

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: P209023

Luminaire Tested: **LDSQA6A65840D010TE LARH20SP 6LSQA1H 30°**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P209023
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: LDSQA6A65840D010TE LARH20SP 6LSQA1H 30°
Description: PORTFOLIO 6" SQUARE ADJUSTABLE REFLECTOR, ANGLE-CUT TRIM,
SELF-FLANGED, 20° SPOT, 30° Tilt
Light Source: (1) HIGH LUMEN LED 80CRI / 4000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 5657.1 lumens
Efficiency: N/A
Efficacy: 71.9 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

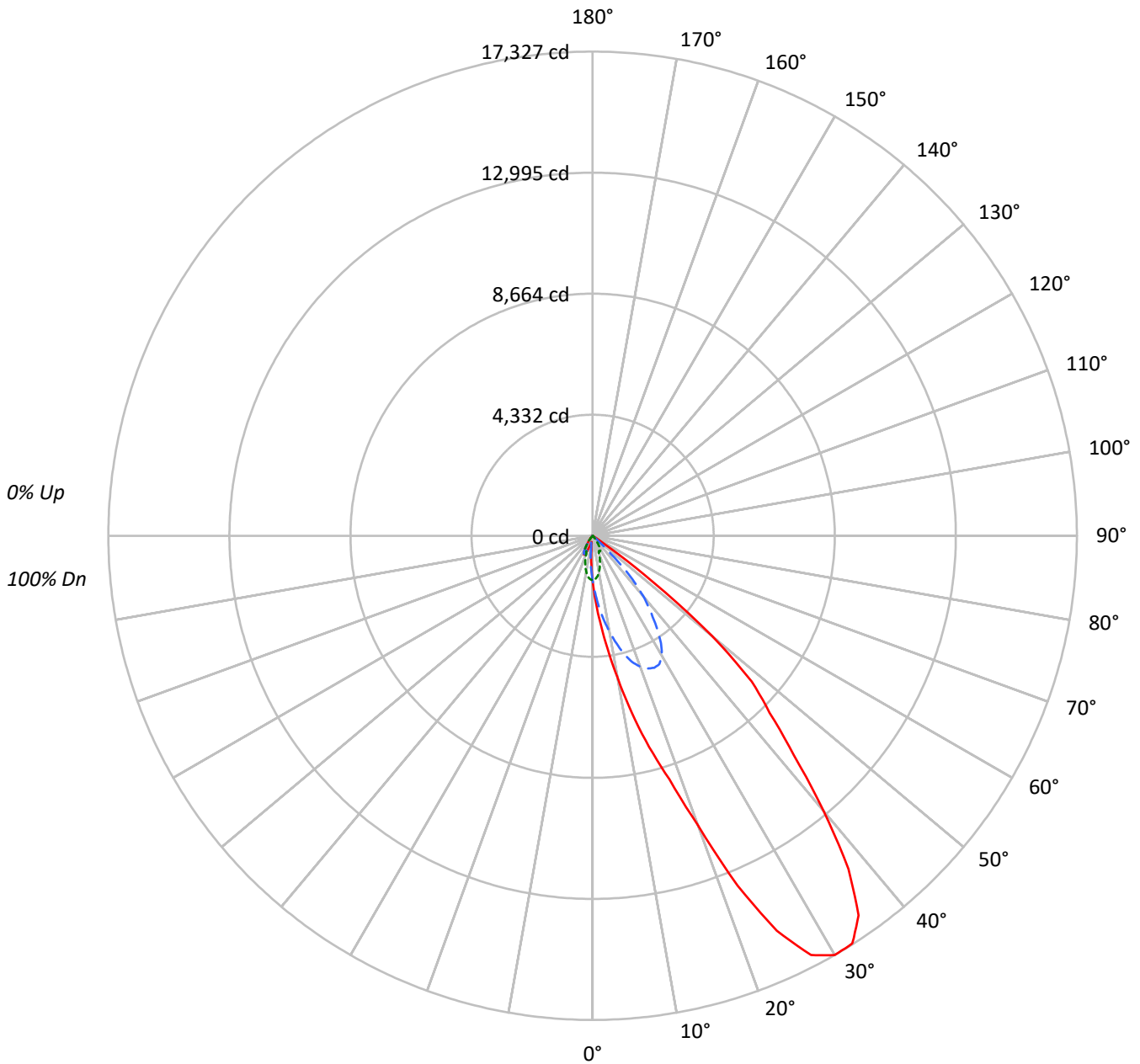
Input Watts (W): 78.67
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	46	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°	68760	68760	68760
5°	133239	65526	22103
10°	226368	57343	9924
15°	348822	45738	15779
20°	504961	29764	27446
25°	740862	28723	35293
30°	861426	27210	27046
35°	871912	14412	14297
40°	721882	5435	6003
45°	545202	1845	2192
50°	373013	677	677
55°	51885	593	83
60°	1352	577	0
65°	346	805	0
70°	138	995	0
75°	0	1314	0
80°	0	2232	273
85°	0	4446	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	167.5	3.0
10°-20°	708.2	12.5
20°-30°	1615.6	28.6
30°-40°	1869.7	33.0
40°-50°	1127.6	19.9
50°-60°	153.2	2.7
60°-70°	4.9	0.1
70°-80°	5.4	0.1
80°-90°	5.0	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°	2491.4	44.0
0°-40°	4361.0	77.1
0°-60°	5641.8	99.7
0°-90°	5657.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	5657.1	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1597	1597	1597	1597	1597	
5°	3083	2524	1516	829	511	359
15°	7826	4399	1026	316	354	2317
25°	15595	5213	605	727	743	7057
35°	16588	3974	274	280	272	9997
45°	8954	1082	30	37	36	7001
55°	691	8	8	6	1	1355
65°	3	4	8	4	0	5
75°	0	6	8	6	0	0
85°	0	6	9	6	0	0
90°	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°	1597.0	1597.0	1597.0	1597.0	1597.0	1597.0	1597.0	1597.0	1597.0	1597.0	1597.0
2.5°	2309.6	2288.2	2297.2	2273.6	2214.0	2201.7	2200.6	2184.8	2134.2	2094.9	2047.7
5°	3082.8	3081.7	3087.3	3036.7	2932.2	2899.6	2883.9	2845.7	2723.2	2628.8	2524.2
7.5°	4048.2	4041.5	4034.7	3942.6	3778.5	3715.5	3675.1	3536.8	3368.3	3200.8	3014.2
10°	5177.7	5174.3	5148.5	4986.7	4723.7	4607.9	4529.2	4310.1	4039.2	3801.0	3484.0
12.5°	6489.3	6458.9	6412.9	6175.7	5814.9	5689.1	5516.0	5168.7	4752.9	4387.6	3944.8
15°	7825.6	7781.7	7699.7	7395.1	6947.8	6733.2	6518.5	6061.1	5496.9	4966.4	4398.9
17.5°	9132.6	9084.3	8892.1	8375.1	7938.0	7676.1	7437.8	6809.6	6146.5	5464.3	4745.0
20°	11020.8	10845.4	10510.5	9695.7	8883.1	8411.1	8132.4	7468.2	6647.7	5853.2	4991.1
22.5°	13542.7	13153.9	12440.2	11116.3	9955.3	9274.2	8818.0	7934.6	7008.5	6107.2	5142.9
25°	15594.9	15418.5	14607.1	12723.4	10911.7	10109.3	9474.3	8305.5	7271.5	6276.9	5212.6
27.5°	16917.7	16873.9	15946.7	14054.1	11692.8	10639.8	9930.6	8550.5	7398.5	6312.8	5178.8
30°	17326.8	17395.4	16505.3	14505.9	11918.7	10746.5	9971.1	8553.8	7300.7	6149.9	4963.0
32.5°	17296.5	17299.9	16208.6	14115.9	11551.2	10436.3	9633.9	8269.5	6940.0	5741.9	4552.8
35°	16588.5	16414.3	15180.2	12917.9	10696.0	9712.6	8966.3	7718.8	6345.4	5128.3	3974.0
37.5°	15034.1	14806.0	13367.4	11383.8	9683.3	8774.1	8171.7	6996.1	5637.4	4473.0	3376.1
40°	12843.7	12520.0	11333.2	9957.6	8575.2	7891.9	7386.1	6188.1	4879.9	3830.2	2815.3
42.5°	10651.0	10492.5	9708.1	8589.8	7643.5	7000.6	6472.4	5341.8	4151.6	3196.3	2106.1
45°	8953.9	8818.0	8290.9	7553.6	6625.3	6038.6	5529.5	4459.6	3225.5	2144.4	1082.3
47.5°	7717.7	7607.5	7102.9	6328.6	5310.3	4668.6	4143.7	2924.3	1827.4	926.1	270.9
50°	5568.8	5456.4	4961.9	4065.1	3145.7	2608.5	2230.9	1305.9	518.1	187.7	28.1
52.5°	2729.9	2637.7	2301.7	1722.9	1156.5	831.7	608.0	245.0	59.6	20.2	13.5
55°	691.2	635.0	529.3	332.7	163.0	97.8	62.9	22.5	14.6	11.2	7.9
57.5°	39.3	38.2	34.8	25.8	19.1	16.9	14.6	11.2	7.9	6.7	5.6
60°	15.7	14.6	13.5	11.2	9.0	7.9	7.9	5.6	4.5	4.5	4.5
62.5°	6.7	6.7	6.7	5.6	4.5	4.5	4.5	3.4	4.5	4.5	4.5
65°	3.4	3.4	3.4	2.2	2.2	2.2	3.4	3.4	3.4	4.5	4.5
67.5°	2.2	1.1	1.1	1.1	2.2	2.2	2.2	3.4	3.4	4.5	4.5
70°	1.1	1.1	1.1	1.1	2.2	2.2	2.2	3.4	3.4	4.5	5.6
72.5°	0.0	1.1	1.1	1.1	2.2	2.2	2.2	3.4	3.4	4.5	5.6
75°	0.0	1.1	1.1	1.1	2.2	2.2	2.2	3.4	4.5	4.5	5.6
77.5°	0.0	1.1	1.1	1.1	2.2	2.2	2.2	3.4	4.5	4.5	5.6
80°	0.0	1.1	1.1	1.1	2.2	2.2	2.2	3.4	4.5	4.5	5.6
82.5°	0.0	0.0	1.1	1.1	2.2	2.2	2.2	3.4	4.5	4.5	5.6
85°	0.0	0.0	1.1	1.1	2.2	2.2	2.2	3.4	4.5	4.5	5.6
87.5°	0.0	0.0	1.1	1.1	2.2	2.2	2.2	3.4	3.4	4.5	5.6
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°	1597.0	1597.0	1597.0	1597.0	1597.0	1597.0	1597.0	1597.0	1597.0	1597.0	1597.0
2.5°	1987.0	1946.6	1887.0	1847.7	1809.4	1773.5	1713.9	1680.2	1619.5	1563.3	1515.0
5°	2398.4	2297.2	2174.7	2070.2	2002.8	1936.4	1816.2	1727.4	1616.1	1516.1	1424.0
7.5°	2814.2	2635.5	2434.3	2262.4	2157.8	2055.6	1875.8	1731.9	1574.6	1431.8	1295.8
10°	3191.8	2923.2	2638.9	2392.7	2251.1	2118.5	1881.4	1690.3	1488.0	1311.6	1140.7
12.5°	3542.5	3175.0	2804.1	2482.6	2307.3	2147.7	1857.8	1624.0	1383.5	1174.5	975.5
15°	3854.9	3382.9	2924.3	2534.3	2328.7	2139.9	1802.7	1530.7	1259.9	1026.1	774.4
17.5°	4092.0	3512.1	2977.2	2526.5	2290.5	2080.3	1708.3	1413.8	1128.4	845.2	560.8
20°	4235.9	3567.2	2965.9	2465.8	2208.4	1985.9	1595.9	1286.8	969.9	649.6	494.5
22.5°	4296.6	3562.7	2913.1	2374.8	2107.3	1882.5	1488.0	1163.2	803.6	587.8	515.9
25°	4306.7	3516.6	2838.9	2274.7	2007.2	1783.6	1379.0	1022.7	697.9	604.6	577.7
27.5°	4229.2	3408.7	2699.6	2130.9	1866.8	1635.2	1216.0	812.6	655.2	602.4	620.4
30°	3999.9	3162.6	2453.4	1878.0	1622.9	1391.4	868.8	637.2	544.0	547.3	551.8
32.5°	3596.4	2753.5	2057.8	1508.2	1229.5	917.1	540.6	426.0	413.6	413.6	411.3
35°	3058.1	2253.4	1615.0	954.2	611.4	440.6	279.8	281.0	275.4	274.2	273.1
37.5°	2501.8	1778.0	1022.7	394.5	265.2	184.3	165.2	167.5	165.2	168.6	166.3
40°	1972.4	1098.0	373.1	125.9	93.3	89.9	92.2	94.4	94.4	96.7	96.7
42.5°	1146.4	364.1	97.8	50.6	50.6	48.3	49.5	51.7	52.8	53.9	52.8
45°	340.5	75.3	31.5	28.1	28.1	27.0	27.0	28.1	29.2	30.3	30.3
47.5°	53.9	21.4	18.0	15.7	15.7	15.7	15.7	15.7	16.9	16.9	18.0
50°	16.9	13.5	11.2	10.1	10.1	9.0	9.0	10.1	10.1	10.1	11.2
52.5°	10.1	7.9	7.9	6.7	7.9	7.9	6.7	7.9	7.9	7.9	9.0
55°	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	7.9	7.9	7.9
57.5°	5.6	5.6	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
60°	5.6	5.6	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	7.9
62.5°	5.6	5.6	6.7	6.7	6.7	6.7	6.7	6.7	7.9	7.9	7.9
65°	5.6	5.6	6.7	6.7	6.7	6.7	6.7	7.9	7.9	7.9	7.9
67.5°	5.6	6.7	6.7	6.7	6.7	7.9	7.9	7.9	7.9	7.9	7.9
70°	5.6	6.7	6.7	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9
72.5°	5.6	6.7	6.7	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9
75°	6.7	6.7	6.7	7.9	7.9	7.9	7.9	7.9	7.9	7.9	9.0
77.5°	6.7	6.7	7.9	7.9	7.9	7.9	7.9	7.9	9.0	9.0	9.0
80°	6.7	6.7	7.9	7.9	7.9	7.9	7.9	9.0	9.0	9.0	9.0
82.5°	6.7	6.7	7.9	7.9	7.9	7.9	7.9	9.0	9.0	9.0	9.0
85°	6.7	6.7	7.9	7.9	7.9	7.9	7.9	9.0	9.0	9.0	9.0
87.5°	6.7	6.7	7.9	7.9	7.9	7.9	7.9	9.0	9.0	9.0	9.0
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°	1597.0	1597.0	1597.0	1597.0	1597.0	1597.0	1597.0	1597.0	1597.0	1597.0	1597.0
2.5°	1473.4	1421.7	1397.0	1362.1	1337.4	1282.3	1259.9	1221.7	1190.2	1138.5	1141.9
5°	1345.3	1247.5	1181.2	1129.5	1093.5	1005.9	947.4	885.6	829.4	759.7	733.9
7.5°	1167.7	1047.5	946.3	884.5	838.4	721.5	592.3	491.1	414.7	359.6	338.3
10°	990.1	833.9	673.2	577.7	511.4	399.0	341.7	314.7	290.0	259.6	239.4
12.5°	783.3	560.8	414.7	376.5	349.5	312.4	275.4	246.1	251.7	252.9	260.7
15°	535.0	403.5	357.4	331.5	302.3	281.0	293.3	301.2	315.8	316.9	327.0
17.5°	434.9	378.7	341.7	340.5	342.8	355.1	374.3	384.4	403.5	408.0	422.6
20°	434.9	402.3	433.8	433.8	439.4	456.3	481.0	495.6	517.0	524.9	542.8
22.5°	495.6	518.1	557.4	561.9	564.2	582.2	613.6	628.2	653.0	657.5	676.6
25°	604.6	624.9	660.8	664.2	665.3	678.8	702.4	710.3	727.1	718.2	729.4
27.5°	639.5	648.5	671.0	673.2	667.6	673.2	682.2	682.2	687.8	669.8	673.2
30°	561.9	564.2	575.4	576.5	564.2	566.4	567.6	566.4	565.3	546.2	546.2
32.5°	417.0	417.0	431.6	428.2	414.7	418.1	418.1	418.1	417.0	401.2	399.0
35°	276.5	277.6	290.0	287.7	277.6	279.8	279.8	283.2	279.8	270.9	268.6
37.5°	168.6	169.7	175.3	176.4	173.1	174.2	175.3	174.2	176.4	172.0	169.7
40°	97.8	100.0	104.5	105.6	104.5	104.5	105.6	106.8	111.3	105.6	103.4
42.5°	57.3	58.4	60.7	60.7	60.7	60.7	61.8	62.9	64.1	62.9	61.8
45°	32.6	33.7	34.8	34.8	36.0	34.8	36.0	36.0	37.1	36.0	36.0
47.5°	19.1	19.1	20.2	20.2	21.4	20.2	21.4	21.4	21.4	20.2	20.2
50°	11.2	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	11.2	11.2
52.5°	9.0	9.0	9.0	9.0	9.0	7.9	7.9	7.9	7.9	6.7	6.7
55°	7.9	7.9	7.9	7.9	7.9	7.9	6.7	5.6	5.6	4.5	4.5
57.5°	6.7	7.9	7.9	7.9	7.9	6.7	6.7	5.6	4.5	3.4	3.4
60°	7.9	7.9	7.9	7.9	6.7	6.7	6.7	5.6	4.5	3.4	3.4
62.5°	7.9	7.9	7.9	7.9	7.9	6.7	6.7	5.6	4.5	3.4	3.4
65°	7.9	7.9	7.9	7.9	7.9	6.7	6.7	5.6	4.5	3.4	3.4
67.5°	7.9	7.9	7.9	7.9	7.9	6.7	6.7	5.6	4.5	4.5	3.4
70°	7.9	9.0	9.0	7.9	7.9	7.9	6.7	5.6	5.6	4.5	3.4
72.5°	7.9	9.0	9.0	7.9	7.9	7.9	6.7	5.6	5.6	4.5	3.4
75°	9.0	9.0	9.0	9.0	7.9	7.9	6.7	6.7	5.6	4.5	3.4
77.5°	9.0	9.0	9.0	9.0	7.9	7.9	6.7	6.7	5.6	4.5	3.4
80°	9.0	9.0	9.0	9.0	9.0	7.9	7.9	6.7	5.6	4.5	4.5
82.5°	9.0	9.0	9.0	9.0	9.0	7.9	7.9	6.7	5.6	4.5	4.5
85°	9.0	9.0	9.0	9.0	9.0	7.9	7.9	6.7	5.6	4.5	3.4
87.5°	9.0	9.0	9.0	9.0	7.9	7.9	6.7	6.7	5.6	4.5	3.4
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: P209023

CATALOG NUMBER: LDSQA6A65840D010TE LARH20SP 6LSQA1H 30°

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1597.0	1597.0	1597.0	1597.0	1597.0	1597.0	1597.0	1597.0
2.5°	1100.3	1074.4	1063.2	1081.2	1072.2	1045.2	1050.8	1034.0
5°	656.3	617.0	592.3	603.5	567.6	535.0	535.0	511.4
7.5°	316.9	304.6	297.8	300.1	292.2	282.1	276.5	276.5
10°	222.5	218.0	219.2	219.2	225.9	224.8	228.1	227.0
12.5°	264.1	266.4	267.5	272.0	277.6	277.6	281.0	278.7
15°	338.3	336.0	342.8	343.9	352.9	354.0	358.5	354.0
17.5°	430.4	434.9	441.7	440.6	458.5	459.7	459.7	458.5
20°	554.1	557.4	564.2	566.4	587.8	590.0	597.9	599.0
22.5°	688.9	688.9	692.3	696.8	717.0	718.2	721.5	721.5
25°	735.0	728.3	729.4	735.0	746.3	741.8	745.1	742.9
27.5°	675.5	665.3	663.1	671.0	678.8	666.5	671.0	671.0
30°	548.5	539.5	537.2	545.1	550.7	537.2	541.7	544.0
32.5°	401.2	395.6	394.5	400.1	404.6	393.4	397.9	401.2
35°	270.9	268.6	266.4	267.5	274.2	265.2	269.7	272.0
37.5°	172.0	167.5	168.6	170.8	175.3	169.7	174.2	174.2
40°	105.6	103.4	103.4	105.6	107.9	103.4	105.6	106.8
42.5°	61.8	61.8	61.8	62.9	64.1	61.8	61.8	62.9
45°	36.0	34.8	34.8	36.0	37.1	34.8	36.0	36.0
47.5°	20.2	19.1	19.1	20.2	20.2	19.1	20.2	20.2
50°	11.2	10.1	10.1	11.2	11.2	10.1	10.1	10.1
52.5°	5.6	5.6	5.6	5.6	5.6	5.6	4.5	4.5
55°	3.4	3.4	2.2	2.2	2.2	2.2	2.2	1.1
57.5°	2.2	2.2	1.1	1.1	1.1	1.1	0.0	0.0
60°	2.2	2.2	1.1	1.1	1.1	0.0	0.0	0.0
62.5°	2.2	2.2	1.1	1.1	1.1	0.0	0.0	0.0
65°	2.2	2.2	1.1	1.1	1.1	0.0	0.0	0.0
67.5°	2.2	2.2	1.1	1.1	1.1	0.0	0.0	0.0
70°	3.4	2.2	2.2	1.1	1.1	1.1	0.0	0.0
72.5°	3.4	2.2	2.2	2.2	1.1	1.1	0.0	0.0
75°	3.4	2.2	2.2	2.2	1.1	1.1	0.0	0.0
77.5°	3.4	2.2	2.2	2.2	1.1	1.1	1.1	0.0
80°	3.4	2.2	2.2	2.2	1.1	1.1	1.1	1.1
82.5°	3.4	2.2	2.2	2.2	1.1	1.1	1.1	1.1
85°	3.4	2.2	2.2	2.2	1.1	1.1	1.1	0.0
87.5°	3.4	2.2	2.2	2.2	1.1	1.1	1.1	0.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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













(END OF REPORT)