

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: P209236

Luminaire Tested: **LDSQ4B20D010 EU4B10209040 4LBCSSQ1MMS**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P209236
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P35089)
Test Lab: INNOVATION CENTER-P3
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: io LED
Catalog Number: LDSQ4B20D010 EU4B10209040 4LBCSSQ1MMS
Description: PORTFOLIO LD4 SERIES 4" RECESSED FIXTURE WITH A SQUARE SHALLOW CAST METALLIC SILVER TRIM
MEDIUM DISTRIBUTION WITH MATTE METALLIC SILVER 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 4000 K
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1723.7 lumens
Efficiency: N/A
Efficacy: 82.9 lumens/watt
Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29
Luminous Opening: Point Source (0' x 0' x 0')
CIE Type: Direct

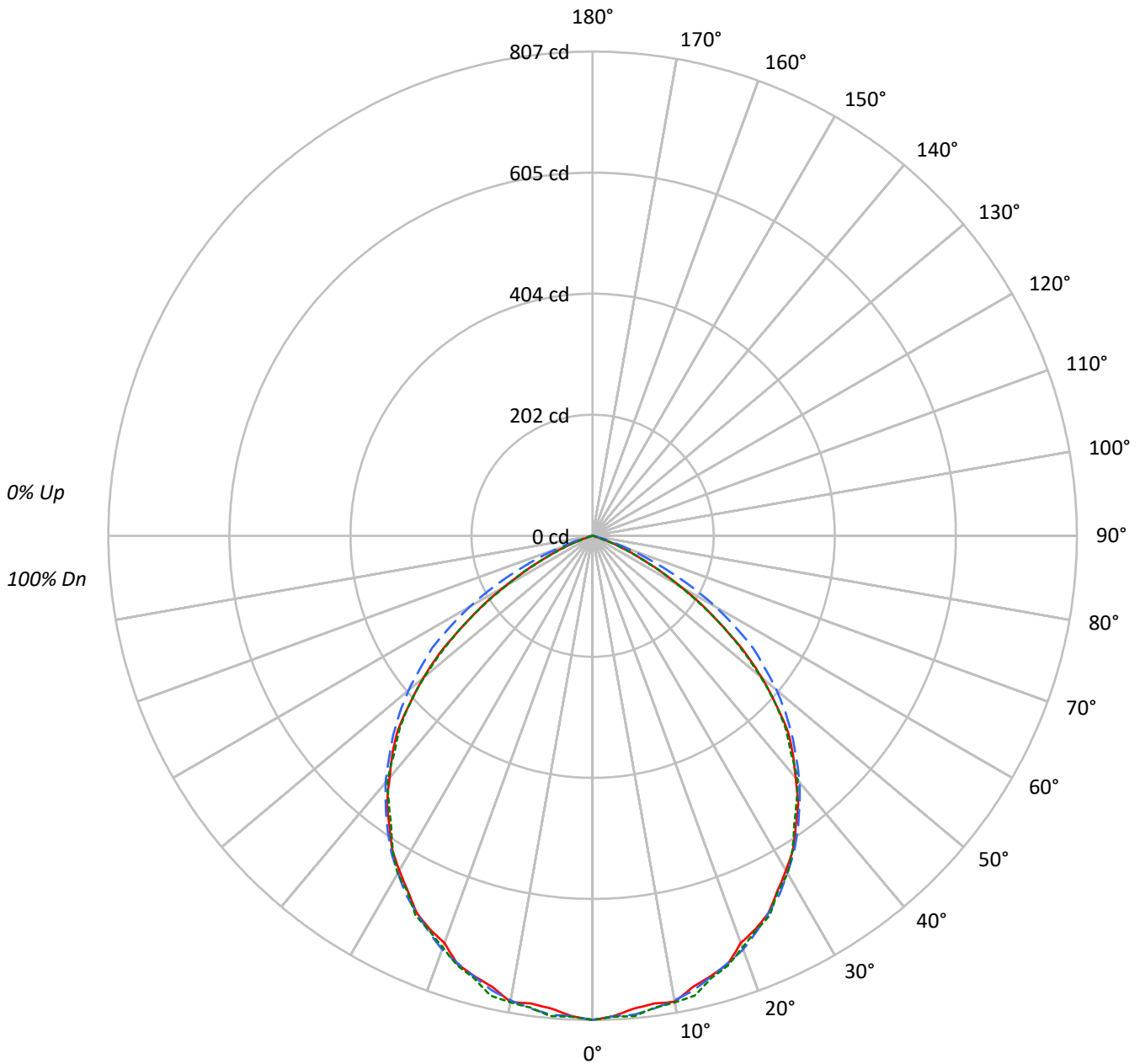
Input Watts (W): 20.8
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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Luminous Intensity Polar Plot





TEST NUMBER: P209236

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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 | 111 | 108 | 104 | 101 | 109 | 105 | 102 | 100 | 101 | 99 | 96 | 97 | 95 | 94 | 94 | 92 | 91 | 89 | | | | | | | | | | | | | | | | | | | |
| 2 | 103 | 96 | 91 | 86 | 100 | 94 | 89 | 85 | 91 | 87 | 83 | 88 | 84 | 81 | 85 | 82 | 79 | 77 | | | | | | | | | | | | | | | | | | | |
| 3 | 95 | 86 | 79 | 74 | 93 | 85 | 78 | 73 | 82 | 76 | 72 | 79 | 74 | 71 | 77 | 73 | 69 | 67 | | | | | | | | | | | | | | | | | | | |
| 4 | 88 | 77 | 70 | 64 | 86 | 76 | 69 | 63 | 74 | 67 | 63 | 71 | 66 | 62 | 69 | 65 | 61 | 59 | | | | | | | | | | | | | | | | | | | |
| 5 | 81 | 70 | 62 | 56 | 79 | 69 | 61 | 56 | 67 | 60 | 55 | 65 | 59 | 54 | 63 | 58 | 54 | 52 | | | | | | | | | | | | | | | | | | | |
| 6 | 75 | 63 | 55 | 49 | 73 | 62 | 55 | 49 | 61 | 54 | 49 | 59 | 53 | 48 | 57 | 52 | 48 | 46 | | | | | | | | | | | | | | | | | | | |
| 7 | 70 | 58 | 50 | 44 | 68 | 57 | 49 | 44 | 55 | 49 | 44 | 54 | 48 | 43 | 53 | 47 | 43 | 41 | | | | | | | | | | | | | | | | | | | |
| 8 | 65 | 53 | 45 | 40 | 64 | 52 | 45 | 39 | 51 | 44 | 39 | 50 | 44 | 39 | 49 | 43 | 39 | 37 | | | | | | | | | | | | | | | | | | | |
| 9 | 61 | 49 | 41 | 36 | 60 | 48 | 41 | 36 | 47 | 40 | 36 | 46 | 40 | 35 | 45 | 39 | 35 | 34 | | | | | | | | | | | | | | | | | | | |
| 10 | 57 | 45 | 38 | 33 | 56 | 44 | 37 | 33 | 44 | 37 | 32 | 43 | 37 | 32 | 42 | 36 | 32 | 31 | | | | | | | | | | | | | | | | | | | |

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° | 76.2 | 4.4 |
| 10°-20° | 215.5 | 12.5 |
| 20°-30° | 319.8 | 18.6 |
| 30°-40° | 370.6 | 21.5 |
| 40°-50° | 355.3 | 20.6 |
| 50°-60° | 261.2 | 15.2 |
| 60°-70° | 112.8 | 6.5 |
| 70°-80° | 12.2 | 0.7 |
| 80°-90° | 0.1 | 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° | 611.5 | 35.5 |
| 0°-40° | 982.1 | 57.0 |
| 0°-60° | 1598.6 | 92.7 |
| 0°-90° | 1723.7 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 1723.7 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|-----|-------|-----|-------|-----|------|
| 0° | 807 | 807 | 807 | 807 | 807 | |
| 5° | 791 | 799 | 801 | 802 | 804 | 75 |
| 15° | 760 | 764 | 761 | 762 | 763 | 214 |
| 25° | 694 | 692 | 694 | 695 | 698 | 318 |
| 35° | 590 | 594 | 596 | 595 | 586 | 369 |
| 45° | 460 | 461 | 470 | 463 | 455 | 349 |
| 55° | 266 | 293 | 327 | 292 | 267 | 239 |
| 65° | 87 | 109 | 142 | 108 | 85 | 90 |
| 75° | 2 | 3 | 13 | 2 | 2 | 7 |
| 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° | 22.5° | 25° | 30° | 35° | 40° | 45° |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0° | 806.9 | 806.9 | 806.9 | 806.9 | 806.9 | 806.9 | 806.9 | 806.9 | 806.9 | 806.9 | 806.9 |
| 2.5° | 801.2 | 810.4 | 811.5 | 805.8 | 803.5 | 800.1 | 808.1 | 802.3 | 804.6 | 802.3 | 801.2 |
| 5° | 790.9 | 801.2 | 802.3 | 802.3 | 800.1 | 798.9 | 802.3 | 801.2 | 800.1 | 797.8 | 801.2 |
| 7.5° | 786.3 | 792.0 | 797.8 | 790.9 | 794.3 | 793.2 | 801.2 | 797.8 | 796.6 | 796.6 | 794.3 |
| 10° | 788.6 | 787.4 | 792.0 | 785.2 | 787.4 | 785.2 | 792.0 | 792.0 | 789.7 | 787.4 | 786.3 |
| 12.5° | 770.3 | 779.4 | 779.4 | 778.3 | 776.0 | 772.5 | 779.4 | 784.0 | 777.1 | 777.1 | 776.0 |
| 15° | 759.9 | 762.2 | 763.4 | 763.4 | 762.2 | 764.5 | 768.0 | 763.4 | 764.5 | 758.8 | 761.1 |
| 17.5° | 748.5 | 743.9 | 747.3 | 745.0 | 746.2 | 748.5 | 753.1 | 753.1 | 746.2 | 745.0 | 747.3 |
| 20° | 722.1 | 735.9 | 737.0 | 730.1 | 731.3 | 731.3 | 739.3 | 732.4 | 737.0 | 731.3 | 733.6 |
| 22.5° | 709.5 | 718.7 | 719.8 | 710.7 | 716.4 | 709.5 | 717.5 | 707.2 | 718.7 | 710.7 | 714.1 |
| 25° | 693.5 | 692.3 | 695.7 | 691.2 | 692.3 | 692.3 | 698.0 | 693.5 | 696.9 | 692.3 | 693.5 |
| 27.5° | 667.1 | 676.3 | 675.1 | 670.5 | 672.8 | 671.7 | 683.1 | 670.5 | 677.4 | 671.7 | 674.0 |
| 30° | 644.2 | 652.2 | 649.9 | 645.3 | 645.3 | 641.9 | 654.5 | 651.0 | 649.9 | 649.9 | 648.8 |
| 32.5° | 621.2 | 622.4 | 620.1 | 621.2 | 622.4 | 617.8 | 628.1 | 623.5 | 622.4 | 623.5 | 624.7 |
| 35° | 590.3 | 590.3 | 592.6 | 589.2 | 593.7 | 593.7 | 602.9 | 597.2 | 596.0 | 592.6 | 596.0 |
| 37.5° | 562.8 | 559.4 | 560.5 | 560.5 | 562.8 | 565.1 | 569.7 | 567.4 | 567.4 | 563.9 | 566.2 |
| 40° | 526.1 | 523.8 | 527.3 | 527.3 | 530.7 | 530.7 | 535.3 | 533.0 | 536.4 | 536.4 | 536.4 |
| 42.5° | 494.0 | 494.0 | 491.7 | 495.2 | 496.3 | 495.2 | 503.2 | 502.0 | 503.2 | 500.9 | 502.0 |
| 45° | 459.6 | 459.6 | 457.3 | 456.2 | 461.9 | 460.8 | 469.9 | 466.5 | 471.1 | 468.8 | 469.9 |
| 47.5° | 412.6 | 418.4 | 414.9 | 418.4 | 425.2 | 426.4 | 432.1 | 429.8 | 434.4 | 431.0 | 435.6 |
| 50° | 367.9 | 367.9 | 371.4 | 376.0 | 382.8 | 384.0 | 390.9 | 395.4 | 397.7 | 398.9 | 400.0 |
| 52.5° | 320.9 | 319.8 | 323.2 | 329.0 | 334.7 | 339.3 | 346.2 | 353.0 | 357.6 | 364.5 | 361.1 |
| 55° | 265.9 | 268.2 | 271.7 | 278.5 | 287.7 | 293.4 | 299.2 | 308.3 | 316.4 | 319.8 | 326.7 |
| 57.5° | 218.9 | 216.6 | 218.9 | 228.1 | 238.4 | 243.0 | 251.0 | 260.2 | 271.7 | 278.5 | 280.8 |
| 60° | 169.6 | 170.8 | 173.1 | 181.1 | 189.1 | 196.0 | 199.4 | 214.3 | 224.7 | 231.5 | 236.1 |
| 62.5° | 124.9 | 127.2 | 129.5 | 136.4 | 144.4 | 150.2 | 155.9 | 168.5 | 177.7 | 184.5 | 189.1 |
| 65° | 87.1 | 88.3 | 91.7 | 95.1 | 103.2 | 108.9 | 113.5 | 123.8 | 133.0 | 138.7 | 142.1 |
| 67.5° | 53.9 | 55.0 | 57.3 | 61.9 | 67.6 | 72.2 | 76.8 | 83.7 | 91.7 | 97.4 | 98.6 |
| 70° | 27.5 | 28.7 | 29.8 | 33.2 | 37.8 | 40.1 | 43.6 | 49.3 | 55.0 | 59.6 | 61.9 |
| 72.5° | 9.2 | 9.2 | 10.3 | 12.6 | 14.9 | 17.2 | 18.3 | 24.1 | 28.7 | 30.9 | 32.1 |
| 75° | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 3.4 | 3.4 | 6.9 | 9.2 | 11.5 | 12.6 |
| 77.5° | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 2.3 | 2.3 |
| 80° | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| 82.5° | 0.0 | 0.0 | 0.0 | 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 | 0.0 | 0.0 | 0.0 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 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):

| | 50° | 55° | 60° | 65° | 67.5° | 70° | 75° | 80° | 85° | 90° |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0° | 806.9 | 806.9 | 806.9 | 806.9 | 806.9 | 806.9 | 806.9 | 806.9 | 806.9 | 806.9 |
| 2.5° | 806.9 | 804.6 | 803.5 | 804.6 | 804.6 | 803.5 | 806.9 | 811.5 | 817.2 | 802.3 |
| 5° | 805.8 | 803.5 | 805.8 | 798.9 | 802.3 | 800.1 | 804.6 | 803.5 | 808.1 | 803.5 |
| 7.5° | 802.3 | 797.8 | 798.9 | 795.5 | 800.1 | 794.3 | 797.8 | 804.6 | 800.1 | 793.2 |
| 10° | 790.9 | 788.6 | 796.6 | 785.2 | 782.9 | 787.4 | 796.6 | 789.7 | 787.4 | 789.7 |
| 12.5° | 779.4 | 779.4 | 782.9 | 773.7 | 774.8 | 777.1 | 781.7 | 777.1 | 779.4 | 785.2 |
| 15° | 766.8 | 764.5 | 770.3 | 763.4 | 762.2 | 759.9 | 764.5 | 764.5 | 766.8 | 763.4 |
| 17.5° | 751.9 | 748.5 | 748.5 | 746.2 | 745.0 | 750.8 | 753.1 | 754.2 | 755.4 | 750.8 |
| 20° | 733.6 | 732.4 | 735.9 | 732.4 | 733.6 | 734.7 | 734.7 | 732.4 | 742.7 | 730.1 |
| 22.5° | 714.1 | 717.5 | 712.9 | 710.7 | 712.9 | 715.2 | 715.2 | 716.4 | 714.1 | 711.8 |
| 25° | 694.6 | 696.9 | 698.0 | 691.2 | 694.6 | 691.2 | 699.2 | 700.3 | 695.7 | 698.0 |
| 27.5° | 677.4 | 674.0 | 672.8 | 668.2 | 670.5 | 669.4 | 670.5 | 670.5 | 677.4 | 668.2 |
| 30° | 651.0 | 647.6 | 648.8 | 645.3 | 646.5 | 645.3 | 646.5 | 646.5 | 651.0 | 649.9 |
| 32.5° | 625.8 | 622.4 | 623.5 | 620.1 | 620.1 | 621.2 | 619.0 | 619.0 | 622.4 | 620.1 |
| 35° | 601.8 | 593.7 | 594.9 | 593.7 | 594.9 | 590.3 | 590.3 | 589.2 | 591.4 | 585.7 |
| 37.5° | 567.4 | 563.9 | 562.8 | 561.6 | 562.8 | 560.5 | 562.8 | 559.4 | 562.8 | 558.2 |
| 40° | 536.4 | 534.1 | 535.3 | 528.4 | 528.4 | 529.5 | 527.3 | 526.1 | 527.3 | 531.8 |
| 42.5° | 505.5 | 500.9 | 498.6 | 496.3 | 497.5 | 494.0 | 492.9 | 490.6 | 492.9 | 488.3 |
| 45° | 468.8 | 468.8 | 467.7 | 461.9 | 463.1 | 463.1 | 458.5 | 453.9 | 455.0 | 455.0 |
| 47.5° | 435.6 | 433.3 | 432.1 | 426.4 | 425.2 | 424.1 | 419.5 | 416.1 | 416.1 | 412.6 |
| 50° | 398.9 | 396.6 | 393.2 | 387.4 | 385.1 | 378.2 | 374.8 | 370.2 | 365.6 | 365.6 |
| 52.5° | 364.5 | 356.5 | 351.9 | 342.7 | 339.3 | 335.8 | 326.7 | 323.2 | 319.8 | 316.4 |
| 55° | 323.2 | 316.4 | 307.2 | 296.9 | 292.3 | 286.6 | 277.4 | 270.5 | 265.9 | 267.1 |
| 57.5° | 283.1 | 271.7 | 262.5 | 248.7 | 243.0 | 239.6 | 230.4 | 221.2 | 216.6 | 216.6 |
| 60° | 233.8 | 224.7 | 213.2 | 200.6 | 196.0 | 190.3 | 178.8 | 173.1 | 169.6 | 166.2 |
| 62.5° | 186.8 | 180.0 | 169.6 | 153.6 | 150.2 | 144.4 | 136.4 | 129.5 | 126.1 | 126.1 |
| 65° | 139.8 | 133.0 | 123.8 | 112.3 | 107.7 | 103.2 | 96.3 | 89.4 | 86.0 | 84.8 |
| 67.5° | 98.6 | 90.6 | 82.5 | 73.4 | 69.9 | 67.6 | 60.7 | 56.2 | 53.9 | 52.7 |
| 70° | 59.6 | 55.0 | 49.3 | 42.4 | 39.0 | 36.7 | 32.1 | 28.7 | 27.5 | 26.4 |
| 72.5° | 30.9 | 27.5 | 22.9 | 18.3 | 16.0 | 13.8 | 11.5 | 9.2 | 8.0 | 8.0 |
| 75° | 11.5 | 9.2 | 5.7 | 3.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 |
| 77.5° | 2.3 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| 80° | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| 82.5° | 0.0 | 0.0 | 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 | 0.0 | 0.0 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 90° | 0.0 | 0.0 | 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)