.2	646.3	384.2	26.8	10.4	8.9
42.5°	1964.1	1728.9	1426.6	1070.7	829.4	539.1	300.8	143.0	19.4	7.4	7.4
45°	1297.0	997.7	677.5	403.5	272.5	163.8	122.1	86.4	14.9	6.0	6.0
47.5°	433.3	275.5	201.0	144.4	123.6	98.3	78.9	53.6	10.4	4.5	4.5
50°	165.3	134.0	110.2	83.4	74.5	59.6	47.7	31.3	7.4	4.5	4.5
51°	129.6	105.7	86.4	65.5	59.6	47.7	38.7	26.8	6.0	4.5	4.5
52°	99.8	81.9	67.0	50.6	47.7	38.7	32.8	22.3	6.0	3.0	4.5
53°	75.9	62.5	50.6	38.7	37.2	31.3	26.8	17.9	4.5	3.0	4.5
54°	56.6	47.7	40.2	31.3	31.3	26.8	22.3	14.9	4.5	3.0	4.5
55°	43.2	35.7	31.3	23.8	25.3	22.3	19.4	11.9	4.5	3.0	4.5
57.5°	22.3	20.8	17.9	14.9	16.4	14.9	13.4	7.4	4.5	3.0	4.5
60°	13.4	11.9	10.4	8.9	10.4	10.4	10.4	4.5	4.5	3.0	4.5
61°	10.4	8.9	7.4	7.4	8.9	8.9	8.9	4.5	4.5	3.0	4.5
62°	7.4	7.4	6.0	6.0	8.9	7.4	7.4	4.5	4.5	3.0	4.5
63°	6.0	6.0	6.0	4.5	7.4	7.4	7.4	4.5	4.5	3.0	4.5
64°	4.5	4.5	4.5	4.5	6.0	7.4	7.4	3.0	4.5	3.0	4.5
65°	4.5	4.5	3.0	3.0	6.0	6.0	6.0	3.0	4.5	3.0	4.5
66°	3.0	3.0	3.0	3.0	6.0	6.0	6.0	3.0	4.5	3.0	4.5





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CATALOG NUMBER: LDA4A28830D010TE 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°	1.5	1.5	1.5	1.5	4.5	4.5	6.0	3.0	4.5	4.5	4.5
75°	1.5	1.5	1.5	1.5	4.5	4.5	6.0	3.0	4.5	4.5	4.5
77.5°	1.5	1.5	1.5	1.5	4.5	4.5	6.0	3.0	4.5	4.5	6.0
80°	1.5	1.5	1.5	1.5	4.5	4.5	6.0	3.0	4.5	4.5	6.0
82.5°	1.5	1.5	1.5	1.5	4.5	4.5	6.0	3.0	4.5	4.5	6.0
85°	1.5	1.5	1.5	1.5	4.5	4.5	6.0	3.0	4.5	4.5	6.0
87.5°	1.5	1.5	1.5	1.5	4.5	4.5	6.0	3.0	4.5	4.5	4.5
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: P170926

CATALOG NUMBER: LDA4A28830D010TE LAR15SP 4LA1 30° Tilt

**CANDELA DISTRIBUTION (continued):**

	135°	157.5°	180°
0°	140.0	140.0	140.0
2.5°	105.7	101.3	98.3
5°	90.8	86.4	84.9
7.5°	84.9	83.4	84.9
10°	93.8	99.8	107.2
12.5°	125.1	147.4	159.3
15°	207.0	269.5	296.3
17.5°	364.8	415.5	445.2
20°	321.6	293.4	309.7
22.5°	174.2	151.9	156.4
25°	96.8	83.4	84.9
26°	77.4	67.0	67.0
27°	62.5	53.6	53.6
28°	50.6	43.2	43.2
29°	40.2	34.2	34.2
30°	32.8	28.3	28.3
31°	26.8	22.3	22.3
32°	22.3	19.4	17.9
33°	19.4	16.4	14.9
34°	16.4	13.4	11.9
35°	13.4	10.4	10.4
36°	11.9	8.9	8.9
37°	10.4	7.4	7.4
38°	8.9	6.0	6.0
39°	7.4	6.0	4.5
40°	6.0	4.5	3.0
42.5°	4.5	3.0	1.5
45°	4.5	1.5	0.0
47.5°	3.0	1.5	0.0
50°	3.0	0.0	0.0
51°	3.0	0.0	0.0
52°	3.0	0.0	0.0
53°	1.5	0.0	0.0
54°	3.0	0.0	0.0
55°	1.5	0.0	0.0
57.5°	3.0	0.0	0.0
60°	3.0	0.0	0.0
61°	3.0	0.0	0.0
62°	3.0	0.0	0.0
63°	3.0	0.0	0.0
64°	3.0	1.5	0.0
65°	3.0	1.5	0.0
66°	3.0	1.5	0.0



TEST NUMBER: P170926

CATALOG NUMBER: LDA4A28830D010TE LAR15SP 4LA1 30° Tilt

**CANDELA DISTRIBUTION (continued):**

	135°	157.5°	180°
72.5°	3.0	1.5	0.0
75°	3.0	1.5	0.0
77.5°	3.0	1.5	0.0
80°	3.0	1.5	0.0
82.5°	3.0	1.5	0.0
85°	3.0	1.5	0.0
87.5°	3.0	1.5	0.0
90°	0.0	0.0	0.0



Report Generated By E9808895 / USPTCWHP6082093





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









67.5°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	3.0	3.0
70°	1.5	1.5	1.5	1.5	1.5	1.5	1.5	3.0	3.0	1.5	1.5





67.5°	3.0	1.5	3.0	3.0	4.5	6.0	6.0	3.0	4.5	3.0	4.5
70°	1.5	1.5	1.5	1.5	4.5	4.5	6.0	3.0	4.5	3.0	4.5





67.5°	3.0	1.5	0.0
70°	3.0	1.5	0.0



(END OF REPORT)