

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: P209114

Luminaire Tested: **LDSQ4B15D010 EU4B10208030 4LBSQ1LI**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P209114
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: LDSQ4B15D010 EU4B10208030 4LBSQ1LI
Description: PORTFOLIO LD4 SERIES 4" RECESSED FIXTURE WITH A SQUARE LOW
IRIDESCENT TRIM.
MEDIUM DISTRIBUTION WITH SPECULAR CLEAR TRIM
WATTAGE D010TR-14.39 W DE010-14.29 W D5LT-14.34 W DMX-14.46 W DL2-15.8 W
DL3-15.28 W DLE-15.432 W
Light Source: HIGH LUMEN LED 3000 K
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1417.5 lumens
Efficiency: N/A
Efficacy: 98.5 lumens/watt
Spacing Criteria (0/90/45): 0.91 / 0.9 / 0.94
Luminous Opening: Circular (Dia: 1.12' x H: 0')
CIE Type: Direct

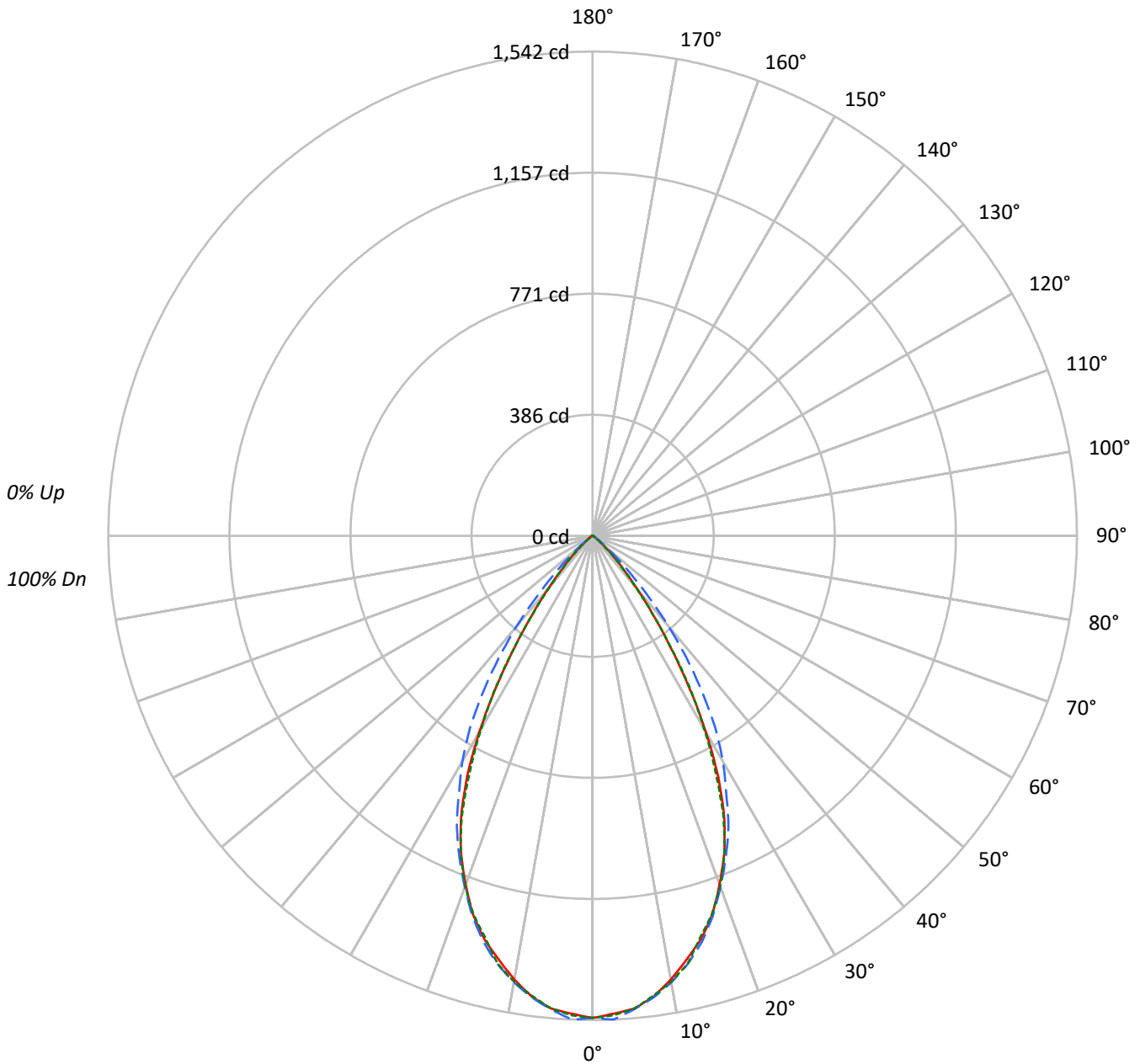
Input Watts (W): 14.39
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|-----|---|--|---|
| RF | 20 | | | | | 20 | | | | | 20 | | | | | 20 | | | | | 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 | 50 | 30 | 10 | 0 | | |
| RCR | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 100 | | | | | 100 | | | |
| 1 | 113 | 111 | 108 | 106 | 111 | 108 | 106 | 104 | 104 | 103 | 101 | 101 | 99 | 98 | 97 | 96 | 95 | 93 | | | | | 93 | | | |
| 2 | 108 | 103 | 99 | 95 | 105 | 101 | 97 | 94 | 98 | 95 | 92 | 95 | 92 | 90 | 92 | 90 | 88 | 87 | | | | | 87 | | | |
| 3 | 102 | 96 | 91 | 87 | 100 | 94 | 90 | 86 | 92 | 88 | 84 | 89 | 86 | 83 | 87 | 84 | 82 | 80 | | | | | 80 | | | |
| 4 | 97 | 89 | 84 | 79 | 95 | 88 | 83 | 79 | 86 | 81 | 78 | 84 | 80 | 77 | 82 | 79 | 76 | 75 | | | | | 75 | | | |
| 5 | 92 | 83 | 77 | 73 | 90 | 82 | 77 | 73 | 81 | 76 | 72 | 79 | 75 | 71 | 77 | 74 | 71 | 69 | | | | | 69 | | | |
| 6 | 87 | 78 | 72 | 68 | 86 | 77 | 71 | 67 | 76 | 71 | 67 | 74 | 70 | 66 | 73 | 69 | 66 | 64 | | | | | 64 | | | |
| 7 | 83 | 73 | 67 | 63 | 81 | 73 | 67 | 63 | 71 | 66 | 62 | 70 | 65 | 62 | 69 | 65 | 62 | 60 | | | | | 60 | | | |
| 8 | 79 | 69 | 63 | 59 | 77 | 68 | 62 | 58 | 67 | 62 | 58 | 66 | 61 | 58 | 65 | 61 | 58 | 56 | | | | | 56 | | | |
| 9 | 75 | 65 | 59 | 55 | 74 | 64 | 59 | 55 | 63 | 58 | 55 | 63 | 58 | 54 | 62 | 57 | 54 | 53 | | | | | 53 | | | |
| 10 | 71 | 61 | 55 | 51 | 70 | 61 | 55 | 51 | 60 | 55 | 51 | 59 | 54 | 51 | 58 | 54 | 51 | 50 | | | | | 50 | | | |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|-------|-------|-------|
| 0° | 16625 | 16625 | 16625 |
| 5° | 16434 | 16456 | 16434 |
| 10° | 15778 | 15873 | 15853 |
| 15° | 14916 | 15025 | 14840 |
| 20° | 13613 | 13713 | 13680 |
| 25° | 11853 | 12225 | 11771 |
| 30° | 9013 | 10367 | 8879 |
| 35° | 5674 | 8059 | 5725 |
| 40° | 3060 | 5322 | 3005 |
| 45° | 1449 | 2629 | 1433 |
| 50° | 542 | 986 | 542 |
| 55° | 259 | 313 | 240 |
| 60° | 169 | 147 | 169 |
| 65° | 100 | 100 | 100 |
| 70° | 63 | 92 | 63 |
| 75° | 42 | 42 | 42 |
| 80° | 62 | 62 | 62 |
| 85° | 0 | 0 | 0 |



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 142.4 | 10.0 |
| 10°-20° | 373.1 | 26.3 |
| 20°-30° | 455.7 | 32.2 |
| 30°-40° | 318.8 | 22.5 |
| 40°-50° | 104.5 | 7.4 |
| 50°-60° | 16.6 | 1.2 |
| 60°-70° | 4.5 | 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° | 971.2 | 68.5 |
| 0°-40° | 1289.9 | 91.0 |
| 0°-60° | 1411.0 | 99.5 |
| 0°-90° | 1417.5 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 1417.5 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 1535 | 1535 | 1535 | 1535 | 1535 | |
| 5° | 1512 | 1512 | 1514 | 1505 | 1512 | 142 |
| 15° | 1330 | 1336 | 1340 | 1331 | 1324 | 371 |
| 25° | 992 | 1007 | 1023 | 1005 | 985 | 446 |
| 35° | 429 | 507 | 610 | 499 | 433 | 274 |
| 45° | 95 | 117 | 172 | 115 | 94 | 79 |
| 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 |



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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 10° | 15° | 20° | 25° | 30° | 35° | 40° | 45° | 50° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1535.3 | 1535.3 | 1535.3 | 1535.3 | 1535.3 | 1535.3 | 1535.3 | 1535.3 | 1535.3 | 1535.3 | 1535.3 |
| 2.5° | 1523.6 | 1534.4 | 1531.4 | 1538.3 | 1538.3 | 1530.5 | 1532.4 | 1535.3 | 1539.2 | 1542.2 | 1518.8 |
| 5° | 1511.9 | 1521.7 | 1512.9 | 1522.7 | 1516.8 | 1508.0 | 1522.7 | 1514.9 | 1519.7 | 1513.9 | 1517.8 |
| 7.5° | 1480.7 | 1496.3 | 1478.8 | 1490.5 | 1486.6 | 1481.7 | 1487.5 | 1485.6 | 1488.5 | 1483.6 | 1472.9 |
| 10° | 1434.9 | 1447.5 | 1435.8 | 1452.4 | 1444.6 | 1439.7 | 1444.6 | 1449.5 | 1448.5 | 1443.6 | 1449.5 |
| 12.5° | 1382.2 | 1396.8 | 1391.0 | 1400.7 | 1391.9 | 1391.9 | 1403.7 | 1400.7 | 1401.7 | 1397.8 | 1404.6 |
| 15° | 1330.5 | 1341.2 | 1332.4 | 1345.1 | 1341.2 | 1330.5 | 1335.4 | 1335.4 | 1343.2 | 1340.2 | 1332.4 |
| 17.5° | 1266.1 | 1274.9 | 1265.1 | 1268.1 | 1264.2 | 1262.2 | 1282.7 | 1269.0 | 1276.8 | 1271.0 | 1272.0 |
| 20° | 1181.3 | 1185.2 | 1182.2 | 1190.0 | 1185.2 | 1191.0 | 1189.1 | 1187.1 | 1187.1 | 1190.0 | 1183.2 |
| 22.5° | 1095.4 | 1095.4 | 1098.3 | 1100.3 | 1104.2 | 1098.3 | 1110.0 | 1100.3 | 1101.3 | 1108.1 | 1106.1 |
| 25° | 992.0 | 989.1 | 995.9 | 1005.7 | 1009.6 | 1004.7 | 1020.3 | 1012.5 | 1018.4 | 1023.2 | 1012.5 |
| 27.5° | 866.2 | 866.2 | 873.0 | 889.6 | 892.5 | 898.4 | 919.8 | 919.8 | 927.6 | 920.8 | 928.6 |
| 30° | 720.8 | 731.6 | 740.4 | 761.8 | 768.6 | 781.3 | 803.8 | 814.5 | 832.0 | 829.1 | 825.2 |
| 32.5° | 571.6 | 586.2 | 587.2 | 609.6 | 628.2 | 649.6 | 679.9 | 705.2 | 717.9 | 726.7 | 716.9 |
| 35° | 429.2 | 438.0 | 445.8 | 461.4 | 492.6 | 520.9 | 548.2 | 581.4 | 603.8 | 609.6 | 600.9 |
| 37.5° | 314.1 | 316.0 | 323.8 | 338.5 | 361.9 | 389.2 | 422.4 | 458.5 | 481.9 | 490.6 | 480.9 |
| 40° | 216.5 | 218.5 | 222.4 | 235.1 | 254.6 | 274.1 | 300.4 | 337.5 | 359.0 | 376.5 | 363.8 |
| 42.5° | 145.3 | 147.3 | 151.2 | 160.9 | 171.7 | 190.2 | 210.7 | 234.1 | 254.6 | 262.4 | 255.6 |
| 45° | 94.6 | 94.6 | 96.6 | 103.4 | 109.2 | 123.9 | 138.5 | 153.1 | 166.8 | 171.7 | 166.8 |
| 47.5° | 55.6 | 56.6 | 58.5 | 63.4 | 70.2 | 76.1 | 86.8 | 96.6 | 100.5 | 104.4 | 102.4 |
| 50° | 32.2 | 32.2 | 35.1 | 38.0 | 42.9 | 46.8 | 50.7 | 54.6 | 56.6 | 58.5 | 56.6 |
| 52.5° | 17.6 | 18.5 | 19.5 | 20.5 | 22.4 | 26.3 | 29.3 | 29.3 | 30.2 | 31.2 | 30.2 |
| 55° | 13.7 | 13.7 | 13.7 | 13.7 | 14.6 | 14.6 | 14.6 | 15.6 | 15.6 | 16.6 | 15.6 |
| 57.5° | 9.8 | 9.8 | 9.8 | 10.7 | 10.7 | 10.7 | 9.8 | 9.8 | 9.8 | 9.8 | 9.8 |
| 60° | 7.8 | 7.8 | 7.8 | 7.8 | 7.8 | 7.8 | 7.8 | 6.8 | 6.8 | 6.8 | 6.8 |
| 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° | 2.9 | 2.9 | 2.9 | 2.9 | 3.9 | 3.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 |
| 70° | 2.0 | 2.0 | 2.0 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 |
| 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° | 1535.3 | 1535.3 | 1535.3 | 1535.3 | 1535.3 | 1535.3 | 1535.3 | 1535.3 |
| 2.5° | 1535.3 | 1518.8 | 1520.7 | 1529.5 | 1524.6 | 1529.5 | 1528.5 | 1528.5 |
| 5° | 1518.8 | 1513.9 | 1506.1 | 1503.1 | 1509.0 | 1521.7 | 1519.7 | 1511.9 |
| 7.5° | 1487.5 | 1474.9 | 1483.6 | 1487.5 | 1482.7 | 1490.5 | 1494.4 | 1477.8 |
| 10° | 1450.5 | 1445.6 | 1443.6 | 1445.6 | 1443.6 | 1451.4 | 1441.7 | 1441.7 |
| 12.5° | 1397.8 | 1390.0 | 1390.0 | 1401.7 | 1394.9 | 1389.0 | 1396.8 | 1395.8 |
| 15° | 1345.1 | 1329.5 | 1329.5 | 1333.4 | 1336.3 | 1332.4 | 1333.4 | 1323.7 |
| 17.5° | 1267.1 | 1262.2 | 1255.4 | 1266.1 | 1269.0 | 1265.1 | 1268.1 | 1263.2 |
| 20° | 1193.9 | 1193.9 | 1181.3 | 1186.1 | 1190.0 | 1193.0 | 1194.9 | 1187.1 |
| 22.5° | 1100.3 | 1102.2 | 1093.5 | 1103.2 | 1106.1 | 1096.4 | 1098.3 | 1096.4 |
| 25° | 1014.5 | 1013.5 | 1006.6 | 1002.7 | 1004.7 | 1000.8 | 999.8 | 985.2 |
| 27.5° | 919.8 | 910.1 | 895.4 | 899.4 | 882.8 | 869.1 | 869.1 | 846.7 |
| 30° | 817.4 | 800.8 | 781.3 | 761.8 | 747.2 | 731.6 | 722.8 | 710.1 |
| 32.5° | 697.4 | 675.0 | 650.6 | 624.3 | 607.7 | 584.3 | 571.6 | 578.4 |
| 35° | 578.4 | 545.3 | 512.1 | 485.8 | 460.4 | 446.7 | 431.1 | 433.1 |
| 37.5° | 463.3 | 416.5 | 387.2 | 359.0 | 337.5 | 319.9 | 313.1 | 311.2 |
| 40° | 338.5 | 301.4 | 272.1 | 251.7 | 237.0 | 223.4 | 215.6 | 212.6 |
| 42.5° | 234.1 | 207.8 | 184.4 | 167.8 | 158.0 | 149.2 | 145.3 | 144.4 |
| 45° | 152.2 | 136.6 | 121.0 | 109.2 | 101.4 | 95.6 | 94.6 | 93.6 |
| 47.5° | 95.6 | 87.8 | 78.0 | 69.3 | 62.4 | 58.5 | 55.6 | 55.6 |
| 50° | 54.6 | 51.7 | 46.8 | 41.9 | 38.0 | 36.1 | 33.2 | 32.2 |
| 52.5° | 29.3 | 29.3 | 27.3 | 23.4 | 20.5 | 18.5 | 18.5 | 17.6 |
| 55° | 15.6 | 15.6 | 14.6 | 14.6 | 13.7 | 13.7 | 13.7 | 12.7 |
| 57.5° | 9.8 | 9.8 | 10.7 | 10.7 | 9.8 | 9.8 | 9.8 | 9.8 |
| 60° | 6.8 | 7.8 | 7.8 | 7.8 | 7.8 | 7.8 | 7.8 | 7.8 |
| 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° | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 |
| 70° | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 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)