

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: P209011

Luminaire Tested: **LDSQA6A45940D010TE LARH20SP 6LSQA1H 30°**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P209011  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P26686)  
Test Lab: INNOVATION CENTER-P2  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: io LED  
Catalog Number: LDSQA6A45940D010TE LARH20SP 6LSQA1H 30°  
Description: PORTFOLIO 6" SQUARE ADJUSTABLE REFLECTOR, ANGLE-CUT TRIM,  
SELF-FLANGED, 20° SPOT, 30° Tilt  
Light Source: (1) HIGH LUMEN LED 90CRI / 4000K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 3744.5 lumens  
Efficiency: N/A  
Efficacy: 68.8 lumens/watt  
Spacing Criteria (0/90/45): 2.35 / 0.6 / 1.31  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
CIE Type: Direct

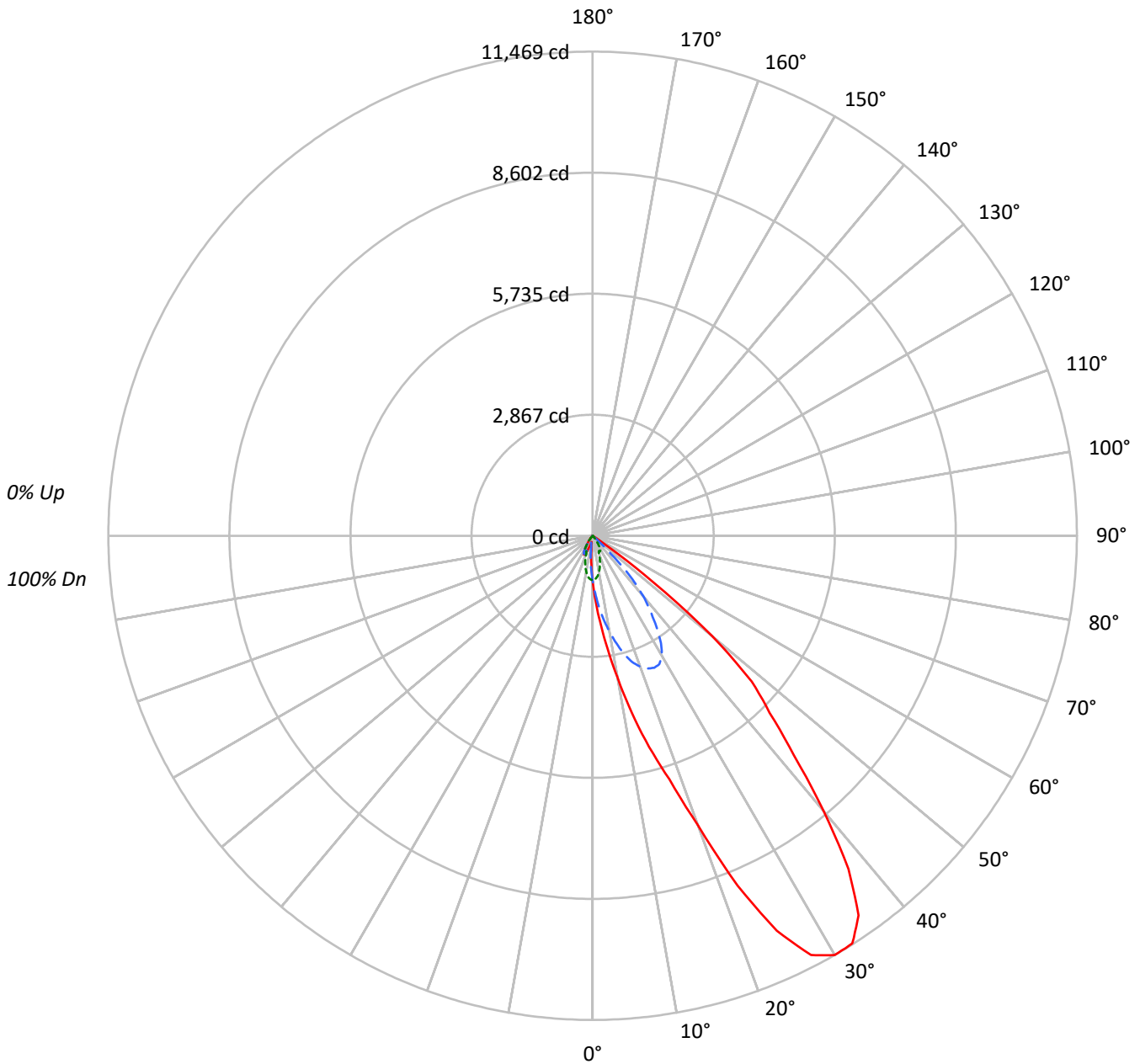
Input Watts (W): 54.4  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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### Luminous Intensity Polar Plot





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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

RF	20									20									20									20									
RC	80									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	97	96	96	94	93	91																			
2	105	100	95	91	103	98	94	90	95	91	88	92	89	86	89	86	84	82																			
3	99	91	85	80	96	89	84	80	87	82	78	84	80	77	82	79	76	74																			
4	92	83	76	71	90	82	76	71	79	74	70	77	73	69	75	71	68	66																			
5	86	76	69	64	84	75	68	63	73	67	63	71	66	62	69	65	61	60																			
6	80	69	62	57	79	69	62	57	67	61	56	65	60	56	64	59	55	54																			
7	75	64	56	51	73	63	56	51	62	55	51	60	55	50	59	54	50	49																			
8	70	59	51	46	69	58	51	46	57	50	46	56	50	46	54	49	45	44																			
9	66	54	47	42	64	53	47	42	52	46	42	51	46	42	50	45	41	40																			
10	61	50	43	38	60	49	43	38	48	42	38	48	42	38	47	41	38	36																			

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

	0°	90°	180°
0°	45514	45514	45514
5°	88191	43371	14630
10°	149837	37953	6571
15°	230887	30275	10444
20°	334240	19702	18167
25°	490388	19012	23359
30°	570187	18012	17903
35°	577128	9540	9461
40°	477823	3597	3974
45°	360876	1224	1449
50°	246905	449	449
55°	34342	390	53
60°	896	388	0
65°	224	530	0
70°	88	655	0
75°	0	865	0
80°	0	1488	174
85°	0	2964	0



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	110.9	3.0
10°-20°	468.8	12.5
20°-30°	1069.4	28.6
30°-40°	1237.5	33.0
40°-50°	746.3	19.9
50°-60°	101.4	2.7
60°-70°	3.3	0.1
70°-80°	3.5	0.1
80°-90°	3.3	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°	1649.1	44.0
0°-40°	2886.6	77.1
0°-60°	3734.4	99.7
0°-90°	3744.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3744.5	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	1057	1057	1057	1057	1057	
5°	2040	1671	1004	549	338	237
15°	5180	2912	679	209	234	1533
25°	10322	3450	400	481	492	4671
35°	10980	2630	182	185	180	6617
45°	5927	716	20	24	24	4634
55°	458	5	5	4	1	897
65°	2	3	5	3	0	3
75°	0	4	5	4	0	0
85°	0	4	6	4	0	0
90°	0	0	0	0	0	0



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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	1057.1	1057.1	1057.1	1057.1	1057.1	1057.1	1057.1	1057.1	1057.1	1057.1	1057.1
2.5°	1528.7	1514.6	1520.5	1504.9	1465.5	1457.3	1456.6	1446.2	1412.7	1386.6	1355.4
5°	2040.5	2039.8	2043.5	2010.0	1940.9	1919.3	1908.9	1883.6	1802.5	1740.0	1670.8
7.5°	2679.6	2675.1	2670.6	2609.6	2501.0	2459.4	2432.6	2341.1	2229.5	2118.6	1995.2
10°	3427.2	3424.9	3407.8	3300.7	3126.6	3050.0	2997.9	2852.9	2673.6	2515.9	2306.1
12.5°	4295.3	4275.2	4244.7	4087.8	3849.0	3765.7	3651.1	3421.2	3146.0	2904.2	2611.1
15°	5179.8	5150.8	5096.5	4894.9	4598.8	4456.7	4314.7	4011.9	3638.5	3287.3	2911.7
17.5°	6045.0	6013.0	5885.8	5543.6	5254.2	5080.9	4923.2	4507.3	4068.4	3616.9	3140.8
20°	7294.8	7178.7	6957.0	6417.7	5879.8	5567.4	5382.9	4943.3	4400.2	3874.3	3303.7
22.5°	8964.1	8706.7	8234.3	7358.0	6589.5	6138.7	5836.7	5252.0	4639.0	4042.4	3404.1
25°	10322.5	10205.7	9668.6	8421.8	7222.6	6691.4	6271.1	5497.5	4813.1	4154.7	3450.2
27.5°	11198.0	11169.0	10555.3	9302.6	7739.6	7042.6	6573.2	5659.6	4897.1	4178.5	3427.9
30°	11468.8	11514.2	10925.0	9601.6	7889.1	7113.2	6599.9	5661.9	4832.4	4070.7	3285.1
32.5°	11448.7	11451.0	10728.6	9343.5	7645.9	6907.9	6376.8	5473.7	4593.6	3800.6	3013.6
35°	10980.1	10864.8	10048.0	8550.5	7079.8	6428.8	5934.9	5109.2	4200.1	3394.4	2630.5
37.5°	9951.2	9800.2	8848.0	7535.0	6409.5	5807.7	5408.9	4630.8	3731.4	2960.8	2234.7
40°	8501.4	8287.1	7501.6	6591.0	5676.0	5223.7	4889.0	4096.0	3230.0	2535.2	1863.5
42.5°	7050.0	6945.1	6425.9	5685.7	5059.3	4633.8	4284.2	3535.8	2748.0	2115.7	1394.1
45°	5926.7	5836.7	5487.8	4999.8	4385.3	3997.0	3660.0	2951.8	2135.0	1419.4	716.4
47.5°	5108.4	5035.5	4701.5	4188.9	3515.0	3090.2	2742.8	1935.6	1209.6	613.0	179.3
50°	3686.1	3611.7	3284.4	2690.7	2082.2	1726.6	1476.7	864.4	342.9	124.2	18.6
52.5°	1807.0	1746.0	1523.5	1140.4	765.5	550.5	402.5	162.2	39.4	13.4	8.9
55°	457.5	420.3	350.4	220.2	107.9	64.7	41.7	14.9	9.7	7.4	5.2
57.5°	26.0	25.3	23.1	17.1	12.6	11.2	9.7	7.4	5.2	4.5	3.7
60°	10.4	9.7	8.9	7.4	6.0	5.2	5.2	3.7	3.0	3.0	3.0
62.5°	4.5	4.5	4.5	3.7	3.0	3.0	3.0	2.2	3.0	3.0	3.0
65°	2.2	2.2	2.2	1.5	1.5	1.5	2.2	2.2	2.2	3.0	3.0
67.5°	1.5	0.7	0.7	0.7	1.5	1.5	1.5	2.2	2.2	3.0	3.0
70°	0.7	0.7	0.7	0.7	1.5	1.5	1.5	2.2	2.2	3.0	3.7
72.5°	0.0	0.7	0.7	0.7	1.5	1.5	1.5	2.2	2.2	3.0	3.7
75°	0.0	0.7	0.7	0.7	1.5	1.5	1.5	2.2	3.0	3.0	3.7
77.5°	0.0	0.7	0.7	0.7	1.5	1.5	1.5	2.2	3.0	3.0	3.7
80°	0.0	0.7	0.7	0.7	1.5	1.5	1.5	2.2	3.0	3.0	3.7
82.5°	0.0	0.0	0.7	0.7	1.5	1.5	1.5	2.2	3.0	3.0	3.7
85°	0.0	0.0	0.7	0.7	1.5	1.5	1.5	2.2	3.0	3.0	3.7
87.5°	0.0	0.0	0.7	0.7	1.5	1.5	1.5	2.2	2.2	3.0	3.7
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):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	1057.1	1057.1	1057.1	1057.1	1057.1	1057.1	1057.1	1057.1	1057.1	1057.1	1057.1
2.5°	1315.2	1288.4	1249.0	1223.0	1197.7	1173.9	1134.5	1112.1	1072.0	1034.8	1002.8
5°	1587.5	1520.5	1439.5	1370.3	1325.6	1281.8	1202.2	1143.4	1069.7	1003.5	942.5
7.5°	1862.7	1744.5	1611.3	1497.5	1428.3	1360.6	1241.6	1146.4	1042.2	947.7	857.7
10°	2112.7	1934.9	1746.7	1583.8	1490.0	1402.3	1245.3	1118.8	984.9	868.1	755.1
12.5°	2344.8	2101.5	1856.0	1643.3	1527.2	1421.6	1229.7	1074.9	915.7	777.4	645.7
15°	2551.6	2239.2	1935.6	1677.5	1541.4	1416.4	1193.2	1013.2	833.9	679.2	512.6
17.5°	2708.6	2324.7	1970.6	1672.3	1516.1	1377.0	1130.7	935.8	746.9	559.4	371.2
20°	2803.8	2361.2	1963.2	1632.1	1461.8	1314.5	1056.3	851.8	642.0	430.0	327.3
22.5°	2844.0	2358.2	1928.2	1571.9	1394.8	1246.0	984.9	769.9	531.9	389.1	341.5
25°	2850.7	2327.7	1879.1	1505.7	1328.6	1180.6	912.8	677.0	462.0	400.2	382.4
27.5°	2799.3	2256.3	1786.9	1410.4	1235.6	1082.4	804.9	537.8	433.7	398.7	410.6
30°	2647.6	2093.4	1623.9	1243.1	1074.2	921.0	575.0	421.8	360.1	362.3	365.3
32.5°	2380.5	1822.6	1362.1	998.3	813.8	607.0	357.8	281.9	273.8	273.8	272.3
35°	2024.2	1491.5	1069.0	631.6	404.7	291.6	185.2	186.0	182.3	181.5	180.8
37.5°	1655.9	1176.9	677.0	261.1	175.6	122.0	109.4	110.8	109.4	111.6	110.1
40°	1305.6	726.8	247.0	83.3	61.7	59.5	61.0	62.5	62.5	64.0	64.0
42.5°	758.8	241.0	64.7	33.5	33.5	32.0	32.7	34.2	35.0	35.7	35.0
45°	225.4	49.8	20.8	18.6	18.6	17.9	17.9	18.6	19.3	20.1	20.1
47.5°	35.7	14.1	11.9	10.4	10.4	10.4	10.4	10.4	11.2	11.2	11.9
50°	11.2	8.9	7.4	6.7	6.7	6.0	6.0	6.7	6.7	6.7	7.4
52.5°	6.7	5.2	5.2	4.5	5.2	5.2	4.5	5.2	5.2	5.2	6.0
55°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.2	5.2	5.2
57.5°	3.7	3.7	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
60°	3.7	3.7	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.2
62.5°	3.7	3.7	4.5	4.5	4.5	4.5	4.5	4.5	5.2	5.2	5.2
65°	3.7	3.7	4.5	4.5	4.5	4.5	4.5	5.2	5.2	5.2	5.2
67.5°	3.7	4.5	4.5	4.5	4.5	5.2	5.2	5.2	5.2	5.2	5.2
70°	3.7	4.5	4.5	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
72.5°	3.7	4.5	4.5	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
75°	4.5	4.5	4.5	5.2	5.2	5.2	5.2	5.2	5.2	5.2	6.0
77.5°	4.5	4.5	5.2	5.2	5.2	5.2	5.2	5.2	6.0	6.0	6.0
80°	4.5	4.5	5.2	5.2	5.2	5.2	5.2	6.0	6.0	6.0	6.0
82.5°	4.5	4.5	5.2	5.2	5.2	5.2	5.2	6.0	6.0	6.0	6.0
85°	4.5	4.5	5.2	5.2	5.2	5.2	5.2	6.0	6.0	6.0	6.0
87.5°	4.5	4.5	5.2	5.2	5.2	5.2	5.2	6.0	6.0	6.0	6.0
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):**

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	1057.1	1057.1	1057.1	1057.1	1057.1	1057.1	1057.1	1057.1	1057.1	1057.1	1057.1
2.5°	975.3	941.0	924.7	901.6	885.2	848.8	833.9	808.6	787.8	753.6	755.8
5°	890.5	825.7	781.8	747.6	723.8	665.8	627.1	586.2	549.0	502.9	485.8
7.5°	772.9	693.3	626.4	585.5	555.0	477.6	392.0	325.1	274.5	238.1	223.9
10°	655.4	552.0	445.6	382.4	338.5	264.1	226.1	208.3	191.9	171.8	158.5
12.5°	518.5	371.2	274.5	249.2	231.4	206.8	182.3	162.9	166.6	167.4	172.6
15°	354.1	267.1	236.6	219.5	200.1	186.0	194.2	199.4	209.0	209.8	216.5
17.5°	287.9	250.7	226.1	225.4	226.9	235.1	247.7	254.4	267.1	270.0	279.7
20°	287.9	266.3	287.1	287.1	290.9	302.0	318.4	328.1	342.2	347.4	359.3
22.5°	328.1	342.9	369.0	372.0	373.4	385.3	406.2	415.8	432.2	435.2	447.8
25°	400.2	413.6	437.4	439.6	440.4	449.3	464.9	470.1	481.3	475.4	482.8
27.5°	423.3	429.2	444.1	445.6	441.9	445.6	451.6	451.6	455.3	443.4	445.6
30°	372.0	373.4	380.9	381.6	373.4	374.9	375.7	374.9	374.2	361.5	361.5
32.5°	276.0	276.0	285.7	283.4	274.5	276.7	276.7	276.7	276.0	265.6	264.1
35°	183.0	183.7	191.9	190.4	183.7	185.2	185.2	187.5	185.2	179.3	177.8
37.5°	111.6	112.3	116.0	116.8	114.6	115.3	116.0	115.3	116.8	113.8	112.3
40°	64.7	66.2	69.2	69.9	69.2	69.2	69.9	70.7	73.6	69.9	68.4
42.5°	37.9	38.7	40.2	40.2	40.2	40.2	40.9	41.7	42.4	41.7	40.9
45°	21.6	22.3	23.1	23.1	23.8	23.1	23.8	23.8	24.5	23.8	23.8
47.5°	12.6	12.6	13.4	13.4	14.1	13.4	14.1	14.1	14.1	13.4	13.4
50°	7.4	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	7.4	7.4
52.5°	6.0	6.0	6.0	6.0	6.0	5.2	5.2	5.2	5.2	4.5	4.5
55°	5.2	5.2	5.2	5.2	5.2	5.2	4.5	3.7	3.7	3.0	3.0
57.5°	4.5	5.2	5.2	5.2	5.2	4.5	4.5	3.7	3.0	2.2	2.2
60°	5.2	5.2	5.2	5.2	4.5	4.5	4.5	3.7	3.0	2.2	2.2
62.5°	5.2	5.2	5.2	5.2	5.2	4.5	4.5	3.7	3.0	2.2	2.2
65°	5.2	5.2	5.2	5.2	5.2	4.5	4.5	3.7	3.0	2.2	2.2
67.5°	5.2	5.2	5.2	5.2	5.2	4.5	4.5	3.7	3.0	3.0	2.2
70°	5.2	6.0	6.0	5.2	5.2	5.2	4.5	3.7	3.7	3.0	2.2
72.5°	5.2	6.0	6.0	5.2	5.2	5.2	4.5	3.7	3.7	3.0	2.2
75°	6.0	6.0	6.0	6.0	5.2	5.2	4.5	4.5	3.7	3.0	2.2
77.5°	6.0	6.0	6.0	6.0	5.2	5.2	4.5	4.5	3.7	3.0	2.2
80°	6.0	6.0	6.0	6.0	6.0	5.2	5.2	4.5	3.7	3.0	3.0
82.5°	6.0	6.0	6.0	6.0	6.0	5.2	5.2	4.5	3.7	3.0	3.0
85°	6.0	6.0	6.0	6.0	6.0	5.2	5.2	4.5	3.7	3.0	2.2
87.5°	6.0	6.0	6.0	6.0	5.2	5.2	4.5	4.5	3.7	3.0	2.2
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: P209011

CATALOG NUMBER: LDSQA6A45940D010TE LARH20SP 6LSQA1H 30°

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1057.1	1057.1	1057.1	1057.1	1057.1	1057.1	1057.1	1057.1
2.5°	728.3	711.2	703.7	715.6	709.7	691.8	695.6	684.4
5°	434.4	408.4	392.0	399.5	375.7	354.1	354.1	338.5
7.5°	209.8	201.6	197.1	198.6	193.4	186.7	183.0	183.0
10°	147.3	144.3	145.1	145.1	149.5	148.8	151.0	150.3
12.5°	174.8	176.3	177.0	180.0	183.7	183.7	186.0	184.5
15°	223.9	222.4	226.9	227.6	233.6	234.3	237.3	234.3
17.5°	284.9	287.9	292.4	291.6	303.5	304.3	304.3	303.5
20°	366.7	369.0	373.4	374.9	389.1	390.6	395.8	396.5
22.5°	456.0	456.0	458.2	461.2	474.6	475.4	477.6	477.6
25°	486.5	482.1	482.8	486.5	494.0	491.0	493.2	491.7
27.5°	447.1	440.4	438.9	444.1	449.3	441.1	444.1	444.1
30°	363.0	357.1	355.6	360.8	364.5	355.6	358.6	360.1
32.5°	265.6	261.9	261.1	264.8	267.8	260.4	263.3	265.6
35°	179.3	177.8	176.3	177.0	181.5	175.6	178.5	180.0
37.5°	113.8	110.8	111.6	113.1	116.0	112.3	115.3	115.3
40°	69.9	68.4	68.4	69.9	71.4	68.4	69.9	70.7
42.5°	40.9	40.9	40.9	41.7	42.4	40.9	40.9	41.7
45°	23.8	23.1	23.1	23.8	24.5	23.1	23.8	23.8
47.5°	13.4	12.6	12.6	13.4	13.4	12.6	13.4	13.4
50°	7.4	6.7	6.7	7.4	7.4	6.7	6.7	6.7
52.5°	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.0
55°	2.2	2.2	1.5	1.5	1.5	1.5	1.5	0.7
57.5°	1.5	1.5	0.7	0.7	0.7	0.7	0.0	0.0
60°	1.5	1.5	0.7	0.7	0.7	0.0	0.0	0.0
62.5°	1.5	1.5	0.7	0.7	0.7	0.0	0.0	0.0
65°	1.5	1.5	0.7	0.7	0.7	0.0	0.0	0.0
67.5°	1.5	1.5	0.7	0.7	0.7	0.0	0.0	0.0
70°	2.2	1.5	1.5	0.7	0.7	0.7	0.0	0.0
72.5°	2.2	1.5	1.5	1.5	0.7	0.7	0.0	0.0
75°	2.2	1.5	1.5	1.5	0.7	0.7	0.0	0.0
77.5°	2.2	1.5	1.5	1.5	0.7	0.7	0.7	0.0
80°	2.2	1.5	1.5	1.5	0.7	0.7	0.7	0.7
82.5°	2.2	1.5	1.5	1.5	0.7	0.7	0.7	0.7
85°	2.2	1.5	1.5	1.5	0.7	0.7	0.7	0.0
87.5°	2.2	1.5	1.5	1.5	0.7	0.7	0.7	0.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



Report Generated By E9808895 / USPTCWHP6082093





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















(END OF REPORT)