

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: P209009

Luminaire Tested: **LDSQA6A45930D010TE LARH20SP 6LSQA1H 30°**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P209009
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: LDSQA6A45930D010TE 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 / 3000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3430.0 lumens
Efficiency: N/A
Efficacy: 63.1 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

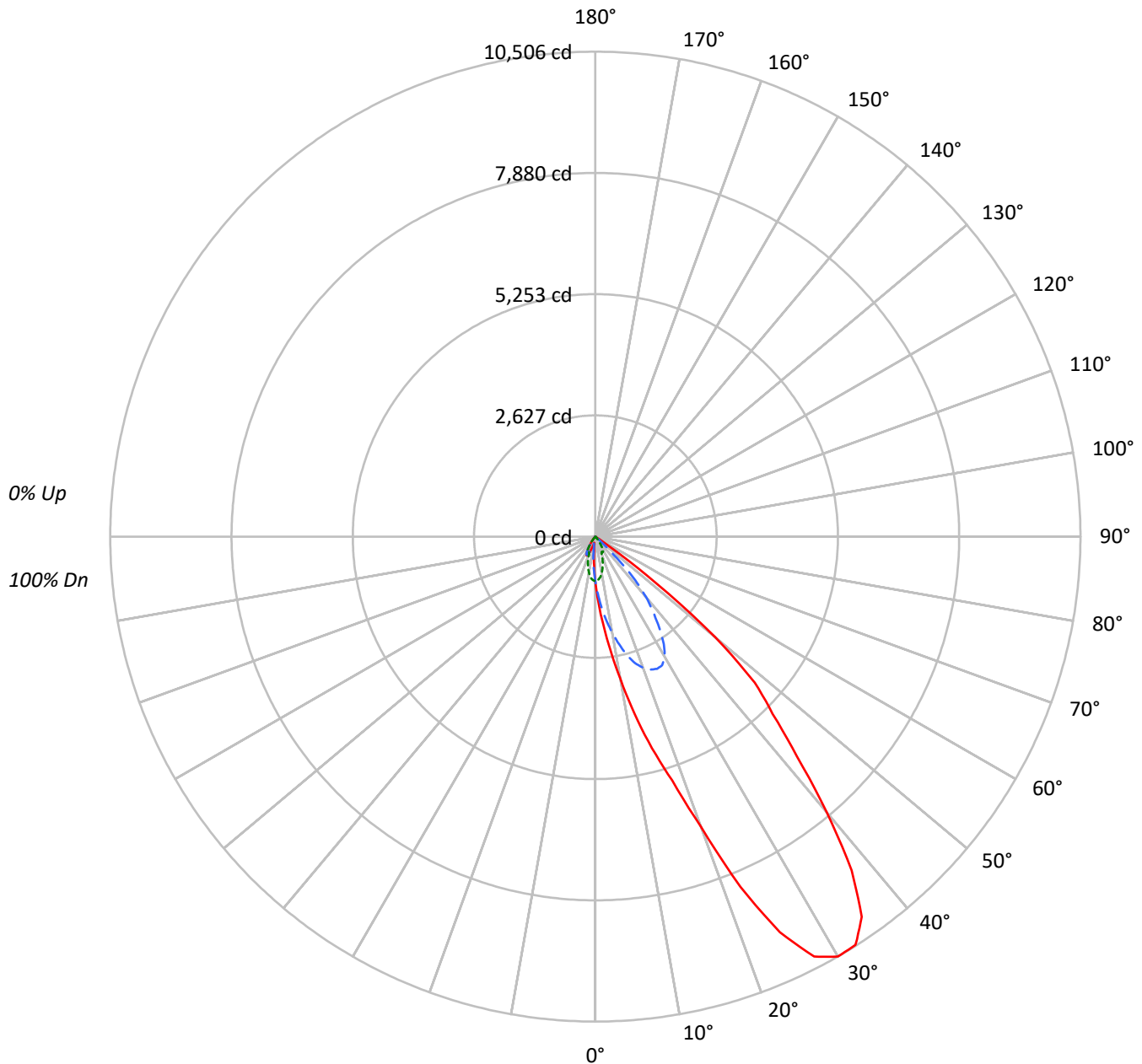
Input Watts (W): 54.4
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20				20				20				20				20
RC	80				70				50				30				10
RW	70	50	30	10	70	50	30	10	50	30	10		50	30	10		50
RCR																	
0	119	119	119	119	116	116	116	116	111	111	111		106	106	106		102
1	112	109	106	104	110	107	104	102	103	101	99		99	97	96		96
2	105	100	95	91	103	98	94	90	95	91	88		92	89	86		89
3	99	91	85	80	96	89	84	80	87	82	78		84	80	77		82
4	92	83	76	71	90	82	76	71	79	74	70		77	73	69		75
5	86	76	69	64	84	75	68	63	73	67	63		71	66	62		69
6	80	69	62	57	79	69	62	57	67	61	56		65	60	56		64
7	75	64	56	51	73	63	56	51	62	55	51		60	55	50		59
8	70	59	51	46	69	58	51	46	57	50	46		56	50	46		54
9	66	54	47	42	64	53	47	42	52	46	42		51	46	42		50
10	61	50	43	38	60	49	43	38	48	42	38		48	42	38		47

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	41691	41691	41691
5°	80787	39728	13398
10°	137250	34766	6016
15°	211497	27730	9566
20°	306166	18048	16641
25°	449199	17416	21397
30°	522301	16501	16396
35°	528656	8741	8667
40°	437687	3294	3636
45°	330565	1120	1327
50°	226167	409	409
55°	31460	360	53
60°	818	353	0
65°	204	489	0
70°	88	604	0
75°	0	799	0
80°	0	1364	174
85°	0	2717	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	101.6	3.0
10°-20°	429.4	12.5
20°-30°	979.6	28.6
30°-40°	1133.6	33.0
40°-50°	683.7	19.9
50°-60°	92.9	2.7
60°-70°	3.0	0.1
70°-80°	3.3	0.1
80°-90°	3.1	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°	1510.6	44.0
0°-40°	2644.2	77.1
0°-60°	3420.7	99.7
0°-90°	3430.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3430.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	968	968	968	968	968	
5°	1869	1530	919	503	310	218
15°	4745	2667	622	192	215	1405
25°	9456	3160	367	441	450	4279
35°	10058	2410	166	170	165	6061
45°	5429	656	18	22	22	4245
55°	419	5	5	3	1	822
65°	2	3	5	3	0	3
75°	0	3	5	3	0	0
85°	0	3	6	3	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°	968.3	968.3	968.3	968.3	968.3	968.3	968.3	968.3	968.3	968.3	968.3
2.5°	1400.3	1387.4	1392.8	1378.5	1342.4	1334.9	1334.2	1324.7	1294.0	1270.2	1241.6
5°	1869.2	1868.5	1871.9	1841.2	1777.8	1758.1	1748.5	1725.4	1651.1	1593.9	1530.5
7.5°	2454.5	2450.4	2446.3	2390.4	2291.0	2252.8	2228.3	2144.4	2042.2	1940.7	1827.6
10°	3139.3	3137.3	3121.6	3023.5	2864.0	2793.8	2746.1	2613.3	2449.0	2304.6	2112.4
12.5°	3934.6	3916.2	3888.2	3744.4	3525.7	3449.4	3344.4	3133.9	2881.8	2660.3	2391.8
15°	4744.8	4718.2	4668.5	4483.8	4212.6	4082.4	3952.3	3674.9	3332.9	3011.2	2667.1
17.5°	5537.3	5508.0	5391.4	5078.0	4812.9	4654.1	4509.7	4128.8	3726.7	3313.1	2877.0
20°	6682.1	6575.8	6372.7	5878.7	5386.0	5099.8	4930.8	4528.1	4030.6	3548.9	3026.2
22.5°	8211.2	7975.4	7542.7	6740.0	6036.1	5623.1	5346.5	4810.9	4249.4	3702.9	3118.2
25°	9455.5	9348.5	8856.5	7714.4	6616.0	6129.4	5744.4	5035.7	4408.8	3805.8	3160.5
27.5°	10257.5	10230.9	9668.8	8521.2	7089.6	6451.1	6021.1	5184.3	4485.8	3827.6	3140.0
30°	10505.6	10547.1	10007.4	8795.2	7226.5	6515.8	6045.6	5186.3	4426.5	3728.8	3009.2
32.5°	10487.2	10489.2	9827.5	8558.7	7003.7	6327.7	5841.2	5013.9	4207.8	3481.4	2760.5
35°	10057.9	9952.2	9204.0	7832.3	6485.1	5888.9	5436.4	4680.0	3847.3	3109.3	2409.5
37.5°	9115.4	8977.1	8104.9	6902.2	5871.2	5319.9	4954.7	4241.9	3418.0	2712.1	2047.0
40°	7787.3	7591.1	6871.5	6037.4	5199.3	4785.0	4478.3	3751.9	2958.8	2322.3	1707.0
42.5°	6457.9	6361.8	5886.2	5208.1	4634.4	4244.6	3924.3	3238.8	2517.2	1938.0	1277.0
45°	5428.9	5346.5	5026.9	4579.9	4017.0	3661.3	3352.6	2703.9	1955.7	1300.2	656.2
47.5°	4679.4	4612.6	4306.6	3837.1	3219.7	2830.6	2512.4	1773.1	1108.0	561.5	164.2
50°	3376.5	3308.3	3008.5	2464.7	1907.3	1581.6	1352.6	791.8	314.1	113.8	17.0
52.5°	1655.2	1599.3	1395.6	1044.6	701.2	504.3	368.7	148.6	36.1	12.3	8.2
55°	419.1	385.0	321.0	201.7	98.8	59.3	38.2	13.6	8.9	6.8	4.8
57.5°	23.8	23.2	21.1	15.7	11.6	10.2	8.9	6.8	4.8	4.1	3.4
60°	9.5	8.9	8.2	6.8	5.5	4.8	4.8	3.4	2.7	2.7	2.7
62.5°	4.1	4.1	4.1	3.4	2.7	2.7	2.7	2.0	2.7	2.7	2.7
65°	2.0	2.0	2.0	1.4	1.4	1.4	2.0	2.0	2.0	2.7	2.7
67.5°	1.4	0.7	0.7	0.7	1.4	1.4	1.4	2.0	2.0	2.7	2.7
70°	0.7	0.7	0.7	0.7	1.4	1.4	1.4	2.0	2.0	2.7	3.4
72.5°	0.0	0.7	0.7	0.7	1.4	1.4	1.4	2.0	2.0	2.7	3.4
75°	0.0	0.7	0.7	0.7	1.4	1.4	1.4	2.0	2.7	2.7	3.4
77.5°	0.0	0.7	0.7	0.7	1.4	1.4	1.4	2.0	2.7	2.7	3.4
80°	0.0	0.7	0.7	0.7	1.4	1.4	1.4	2.0	2.7	2.7	3.4
82.5°	0.0	0.0	0.7	0.7	1.4	1.4	1.4	2.0	2.7	2.7	3.4
85°	0.0	0.0	0.7	0.7	1.4	1.4	1.4	2.0	2.7	2.7	3.4
87.5°	0.0	0.0	0.7	0.7	1.4	1.4	1.4	2.0	2.0	2.7	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



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CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	968.3	968.3	968.3	968.3	968.3	968.3	968.3	968.3	968.3	968.3	968.3
2.5°	1204.8	1180.2	1144.1	1120.3	1097.1	1075.3	1039.2	1018.7	981.9	947.9	918.6
5°	1454.2	1392.8	1318.6	1255.2	1214.3	1174.1	1101.2	1047.4	979.9	919.2	863.4
7.5°	1706.3	1597.9	1476.0	1371.7	1308.3	1246.3	1137.3	1050.1	954.7	868.1	785.7
10°	1935.3	1772.4	1600.0	1450.8	1364.9	1284.5	1140.7	1024.9	902.2	795.2	691.6
12.5°	2147.9	1925.0	1700.2	1505.3	1399.0	1302.2	1126.4	984.7	838.8	712.1	591.5
15°	2337.3	2051.1	1773.1	1536.6	1411.9	1297.4	1093.0	928.1	763.9	622.1	469.5
17.5°	2481.1	2129.5	1805.1	1531.8	1388.7	1261.3	1035.8	857.2	684.2	512.4	340.0
20°	2568.3	2162.8	1798.3	1495.0	1339.0	1204.1	967.6	780.2	588.1	393.9	299.8
22.5°	2605.1	2160.1	1766.3	1439.9	1277.7	1141.4	902.2	705.3	487.2	356.4	312.8
25°	2611.2	2132.2	1721.3	1379.2	1217.0	1081.4	836.1	620.1	423.2	366.6	350.3
27.5°	2564.2	2066.8	1636.8	1292.0	1131.8	991.5	737.3	492.7	397.3	365.2	376.1
30°	2425.2	1917.5	1487.6	1138.7	984.0	843.6	526.7	386.4	329.8	331.9	334.6
32.5°	2180.6	1669.5	1247.7	914.5	745.5	556.0	327.8	258.3	250.8	250.8	249.4
35°	1854.2	1366.3	979.2	578.5	370.7	267.1	169.7	170.4	166.9	166.3	165.6
37.5°	1516.9	1078.0	620.1	239.2	160.8	111.8	100.2	101.5	100.2	102.2	100.9
40°	1195.9	665.8	226.2	76.3	56.6	54.5	55.9	57.2	57.2	58.6	58.6
42.5°	695.1	220.8	59.3	30.7	30.7	29.3	30.0	31.3	32.0	32.7	32.0
45°	206.5	45.7	19.1	17.0	17.0	16.4	16.4	17.0	17.7	18.4	18.4
47.5°	32.7	12.9	10.9	9.5	9.5	9.5	9.5	9.5	10.2	10.2	10.9
50°	10.2	8.2	6.8	6.1	6.1	5.5	5.5	6.1	6.1	6.1	6.8
52.5°	6.1	4.8	4.8	4.1	4.8	4.8	4.1	4.8	4.8	4.8	5.5
55°	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.8	4.8	4.8
57.5°	3.4	3.4	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
60°	3.4	3.4	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.8
62.5°	3.4	3.4	4.1	4.1	4.1	4.1	4.1	4.1	4.8	4.8	4.8
65°	3.4	3.4	4.1	4.1	4.1	4.1	4.1	4.8	4.8	4.8	4.8
67.5°	3.4	4.1	4.1	4.1	4.1	4.8	4.8	4.8	4.8	4.8	4.8
70°	3.4	4.1	4.1	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
72.5°	3.4	4.1	4.1	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
75°	4.1	4.1	4.1	4.8	4.8	4.8	4.8	4.8	4.8	4.8	5.5
77.5°	4.1	4.1	4.8	4.8	4.8	4.8	4.8	4.8	5.5	5.5	5.5
80°	4.1	4.1	4.8	4.8	4.8	4.8	4.8	5.5	5.5	5.5	5.5
82.5°	4.1	4.1	4.8	4.8	4.8	4.8	4.8	5.5	5.5	5.5	5.5
85°	4.1	4.1	4.8	4.8	4.8	4.8	4.8	5.5	5.5	5.5	5.5
87.5°	4.1	4.1	4.8	4.8	4.8	4.8	4.8	5.5	5.5	5.5	5.5
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):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	968.3	968.3	968.3	968.3	968.3	968.3	968.3	968.3	968.3	968.3	968.3
2.5°	893.4	862.0	847.0	825.9	810.9	777.5	763.9	740.7	721.6	690.3	692.3
5°	815.7	756.4	716.2	684.8	663.0	609.9	574.4	537.0	502.9	460.6	445.0
7.5°	708.0	635.1	573.8	536.3	508.3	437.5	359.1	297.8	251.4	218.1	205.1
10°	600.3	505.6	408.2	350.3	310.0	241.9	207.2	190.8	175.8	157.4	145.1
12.5°	475.0	340.0	251.4	228.3	211.9	189.4	166.9	149.2	152.6	153.3	158.1
15°	324.4	244.6	216.7	201.0	183.3	170.4	177.9	182.6	191.5	192.2	198.3
17.5°	263.7	229.6	207.2	206.5	207.8	215.3	226.9	233.0	244.6	247.4	256.2
20°	263.7	244.0	263.0	263.0	266.4	276.7	291.7	300.5	313.5	318.2	329.1
22.5°	300.5	314.1	338.0	340.7	342.1	353.0	372.1	380.9	395.9	398.6	410.2
25°	366.6	378.9	400.7	402.7	403.4	411.6	425.9	430.7	440.9	435.4	442.2
27.5°	387.7	393.2	406.8	408.2	404.8	408.2	413.6	413.6	417.0	406.1	408.2
30°	340.7	342.1	348.9	349.6	342.1	343.4	344.1	343.4	342.8	331.2	331.2
32.5°	252.8	252.8	261.7	259.6	251.4	253.5	253.5	253.5	252.8	243.3	241.9
35°	167.6	168.3	175.8	174.4	168.3	169.7	169.7	171.7	169.7	164.2	162.9
37.5°	102.2	102.9	106.3	107.0	104.9	105.6	106.3	105.6	107.0	104.3	102.9
40°	59.3	60.6	63.4	64.1	63.4	63.4	64.1	64.7	67.5	64.1	62.7
42.5°	34.8	35.4	36.8	36.8	36.8	36.8	37.5	38.2	38.8	38.2	37.5
45°	19.8	20.4	21.1	21.1	21.8	21.1	21.8	21.8	22.5	21.8	21.8
47.5°	11.6	11.6	12.3	12.3	12.9	12.3	12.9	12.9	12.9	12.3	12.3
50°	6.8	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	6.8	6.8
52.5°	5.5	5.5	5.5	5.5	5.5	4.8	4.8	4.8	4.8	4.1	4.1
55°	4.8	4.8	4.8	4.8	4.8	4.8	4.1	3.4	3.4	2.7	2.7
57.5°	4.1	4.8	4.8	4.8	4.8	4.1	4.1	3.4	2.7	2.0	2.0
60°	4.8	4.8	4.8	4.8	4.1	4.1	4.1	3.4	2.7	2.0	2.0
62.5°	4.8	4.8	4.8	4.8	4.8	4.1	4.1	3.4	2.7	2.0	2.0
65°	4.8	4.8	4.8	4.8	4.8	4.1	4.1	3.4	2.7	2.0	2.0
67.5°	4.8	4.8	4.8	4.8	4.8	4.1	4.1	3.4	2.7	2.7	2.0
70°	4.8	5.5	5.5	4.8	4.8	4.8	4.1	3.4	3.4	2.7	2.0
72.5°	4.8	5.5	5.5	4.8	4.8	4.8	4.1	3.4	3.4	2.7	2.0
75°	5.5	5.5	5.5	5.5	4.8	4.8	4.1	4.1	3.4	2.7	2.0
77.5°	5.5	5.5	5.5	5.5	4.8	4.8	4.1	4.1	3.4	2.7	2.0
80°	5.5	5.5	5.5	5.5	5.5	4.8	4.8	4.1	3.4	2.7	2.7
82.5°	5.5	5.5	5.5	5.5	5.5	4.8	4.8	4.1	3.4	2.7	2.7
85°	5.5	5.5	5.5	5.5	5.5	4.8	4.8	4.1	3.4	2.7	2.0
87.5°	5.5	5.5	5.5	5.5	4.8	4.8	4.1	4.1	3.4	2.7	2.0
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: P209009

CATALOG NUMBER: LDSQA6A45930D010TE LARH20SP 6LSQA1H 30°

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	968.3	968.3	968.3	968.3	968.3	968.3	968.3	968.3
2.5°	667.1	651.4	644.6	655.5	650.1	633.7	637.1	626.9
5°	398.0	374.1	359.1	365.9	344.1	324.4	324.4	310.0
7.5°	192.2	184.7	180.6	181.9	177.2	171.0	167.6	167.6
10°	134.9	132.2	132.9	132.9	137.0	136.3	138.3	137.6
12.5°	160.1	161.5	162.2	164.9	168.3	168.3	170.4	169.0
15°	205.1	203.7	207.8	208.5	214.0	214.6	217.4	214.6
17.5°	261.0	263.7	267.8	267.1	278.0	278.7	278.7	278.0
20°	335.9	338.0	342.1	343.4	356.4	357.7	362.5	363.2
22.5°	417.7	417.7	419.8	422.5	434.8	435.4	437.5	437.5
25°	445.7	441.6	442.2	445.7	452.5	449.7	451.8	450.4
27.5°	409.5	403.4	402.0	406.8	411.6	404.1	406.8	406.8
30°	332.5	327.1	325.7	330.5	333.9	325.7	328.4	329.8
32.5°	243.3	239.9	239.2	242.6	245.3	238.5	241.2	243.3
35°	164.2	162.9	161.5	162.2	166.3	160.8	163.5	164.9
37.5°	104.3	101.5	102.2	103.6	106.3	102.9	105.6	105.6
40°	64.1	62.7	62.7	64.1	65.4	62.7	64.1	64.7
42.5°	37.5	37.5	37.5	38.2	38.8	37.5	37.5	38.2
45°	21.8	21.1	21.1	21.8	22.5	21.1	21.8	21.8
47.5°	12.3	11.6	11.6	12.3	12.3	11.6	12.3	12.3
50°	6.8	6.1	6.1	6.8	6.8	6.1	6.1	6.1
52.5°	3.4	3.4	3.4	3.4	3.4	3.4	2.7	2.7
55°	2.0	2.0	1.4	1.4	1.4	1.4	1.4	0.7
57.5°	1.4	1.4	0.7	0.7	0.7	0.7	0.0	0.0
60°	1.4	1.4	0.7	0.7	0.7	0.0	0.0	0.0
62.5°	1.4	1.4	0.7	0.7	0.7	0.0	0.0	0.0
65°	1.4	1.4	0.7	0.7	0.7	0.0	0.0	0.0
67.5°	1.4	1.4	0.7	0.7	0.7	0.0	0.0	0.0
70°	2.0	1.4	1.4	0.7	0.7	0.7	0.0	0.0
72.5°	2.0	1.4	1.4	1.4	0.7	0.7	0.0	0.0
75°	2.0	1.4	1.4	1.4	0.7	0.7	0.0	0.0
77.5°	2.0	1.4	1.4	1.4	0.7	0.7	0.7	0.0
80°	2.0	1.4	1.4	1.4	0.7	0.7	0.7	0.7
82.5°	2.0	1.4	1.4	1.4	0.7	0.7	0.7	0.7
85°	2.0	1.4	1.4	1.4	0.7	0.7	0.7	0.0
87.5°	2.0	1.4	1.4	1.4	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



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— 0°-180° - - 45°-225° - - - 90°-270°













(END OF REPORT)