

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: P209224

Luminaire Tested: **LDSQ4B15D010 EU4B10209050 4LBCSSQ1MMS**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P209224
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: LDSQ4B15D010 EU4B10209050 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-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 5000 K
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1278.1 lumens
Efficiency: N/A
Efficacy: 88.8 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

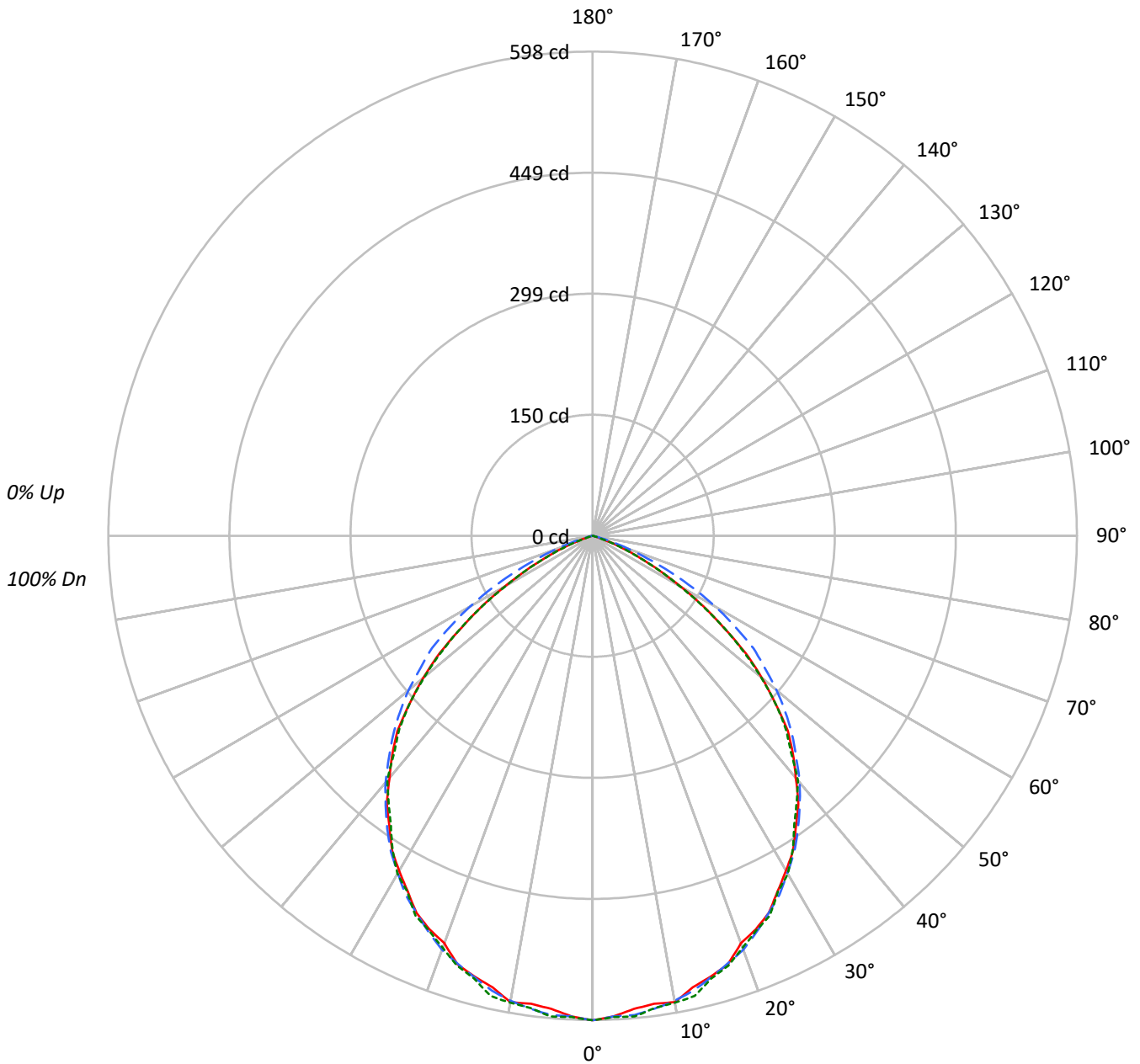
Input Watts (W): 14.39
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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Luminous Intensity Polar Plot





TEST NUMBER: P209224

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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° | 56.5 | 4.4 |
| 10°-20° | 159.8 | 12.5 |
| 20°-30° | 237.1 | 18.6 |
| 30°-40° | 274.8 | 21.5 |
| 40°-50° | 263.5 | 20.6 |
| 50°-60° | 193.7 | 15.2 |
| 60°-70° | 83.6 | 6.5 |
| 70°-80° | 9.0 | 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° | 453.5 | 35.5 |
| 0°-40° | 728.2 | 57.0 |
| 0°-60° | 1185.4 | 92.7 |
| 0°-90° | 1278.1 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 1278.1 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|-----|-------|-----|-------|-----|------|
| 0° | 598 | 598 | 598 | 598 | 598 | |
| 5° | 586 | 592 | 594 | 595 | 596 | 56 |
| 15° | 564 | 567 | 564 | 565 | 566 | 159 |
| 25° | 514 | 513 | 514 | 515 | 518 | 235 |
| 35° | 438 | 440 | 442 | 441 | 434 | 274 |
| 45° | 341 | 342 | 348 | 343 | 337 | 259 |
| 55° | 197 | 218 | 242 | 217 | 198 | 177 |
| 65° | 65 | 81 | 105 | 80 | 63 | 66 |
| 75° | 2 | 2 | 9 | 2 | 2 | 5 |
| 85° | 0 | 0 | 0 | 0 | 0 | 0 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



TEST NUMBER: P209224

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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 10° | 15° | 20° | 22.5° | 25° | 30° | 35° | 40° | 45° |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0° | 598.4 | 598.4 | 598.4 | 598.4 | 598.4 | 598.4 | 598.4 | 598.4 | 598.4 | 598.4 | 598.4 |
| 2.5° | 594.1 | 600.9 | 601.8 | 597.5 | 595.8 | 593.3 | 599.2 | 595.0 | 596.7 | 595.0 | 594.1 |
| 5° | 586.5 | 594.1 | 595.0 | 595.0 | 593.3 | 592.4 | 595.0 | 594.1 | 593.3 | 591.6 | 594.1 |
| 7.5° | 583.1 | 587.3 | 591.6 | 586.5 | 589.0 | 588.2 | 594.1 | 591.6 | 590.7 | 590.7 | 589.0 |
| 10° | 584.8 | 583.9 | 587.3 | 582.2 | 583.9 | 582.2 | 587.3 | 587.3 | 585.6 | 583.9 | 583.1 |
| 12.5° | 571.2 | 578.0 | 578.0 | 577.1 | 575.4 | 572.9 | 578.0 | 581.4 | 576.3 | 576.3 | 575.4 |
| 15° | 563.5 | 565.2 | 566.1 | 566.1 | 565.2 | 566.9 | 569.5 | 566.1 | 566.9 | 562.7 | 564.4 |
| 17.5° | 555.0 | 551.6 | 554.2 | 552.5 | 553.3 | 555.0 | 558.4 | 558.4 | 553.3 | 552.5 | 554.2 |
| 20° | 535.5 | 545.7 | 546.5 | 541.4 | 542.3 | 542.3 | 548.2 | 543.1 | 546.5 | 542.3 | 544.0 |
| 22.5° | 526.1 | 532.9 | 533.8 | 527.0 | 531.2 | 526.1 | 532.1 | 524.4 | 532.9 | 527.0 | 529.5 |
| 25° | 514.2 | 513.4 | 515.9 | 512.5 | 513.4 | 513.4 | 517.6 | 514.2 | 516.8 | 513.4 | 514.2 |
| 27.5° | 494.7 | 501.5 | 500.6 | 497.2 | 498.9 | 498.1 | 506.6 | 497.2 | 502.3 | 498.1 | 499.8 |
| 30° | 477.7 | 483.6 | 481.9 | 478.5 | 478.5 | 476.0 | 485.3 | 482.8 | 481.9 | 481.9 | 481.1 |
| 32.5° | 460.7 | 461.5 | 459.8 | 460.7 | 461.5 | 458.1 | 465.8 | 462.4 | 461.5 | 462.4 | 463.2 |
| 35° | 437.7 | 437.7 | 439.4 | 436.9 | 440.3 | 440.3 | 447.1 | 442.8 | 442.0 | 439.4 | 442.0 |
| 37.5° | 417.3 | 414.8 | 415.6 | 415.6 | 417.3 | 419.0 | 422.4 | 420.7 | 420.7 | 418.2 | 419.9 |
| 40° | 390.1 | 388.4 | 391.0 | 391.0 | 393.5 | 393.5 | 396.9 | 395.2 | 397.8 | 397.8 | 397.8 |
| 42.5° | 366.3 | 366.3 | 364.6 | 367.2 | 368.0 | 367.2 | 373.1 | 372.3 | 373.1 | 371.4 | 372.3 |
| 45° | 340.8 | 340.8 | 339.1 | 338.3 | 342.5 | 341.7 | 348.5 | 345.9 | 349.3 | 347.6 | 348.5 |
| 47.5° | 306.0 | 310.2 | 307.7 | 310.2 | 315.3 | 316.2 | 320.4 | 318.7 | 322.1 | 319.6 | 323.0 |
| 50° | 272.8 | 272.8 | 275.4 | 278.8 | 283.9 | 284.7 | 289.8 | 293.2 | 294.9 | 295.8 | 296.6 |
| 52.5° | 238.0 | 237.1 | 239.7 | 243.9 | 248.2 | 251.6 | 256.7 | 261.8 | 265.2 | 270.3 | 267.7 |
| 55° | 197.2 | 198.9 | 201.4 | 206.5 | 213.3 | 217.6 | 221.8 | 228.6 | 234.6 | 237.1 | 242.2 |
| 57.5° | 162.3 | 160.6 | 162.3 | 169.1 | 176.8 | 180.2 | 186.1 | 192.9 | 201.4 | 206.5 | 208.2 |
| 60° | 125.8 | 126.6 | 128.3 | 134.3 | 140.2 | 145.3 | 147.9 | 158.9 | 166.6 | 171.7 | 175.1 |
| 62.5° | 92.6 | 94.3 | 96.0 | 101.1 | 107.1 | 111.3 | 115.6 | 124.9 | 131.7 | 136.8 | 140.2 |
| 65° | 64.6 | 65.4 | 68.0 | 70.5 | 76.5 | 80.7 | 84.1 | 91.8 | 98.6 | 102.8 | 105.4 |
| 67.5° | 39.9 | 40.8 | 42.5 | 45.9 | 50.1 | 53.5 | 56.9 | 62.0 | 68.0 | 72.2 | 73.1 |
| 70° | 20.4 | 21.2 | 22.1 | 24.6 | 28.0 | 29.7 | 32.3 | 36.5 | 40.8 | 44.2 | 45.9 |
| 72.5° | 6.8 | 6.8 | 7.6 | 9.3 | 11.0 | 12.7 | 13.6 | 17.8 | 21.2 | 22.9 | 23.8 |
| 75° | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 2.5 | 2.5 | 5.1 | 6.8 | 8.5 | 9.3 |
| 77.5° | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 1.7 | 1.7 |
| 80° | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| 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° | 598.4 | 598.4 | 598.4 | 598.4 | 598.4 | 598.4 | 598.4 | 598.4 | 598.4 | 598.4 |
| 2.5° | 598.4 | 596.7 | 595.8 | 596.7 | 596.7 | 595.8 | 598.4 | 601.8 | 606.0 | 595.0 |
| 5° | 597.5 | 595.8 | 597.5 | 592.4 | 595.0 | 593.3 | 596.7 | 595.8 | 599.2 | 595.8 |
| 7.5° | 595.0 | 591.6 | 592.4 | 589.9 | 593.3 | 589.0 | 591.6 | 596.7 | 593.3 | 588.2 |
| 10° | 586.5 | 584.8 | 590.7 | 582.2 | 580.5 | 583.9 | 590.7 | 585.6 | 583.9 | 585.6 |
| 12.5° | 578.0 | 578.0 | 580.5 | 573.7 | 574.6 | 576.3 | 579.7 | 576.3 | 578.0 | 582.2 |
| 15° | 568.6 | 566.9 | 571.2 | 566.1 | 565.2 | 563.5 | 566.9 | 566.9 | 568.6 | 566.1 |
| 17.5° | 557.6 | 555.0 | 555.0 | 553.3 | 552.5 | 556.7 | 558.4 | 559.3 | 560.1 | 556.7 |
| 20° | 544.0 | 543.1 | 545.7 | 543.1 | 544.0 | 544.8 | 544.8 | 543.1 | 550.8 | 541.4 |
| 22.5° | 529.5 | 532.1 | 528.7 | 527.0 | 528.7 | 530.4 | 530.4 | 531.2 | 529.5 | 527.8 |
| 25° | 515.1 | 516.8 | 517.6 | 512.5 | 515.1 | 512.5 | 518.5 | 519.3 | 515.9 | 517.6 |
| 27.5° | 502.3 | 499.8 | 498.9 | 495.5 | 497.2 | 496.4 | 497.2 | 497.2 | 502.3 | 495.5 |
| 30° | 482.8 | 480.2 | 481.1 | 478.5 | 479.4 | 478.5 | 479.4 | 479.4 | 482.8 | 481.9 |
| 32.5° | 464.1 | 461.5 | 462.4 | 459.8 | 459.8 | 460.7 | 459.0 | 459.0 | 461.5 | 459.8 |
| 35° | 446.2 | 440.3 | 441.1 | 440.3 | 441.1 | 437.7 | 437.7 | 436.9 | 438.6 | 434.3 |
| 37.5° | 420.7 | 418.2 | 417.3 | 416.5 | 417.3 | 415.6 | 417.3 | 414.8 | 417.3 | 413.9 |
| 40° | 397.8 | 396.1 | 396.9 | 391.8 | 391.8 | 392.7 | 391.0 | 390.1 | 391.0 | 394.4 |
| 42.5° | 374.8 | 371.4 | 369.7 | 368.0 | 368.9 | 366.3 | 365.5 | 363.8 | 365.5 | 362.1 |
| 45° | 347.6 | 347.6 | 346.8 | 342.5 | 343.4 | 343.4 | 340.0 | 336.6 | 337.4 | 337.4 |
| 47.5° | 323.0 | 321.3 | 320.4 | 316.2 | 315.3 | 314.5 | 311.1 | 308.5 | 308.5 | 306.0 |
| 50° | 295.8 | 294.1 | 291.5 | 287.3 | 285.6 | 280.5 | 277.9 | 274.5 | 271.1 | 271.1 |
| 52.5° | 270.3 | 264.3 | 260.9 | 254.1 | 251.6 | 249.0 | 242.2 | 239.7 | 237.1 | 234.6 |
| 55° | 239.7 | 234.6 | 227.8 | 220.1 | 216.7 | 212.5 | 205.7 | 200.6 | 197.2 | 198.0 |
| 57.5° | 209.9 | 201.4 | 194.6 | 184.4 | 180.2 | 177.6 | 170.8 | 164.0 | 160.6 | 160.6 |
| 60° | 173.4 | 166.6 | 158.1 | 148.7 | 145.3 | 141.1 | 132.6 | 128.3 | 125.8 | 123.2 |
| 62.5° | 138.5 | 133.4 | 125.8 | 113.9 | 111.3 | 107.1 | 101.1 | 96.0 | 93.5 | 93.5 |
| 65° | 103.7 | 98.6 | 91.8 | 83.3 | 79.9 | 76.5 | 71.4 | 66.3 | 63.7 | 62.9 |
| 67.5° | 73.1 | 67.1 | 61.2 | 54.4 | 51.8 | 50.1 | 45.0 | 41.6 | 39.9 | 39.1 |
| 70° | 44.2 | 40.8 | 36.5 | 31.4 | 28.9 | 27.2 | 23.8 | 21.2 | 20.4 | 19.5 |
| 72.5° | 22.9 | 20.4 | 17.0 | 13.6 | 11.9 | 10.2 | 8.5 | 6.8 | 5.9 | 5.9 |
| 75° | 8.5 | 6.8 | 4.2 | 2.5 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 |
| 77.5° | 1.7 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| 80° | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| 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)