

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: P274360

Luminaire Tested: **LDSQ4B20DE010W2N2050 EU4B1020W2N902050 4LBSQOLI**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P274360
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: LDSQ4B20DE010W2N2050 EU4B1020W2N902050 4LBSQ0LI
Description: PORTFOLIO 4" W2N SQ DOWNLIGHT WITH SPECULAR FINISH
Light Source: W2N 2000K-5000K CCT TUNING RANGE
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1475.6 lumens
Efficiency: N/A
Efficacy: 52.7 lumens/watt
Spacing Criteria (0/90/45): 0.91 / 0.9 / 0.94
Luminous Opening: Rectangular (W 0.38' x L: 0.38' x H: 0')
CIE Type: Direct

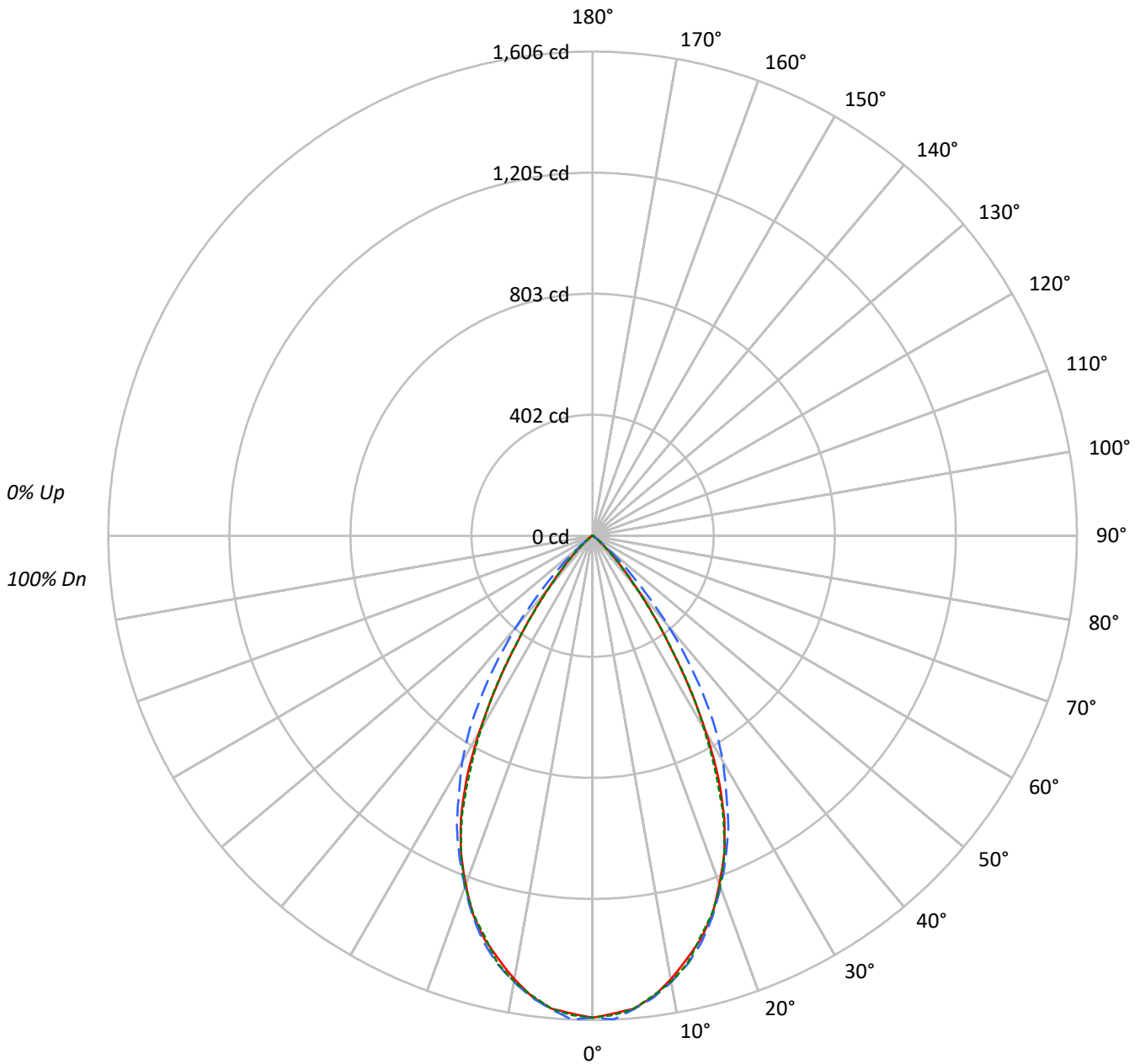
Input Watts (W): 28
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P274360

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Luminous Intensity Polar Plot



0% Up

100% Dn



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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 | 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 | 65 | | | | | | | | | | | | | | | | | | | |
| 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° | 122347 | 122347 | 122347 |
| 5° | 120940 | 121093 | 120940 |
| 10° | 116104 | 116812 | 116656 |
| 15° | 109760 | 110569 | 109198 |
| 20° | 100174 | 100916 | 100663 |
| 25° | 87226 | 89963 | 86618 |
| 30° | 66324 | 76294 | 65343 |
| 35° | 41750 | 59308 | 42133 |
| 40° | 22522 | 39169 | 22122 |
| 45° | 10662 | 19344 | 10554 |
| 50° | 3989 | 7252 | 3989 |
| 55° | 1895 | 2309 | 1762 |
| 60° | 1240 | 1087 | 1240 |
| 65° | 743 | 743 | 743 |
| 70° | 448 | 671 | 448 |
| 75° | 296 | 296 | 296 |
| 80° | 441 | 441 | 441 |
| 85° | 0 | 0 | 0 |



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 148.2 | 10.0 |
| 10°-20° | 388.4 | 26.3 |
| 20°-30° | 474.5 | 32.2 |
| 30°-40° | 331.8 | 22.5 |
| 40°-50° | 108.7 | 7.4 |
| 50°-60° | 17.3 | 1.2 |
| 60°-70° | 4.7 | 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° | 1011.0 | 68.5 |
| 0°-40° | 1342.9 | 91.0 |
| 0°-60° | 1468.9 | 99.5 |
| 0°-90° | 1475.6 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 1475.6 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 1598 | 1598 | 1598 | 1598 | 1598 | |
| 5° | 1574 | 1574 | 1576 | 1566 | 1574 | 148 |
| 15° | 1385 | 1391 | 1395 | 1386 | 1378 | 386 |
| 25° | 1033 | 1048 | 1065 | 1046 | 1026 | 464 |
| 35° | 447 | 528 | 635 | 519 | 451 | 285 |
| 45° | 98 | 121 | 179 | 120 | 98 | 83 |
| 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 | 0 |



TEST NUMBER: P274360

CATALOG NUMBER: LDSQ4B20DE010W2N2050 EU4B1020W2N902050 4LBSQ0LI

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 10° | 15° | 20° | 25° | 30° | 35° | 40° | 45° | 50° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1598.4 | 1598.4 | 1598.4 | 1598.4 | 1598.4 | 1598.4 | 1598.4 | 1598.4 | 1598.4 | 1598.4 | 1598.4 |
| 2.5° | 1586.2 | 1597.4 | 1594.3 | 1601.4 | 1601.4 | 1593.3 | 1595.3 | 1598.4 | 1602.4 | 1605.5 | 1581.1 |
| 5° | 1574.0 | 1584.2 | 1575.0 | 1585.2 | 1579.1 | 1569.9 | 1585.2 | 1577.1 | 1582.1 | 1576.0 | 1580.1 |
| 7.5° | 1541.5 | 1557.8 | 1539.5 | 1551.7 | 1547.6 | 1542.5 | 1548.6 | 1546.6 | 1549.6 | 1544.6 | 1533.4 |
| 10° | 1493.8 | 1507.0 | 1494.8 | 1512.1 | 1503.9 | 1498.9 | 1503.9 | 1509.0 | 1508.0 | 1502.9 | 1509.0 |
| 12.5° | 1438.9 | 1454.2 | 1448.1 | 1458.2 | 1449.1 | 1449.1 | 1461.3 | 1458.2 | 1459.3 | 1455.2 | 1462.3 |
| 15° | 1385.1 | 1396.3 | 1387.2 | 1400.4 | 1396.3 | 1385.1 | 1390.2 | 1390.2 | 1398.3 | 1395.3 | 1387.2 |
| 17.5° | 1318.1 | 1327.2 | 1317.1 | 1320.1 | 1316.1 | 1314.0 | 1335.4 | 1321.2 | 1329.3 | 1323.2 | 1324.2 |
| 20° | 1229.8 | 1233.8 | 1230.8 | 1238.9 | 1233.8 | 1239.9 | 1237.9 | 1235.8 | 1235.8 | 1238.9 | 1231.8 |
| 22.5° | 1140.4 | 1140.4 | 1143.4 | 1145.5 | 1149.5 | 1143.4 | 1155.6 | 1145.5 | 1146.5 | 1153.6 | 1151.6 |
| 25° | 1032.8 | 1029.7 | 1036.8 | 1047.0 | 1051.0 | 1046.0 | 1062.2 | 1054.1 | 1060.2 | 1065.2 | 1054.1 |
| 27.5° | 901.8 | 901.8 | 908.9 | 926.1 | 929.2 | 935.3 | 957.6 | 957.6 | 965.7 | 958.6 | 966.7 |
| 30° | 750.4 | 761.6 | 770.8 | 793.1 | 800.2 | 813.4 | 836.8 | 847.9 | 866.2 | 863.2 | 859.1 |
| 32.5° | 595.1 | 610.3 | 611.3 | 634.7 | 654.0 | 676.3 | 707.8 | 734.2 | 747.4 | 756.5 | 746.4 |
| 35° | 446.8 | 456.0 | 464.1 | 480.3 | 512.8 | 542.3 | 570.7 | 605.2 | 628.6 | 634.7 | 625.5 |
| 37.5° | 327.0 | 329.0 | 337.1 | 352.4 | 376.7 | 405.2 | 439.7 | 477.3 | 501.7 | 510.8 | 500.6 |
| 40° | 225.4 | 227.5 | 231.5 | 244.7 | 265.0 | 285.4 | 312.8 | 351.4 | 373.7 | 392.0 | 378.8 |
| 42.5° | 151.3 | 153.3 | 157.4 | 167.6 | 178.7 | 198.0 | 219.3 | 243.7 | 265.0 | 273.2 | 266.1 |
| 45° | 98.5 | 98.5 | 100.5 | 107.6 | 113.7 | 129.0 | 144.2 | 159.4 | 173.6 | 178.7 | 173.6 |
| 47.5° | 57.9 | 58.9 | 60.9 | 66.0 | 73.1 | 79.2 | 90.4 | 100.5 | 104.6 | 108.7 | 106.6 |
| 50° | 33.5 | 33.5 | 36.6 | 39.6 | 44.7 | 48.7 | 52.8 | 56.9 | 58.9 | 60.9 | 58.9 |
| 52.5° | 18.3 | 19.3 | 20.3 | 21.3 | 23.4 | 27.4 | 30.5 | 30.5 | 31.5 | 32.5 | 31.5 |
| 55° | 14.2 | 14.2 | 14.2 | 14.2 | 15.2 | 15.2 | 15.2 | 16.2 | 16.2 | 17.3 | 16.2 |
| 57.5° | 10.2 | 10.2 | 10.2 | 11.2 | 11.2 | 11.2 | 10.2 | 10.2 | 10.2 | 10.2 | 10.2 |
| 60° | 8.1 | 8.1 | 8.1 | 8.1 | 8.1 | 8.1 | 8.1 | 7.1 | 7.1 | 7.1 | 7.1 |
| 62.5° | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 |
| 65° | 4.1 | 4.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 4.1 | 4.1 | 4.1 | 4.1 |
| 67.5° | 3.0 | 3.0 | 3.0 | 3.0 | 4.1 | 4.1 | 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° | 1598.4 | 1598.4 | 1598.4 | 1598.4 | 1598.4 | 1598.4 | 1598.4 | 1598.4 |
| 2.5° | 1598.4 | 1581.1 | 1583.1 | 1592.3 | 1587.2 | 1592.3 | 1591.3 | 1591.3 |
| 5° | 1581.1 | 1576.0 | 1567.9 | 1564.9 | 1571.0 | 1584.2 | 1582.1 | 1574.0 |
| 7.5° | 1548.6 | 1535.4 | 1544.6 | 1548.6 | 1543.5 | 1551.7 | 1555.7 | 1538.5 |
| 10° | 1510.0 | 1505.0 | 1502.9 | 1505.0 | 1502.9 | 1511.0 | 1500.9 | 1500.9 |
| 12.5° | 1455.2 | 1447.1 | 1447.1 | 1459.3 | 1452.1 | 1446.1 | 1454.2 | 1453.2 |
| 15° | 1400.4 | 1384.1 | 1384.1 | 1388.2 | 1391.2 | 1387.2 | 1388.2 | 1378.0 |
| 17.5° | 1319.1 | 1314.0 | 1306.9 | 1318.1 | 1321.2 | 1317.1 | 1320.1 | 1315.1 |
| 20° | 1243.0 | 1243.0 | 1229.8 | 1234.8 | 1238.9 | 1241.9 | 1244.0 | 1235.8 |
| 22.5° | 1145.5 | 1147.5 | 1138.4 | 1148.5 | 1151.6 | 1141.4 | 1143.4 | 1141.4 |
| 25° | 1056.1 | 1055.1 | 1048.0 | 1043.9 | 1046.0 | 1041.9 | 1040.9 | 1025.6 |
| 27.5° | 957.6 | 947.5 | 932.2 | 936.3 | 919.0 | 904.8 | 904.8 | 881.4 |
| 30° | 851.0 | 833.7 | 813.4 | 793.1 | 777.9 | 761.6 | 752.5 | 739.3 |
| 32.5° | 726.1 | 702.7 | 677.3 | 649.9 | 632.6 | 608.3 | 595.1 | 602.2 |
| 35° | 602.2 | 567.7 | 533.1 | 505.7 | 479.3 | 465.1 | 448.8 | 450.9 |
| 37.5° | 482.4 | 433.6 | 403.1 | 373.7 | 351.4 | 333.1 | 326.0 | 323.9 |
| 40° | 352.4 | 313.8 | 283.3 | 262.0 | 246.8 | 232.5 | 224.4 | 221.4 |
| 42.5° | 243.7 | 216.3 | 191.9 | 174.7 | 164.5 | 155.4 | 151.3 | 150.3 |
| 45° | 158.4 | 142.2 | 125.9 | 113.7 | 105.6 | 99.5 | 98.5 | 97.5 |
| 47.5° | 99.5 | 91.4 | 81.2 | 72.1 | 65.0 | 60.9 | 57.9 | 57.9 |
| 50° | 56.9 | 53.8 | 48.7 | 43.7 | 39.6 | 37.6 | 34.5 | 33.5 |
| 52.5° | 30.5 | 30.5 | 28.4 | 24.4 | 21.3 | 19.3 | 19.3 | 18.3 |
| 55° | 16.2 | 16.2 | 15.2 | 15.2 | 14.2 | 14.2 | 14.2 | 13.2 |
| 57.5° | 10.2 | 10.2 | 11.2 | 11.2 | 10.2 | 10.2 | 10.2 | 10.2 |
| 60° | 7.1 | 8.1 | 8.1 | 8.1 | 8.1 | 8.1 | 8.1 | 8.1 |
| 62.5° | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 |
| 65° | 4.1 | 5.1 | 5.1 | 5.1 | 5.1 | 4.1 | 4.1 | 4.1 |
| 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 |



Report Generated By E9808895 / USPTCWHP6082093





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









(END OF REPORT)