

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: P209137

Luminaire Tested: **LDSQ4B20D010 EU4B10209730 4LBSQ1LI**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P209137  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P35088)  
Test Lab: INNOVATION CENTER-P3  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: io LED  
Catalog Number: LDSQ4B20D010 EU4B10209730 4LBSQ1LI  
Description: PORTFOLIO LD4 SERIES 4" RECESSED FIXTURE WITH A SQUARE LOW  
IRIDESCENT TRIM.  
MEDIUM DISTRIBUTION WITH SPECULAR CLEAR TRIM  
WATTAGE D010TR-21.86 W DE010-20.46 W D5LT-21.24 W DMX-20.89 W DL2-22.5 W  
DL3-21.8 6 W DLE-22.46 W  
Light Source: HIGH LUMEN LED 3000 K  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1432.9 lumens  
Efficiency: N/A  
Efficacy: 68.9 lumens/watt  
Spacing Criteria (0/90/45): 0.91 / 0.9 / 0.94  
Luminous Opening: Point Source (0' x 0' x 0')  
CIE Type: Direct

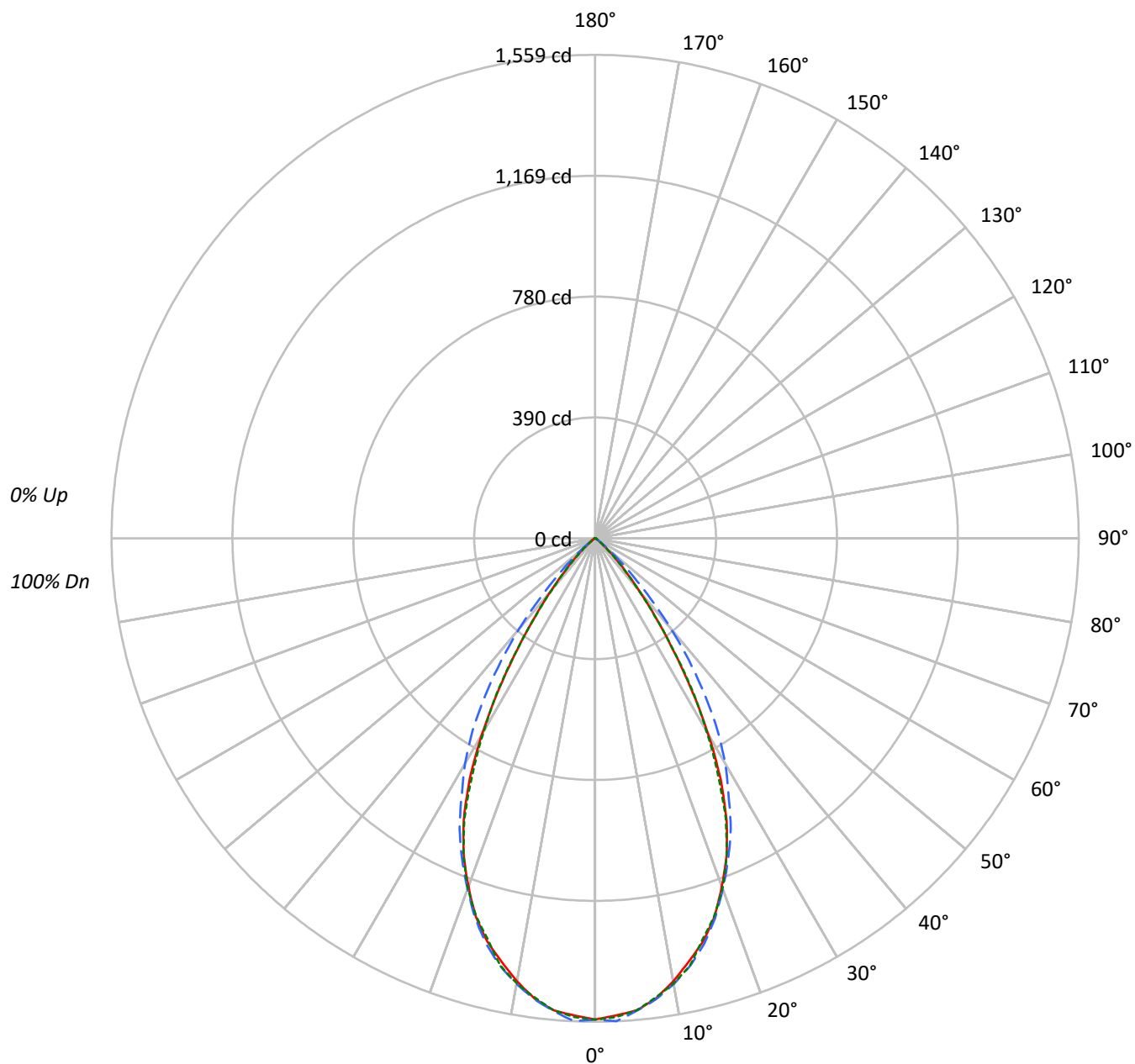
Input Watts (W): 20.8  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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  |     |    |    | 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 | 111 | 108 | 106 | 111 | 108 | 106 | 104 | 104 | 103 | 101 | 101 | 99  | 98  | 97  | 96  | 95  | 93  |    |    |   |  |  |  |
| 2   | 108 | 103 | 99  | 95  | 105 | 101 | 97  | 94  | 98  | 95  | 92  | 95  | 92  | 90  | 92  | 90  | 88  | 87  |    |    |   |  |  |  |
| 3   | 102 | 96  | 91  | 87  | 100 | 94  | 90  | 86  | 92  | 88  | 84  | 89  | 86  | 83  | 87  | 84  | 82  | 80  |    |    |   |  |  |  |
| 4   | 97  | 89  | 84  | 79  | 95  | 88  | 83  | 79  | 86  | 81  | 78  | 84  | 80  | 77  | 82  | 79  | 76  | 75  |    |    |   |  |  |  |
| 5   | 92  | 83  | 77  | 73  | 90  | 82  | 77  | 73  | 81  | 76  | 72  | 79  | 75  | 71  | 77  | 74  | 71  | 69  |    |    |   |  |  |  |
| 6   | 87  | 78  | 72  | 68  | 86  | 77  | 71  | 67  | 76  | 71  | 67  | 74  | 70  | 66  | 73  | 69  | 66  | 64  |    |    |   |  |  |  |
| 7   | 83  | 73  | 67  | 63  | 81  | 73  | 67  | 63  | 71  | 66  | 62  | 70  | 65  | 62  | 69  | 65  | 62  | 60  |    |    |   |  |  |  |
| 8   | 79  | 69  | 63  | 59  | 77  | 68  | 62  | 58  | 67  | 62  | 58  | 66  | 61  | 58  | 65  | 61  | 58  | 56  |    |    |   |  |  |  |
| 9   | 75  | 65  | 59  | 55  | 74  | 64  | 59  | 55  | 63  | 58  | 55  | 63  | 58  | 54  | 62  | 57  | 54  | 53  |    |    |   |  |  |  |
| 10  | 71  | 61  | 55  | 51  | 70  | 61  | 55  | 51  | 60  | 55  | 51  | 59  | 54  | 51  | 58  | 54  | 51  | 50  |    |    |   |  |  |  |

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

|     | 0°                                                           | 45° | 90° |
|-----|--------------------------------------------------------------|-----|-----|
| 0°  | Luminaire represents a point source (luminous area is zero). |     |     |
| 5°  | No luminance values can be calculated.                       |     |     |
| 10° |                                                              |     |     |
| 15° |                                                              |     |     |
| 20° |                                                              |     |     |
| 25° |                                                              |     |     |
| 30° |                                                              |     |     |
| 35° |                                                              |     |     |
| 40° |                                                              |     |     |
| 45° |                                                              |     |     |
| 50° |                                                              |     |     |
| 55° |                                                              |     |     |
| 60° |                                                              |     |     |
| 65° |                                                              |     |     |
| 70° |                                                              |     |     |
| 75° |                                                              |     |     |
| 80° |                                                              |     |     |
| 85° |                                                              |     |     |



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 143.9  | 10.0      |
| 10°-20°   | 377.1  | 26.3      |
| 20°-30°   | 460.7  | 32.2      |
| 30°-40°   | 322.2  | 22.5      |
| 40°-50°   | 105.6  | 7.4       |
| 50°-60°   | 16.8   | 1.2       |
| 60°-70°   | 4.6    | 0.3       |
| 70°-80°   | 1.5    | 0.1       |
| 80°-90°   | 0.4    | 0.0       |
| 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°    | 981.8  | 68.5      |
| 0°-40°    | 1304.0 | 91.0      |
| 0°-60°    | 1426.4 | 99.5      |
| 0°-90°    | 1432.9 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 1432.9 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1552 | 1552  | 1552 | 1552  | 1552 |      |
| 5°  | 1528 | 1529  | 1530 | 1521  | 1528 | 143  |
| 15° | 1345 | 1350  | 1355 | 1346  | 1338 | 375  |
| 25° | 1003 | 1018  | 1034 | 1016  | 996  | 450  |
| 35° | 434  | 512   | 616  | 504   | 438  | 277  |
| 45° | 96   | 118   | 174  | 116   | 95   | 80   |
| 55° | 14   | 15    | 17   | 15    | 13   | 14   |
| 65° | 4    | 5     | 4    | 5     | 4    | 4    |
| 75° | 1    | 1     | 1    | 1     | 1    | 1    |
| 85° | 0    | 0     | 0    | 0     | 0    | 0    |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 10°    | 15°    | 20°    | 25°    | 30°    | 35°    | 40°    | 45°    | 50°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1552.1 | 1552.1 | 1552.1 | 1552.1 | 1552.1 | 1552.1 | 1552.1 | 1552.1 | 1552.1 | 1552.1 | 1552.1 |
| 2.5°  | 1540.3 | 1551.1 | 1548.1 | 1555.0 | 1555.0 | 1547.2 | 1549.1 | 1552.1 | 1556.0 | 1559.0 | 1535.3 |
| 5°    | 1528.4 | 1538.3 | 1529.4 | 1539.3 | 1533.4 | 1524.5 | 1539.3 | 1531.4 | 1536.3 | 1530.4 | 1534.3 |
| 7.5°  | 1496.9 | 1512.6 | 1494.9 | 1506.7 | 1502.8 | 1497.9 | 1503.8 | 1501.8 | 1504.8 | 1499.8 | 1489.0 |
| 10°   | 1450.5 | 1463.3 | 1451.5 | 1468.3 | 1460.4 | 1455.5 | 1460.4 | 1465.3 | 1464.3 | 1459.4 | 1465.3 |
| 12.5° | 1397.3 | 1412.1 | 1406.1 | 1416.0 | 1407.1 | 1407.1 | 1419.0 | 1416.0 | 1417.0 | 1413.1 | 1420.0 |
| 15°   | 1345.0 | 1355.9 | 1347.0 | 1359.8 | 1355.9 | 1345.0 | 1349.9 | 1349.9 | 1357.8 | 1354.9 | 1347.0 |
| 17.5° | 1279.9 | 1288.8 | 1278.9 | 1281.9 | 1278.0 | 1276.0 | 1296.7 | 1282.9 | 1290.8 | 1284.9 | 1285.8 |
| 20°   | 1194.1 | 1198.1 | 1195.1 | 1203.0 | 1198.1 | 1204.0 | 1202.0 | 1200.1 | 1200.1 | 1203.0 | 1196.1 |
| 22.5° | 1107.4 | 1107.4 | 1110.3 | 1112.3 | 1116.2 | 1110.3 | 1122.2 | 1112.3 | 1113.3 | 1120.2 | 1118.2 |
| 25°   | 1002.8 | 999.9  | 1006.8 | 1016.6 | 1020.6 | 1015.7 | 1031.4 | 1023.6 | 1029.5 | 1034.4 | 1023.6 |
| 27.5° | 875.6  | 875.6  | 882.5  | 899.3  | 902.3  | 908.2  | 929.9  | 929.9  | 937.8  | 930.9  | 938.7  |
| 30°   | 728.7  | 739.6  | 748.4  | 770.1  | 777.0  | 789.8  | 812.5  | 823.4  | 841.1  | 838.2  | 834.2  |
| 32.5° | 577.8  | 592.6  | 593.6  | 616.3  | 635.0  | 656.7  | 687.3  | 712.9  | 725.8  | 734.6  | 724.8  |
| 35°   | 433.9  | 442.7  | 450.6  | 466.4  | 498.0  | 526.6  | 554.2  | 587.7  | 610.4  | 616.3  | 607.4  |
| 37.5° | 317.5  | 319.5  | 327.4  | 342.2  | 365.8  | 393.4  | 427.0  | 463.5  | 487.1  | 496.0  | 486.1  |
| 40°   | 218.9  | 220.9  | 224.8  | 237.6  | 257.4  | 277.1  | 303.7  | 341.2  | 362.9  | 380.6  | 367.8  |
| 42.5° | 146.9  | 148.9  | 152.8  | 162.7  | 173.5  | 192.3  | 213.0  | 236.7  | 257.4  | 265.3  | 258.4  |
| 45°   | 95.6   | 95.6   | 97.6   | 104.5  | 110.4  | 125.2  | 140.0  | 154.8  | 168.6  | 173.5  | 168.6  |
| 47.5° | 56.2   | 57.2   | 59.2   | 64.1   | 71.0   | 76.9   | 87.8   | 97.6   | 101.6  | 105.5  | 103.5  |
| 50°   | 32.5   | 32.5   | 35.5   | 38.5   | 43.4   | 47.3   | 51.3   | 55.2   | 57.2   | 59.2   | 57.2   |
| 52.5° | 17.7   | 18.7   | 19.7   | 20.7   | 22.7   | 26.6   | 29.6   | 29.6   | 30.6   | 31.6   | 30.6   |
| 55°   | 13.8   | 13.8   | 13.8   | 13.8   | 14.8   | 14.8   | 14.8   | 15.8   | 15.8   | 16.8   | 15.8   |
| 57.5° | 9.9    | 9.9    | 9.9    | 10.8   | 10.8   | 10.8   | 9.9    | 9.9    | 9.9    | 9.9    | 9.9    |
| 60°   | 7.9    | 7.9    | 7.9    | 7.9    | 7.9    | 7.9    | 7.9    | 6.9    | 6.9    | 6.9    | 6.9    |
| 62.5° | 5.9    | 5.9    | 5.9    | 5.9    | 5.9    | 5.9    | 5.9    | 5.9    | 5.9    | 5.9    | 5.9    |
| 65°   | 3.9    | 3.9    | 4.9    | 4.9    | 4.9    | 4.9    | 4.9    | 3.9    | 3.9    | 3.9    | 3.9    |
| 67.5° | 3.0    | 3.0    | 3.0    | 3.0    | 3.9    | 3.9    | 3.0    | 3.0    | 3.0    | 3.0    | 3.0    |
| 70°   | 2.0    | 2.0    | 2.0    | 3.0    | 3.0    | 3.0    | 3.0    | 3.0    | 3.0    | 3.0    | 3.0    |
| 72.5° | 2.0    | 2.0    | 2.0    | 2.0    | 2.0    | 2.0    | 2.0    | 2.0    | 2.0    | 2.0    | 2.0    |
| 75°   | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    |
| 77.5° | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    |
| 80°   | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    |
| 82.5° | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 1.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    |
| 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):**

|       | 55°    | 60°    | 65°    | 70°    | 75°    | 80°    | 85°    | 90°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1552.1 | 1552.1 | 1552.1 | 1552.1 | 1552.1 | 1552.1 | 1552.1 | 1552.1 |
| 2.5°  | 1552.1 | 1535.3 | 1537.3 | 1546.2 | 1541.2 | 1546.2 | 1545.2 | 1545.2 |
| 5°    | 1535.3 | 1530.4 | 1522.5 | 1519.5 | 1525.5 | 1538.3 | 1536.3 | 1528.4 |
| 7.5°  | 1503.8 | 1491.0 | 1499.8 | 1503.8 | 1498.8 | 1506.7 | 1510.7 | 1493.9 |
| 10°   | 1466.3 | 1461.4 | 1459.4 | 1461.4 | 1459.4 | 1467.3 | 1457.4 | 1457.4 |
| 12.5° | 1413.1 | 1405.2 | 1405.2 | 1417.0 | 1410.1 | 1404.2 | 1412.1 | 1411.1 |
| 15°   | 1359.8 | 1344.0 | 1344.0 | 1348.0 | 1350.9 | 1347.0 | 1348.0 | 1338.1 |
| 17.5° | 1280.9 | 1276.0 | 1269.1 | 1279.9 | 1282.9 | 1278.9 | 1281.9 | 1277.0 |
| 20°   | 1207.0 | 1207.0 | 1194.1 | 1199.1 | 1203.0 | 1206.0 | 1207.9 | 1200.1 |
| 22.5° | 1112.3 | 1114.3 | 1105.4 | 1115.3 | 1118.2 | 1108.4 | 1110.3 | 1108.4 |
| 25°   | 1025.5 | 1024.5 | 1017.6 | 1013.7 | 1015.7 | 1011.7 | 1010.7 | 995.9  |
| 27.5° | 929.9  | 920.0  | 905.2  | 909.2  | 892.4  | 878.6  | 878.6  | 855.9  |
| 30°   | 826.3  | 809.6  | 789.8  | 770.1  | 755.3  | 739.6  | 730.7  | 717.9  |
| 32.5° | 705.0  | 682.4  | 657.7  | 631.1  | 614.3  | 590.7  | 577.8  | 584.7  |
| 35°   | 584.7  | 551.2  | 517.7  | 491.1  | 465.4  | 451.6  | 435.8  | 437.8  |
| 37.5° | 468.4  | 421.1  | 391.5  | 362.9  | 341.2  | 323.4  | 316.5  | 314.6  |
| 40°   | 342.2  | 304.7  | 275.1  | 254.4  | 239.6  | 225.8  | 217.9  | 215.0  |
| 42.5° | 236.7  | 210.0  | 186.4  | 169.6  | 159.7  | 150.9  | 146.9  | 145.9  |
| 45°   | 153.8  | 138.1  | 122.3  | 110.4  | 102.6  | 96.6   | 95.6   | 94.7   |
| 47.5° | 96.6   | 88.7   | 78.9   | 70.0   | 63.1   | 59.2   | 56.2   | 56.2   |
| 50°   | 55.2   | 52.3   | 47.3   | 42.4   | 38.5   | 36.5   | 33.5   | 32.5   |
| 52.5° | 29.6   | 29.6   | 27.6   | 23.7   | 20.7   | 18.7   | 18.7   | 17.7   |
| 55°   | 15.8   | 15.8   | 14.8   | 14.8   | 13.8   | 13.8   | 13.8   | 12.8   |
| 57.5° | 9.9    | 9.9    | 10.8   | 10.8   | 9.9    | 9.9    | 9.9    | 9.9    |
| 60°   | 6.9    | 7.9    | 7.9    | 7.9    | 7.9    | 7.9    | 7.9    | 7.9    |
| 62.5° | 5.9    | 5.9    | 5.9    | 5.9    | 5.9    | 5.9    | 5.9    | 5.9    |
| 65°   | 3.9    | 4.9    | 4.9    | 4.9    | 4.9    | 3.9    | 3.9    | 3.9    |
| 67.5° | 3.0    | 3.0    | 3.0    | 3.0    | 3.0    | 3.0    | 3.0    | 3.0    |
| 70°   | 3.0    | 3.0    | 3.0    | 3.0    | 3.0    | 2.0    | 2.0    | 2.0    |
| 72.5° | 2.0    | 2.0    | 2.0    | 2.0    | 2.0    | 2.0    | 2.0    | 2.0    |
| 75°   | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    |
| 77.5° | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    |
| 80°   | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    |
| 82.5° | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    | 1.0    |
| 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)