

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: P170915

Luminaire Tested: **LDA4A09935D010TE LAR15SP 4LA1 30° Tilt**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P170915
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: LDA4A09935D010TE 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 / 3500K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 718.2 lumens
Efficiency: N/A
Efficacy: 51.9 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

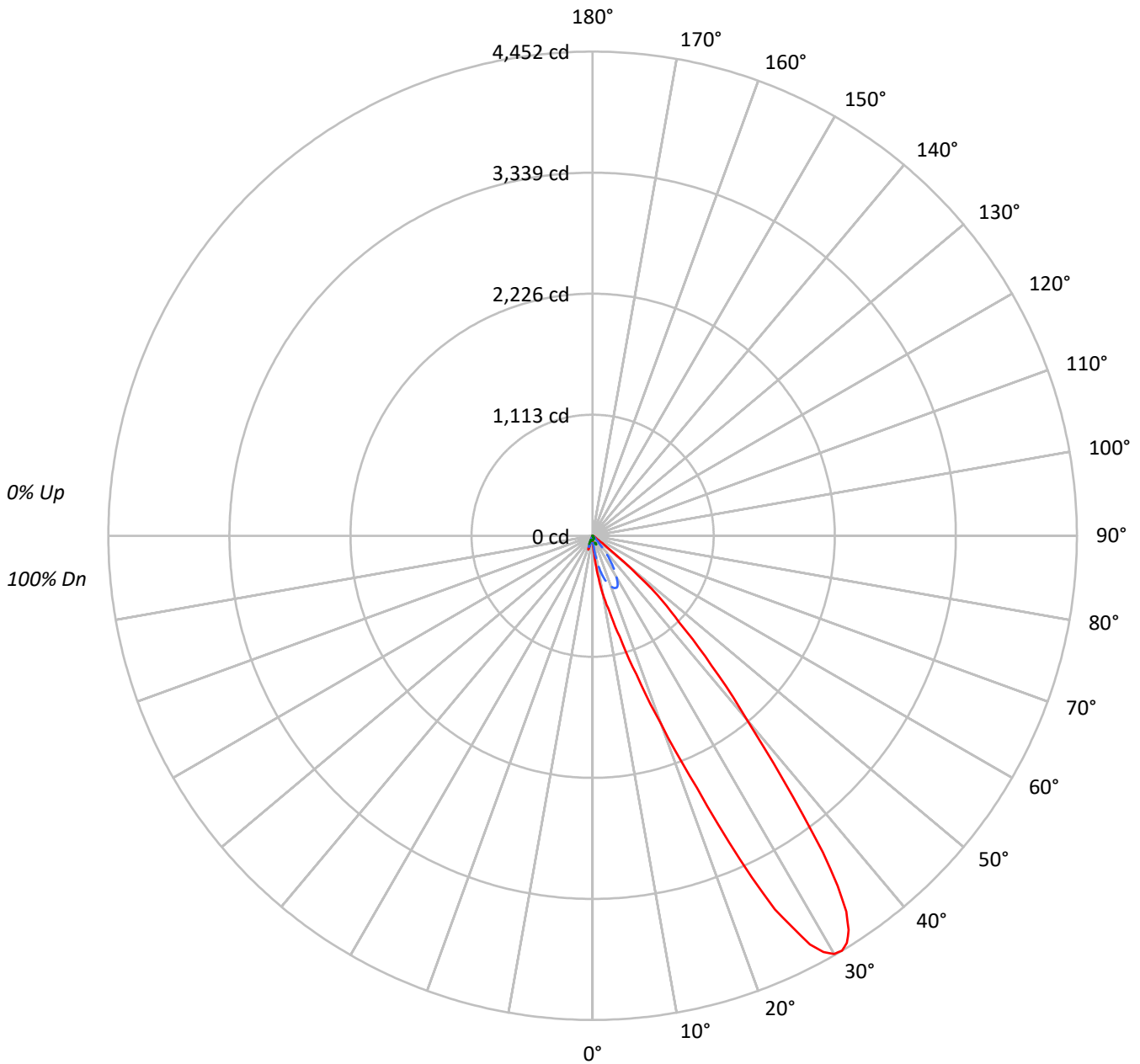
Input Watts (W): 13.84
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P170915

CATALOG NUMBER: LDA4A09935D010TE LAR15SP 4LA1 30° Tilt

Luminous Intensity Polar Plot





TEST NUMBER: P170915

CATALOG NUMBER: LDA4A09935D010TE 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°	5168	5168	5168
5°	23179	4854	3145
10°	68611	4471	4020
15°	122500	5299	11327
20°	242637	10409	12168
25°	472161	6791	3457
30°	632448	2535	1211
35°	591799	1069	467
40°	354622	499	145
45°	196800	314	0
50°	72190	249	0
55°	11032	194	0
60°	2418	222	0
65°	788	263	0
70°	144	325	0
75°	0	620	0
80°	0	923	0
85°	0	1840	0



TEST NUMBER: P170915

CATALOG NUMBER: LDA4A09935D010TE LAR15SP 4LA1 30° Tilt

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	9.2	1.3
10°-20°	77.6	10.8
20°-30°	231.6	32.2
30°-40°	274.3	38.2
40°-50°	113.8	15.8
50°-60°	8.8	1.2
60°-70°	1.2	0.2
70°-80°	0.9	0.1
80°-90°	0.8	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°	318.4	44.3
0°-40°	592.6	82.5
0°-60°	715.2	99.6
0°-90°	718.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	718.2	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	42	42	42	42	42	
5°	187	94	39	27	25	30
15°	959	405	42	62	89	317
25°	3469	526	50	29	25	1585
35°	3930	293	7	4	3	2278
45°	1128	26	2	1	0	920
55°	51	4	1	0	0	75
65°	3	1	1	1	0	3
75°	0	1	1	1	0	0
85°	0	1	1	1	0	0
90°	0	0	0	0	0	



TEST NUMBER: P170915

CATALOG NUMBER: LDA4A09935D010TE LAR15SP 4LA1 30° Tilt

CANDELA DISTRIBUTION (FULL):

	0°	2.5°	5°	7.5°	10°	12.5°	15°	17.5°	20°	22.5°	25°
0°	41.9	41.9	41.9	41.9	41.9	41.9	41.9	41.9	41.9	41.9	41.9
2.5°	72.7	69.1	70.9	67.8	69.5	66.4	64.2	66.4	66.4	64.6	62.0
5°	187.2	186.3	189.9	181.4	183.6	174.3	166.3	168.5	166.7	160.9	150.7
7.5°	356.6	353.0	357.0	345.0	345.5	329.9	317.8	320.5	312.5	302.7	284.8
10°	547.8	542.9	547.4	533.1	530.4	508.6	491.7	494.3	476.1	460.0	432.8
12.5°	713.6	713.2	698.9	701.6	696.3	662.8	652.1	653.0	628.1	610.2	577.7
15°	959.3	968.6	971.3	953.0	920.0	859.4	832.7	822.4	781.8	752.0	705.2
17.5°	1336.8	1349.7	1305.6	1316.3	1261.9	1167.0	1113.9	1082.3	1006.1	949.9	865.2
20°	1848.5	1837.4	1773.6	1765.6	1672.9	1550.8	1439.3	1379.6	1262.4	1180.3	1056.9
22.5°	2509.1	2500.6	2391.4	2342.9	2149.0	1976.9	1832.5	1682.7	1508.4	1398.8	1231.2
25°	3469.3	3430.5	3220.1	3081.9	2740.9	2448.5	2207.8	1975.1	1708.1	1589.1	1376.0
26°	3822.7	3813.4	3594.1	3412.2	3001.2	2638.4	2313.9	2080.8	1786.6	1647.5	1417.0
27°	4034.9	4109.4	3905.2	3699.3	3249.9	2815.3	2439.1	2165.9	1847.6	1688.5	1443.3
28°	4255.1	4303.3	4120.5	3862.0	3449.2	2956.2	2534.1	2223.4	1885.1	1708.6	1452.2
29°	4376.4	4422.7	4252.9	4010.4	3579.8	3047.6	2590.2	2248.8	1898.9	1708.1	1444.2
30°	4440.5	4483.8	4318.0	4082.6	3633.7	3076.1	2602.3	2238.5	1885.5	1687.6	1421.5
31°	4452.1	4488.2	4324.6	4080.4	3613.2	3040.9	2568.4	2196.2	1849.9	1649.7	1387.2
32°	4412.9	4441.0	4274.7	4014.4	3521.0	2951.7	2498.0	2130.7	1795.5	1602.5	1343.0
33°	4321.1	4371.5	4168.6	3881.1	3360.5	2819.8	2398.1	2045.1	1727.7	1541.0	1289.1
34°	4169.1	4201.2	3991.2	3672.5	3146.5	2659.3	2275.5	1945.7	1650.2	1468.3	1228.0
35°	3930.2	3958.7	3726.5	3390.8	2902.7	2478.4	2135.6	1836.0	1563.2	1386.7	1160.3
36°	3599.4	3626.6	3383.7	3077.9	2656.7	2289.8	1988.0	1716.6	1469.2	1299.4	1088.5
37°	3213.0	3236.6	3020.4	2770.8	2415.1	2099.0	1838.7	1595.3	1369.8	1210.2	1020.3
38°	2839.4	2860.8	2686.1	2482.8	2181.9	1912.7	1689.8	1469.6	1267.3	1120.6	948.6
39°	2502.4	2521.2	2380.3	2212.7	1960.0	1734.0	1541.4	1344.8	1164.3	1031.0	874.6
40°	2202.4	2218.5	2102.6	1964.9	1758.5	1566.8	1397.0	1224.0	1063.6	944.1	805.5
42.5°	1616.7	1620.3	1551.2	1470.1	1309.6	1199.5	1078.7	953.9	836.7	754.7	666.4
45°	1128.2	1172.3	1127.3	1073.4	958.4	889.3	812.2	736.8	669.1	590.2	502.8
47.5°	811.3	813.0	786.3	752.4	661.5	614.2	550.9	459.6	392.3	280.4	208.2
50°	376.2	355.3	356.6	333.4	297.3	236.2	197.5	140.9	112.3	80.2	64.6
51°	223.8	208.2	210.4	193.9	169.8	132.4	112.3	90.0	78.0	60.6	49.9
52°	130.6	125.3	124.8	117.2	99.8	91.8	81.1	67.8	59.3	46.8	38.8
53°	94.9	91.4	91.4	86.5	74.4	69.1	61.5	52.2	45.5	35.7	29.4
54°	70.9	68.2	68.2	65.1	60.2	51.7	46.4	38.8	33.9	27.6	21.8
55°	51.3	49.5	49.5	47.2	43.7	37.4	33.4	28.1	25.0	20.1	16.0
57.5°	21.4	20.5	20.5	19.6	18.7	16.0	15.2	12.9	11.1	9.8	8.0
60°	9.8	9.4	9.8	9.4	8.5	8.9	7.6	6.7	6.2	5.3	4.5
61°	7.6	7.1	7.1	7.1	6.2	6.2	5.8	5.3	4.9	4.0	3.6
62°	5.8	5.3	5.3	5.3	4.9	4.9	4.5	4.0	4.0	3.1	2.7
63°	4.5	4.0	4.0	4.0	3.6	3.6	3.6	3.1	3.1	2.7	2.2
64°	3.1	3.1	3.1	3.1	3.1	2.7	2.7	2.7	2.2	1.8	1.8
65°	2.7	2.2	2.7	2.2	2.2	2.2	2.2	2.2	1.8	1.3	1.3
66°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.3	0.9



TEST NUMBER: P170915

CATALOG NUMBER: LDA4A09935D010TE 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	0.4	0.4	0.4	0.4	0.4	0.4	0.4
75°	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.4	0.4
77.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.4
80°	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.4
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.4
85°	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.4	0.4
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.4
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: P170915

CATALOG NUMBER: LDA4A09935D010TE 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°	41.9	41.9	41.9	41.9	41.9	41.9	41.9	41.9	41.9	41.9	41.9
2.5°	60.6	62.4	61.1	57.5	59.3	58.4	56.6	55.3	47.2	41.0	34.8
5°	143.1	144.4	136.8	123.5	119.0	111.9	101.6	94.5	53.5	39.2	30.8
7.5°	270.6	261.7	254.5	229.6	218.9	202.4	182.8	168.9	61.1	37.0	28.5
10°	409.6	395.4	380.7	344.1	325.0	299.5	271.5	255.4	69.1	35.7	28.5
12.5°	547.4	528.2	501.5	461.3	434.2	399.8	361.5	333.0	74.9	36.6	33.0
15°	666.8	643.7	614.2	568.8	537.1	494.3	444.4	405.2	77.6	41.5	45.9
17.5°	797.0	755.1	706.5	648.6	613.8	564.3	508.2	460.5	77.6	52.6	73.5
20°	946.8	870.1	792.1	711.0	661.9	610.2	550.1	498.8	80.7	79.3	101.2
22.5°	1086.3	980.6	870.5	764.9	696.7	640.5	579.5	520.6	93.6	87.4	67.3
25°	1194.6	1060.4	930.7	802.3	725.2	662.8	597.3	526.4	85.6	49.9	36.6
26°	1222.7	1077.8	942.8	806.8	726.6	662.4	595.5	520.2	71.8	39.7	29.4
27°	1237.4	1083.6	943.6	802.8	721.2	654.8	585.7	507.3	57.5	32.1	24.1
28°	1237.4	1076.9	934.3	791.6	707.4	640.5	568.8	486.8	46.8	26.3	19.2
29°	1224.9	1059.5	915.6	774.7	688.7	620.5	545.6	462.7	39.7	21.8	15.6
30°	1200.8	1034.1	890.6	752.9	664.6	597.7	520.2	437.7	34.3	17.8	12.5
31°	1167.0	1005.6	859.8	729.2	642.3	576.8	497.0	412.3	29.9	14.3	10.3
32°	1126.4	969.9	828.2	704.7	624.0	557.2	472.9	385.6	25.9	12.0	8.9
33°	1079.6	929.8	795.2	680.7	606.2	534.9	446.6	356.6	22.3	9.8	7.6
34°	1027.9	885.7	761.3	654.8	584.4	506.8	415.9	325.8	19.2	8.5	6.2
35°	971.7	836.2	726.6	628.5	559.9	475.6	382.9	293.3	16.5	7.1	5.3
36°	911.1	789.9	692.7	602.2	529.5	441.7	346.8	259.9	14.3	5.8	4.9
37°	850.5	746.2	659.3	574.1	494.3	403.4	308.9	225.1	12.5	4.9	4.0
38°	793.0	703.8	626.3	541.6	453.3	361.1	269.7	190.3	10.7	4.5	3.6
39°	739.1	662.8	592.4	502.8	411.0	320.0	231.8	154.2	9.4	4.0	3.1
40°	690.5	624.0	555.4	459.6	367.3	278.1	193.5	115.0	8.0	3.1	2.7
42.5°	587.9	517.5	427.0	320.5	248.3	161.4	90.0	42.8	5.8	2.2	2.2
45°	388.2	298.7	202.8	120.8	81.6	49.0	36.6	25.9	4.5	1.8	1.8
47.5°	129.7	82.5	60.2	43.2	37.0	29.4	23.6	16.0	3.1	1.3	1.3
50°	49.5	40.1	33.0	25.0	22.3	17.8	14.3	9.4	2.2	1.3	1.3
51°	38.8	31.6	25.9	19.6	17.8	14.3	11.6	8.0	1.8	1.3	1.3
52°	29.9	24.5	20.1	15.2	14.3	11.6	9.8	6.7	1.8	0.9	1.3
53°	22.7	18.7	15.2	11.6	11.1	9.4	8.0	5.3	1.3	0.9	1.3
54°	16.9	14.3	12.0	9.4	9.4	8.0	6.7	4.5	1.3	0.9	1.3
55°	12.9	10.7	9.4	7.1	7.6	6.7	5.8	3.6	1.3	0.9	1.3
57.5°	6.7	6.2	5.3	4.5	4.9	4.5	4.0	2.2	1.3	0.9	1.3
60°	4.0	3.6	3.1	2.7	3.1	3.1	3.1	1.3	1.3	0.9	1.3
61°	3.1	2.7	2.2	2.2	2.7	2.7	2.7	1.3	1.3	0.9	1.3
62°	2.2	2.2	1.8	1.8	2.7	2.2	2.2	1.3	1.3	0.9	1.3
63°	1.8	1.8	1.8	1.3	2.2	2.2	2.2	1.3	1.3	0.9	1.3
64°	1.3	1.3	1.3	1.3	1.8	2.2	2.2	0.9	1.3	0.9	1.3
65°	1.3	1.3	0.9	0.9	1.8	1.8	1.8	0.9	1.3	0.9	1.3
66°	0.9	0.9	0.9	0.9	1.8	1.8	1.8	0.9	1.3	0.9	1.3



TEST NUMBER: P170915

CATALOG NUMBER: LDA4A09935D010TE 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°	0.4	0.4	0.4	0.4	1.3	1.3	1.8	0.9	1.3	1.3	1.3
75°	0.4	0.4	0.4	0.4	1.3	1.3	1.8	0.9	1.3	1.3	1.3
77.5°	0.4	0.4	0.4	0.4	1.3	1.3	1.8	0.9	1.3	1.3	1.8
80°	0.4	0.4	0.4	0.4	1.3	1.3	1.8	0.9	1.3	1.3	1.8
82.5°	0.4	0.4	0.4	0.4	1.3	1.3	1.8	0.9	1.3	1.3	1.8
85°	0.4	0.4	0.4	0.4	1.3	1.3	1.8	0.9	1.3	1.3	1.8
87.5°	0.4	0.4	0.4	0.4	1.3	1.3	1.8	0.9	1.3	1.3	1.3
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: P170915

CATALOG NUMBER: LDA4A09935D010TE LAR15SP 4LA1 30° Tilt

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
0°	41.9	41.9	41.9
2.5°	31.6	30.3	29.4
5°	27.2	25.9	25.4
7.5°	25.4	25.0	25.4
10°	28.1	29.9	32.1
12.5°	37.4	44.1	47.7
15°	62.0	80.7	88.7
17.5°	109.2	124.4	133.3
20°	96.3	87.8	92.7
22.5°	52.2	45.5	46.8
25°	29.0	25.0	25.4
26°	23.2	20.1	20.1
27°	18.7	16.0	16.0
28°	15.2	12.9	12.9
29°	12.0	10.3	10.3
30°	9.8	8.5	8.5
31°	8.0	6.7	6.7
32°	6.7	5.8	5.3
33°	5.8	4.9	4.5
34°	4.9	4.0	3.6
35°	4.0	3.1	3.1
36°	3.6	2.7	2.7
37°	3.1	2.2	2.2
38°	2.7	1.8	1.8
39°	2.2	1.8	1.3
40°	1.8	1.3	0.9
42.5°	1.3	0.9	0.4
45°	1.3	0.4	0.0
47.5°	0.9	0.4	0.0
50°	0.9	0.0	0.0
51°	0.9	0.0	0.0
52°	0.9	0.0	0.0
53°	0.4	0.0	0.0
54°	0.9	0.0	0.0
55°	0.4	0.0	0.0
57.5°	0.9	0.0	0.0
60°	0.9	0.0	0.0
61°	0.9	0.0	0.0
62°	0.9	0.0	0.0
63°	0.9	0.0	0.0
64°	0.9	0.4	0.0
65°	0.9	0.4	0.0
66°	0.9	0.4	0.0



TEST NUMBER: P170915

CATALOG NUMBER: LDA4A09935D010TE LAR15SP 4LA1 30° Tilt

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
72.5°	0.9	0.4	0.0
75°	0.9	0.4	0.0
77.5°	0.9	0.4	0.0
80°	0.9	0.4	0.0
82.5°	0.9	0.4	0.0
85°	0.9	0.4	0.0
87.5°	0.9	0.4	0.0
90°	0.0	0.0	0.0



Report Generated By E9808895 / USPTCWHP6082093





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







67.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0.9	0.9
70°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.9	0.9	0.4	0.4





67.5°	0.9	0.4	0.9	0.9	1.3	1.8	1.8	0.9	1.3	0.9	1.3
70°	0.4	0.4	0.4	0.4	1.3	1.3	1.8	0.9	1.3	0.9	1.3





67.5°	0.9	0.4	0.0
70°	0.9	0.4	0.0



(END OF REPORT)