

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: P170904

Luminaire Tested: **LDA4A18840D010TE LAR15SP 4LA1 30° Tilt**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P170904  
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: LDA4A18840D010TE 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 / 4000K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1652.3 lumens  
Efficiency: N/A  
Efficacy: 56.7 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

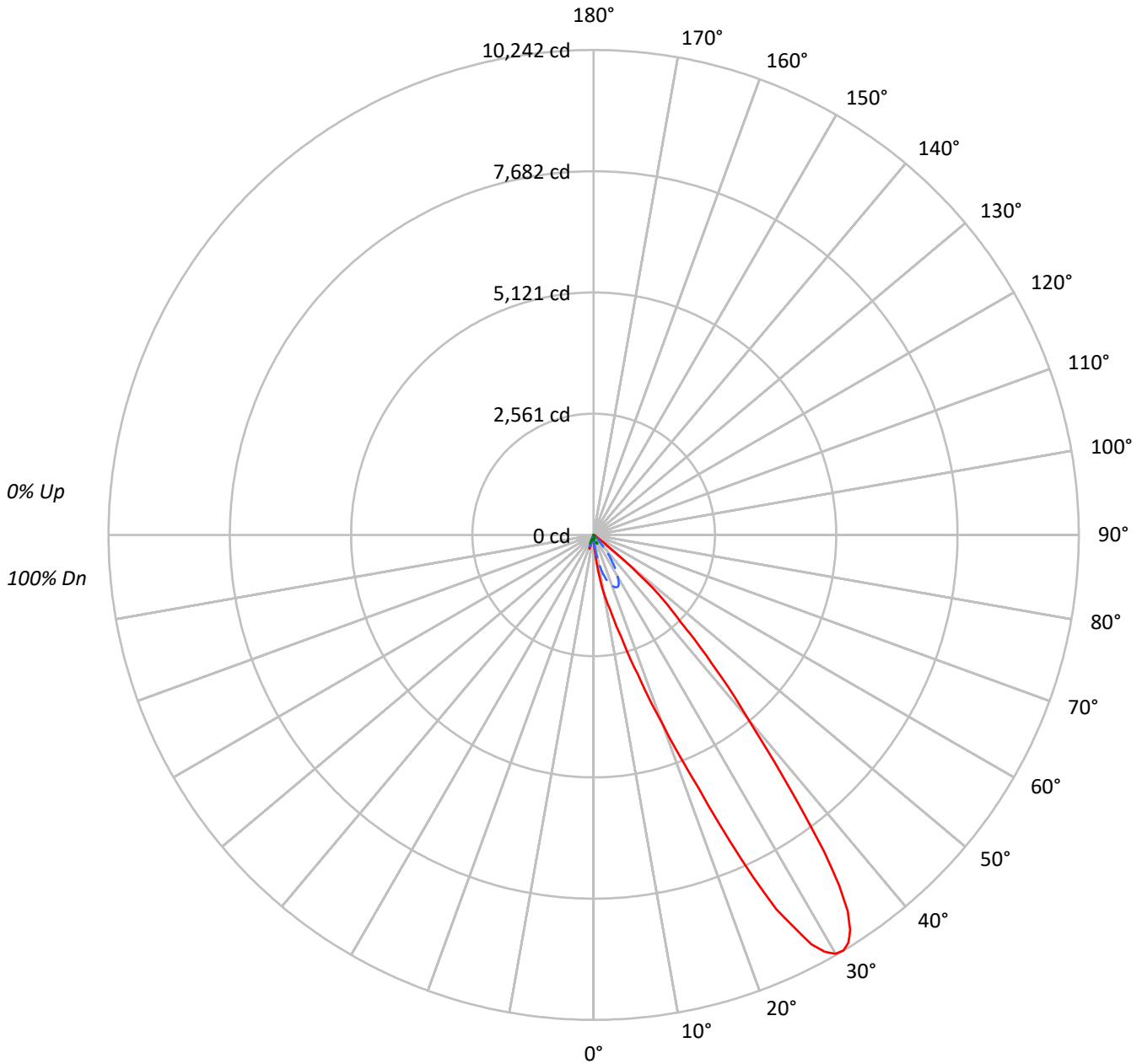
Input Watts (W): 29.12  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



TEST NUMBER: P170904

CATALOG NUMBER: LDA4A18840D010TE LAR15SP 4LA1 30° Tilt

### Luminous Intensity Polar Plot





TEST NUMBER: P170904

CATALOG NUMBER: LDA4A18840D010TE 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°	11891	11891	11891
5°	53328	11168	7231
10°	157851	10270	9243
15°	281789	12182	26063
20°	558190	23955	27998
25°	1086175	15624	7948
30°	1454937	5840	2777
35°	1361399	2469	1084
40°	815821	1159	338
45°	452734	715	0
50°	166082	595	0
55°	25354	452	0
60°	5575	518	0
65°	1810	613	0
70°	361	757	0
75°	0	1477	0
80°	0	2202	0
85°	0	4387	0



TEST NUMBER: P170904

CATALOG NUMBER: LDA4A18840D010TE LAR15SP 4LA1 30° Tilt

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	21.2	1.3
10°-20°	178.5	10.8
20°-30°	532.7	32.2
30°-40°	630.9	38.2
40°-50°	261.7	15.8
50°-60°	20.4	1.2
60°-70°	2.8	0.2
70°-80°	2.1	0.1
80°-90°	2.0	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°	732.4	44.3
0°-40°	1363.3	82.5
0°-60°	1645.4	99.6
0°-90°	1652.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1652.3	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	96	96	96	96	96	
5°	431	217	90	63	58	68
15°	2207	932	95	142	204	728
25°	7981	1211	115	67	58	3645
35°	9041	675	16	9	7	5240
45°	2595	60	4	3	0	2116
55°	118	8	2	1	0	173
65°	6	2	2	2	0	8
75°	0	2	3	2	0	0
85°	0	2	3	2	0	0
90°	0	0	0	0	0	



TEST NUMBER: P170904

CATALOG NUMBER: LDA4A18840D010TE LAR15SP 4LA1 30° Tilt

**CANDELA DISTRIBUTION (FULL):**

	0°	2.5°	5°	7.5°	10°	12.5°	15°	17.5°	20°	22.5°	25°
0°	96.4	96.4	96.4	96.4	96.4	96.4	96.4	96.4	96.4	96.4	96.4
2.5°	167.1	158.9	163.0	155.9	160.0	152.8	147.7	152.8	152.8	148.7	142.5
5°	430.7	428.6	436.8	417.4	422.5	400.9	382.5	387.6	383.5	370.2	346.6
7.5°	820.3	812.1	821.4	793.7	794.7	758.8	731.1	737.3	718.8	696.3	655.2
10°	1260.3	1249.0	1259.2	1226.4	1220.3	1170.0	1131.0	1137.2	1095.2	1058.2	995.7
12.5°	1641.7	1640.7	1607.9	1614.0	1601.7	1524.8	1500.2	1502.3	1444.8	1403.8	1329.0
15°	2206.7	2228.3	2234.4	2192.4	2116.5	1977.0	1915.5	1891.9	1798.6	1729.9	1622.2
17.5°	3075.3	3105.0	3003.5	3028.1	2903.0	2684.6	2562.5	2489.7	2314.4	2185.2	1990.4
20°	4252.5	4226.8	4080.2	4061.7	3848.4	3567.5	3311.1	3173.7	2904.0	2715.3	2431.3
22.5°	5772.1	5752.7	5501.4	5389.7	4943.6	4547.8	4215.5	3871.0	3470.1	3217.8	2832.2
25°	7980.9	7891.7	7407.7	7089.8	6305.4	5632.7	5079.0	4543.7	3929.4	3655.7	3165.5
26°	8794.1	8772.6	8268.0	7849.7	6904.2	6069.5	5323.0	4786.7	4109.9	3790.0	3259.8
27°	9282.2	9453.4	8983.8	8510.0	7476.4	6476.6	5611.2	4982.6	4250.4	3884.3	3320.3
28°	9788.8	9899.5	9479.1	8884.3	7934.8	6800.7	5829.6	5114.8	4336.5	3930.5	3340.9
29°	10067.7	10174.3	9783.6	9225.8	8235.2	7010.9	5958.8	5173.3	4368.3	3929.4	3322.4
30°	10215.3	10314.8	9933.3	9391.9	8359.3	7076.5	5986.5	5149.7	4337.6	3882.3	3270.1
31°	10242.0	10325.1	9948.7	9386.8	8312.1	6995.5	5908.5	5052.3	4255.5	3795.1	3191.1
32°	10151.8	10216.4	9833.9	9235.0	8099.9	6790.4	5746.5	4901.6	4130.4	3686.4	3089.6
33°	9940.5	10056.4	9589.8	8928.4	7730.7	6486.9	5516.8	4704.7	3974.6	3544.9	2965.5
34°	9590.8	9664.7	9181.7	8448.5	7238.5	6117.7	5234.8	4476.0	3796.1	3377.8	2825.1
35°	9041.2	9106.8	8572.6	7800.4	6677.6	5701.4	4912.8	4223.7	3596.2	3190.1	2669.2
36°	8280.3	8342.9	7784.0	7080.6	6111.6	5267.6	4573.4	3948.9	3379.8	2989.1	2504.1
37°	7391.3	7445.6	6948.3	6374.1	5555.8	4828.8	4229.9	3670.0	3151.1	2784.0	2347.2
38°	6532.0	6581.2	6179.2	5711.6	5019.5	4400.1	3887.4	3380.8	2915.3	2577.9	2182.1
39°	5756.8	5799.8	5475.8	5090.2	4508.8	3988.9	3545.9	3093.7	2678.4	2371.8	2011.9
40°	5066.7	5103.6	4837.0	4520.1	4045.3	3604.4	3213.7	2815.8	2446.7	2171.9	1853.0
42.5°	3719.2	3727.4	3568.5	3381.9	3012.7	2759.4	2481.5	2194.4	1924.7	1736.1	1533.0
45°	2595.4	2696.9	2593.3	2469.2	2204.7	2045.7	1868.3	1695.0	1539.2	1357.7	1156.7
47.5°	1866.3	1870.4	1808.9	1730.9	1521.7	1413.0	1267.4	1057.2	902.4	645.0	478.9
50°	865.5	817.3	820.3	767.0	684.0	543.5	454.3	324.0	258.4	184.6	148.7
51°	514.8	478.9	484.0	446.1	390.7	304.6	258.4	207.1	179.5	139.5	114.8
52°	300.5	288.1	287.1	269.7	229.7	211.2	186.6	155.9	136.4	107.7	89.2
53°	218.4	210.2	210.2	198.9	171.2	158.9	141.5	120.0	104.6	82.0	67.7
54°	163.0	156.9	156.9	149.7	138.4	118.9	106.6	89.2	77.9	63.6	50.2
55°	117.9	113.8	113.8	108.7	100.5	86.1	76.9	64.6	57.4	46.1	36.9
57.5°	49.2	47.2	47.2	45.1	43.1	36.9	34.9	29.7	25.6	22.6	18.5
60°	22.6	21.5	22.6	21.5	19.5	20.5	17.4	15.4	14.4	12.3	10.3
61°	17.4	16.4	16.4	16.4	14.4	14.4	13.3	12.3	11.3	9.2	8.2
62°	13.3	12.3	12.3	12.3	11.3	11.3	10.3	9.2	9.2	7.2	6.2
63°	10.3	9.2	9.2	9.2	8.2	8.2	8.2	7.2	7.2	6.2	5.1
64°	7.2	7.2	7.2	7.2	7.2	6.2	6.2	6.2	5.1	4.1	4.1
65°	6.2	5.1	6.2	5.1	5.1	5.1	5.1	5.1	4.1	3.1	3.1
66°	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	3.1	2.1



TEST NUMBER: P170904

CATALOG NUMBER: LDA4A18840D010TE LAR15SP 4LA1 30° Tilt

**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	1.0	1.0	1.0	1.0	1.0	1.0	1.0
75°	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0
77.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0
80°	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0
85°	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0
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: P170904

CATALOG NUMBER: LDA4A18840D010TE LAR15SP 4LA1 30° Tilt

**CANDELA DISTRIBUTION (continued):**

	27.5°	30°	32.5°	35°	37.5°	40°	42.5°	45°	67.5°	90°	112.5°
0°	96.4	96.4	96.4	96.4	96.4	96.4	96.4	96.4	96.4	96.4	96.4
2.5°	139.5	143.6	140.5	132.3	136.4	134.3	130.2	127.2	108.7	94.3	80.0
5°	329.2	332.2	314.8	284.0	273.8	257.4	233.8	217.4	123.1	90.2	70.8
7.5°	622.4	601.9	585.5	528.1	503.5	465.5	420.4	388.6	140.5	85.1	65.6
10°	942.4	909.6	875.7	791.6	747.5	689.1	624.5	587.6	158.9	82.0	65.6
12.5°	1259.2	1215.1	1153.6	1061.3	998.8	919.8	831.6	766.0	172.3	84.1	75.9
15°	1534.0	1480.7	1413.0	1308.4	1235.6	1137.2	1022.4	932.1	178.4	95.4	105.6
17.5°	1833.5	1737.1	1625.3	1492.0	1412.0	1298.2	1169.0	1059.3	178.4	121.0	169.2
20°	2178.0	2001.6	1822.2	1635.6	1522.8	1403.8	1265.4	1147.5	185.6	182.5	232.8
22.5°	2499.0	2255.9	2002.7	1759.6	1602.7	1473.5	1333.1	1197.7	215.3	201.0	154.8
25°	2748.2	2439.5	2141.1	1845.8	1668.4	1524.8	1374.1	1211.0	196.9	114.8	84.1
26°	2812.8	2479.5	2168.8	1856.0	1671.5	1523.8	1370.0	1196.7	165.1	91.3	67.7
27°	2846.6	2492.8	2170.8	1846.8	1659.1	1506.4	1347.4	1166.9	132.3	73.8	55.4
28°	2846.6	2477.4	2149.3	1821.2	1627.4	1473.5	1308.4	1119.8	107.7	60.5	44.1
29°	2817.9	2437.4	2106.2	1782.2	1584.3	1427.4	1255.1	1064.4	91.3	50.2	35.9
30°	2762.5	2379.0	2048.8	1732.0	1528.9	1375.1	1196.7	1007.0	79.0	41.0	28.7
31°	2684.6	2313.4	1978.1	1677.6	1477.6	1326.9	1143.4	948.5	68.7	32.8	23.6
32°	2591.3	2231.3	1905.2	1621.2	1435.6	1281.8	1088.0	887.0	59.5	27.7	20.5
33°	2483.6	2139.0	1829.4	1565.8	1394.6	1230.5	1027.5	820.3	51.3	22.6	17.4
34°	2364.6	2037.5	1751.4	1506.4	1344.3	1165.9	956.7	749.6	44.1	19.5	14.4
35°	2235.4	1923.7	1671.5	1445.9	1287.9	1094.1	880.8	674.7	37.9	16.4	12.3
36°	2096.0	1817.1	1593.5	1385.4	1218.2	1016.2	797.8	597.8	32.8	13.3	11.3
37°	1956.5	1716.6	1516.6	1320.8	1137.2	928.0	710.6	517.8	28.7	11.3	9.2
38°	1824.2	1619.2	1440.7	1245.9	1042.9	830.6	620.4	437.9	24.6	10.3	8.2
39°	1700.2	1524.8	1362.8	1156.7	945.4	736.3	533.2	354.8	21.5	9.2	7.2
40°	1588.4	1435.6	1277.7	1057.2	845.0	639.9	445.0	264.6	18.5	7.2	6.2
42.5°	1352.5	1190.5	982.4	737.3	571.2	371.2	207.1	98.4	13.3	5.1	5.1
45°	893.1	687.0	466.6	277.9	187.7	112.8	84.1	59.5	10.3	4.1	4.1
47.5°	298.4	189.7	138.4	99.5	85.1	67.7	54.3	36.9	7.2	3.1	3.1
50°	113.8	92.3	75.9	57.4	51.3	41.0	32.8	21.5	5.1	3.1	3.1
51°	89.2	72.8	59.5	45.1	41.0	32.8	26.7	18.5	4.1	3.1	3.1
52°	68.7	56.4	46.1	34.9	32.8	26.7	22.6	15.4	4.1	2.1	3.1
53°	52.3	43.1	34.9	26.7	25.6	21.5	18.5	12.3	3.1	2.1	3.1
54°	39.0	32.8	27.7	21.5	21.5	18.5	15.4	10.3	3.1	2.1	3.1
55°	29.7	24.6	21.5	16.4	17.4	15.4	13.3	8.2	3.1	2.1	3.1
57.5°	15.4	14.4	12.3	10.3	11.3	10.3	9.2	5.1	3.1	2.1	3.1
60°	9.2	8.2	7.2	6.2	7.2	7.2	7.2	3.1	3.1	2.1	3.1
61°	7.2	6.2	5.1	5.1	6.2	6.2	6.2	3.1	3.1	2.1	3.1
62°	5.1	5.1	4.1	4.1	6.2	5.1	5.1	3.1	3.1	2.1	3.1
63°	4.1	4.1	4.1	3.1	5.1	5.1	5.1	3.1	3.1	2.1	3.1
64°	3.1	3.1	3.1	3.1	4.1	5.1	5.1	2.1	3.1	2.1	3.1
65°	3.1	3.1	2.1	2.1	4.1	4.1	4.1	2.1	3.1	2.1	3.1
66°	2.1	2.1	2.1	2.1	4.1	4.1	4.1	2.1	3.1	2.1	3.1





TEST NUMBER: P170904

CATALOG NUMBER: LDA4A18840D010TE 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°	1.0	1.0	1.0	1.0	3.1	3.1	4.1	2.1	3.1	3.1	3.1
75°	1.0	1.0	1.0	1.0	3.1	3.1	4.1	2.1	3.1	3.1	3.1
77.5°	1.0	1.0	1.0	1.0	3.1	3.1	4.1	2.1	3.1	3.1	4.1
80°	1.0	1.0	1.0	1.0	3.1	3.1	4.1	2.1	3.1	3.1	4.1
82.5°	1.0	1.0	1.0	1.0	3.1	3.1	4.1	2.1	3.1	3.1	4.1
85°	1.0	1.0	1.0	1.0	3.1	3.1	4.1	2.1	3.1	3.1	4.1
87.5°	1.0	1.0	1.0	1.0	3.1	3.1	4.1	2.1	3.1	3.1	3.1
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: P170904

CATALOG NUMBER: LDA4A18840D010TE LAR15SP 4LA1 30° Tilt

**CANDELA DISTRIBUTION (continued):**

	135°	157.5°	180°
0°	96.4	96.4	96.4
2.5°	72.8	69.7	67.7
5°	62.6	59.5	58.4
7.5°	58.4	57.4	58.4
10°	64.6	68.7	73.8
12.5°	86.1	101.5	109.7
15°	142.5	185.6	204.1
17.5°	251.2	286.1	306.6
20°	221.5	202.0	213.3
22.5°	120.0	104.6	107.7
25°	66.7	57.4	58.4
26°	53.3	46.1	46.1
27°	43.1	36.9	36.9
28°	34.9	29.7	29.7
29°	27.7	23.6	23.6
30°	22.6	19.5	19.5
31°	18.5	15.4	15.4
32°	15.4	13.3	12.3
33°	13.3	11.3	10.3
34°	11.3	9.2	8.2
35°	9.2	7.2	7.2
36°	8.2	6.2	6.2
37°	7.2	5.1	5.1
38°	6.2	4.1	4.1
39°	5.1	4.1	3.1
40°	4.1	3.1	2.1
42.5°	3.1	2.1	1.0
45°	3.1	1.0	0.0
47.5°	2.1	1.0	0.0
50°	2.1	0.0	0.0
51°	2.1	0.0	0.0
52°	2.1	0.0	0.0
53°	1.0	0.0	0.0
54°	2.1	0.0	0.0
55°	1.0	0.0	0.0
57.5°	2.1	0.0	0.0
60°	2.1	0.0	0.0
61°	2.1	0.0	0.0
62°	2.1	0.0	0.0
63°	2.1	0.0	0.0
64°	2.1	1.0	0.0
65°	2.1	1.0	0.0
66°	2.1	1.0	0.0



TEST NUMBER: P170904

CATALOG NUMBER: LDA4A18840D010TE LAR15SP 4LA1 30° Tilt

**CANDELA DISTRIBUTION (continued):**

	135°	157.5°	180°
72.5°	2.1	1.0	0.0
75°	2.1	1.0	0.0
77.5°	2.1	1.0	0.0
80°	2.1	1.0	0.0
82.5°	2.1	1.0	0.0
85°	2.1	1.0	0.0
87.5°	2.1	1.0	0.0
90°	0.0	0.0	0.0



Report Generated By E9808895 / USPTCWHP6082093





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









67.5°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	2.1	2.1
70°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.1	2.1	1.0	1.0





67.5°	2.1	1.0	2.1	2.1	3.1	4.1	4.1	2.1	3.1	2.1	3.1
70°	1.0	1.0	1.0	1.0	3.1	3.1	4.1	2.1	3.1	2.1	3.1





67.5°	2.1	1.0	0.0
70°	2.1	1.0	0.0



(END OF REPORT)