

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: P182689

Luminaire Tested: **LDSQA4A13840D010TE LAR15SP 4LSQA1H 30°**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P182689
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P26799)
Test Lab: INNOVATION CENTER-P2
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: io LED
Catalog Number: LDSQA4A13840D010TE LAR15SP 4LSQA1H 30°
Description: PORTFOLIO 4" SQUARE ADJUSTABLE REFLECTOR, ANGLE-CUT TRIM,
SELF-FLANGED, 15° SPOT, 30° Tilt
Light Source: (1) HIGH LUMEN LED 80CRI / 4000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1630.5 lumens
Efficiency: N/A
Efficacy: 73.2 lumens/watt
Spacing Criteria (0/90/45): 2.24 / 0.6 / 1.1
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
CIE Type: Direct

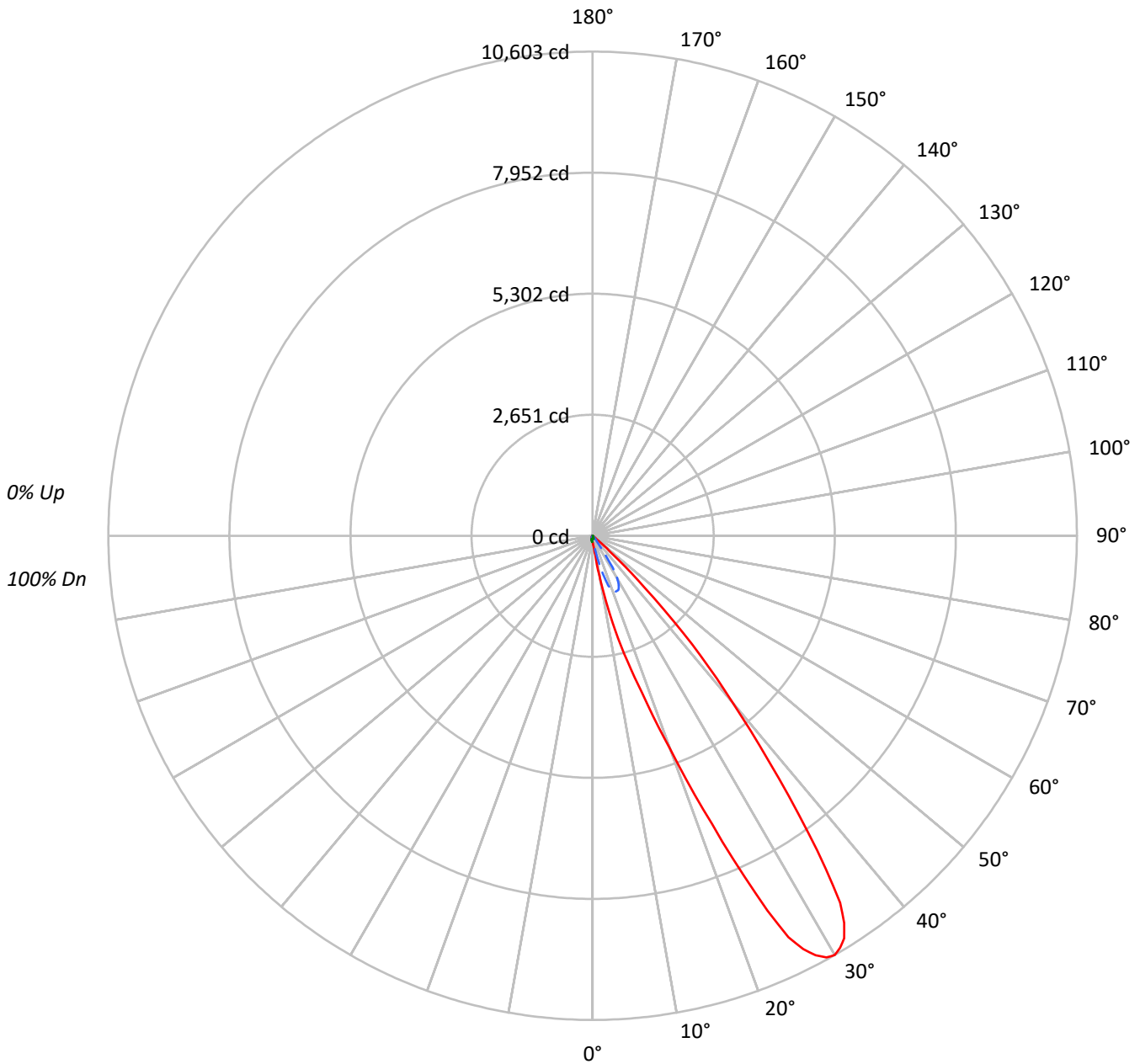
Input Watts (W): 22.27
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P182689

CATALOG NUMBER: LDSQA4A13840D010TE LAR15SP 4LSQA1H 30°

Luminous Intensity Polar Plot





TEST NUMBER: P182689

CATALOG NUMBER: LDSQA4A13840D010TE LAR15SP 4LSQA1H 30°

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 | 113 | 109 | 107 | 104 | 110 | 107 | 105 | 102 | 103 | 101 | 99 | 99 | 98 | 96 | 96 | 95 | 93 | 91 | | | | | | | | | | | | | | | | | | | |
| 2 | 106 | 100 | 95 | 91 | 103 | 98 | 94 | 90 | 95 | 91 | 88 | 92 | 89 | 86 | 89 | 87 | 85 | 83 | | | | | | | | | | | | | | | | | | | |
| 3 | 99 | 92 | 86 | 81 | 97 | 90 | 85 | 80 | 87 | 83 | 79 | 85 | 81 | 78 | 83 | 79 | 77 | 75 | | | | | | | | | | | | | | | | | | | |
| 4 | 93 | 84 | 77 | 72 | 91 | 83 | 76 | 72 | 80 | 75 | 71 | 78 | 74 | 70 | 76 | 72 | 69 | 67 | | | | | | | | | | | | | | | | | | | |
| 5 | 87 | 77 | 70 | 65 | 85 | 76 | 69 | 64 | 74 | 68 | 64 | 72 | 67 | 63 | 70 | 66 | 63 | 61 | | | | | | | | | | | | | | | | | | | |
| 6 | 81 | 70 | 63 | 58 | 79 | 69 | 63 | 58 | 68 | 62 | 57 | 66 | 61 | 57 | 65 | 60 | 57 | 55 | | | | | | | | | | | | | | | | | | | |
| 7 | 76 | 65 | 57 | 52 | 74 | 64 | 57 | 52 | 62 | 56 | 52 | 61 | 56 | 52 | 60 | 55 | 51 | 50 | | | | | | | | | | | | | | | | | | | |
| 8 | 71 | 59 | 52 | 47 | 69 | 59 | 52 | 47 | 57 | 51 | 47 | 56 | 51 | 47 | 55 | 50 | 46 | 45 | | | | | | | | | | | | | | | | | | | |
| 9 | 66 | 55 | 48 | 43 | 65 | 54 | 47 | 43 | 53 | 47 | 43 | 52 | 46 | 42 | 51 | 46 | 42 | 41 | | | | | | | | | | | | | | | | | | | |
| 10 | 62 | 50 | 43 | 39 | 61 | 50 | 43 | 39 | 49 | 43 | 39 | 48 | 42 | 38 | 47 | 42 | 38 | 37 | | | | | | | | | | | | | | | | | | | |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 90° | 180° |
|-----|---------|-------|-------|
| 0° | 13621 | 13621 | 13621 |
| 5° | 22668 | 12846 | 10969 |
| 10° | 96707 | 11263 | 9522 |
| 15° | 267672 | 8946 | 8445 |
| 20° | 513422 | 6330 | 7546 |
| 25° | 968040 | 4233 | 6659 |
| 30° | 1186029 | 2830 | 5839 |
| 35° | 1053322 | 1892 | 4979 |
| 40° | 600315 | 1277 | 4148 |
| 45° | 218971 | 1041 | 3466 |
| 50° | 24099 | 769 | 2924 |
| 55° | 3547 | 574 | 2415 |
| 60° | 814 | 659 | 1957 |
| 65° | 573 | 779 | 1352 |
| 70° | 482 | 963 | 1190 |
| 75° | 636 | 1273 | 936 |
| 80° | 0 | 1897 | 948 |
| 85° | 0 | 2779 | 889 |



TEST NUMBER: P182689

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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 17.7 | 1.1 |
| 10°-20° | 176.7 | 10.8 |
| 20°-30° | 580.3 | 35.6 |
| 30°-40° | 636.4 | 39.0 |
| 40°-50° | 198.8 | 12.2 |
| 50°-60° | 10.9 | 0.7 |
| 60°-70° | 4.4 | 0.3 |
| 70°-80° | 3.3 | 0.2 |
| 80°-90° | 2.1 | 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° | 774.7 | 47.5 |
| 0°-40° | 1411.0 | 86.5 |
| 0°-60° | 1620.7 | 99.4 |
| 0°-90° | 1630.5 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 1630.5 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 45° | 90° | 135° | 180° | Flux |
|-----|------|------|-----|------|------|------|
| 0° | 141 | 141 | 141 | 141 | 141 | |
| 5° | 233 | 187 | 132 | 117 | 113 | 43 |
| 15° | 2669 | 858 | 89 | 80 | 84 | 839 |
| 25° | 9056 | 1317 | 40 | 49 | 62 | 4037 |
| 35° | 8907 | 259 | 16 | 28 | 42 | 5207 |
| 45° | 1598 | 27 | 8 | 16 | 25 | 1467 |
| 55° | 21 | 5 | 3 | 9 | 14 | 33 |
| 65° | 2 | 2 | 3 | 7 | 6 | 2 |
| 75° | 2 | 2 | 3 | 5 | 2 | 1 |
| 85° | 0 | 2 | 2 | 2 | 1 | 0 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



TEST NUMBER: P182689

CATALOG NUMBER: LDSQA4A13840D010TE LAR15SP 4LSQA1H 30°

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 10° | 15° | 20° | 22.5° | 25° | 30° | 35° | 40° | 45° |
|-------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 140.6 | 140.6 | 140.6 | 140.6 | 140.6 | 140.6 | 140.6 | 140.6 | 140.6 | 140.6 | 140.6 |
| 2.5° | 173.4 | 175.1 | 175.9 | 171.7 | 172.5 | 170.9 | 172.5 | 169.2 | 163.3 | 165.0 | 159.9 |
| 5° | 233.1 | 229.8 | 228.9 | 222.2 | 220.5 | 217.2 | 217.2 | 209.6 | 198.6 | 197.0 | 186.9 |
| 7.5° | 412.4 | 394.7 | 379.6 | 356.9 | 335.0 | 318.2 | 311.4 | 284.5 | 255.0 | 244.1 | 220.5 |
| 10° | 983.1 | 979.7 | 941.8 | 870.3 | 787.8 | 728.0 | 693.5 | 589.2 | 457.0 | 376.2 | 292.1 |
| 12.5° | 1789.4 | 1772.6 | 1718.7 | 1587.4 | 1445.2 | 1355.9 | 1286.1 | 1075.7 | 879.5 | 722.2 | 517.6 |
| 15° | 2668.9 | 2600.8 | 2521.7 | 2318.0 | 2118.5 | 2002.3 | 1903.0 | 1650.5 | 1346.7 | 1120.3 | 857.7 |
| 17.5° | 3608.3 | 3638.6 | 3446.7 | 3095.7 | 2741.3 | 2559.5 | 2391.2 | 2003.2 | 1670.7 | 1435.1 | 1139.6 |
| 20° | 4980.2 | 4916.2 | 4578.7 | 3997.1 | 3474.4 | 3170.6 | 2931.5 | 2371.8 | 1870.2 | 1576.5 | 1297.0 |
| 22.5° | 6834.4 | 6630.7 | 5972.5 | 4988.6 | 4159.5 | 3737.9 | 3398.7 | 2644.5 | 2037.7 | 1648.8 | 1322.3 |
| 25° | 9056.4 | 8867.9 | 7649.1 | 5942.2 | 4715.9 | 4169.6 | 3708.4 | 2817.9 | 2105.0 | 1660.6 | 1317.2 |
| 26° | 9781.9 | 9501.6 | 8267.8 | 6281.4 | 4886.8 | 4279.1 | 3785.0 | 2851.6 | 2106.7 | 1651.4 | 1295.3 |
| 27° | 10157.3 | 9937.6 | 8779.5 | 6556.6 | 5003.7 | 4348.1 | 3827.9 | 2860.0 | 2089.9 | 1630.3 | 1261.7 |
| 28° | 10404.8 | 10199.4 | 9103.5 | 6736.8 | 5063.5 | 4375.0 | 3840.6 | 2841.5 | 2052.0 | 1593.3 | 1208.6 |
| 29° | 10557.9 | 10341.6 | 9261.8 | 6818.4 | 5067.7 | 4363.2 | 3817.0 | 2792.7 | 2000.7 | 1548.7 | 1147.2 |
| 30° | 10602.6 | 10368.6 | 9266.0 | 6784.7 | 5005.4 | 4300.1 | 3750.5 | 2713.6 | 1938.4 | 1492.3 | 1079.0 |
| 31° | 10523.4 | 10281.9 | 9113.6 | 6631.5 | 4877.5 | 4177.2 | 3646.1 | 2609.2 | 1860.9 | 1432.5 | 973.8 |
| 32° | 10392.1 | 10071.5 | 8794.6 | 6377.4 | 4702.4 | 4029.1 | 3515.7 | 2495.6 | 1778.5 | 1356.8 | 825.7 |
| 33° | 10112.7 | 9725.5 | 8306.5 | 6058.4 | 4492.0 | 3859.1 | 3363.3 | 2369.3 | 1700.2 | 1226.3 | 613.6 |
| 34° | 9692.7 | 9203.7 | 7708.0 | 5687.2 | 4253.8 | 3647.0 | 3188.3 | 2252.3 | 1618.5 | 1053.8 | 420.0 |
| 35° | 8906.6 | 8451.2 | 7047.3 | 5291.6 | 3997.1 | 3441.6 | 2995.5 | 2099.1 | 1507.4 | 845.0 | 259.2 |
| 36° | 8027.0 | 7692.1 | 6406.8 | 4889.3 | 3734.5 | 3228.7 | 2796.9 | 1986.3 | 1343.3 | 622.0 | 175.9 |
| 37° | 7128.1 | 6831.0 | 5802.5 | 4493.7 | 3471.1 | 2993.0 | 2594.9 | 1858.4 | 1148.0 | 414.9 | 141.4 |
| 38° | 6272.1 | 6036.5 | 5228.5 | 4104.8 | 3197.5 | 2746.4 | 2382.8 | 1722.1 | 937.6 | 266.8 | 116.2 |
| 39° | 5486.0 | 5309.3 | 4666.2 | 3728.6 | 2923.1 | 2504.8 | 2179.1 | 1550.4 | 715.4 | 190.2 | 96.8 |
| 40° | 4747.0 | 4622.5 | 4124.2 | 3357.4 | 2650.4 | 2267.5 | 1994.8 | 1342.5 | 496.6 | 150.7 | 78.3 |
| 42.5° | 3228.7 | 3197.5 | 2902.1 | 2416.4 | 1968.7 | 1744.8 | 1577.3 | 755.0 | 191.1 | 90.9 | 43.8 |
| 45° | 1598.3 | 1620.2 | 1502.4 | 1382.0 | 1288.6 | 1220.4 | 994.0 | 314.8 | 106.1 | 49.7 | 26.9 |
| 47.5° | 565.6 | 566.4 | 487.3 | 434.3 | 414.9 | 413.3 | 300.5 | 111.1 | 56.4 | 30.3 | 19.4 |
| 50° | 159.9 | 172.5 | 162.4 | 165.8 | 129.6 | 110.3 | 90.1 | 53.9 | 28.6 | 19.4 | 12.6 |
| 51° | 98.5 | 106.1 | 99.3 | 102.7 | 89.2 | 80.0 | 67.3 | 40.4 | 22.7 | 16.0 | 11.8 |
| 52° | 63.1 | 67.3 | 64.0 | 64.8 | 59.8 | 52.2 | 45.5 | 29.5 | 18.5 | 13.5 | 10.1 |
| 53° | 42.9 | 45.5 | 42.9 | 42.9 | 39.6 | 37.0 | 32.0 | 21.9 | 15.2 | 10.9 | 7.6 |
| 54° | 29.5 | 30.3 | 30.3 | 30.3 | 27.8 | 26.1 | 22.7 | 16.8 | 12.6 | 10.1 | 6.7 |
| 55° | 21.0 | 21.9 | 21.0 | 21.0 | 20.2 | 18.5 | 16.8 | 12.6 | 10.1 | 8.4 | 5.1 |
| 57.5° | 9.3 | 9.3 | 9.3 | 10.1 | 9.3 | 9.3 | 8.4 | 7.6 | 6.7 | 5.1 | 3.4 |
| 60° | 4.2 | 4.2 | 4.2 | 4.2 | 5.1 | 5.1 | 5.1 | 5.1 | 4.2 | 3.4 | 3.4 |
| 61° | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 4.2 | 4.2 | 4.2 | 3.4 | 3.4 | 2.5 |
| 62° | 2.5 | 2.5 | 2.5 | 2.5 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 2.5 | 2.5 |
| 63° | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 3.4 | 3.4 | 2.5 | 2.5 | 2.5 |
| 64° | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| 65° | 2.5 | 1.7 | 1.7 | 1.7 | 1.7 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| 66° | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 2.5 | 2.5 |



TEST NUMBER: P182689

CATALOG NUMBER: LDSQA4A13840D010TE LAR15SP 4LSQA1H 30°

CANDELA DISTRIBUTION (continued):

| | 0° | 5° | 10° | 15° | 20° | 22.5° | 25° | 30° | 35° | 40° | 45° |
|-------|-----|-----|-----|-----|-----|-------|-----|-----|-----|-----|-----|
| 72.5° | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 2.5 |
| 75° | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 2.5 |
| 77.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.8 | 0.8 | 0.8 | 1.7 | 1.7 | 2.5 |
| 80° | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.8 | 0.8 | 0.8 | 1.7 | 1.7 | 2.5 |
| 82.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.8 | 0.8 | 0.8 | 1.7 | 1.7 | 2.5 |
| 85° | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.8 | 0.8 | 0.8 | 1.7 | 1.7 | 2.5 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.8 | 0.8 | 0.8 | 1.7 | 1.7 | 2.5 |
| 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):

| | 50° | 55° | 60° | 65° | 67.5° | 70° | 75° | 80° | 85° | 90° | 95° |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0° | 140.6 | 140.6 | 140.6 | 140.6 | 140.6 | 140.6 | 140.6 | 140.6 | 140.6 | 140.6 | 140.6 |
| 2.5° | 156.6 | 155.7 | 151.5 | 147.3 | 148.1 | 146.5 | 144.8 | 142.2 | 140.6 | 136.4 | 136.4 |
| 5° | 178.4 | 174.2 | 165.0 | 156.6 | 155.7 | 152.3 | 147.3 | 142.2 | 138.0 | 132.1 | 130.5 |
| 7.5° | 203.7 | 191.9 | 176.8 | 163.3 | 160.8 | 155.7 | 146.5 | 139.7 | 132.1 | 124.6 | 122.0 |
| 10° | 239.9 | 212.1 | 186.0 | 165.8 | 160.8 | 153.2 | 141.4 | 132.1 | 123.7 | 114.5 | 111.1 |
| 12.5° | 368.7 | 261.8 | 197.8 | 165.8 | 156.6 | 147.3 | 133.0 | 122.0 | 111.9 | 101.8 | 98.5 |
| 15° | 614.4 | 418.3 | 250.8 | 165.8 | 149.0 | 138.0 | 120.4 | 109.4 | 98.5 | 89.2 | 85.9 |
| 17.5° | 848.4 | 595.1 | 349.3 | 186.9 | 149.8 | 127.1 | 105.2 | 93.4 | 84.2 | 74.9 | 72.4 |
| 20° | 983.9 | 693.5 | 414.1 | 207.9 | 148.1 | 114.5 | 90.1 | 77.4 | 68.2 | 61.4 | 58.9 |
| 22.5° | 1001.6 | 697.7 | 399.8 | 186.0 | 124.6 | 95.1 | 74.9 | 63.1 | 55.6 | 49.7 | 48.0 |
| 25° | 954.5 | 616.1 | 319.8 | 132.1 | 92.6 | 77.4 | 58.9 | 50.5 | 44.6 | 39.6 | 38.7 |
| 26° | 918.3 | 567.3 | 278.6 | 109.4 | 81.6 | 69.0 | 53.0 | 45.5 | 40.4 | 36.2 | 35.4 |
| 27° | 866.9 | 515.1 | 238.2 | 90.9 | 72.4 | 62.3 | 47.1 | 41.2 | 37.0 | 32.8 | 32.8 |
| 28° | 808.8 | 458.7 | 191.9 | 76.6 | 64.8 | 55.6 | 42.9 | 37.0 | 32.8 | 30.3 | 30.3 |
| 29° | 739.0 | 377.1 | 140.6 | 66.5 | 57.2 | 48.8 | 37.9 | 32.8 | 29.5 | 27.8 | 27.8 |
| 30° | 635.5 | 273.5 | 96.8 | 58.1 | 49.7 | 42.9 | 33.7 | 29.5 | 26.9 | 25.3 | 25.3 |
| 31° | 496.6 | 168.3 | 75.8 | 50.5 | 43.8 | 37.9 | 30.3 | 26.1 | 24.4 | 22.7 | 23.6 |
| 32° | 338.4 | 105.2 | 64.8 | 43.8 | 38.7 | 32.8 | 26.9 | 23.6 | 21.9 | 21.0 | 21.0 |
| 33° | 192.7 | 87.5 | 56.4 | 37.9 | 32.8 | 28.6 | 23.6 | 21.0 | 20.2 | 19.4 | 19.4 |
| 34° | 127.9 | 74.9 | 48.8 | 32.0 | 26.9 | 24.4 | 20.2 | 18.5 | 17.7 | 17.7 | 17.7 |
| 35° | 107.7 | 64.8 | 39.6 | 26.9 | 23.6 | 21.0 | 17.7 | 16.8 | 16.0 | 16.0 | 16.8 |
| 36° | 90.9 | 53.9 | 32.0 | 22.7 | 20.2 | 18.5 | 16.0 | 15.2 | 14.3 | 14.3 | 15.2 |
| 37° | 76.6 | 42.9 | 26.9 | 19.4 | 16.8 | 16.0 | 14.3 | 13.5 | 13.5 | 13.5 | 14.3 |
| 38° | 62.3 | 34.5 | 22.7 | 16.8 | 15.2 | 13.5 | 12.6 | 11.8 | 11.8 | 12.6 | 13.5 |
| 39° | 48.8 | 27.8 | 18.5 | 14.3 | 12.6 | 11.8 | 10.9 | 10.9 | 10.9 | 10.9 | 11.8 |
| 40° | 38.7 | 23.6 | 16.0 | 12.6 | 10.9 | 10.9 | 10.1 | 9.3 | 10.1 | 10.1 | 11.8 |
| 42.5° | 24.4 | 16.8 | 11.8 | 9.3 | 8.4 | 8.4 | 7.6 | 7.6 | 7.6 | 8.4 | 9.3 |
| 45° | 17.7 | 13.5 | 9.3 | 7.6 | 6.7 | 5.9 | 5.9 | 5.9 | 6.7 | 7.6 | 8.4 |
| 47.5° | 13.5 | 9.3 | 6.7 | 5.1 | 4.2 | 4.2 | 4.2 | 4.2 | 5.1 | 5.9 | 6.7 |
| 50° | 9.3 | 5.9 | 4.2 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 4.2 | 5.1 | 5.9 |
| 51° | 7.6 | 5.1 | 4.2 | 3.4 | 3.4 | 2.5 | 2.5 | 3.4 | 4.2 | 4.2 | 5.1 |
| 52° | 5.9 | 4.2 | 3.4 | 2.5 | 2.5 | 2.5 | 2.5 | 3.4 | 3.4 | 4.2 | 5.1 |
| 53° | 5.1 | 4.2 | 3.4 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 3.4 | 4.2 | 5.1 |
| 54° | 4.2 | 3.4 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 3.4 | 4.2 | 5.1 |
| 55° | 3.4 | 3.4 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 3.4 | 3.4 | 4.2 |
| 57.5° | 3.4 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 3.4 | 4.2 |
| 60° | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 3.4 | 4.2 |
| 61° | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 3.4 | 4.2 |
| 62° | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 3.4 | 4.2 |
| 63° | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 3.4 | 3.4 | 4.2 |
| 64° | 2.5 | 2.5 | 2.5 | 2.5 | 3.4 | 3.4 | 2.5 | 2.5 | 3.4 | 3.4 | 4.2 |
| 65° | 2.5 | 2.5 | 3.4 | 3.4 | 3.4 | 3.4 | 2.5 | 2.5 | 3.4 | 3.4 | 4.2 |
| 66° | 2.5 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 2.5 | 2.5 | 3.4 | 3.4 | 4.2 |



TEST NUMBER: P182689

CATALOG NUMBER: LDSQA4A13840D010TE LAR15SP 4LSQA1H 30°

CANDELA DISTRIBUTION (continued):

| | 50° | 55° | 60° | 65° | 67.5° | 70° | 75° | 80° | 85° | 90° | 95° |
|-------|-----|-----|-----|-----|-------|-----|-----|-----|-----|-----|-----|
| 72.5° | 2.5 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 2.5 | 3.4 | 3.4 | 3.4 |
| 75° | 2.5 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 |
| 77.5° | 2.5 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 2.5 | 2.5 | 3.4 | 3.4 |
| 80° | 2.5 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 2.5 | 2.5 | 3.4 | 3.4 |
| 82.5° | 2.5 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 2.5 | 2.5 | 2.5 | 3.4 |
| 85° | 2.5 | 2.5 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 2.5 | 2.5 | 2.5 | 2.5 |
| 87.5° | 2.5 | 2.5 | 3.4 | 3.4 | 3.4 | 3.4 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| 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: P182689

CATALOG NUMBER: LDSQA4A13840D010TE LAR15SP 4LSQA1H 30°

CANDELA DISTRIBUTION (continued):

| | 100° | 105° | 110° | 112.5° | 115° | 120° | 125° | 130° | 135° | 140° | 145° |
|-------|-------|-------|-------|--------|-------|-------|-------|-------|-------|-------|-------|
| 0° | 140.6 | 140.6 | 140.6 | 140.6 | 140.6 | 140.6 | 140.6 | 140.6 | 140.6 | 140.6 | 140.6 |
| 2.5° | 134.7 | 132.1 | 130.5 | 129.6 | 130.5 | 128.8 | 126.3 | 127.1 | 126.3 | 125.4 | 125.4 |
| 5° | 127.9 | 123.7 | 122.0 | 121.2 | 121.2 | 120.4 | 117.0 | 117.8 | 117.0 | 116.2 | 116.2 |
| 7.5° | 118.7 | 115.3 | 112.8 | 111.9 | 111.9 | 111.1 | 107.7 | 109.4 | 107.7 | 106.9 | 107.7 |
| 10° | 107.7 | 104.4 | 103.5 | 101.8 | 101.8 | 101.0 | 98.5 | 99.3 | 98.5 | 98.5 | 98.5 |
| 12.5° | 96.0 | 92.6 | 91.7 | 90.9 | 91.7 | 90.9 | 88.4 | 90.1 | 89.2 | 89.2 | 90.1 |
| 15° | 83.3 | 80.8 | 80.8 | 80.0 | 80.8 | 80.0 | 79.1 | 80.0 | 80.0 | 80.0 | 81.6 |
| 17.5° | 70.7 | 69.0 | 69.0 | 68.2 | 69.0 | 69.0 | 68.2 | 70.7 | 70.7 | 72.4 | 74.1 |
| 20° | 58.1 | 56.4 | 57.2 | 57.2 | 58.9 | 58.9 | 58.9 | 61.4 | 62.3 | 64.0 | 66.5 |
| 22.5° | 48.0 | 47.1 | 48.0 | 48.0 | 49.7 | 50.5 | 50.5 | 53.0 | 55.6 | 57.2 | 59.8 |
| 25° | 38.7 | 38.7 | 40.4 | 40.4 | 41.2 | 42.9 | 43.8 | 47.1 | 48.8 | 50.5 | 53.0 |
| 26° | 36.2 | 36.2 | 37.0 | 37.9 | 38.7 | 40.4 | 41.2 | 44.6 | 46.3 | 48.0 | 50.5 |
| 27° | 32.8 | 32.8 | 34.5 | 35.4 | 36.2 | 37.9 | 39.6 | 42.1 | 43.8 | 46.3 | 48.0 |
| 28° | 30.3 | 30.3 | 32.0 | 32.8 | 33.7 | 36.2 | 37.0 | 39.6 | 41.2 | 43.8 | 46.3 |
| 29° | 27.8 | 28.6 | 30.3 | 30.3 | 32.0 | 33.7 | 34.5 | 37.9 | 39.6 | 41.2 | 43.8 |
| 30° | 26.1 | 26.9 | 27.8 | 28.6 | 29.5 | 31.1 | 32.8 | 35.4 | 37.0 | 38.7 | 41.2 |
| 31° | 24.4 | 25.3 | 26.1 | 26.9 | 27.8 | 29.5 | 31.1 | 33.7 | 35.4 | 37.0 | 39.6 |
| 32° | 22.7 | 22.7 | 24.4 | 25.3 | 26.1 | 27.8 | 29.5 | 32.0 | 33.7 | 35.4 | 37.9 |
| 33° | 21.0 | 21.9 | 22.7 | 23.6 | 24.4 | 26.1 | 27.8 | 29.5 | 31.1 | 33.7 | 36.2 |
| 34° | 19.4 | 20.2 | 21.9 | 22.7 | 23.6 | 25.3 | 26.1 | 27.8 | 29.5 | 32.0 | 33.7 |
| 35° | 17.7 | 19.4 | 20.2 | 21.0 | 21.9 | 23.6 | 24.4 | 26.9 | 27.8 | 30.3 | 32.0 |
| 36° | 16.8 | 17.7 | 19.4 | 20.2 | 21.0 | 21.9 | 22.7 | 25.3 | 26.9 | 28.6 | 30.3 |
| 37° | 15.2 | 16.8 | 17.7 | 18.5 | 19.4 | 21.0 | 21.9 | 23.6 | 25.3 | 26.9 | 28.6 |
| 38° | 14.3 | 15.2 | 16.8 | 17.7 | 18.5 | 19.4 | 20.2 | 22.7 | 23.6 | 25.3 | 26.9 |
| 39° | 13.5 | 14.3 | 16.0 | 16.8 | 16.8 | 18.5 | 19.4 | 21.0 | 21.9 | 23.6 | 26.1 |
| 40° | 12.6 | 13.5 | 15.2 | 15.2 | 16.0 | 17.7 | 18.5 | 20.2 | 21.0 | 22.7 | 24.4 |
| 42.5° | 10.9 | 11.8 | 12.6 | 13.5 | 14.3 | 15.2 | 16.0 | 17.7 | 18.5 | 19.4 | 21.0 |
| 45° | 9.3 | 10.1 | 11.8 | 11.8 | 12.6 | 13.5 | 14.3 | 15.2 | 16.0 | 17.7 | 18.5 |
| 47.5° | 7.6 | 9.3 | 10.1 | 10.9 | 10.9 | 11.8 | 12.6 | 13.5 | 14.3 | 15.2 | 16.0 |
| 50° | 6.7 | 7.6 | 8.4 | 9.3 | 9.3 | 10.1 | 10.9 | 11.8 | 11.8 | 12.6 | 14.3 |
| 51° | 6.7 | 7.6 | 8.4 | 8.4 | 9.3 | 10.1 | 10.1 | 10.9 | 11.8 | 11.8 | 12.6 |
| 52° | 5.9 | 6.7 | 7.6 | 8.4 | 8.4 | 9.3 | 10.1 | 10.1 | 10.9 | 11.8 | 12.6 |
| 53° | 5.9 | 6.7 | 7.6 | 7.6 | 8.4 | 9.3 | 9.3 | 10.1 | 10.1 | 10.9 | 11.8 |
| 54° | 5.9 | 6.7 | 7.6 | 7.6 | 8.4 | 8.4 | 9.3 | 9.3 | 10.1 | 10.1 | 10.9 |
| 55° | 5.1 | 5.9 | 6.7 | 7.6 | 7.6 | 8.4 | 8.4 | 9.3 | 9.3 | 10.1 | 10.1 |
| 57.5° | 5.1 | 5.9 | 6.7 | 6.7 | 6.7 | 7.6 | 7.6 | 8.4 | 8.4 | 8.4 | 9.3 |
| 60° | 5.1 | 5.9 | 5.9 | 6.7 | 6.7 | 7.6 | 7.6 | 7.6 | 7.6 | 8.4 | 8.4 |
| 61° | 5.1 | 5.1 | 5.9 | 6.7 | 6.7 | 6.7 | 7.6 | 7.6 | 7.6 | 7.6 | 8.4 |
| 62° | 5.1 | 5.1 | 5.9 | 5.9 | 6.7 | 6.7 | 6.7 | 7.6 | 7.6 | 7.6 | 7.6 |
| 63° | 4.2 | 5.1 | 5.9 | 5.9 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 | 7.6 | 7.6 |
| 64° | 4.2 | 5.1 | 5.9 | 5.9 | 5.9 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 |
| 65° | 4.2 | 5.1 | 5.9 | 5.9 | 5.9 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 |
| 66° | 4.2 | 5.1 | 5.9 | 5.9 | 5.9 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 |



TEST NUMBER: P182689

CATALOG NUMBER: LDSQA4A13840D010TE LAR15SP 4LSQA1H 30°

CANDELA DISTRIBUTION (continued):

| | 100° | 105° | 110° | 112.5° | 115° | 120° | 125° | 130° | 135° | 140° | 145° |
|-------|------|------|------|--------|------|------|------|------|------|------|------|
| 72.5° | 4.2 | 4.2 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 |
| 75° | 4.2 | 4.2 | 4.2 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 4.2 | 4.2 |
| 77.5° | 3.4 | 3.4 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 3.4 |
| 80° | 3.4 | 3.4 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 3.4 | 3.4 | 3.4 |
| 82.5° | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 2.5 | 2.5 |
| 85° | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 2.5 | 2.5 | 1.7 |
| 87.5° | 2.5 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 2.5 | 2.5 | 2.5 | 1.7 | 1.7 |
| 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: P182689

CATALOG NUMBER: LDSQA4A13840D010TE LAR15SP 4LSQA1H 30°

CANDELA DISTRIBUTION (continued):

| | 150° | 155° | 157.5° | 160° | 165° | 170° | 175° | 180° |
|-------|-------|-------|--------|-------|-------|-------|-------|-------|
| 0° | 140.6 | 140.6 | 140.6 | 140.6 | 140.6 | 140.6 | 140.6 | 140.6 |
| 2.5° | 126.3 | 123.7 | 122.9 | 122.9 | 123.7 | 122.9 | 123.7 | 122.9 |
| 5° | 116.2 | 113.6 | 113.6 | 112.8 | 113.6 | 112.8 | 113.6 | 112.8 |
| 7.5° | 107.7 | 105.2 | 105.2 | 105.2 | 105.2 | 105.2 | 106.1 | 105.2 |
| 10° | 99.3 | 96.8 | 96.8 | 96.0 | 96.8 | 96.8 | 97.6 | 96.8 |
| 12.5° | 90.9 | 89.2 | 89.2 | 88.4 | 90.1 | 89.2 | 90.9 | 90.1 |
| 15° | 83.3 | 81.6 | 81.6 | 82.5 | 83.3 | 83.3 | 84.2 | 84.2 |
| 17.5° | 75.8 | 75.8 | 75.8 | 76.6 | 77.4 | 78.3 | 79.1 | 78.3 |
| 20° | 69.0 | 69.0 | 69.9 | 70.7 | 71.5 | 72.4 | 73.2 | 73.2 |
| 22.5° | 62.3 | 62.3 | 63.1 | 64.8 | 66.5 | 67.3 | 68.2 | 68.2 |
| 25° | 55.6 | 56.4 | 57.2 | 58.1 | 60.6 | 61.4 | 62.3 | 62.3 |
| 26° | 53.0 | 53.9 | 55.6 | 56.4 | 58.1 | 58.9 | 60.6 | 60.6 |
| 27° | 51.3 | 52.2 | 53.0 | 53.9 | 56.4 | 57.2 | 58.9 | 58.1 |
| 28° | 48.8 | 49.7 | 50.5 | 52.2 | 53.9 | 55.6 | 56.4 | 56.4 |
| 29° | 46.3 | 48.0 | 48.8 | 49.7 | 52.2 | 53.0 | 53.9 | 53.9 |
| 30° | 44.6 | 45.5 | 46.3 | 48.0 | 49.7 | 51.3 | 52.2 | 52.2 |
| 31° | 42.1 | 43.8 | 44.6 | 45.5 | 48.0 | 48.8 | 50.5 | 50.5 |
| 32° | 40.4 | 41.2 | 42.1 | 43.8 | 45.5 | 47.1 | 48.0 | 48.0 |
| 33° | 37.9 | 39.6 | 40.4 | 41.2 | 43.8 | 45.5 | 46.3 | 45.5 |
| 34° | 36.2 | 37.9 | 37.9 | 39.6 | 41.2 | 42.9 | 43.8 | 43.8 |
| 35° | 34.5 | 35.4 | 36.2 | 37.9 | 39.6 | 41.2 | 42.1 | 42.1 |
| 36° | 32.8 | 33.7 | 34.5 | 36.2 | 37.9 | 39.6 | 40.4 | 40.4 |
| 37° | 31.1 | 32.0 | 32.8 | 33.7 | 36.2 | 37.9 | 38.7 | 38.7 |
| 38° | 29.5 | 30.3 | 31.1 | 32.8 | 34.5 | 35.4 | 37.0 | 37.0 |
| 39° | 27.8 | 28.6 | 29.5 | 31.1 | 32.8 | 33.7 | 35.4 | 34.5 |
| 40° | 26.1 | 27.8 | 27.8 | 29.5 | 31.1 | 32.0 | 33.7 | 32.8 |
| 42.5° | 22.7 | 23.6 | 24.4 | 25.3 | 26.9 | 28.6 | 29.5 | 29.5 |
| 45° | 20.2 | 21.0 | 21.9 | 22.7 | 23.6 | 24.4 | 26.1 | 25.3 |
| 47.5° | 16.8 | 17.7 | 18.5 | 19.4 | 20.2 | 21.0 | 21.9 | 21.9 |
| 50° | 15.2 | 15.2 | 16.0 | 16.0 | 17.7 | 18.5 | 19.4 | 19.4 |
| 51° | 13.5 | 14.3 | 15.2 | 15.2 | 16.8 | 16.8 | 17.7 | 17.7 |
| 52° | 13.5 | 13.5 | 14.3 | 14.3 | 15.2 | 16.0 | 16.8 | 16.8 |
| 53° | 12.6 | 12.6 | 13.5 | 13.5 | 14.3 | 15.2 | 16.0 | 16.0 |
| 54° | 11.8 | 11.8 | 12.6 | 12.6 | 13.5 | 14.3 | 15.2 | 15.2 |
| 55° | 10.9 | 10.9 | 11.8 | 11.8 | 12.6 | 13.5 | 14.3 | 14.3 |
| 57.5° | 9.3 | 10.1 | 10.1 | 10.9 | 10.9 | 11.8 | 11.8 | 12.6 |
| 60° | 8.4 | 9.3 | 9.3 | 9.3 | 10.1 | 10.1 | 10.1 | 10.1 |
| 61° | 8.4 | 8.4 | 8.4 | 9.3 | 9.3 | 8.4 | 9.3 | 8.4 |
| 62° | 8.4 | 8.4 | 8.4 | 8.4 | 8.4 | 8.4 | 8.4 | 8.4 |
| 63° | 7.6 | 7.6 | 7.6 | 7.6 | 7.6 | 7.6 | 7.6 | 7.6 |
| 64° | 7.6 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 |
| 65° | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 | 5.9 |
| 66° | 6.7 | 6.7 | 5.9 | 6.7 | 5.9 | 5.9 | 5.9 | 5.9 |



TEST NUMBER: P182689

CATALOG NUMBER: LDSQA4A13840D010TE LAR15SP 4LSQA1H 30°

CANDELA DISTRIBUTION (continued):

| | 150° | 155° | 157.5° | 160° | 165° | 170° | 175° | 180° |
|-------|------|------|--------|------|------|------|------|------|
| 72.5° | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 3.4 | 3.4 | 3.4 |
| 75° | 4.2 | 4.2 | 4.2 | 3.4 | 3.4 | 3.4 | 3.4 | 2.5 |
| 77.5° | 3.4 | 3.4 | 3.4 | 3.4 | 2.5 | 2.5 | 2.5 | 2.5 |
| 80° | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 1.7 | 1.7 |
| 82.5° | 2.5 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 |
| 85° | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 0.8 | 0.8 | 0.8 |
| 87.5° | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| 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°







| | | | | | | | | | | | |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 67.5° | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 2.5 | 2.5 |
| 70° | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 2.5 | 2.5 |





| | | | | | | | | | | | |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 67.5° | 2.5 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 2.5 | 3.4 | 3.4 | 4.2 |
| 70° | 2.5 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 2.5 | 3.4 | 3.4 | 3.4 |





| | | | | | | | | | | | |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 67.5° | 4.2 | 5.1 | 5.9 | 5.9 | 5.9 | 5.9 | 5.9 | 5.9 | 5.9 | 5.9 | 5.9 |
| 70° | 4.2 | 5.1 | 5.1 | 5.1 | 5.9 | 5.9 | 5.9 | 5.9 | 5.9 | 5.9 | 5.9 |





| | | | | | | | | |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|
| 67.5° | 5.9 | 5.9 | 5.9 | 5.9 | 5.9 | 5.1 | 5.1 | 5.1 |
| 70° | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 4.2 | 4.2 | 4.2 |



(END OF REPORT)