

Scaled data based on original data using
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State
Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: NEO-RAY

Report Number: P243410

Luminaire Tested: **S123RDR-H560D935-X4F0-XX-UDD-F-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P243410
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-64)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S123RDR-H560D935-X4F0-XX-UDD-F-W
Description: DEFINE 3 REGRESSED DIRECT RECESSED WITH SATIN FLUSH DIFFUSER.
HIGH PERFORMANCE LIGHT ENGINE
Light Source: (184) 3500K CCT, 90 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1687.4 lumens
Efficiency: N/A
Efficacy: 98.1 lumens/watt
Spacing Criteria (0/90/45): 1.21 / 1.07 / 1.22
Luminous Opening: Rectangular (W 0.23' x L: 3.88' x H: 0')
CIE Type: Direct

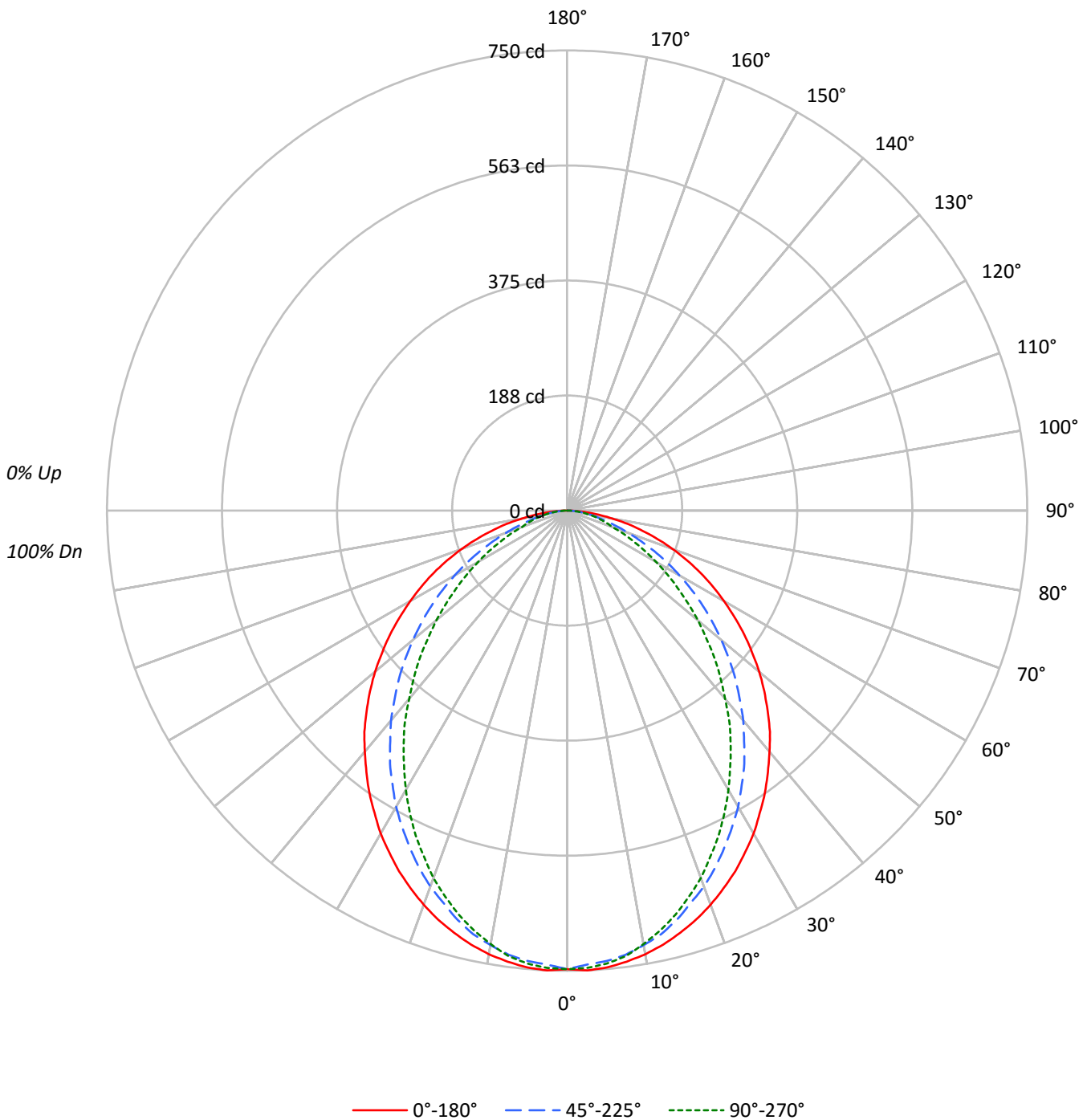
Input Watts (W): 17.2
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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 | 0 |
| RCR | | | | | | | | | | | | | | | | | | |
| 0 | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 100 |
| 1 | 110 | 105 | 101 | 98 | 107 | 103 | 99 | 96 | 99 | 96 | 93 | 95 | 93 | 90 | 91 | 89 | 88 | 86 |
| 2 | 101 | 93 | 87 | 81 | 98 | 91 | 85 | 80 | 87 | 83 | 78 | 84 | 80 | 77 | 81 | 78 | 75 | 73 |
| 3 | 92 | 82 | 75 | 69 | 90 | 81 | 74 | 68 | 78 | 72 | 67 | 75 | 70 | 66 | 73 | 68 | 65 | 62 |
| 4 | 85 | 73 | 65 | 59 | 83 | 72 | 64 | 58 | 70 | 63 | 58 | 67 | 62 | 57 | 65 | 60 | 56 | 54 |
| 5 | 78 | 66 | 58 | 51 | 76 | 65 | 57 | 51 | 63 | 56 | 50 | 61 | 55 | 50 | 59 | 54 | 49 | 47 |
| 6 | 73 | 60 | 51 | 45 | 71 | 59 | 51 | 45 | 57 | 50 | 45 | 56 | 49 | 44 | 54 | 48 | 44 | 42 |
| 7 | 67 | 55 | 46 | 40 | 66 | 54 | 46 | 40 | 52 | 45 | 40 | 51 | 44 | 40 | 49 | 44 | 39 | 37 |
| 8 | 63 | 50 | 42 | 36 | 61 | 49 | 41 | 36 | 48 | 41 | 36 | 47 | 40 | 36 | 46 | 40 | 35 | 34 |
| 9 | 59 | 46 | 38 | 33 | 58 | 45 | 38 | 33 | 44 | 37 | 32 | 43 | 37 | 32 | 42 | 36 | 32 | 30 |
| 10 | 55 | 43 | 35 | 30 | 54 | 42 | 35 | 30 | 41 | 34 | 30 | 40 | 34 | 30 | 39 | 34 | 29 | 28 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 9059 | 9059 | 9059 |
| 5° | 9094 | 8967 | 9016 |
| 10° | 9037 | 8852 | 8831 |
| 15° | 8939 | 8665 | 8557 |
| 20° | 8818 | 8412 | 8219 |
| 25° | 8675 | 8107 | 7815 |
| 30° | 8508 | 7802 | 7359 |
| 35° | 8316 | 7449 | 6872 |
| 40° | 8120 | 7067 | 6331 |
| 45° | 7921 | 6643 | 5825 |
| 50° | 7707 | 6181 | 5239 |
| 55° | 7447 | 5702 | 4645 |
| 60° | 7152 | 5135 | 4048 |
| 65° | 6866 | 4494 | 3456 |
| 70° | 6468 | 3764 | 2768 |
| 75° | 5967 | 2983 | 2637 |
| 80° | 5207 | 2646 | 2401 |
| 85° | 4395 | 2309 | 2239 |



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 70.3 | 4.2 |
| 10°-20° | 195.7 | 11.6 |
| 20°-30° | 281.8 | 16.7 |
| 30°-40° | 317.4 | 18.8 |
| 40°-50° | 303.2 | 18.0 |
| 50°-60° | 247.9 | 14.7 |
| 60°-70° | 166.5 | 9.9 |
| 70°-80° | 83.0 | 4.9 |
| 80°-90° | 21.5 | 1.3 |
| 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° | 547.8 | 32.5 |
| 0°-40° | 865.2 | 51.3 |
| 0°-60° | 1416.4 | 83.9 |
| 0°-90° | 1687.4 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 1687.4 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|-----|-------|-----|-------|-----|------|
| 0° | 747 | 747 | 747 | 747 | 747 | |
| 5° | 747 | 744 | 737 | 743 | 741 | 71 |
| 15° | 712 | 707 | 690 | 686 | 682 | 201 |
| 25° | 649 | 634 | 606 | 593 | 584 | 299 |
| 35° | 562 | 540 | 503 | 475 | 464 | 351 |
| 45° | 462 | 434 | 388 | 354 | 340 | 357 |
| 55° | 352 | 321 | 270 | 232 | 220 | 315 |
| 65° | 239 | 206 | 157 | 128 | 120 | 237 |
| 75° | 127 | 97 | 64 | 57 | 56 | 135 |
| 85° | 32 | 18 | 17 | 16 | 16 | 37 |
| 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° | 747.4 | 747.4 | 747.4 | 747.4 | 747.4 | 747.4 | 747.4 | 747.4 | 747.4 | 747.4 | 747.4 |
| 2.5° | 750.2 | 748.5 | 746.2 | 746.8 | 747.4 | 747.9 | 747.9 | 747.4 | 745.6 | 743.3 | 740.5 |
| 5° | 747.4 | 745.6 | 743.3 | 743.3 | 744.5 | 744.5 | 744.5 | 743.9 | 742.2 | 739.9 | 737.0 |
| 7.5° | 741.6 | 740.5 | 737.6 | 738.2 | 738.8 | 738.8 | 738.8 | 738.2 | 735.9 | 733.0 | 730.1 |
| 10° | 734.2 | 732.4 | 730.1 | 730.1 | 730.7 | 730.7 | 730.7 | 729.6 | 726.7 | 723.3 | 719.2 |
| 12.5° | 724.4 | 722.7 | 720.4 | 720.4 | 720.4 | 720.4 | 720.4 | 718.7 | 714.1 | 710.6 | 707.2 |
| 15° | 712.3 | 710.6 | 708.3 | 708.3 | 707.8 | 707.2 | 706.0 | 703.2 | 699.1 | 695.1 | 690.5 |
| 17.5° | 699.1 | 696.9 | 694.0 | 693.4 | 692.8 | 692.3 | 690.5 | 688.8 | 683.1 | 677.3 | 670.4 |
| 20° | 683.6 | 681.4 | 678.5 | 677.9 | 676.2 | 674.5 | 673.3 | 669.9 | 663.6 | 656.7 | 652.1 |
| 22.5° | 666.4 | 664.1 | 661.3 | 660.1 | 656.7 | 655.5 | 653.8 | 648.6 | 641.7 | 635.4 | 630.3 |
| 25° | 648.6 | 645.8 | 642.3 | 640.6 | 636.6 | 634.3 | 633.7 | 626.2 | 619.4 | 612.5 | 606.2 |
| 27.5° | 628.0 | 625.7 | 622.8 | 619.4 | 615.3 | 612.5 | 611.3 | 604.4 | 595.8 | 587.8 | 582.0 |
| 30° | 607.9 | 604.4 | 601.6 | 597.5 | 591.8 | 588.9 | 586.6 | 579.8 | 572.3 | 562.5 | 557.4 |
| 32.5° | 584.3 | 582.0 | 578.6 | 574.6 | 568.8 | 566.5 | 563.1 | 554.5 | 544.7 | 537.8 | 529.8 |
| 35° | 562.0 | 559.7 | 554.5 | 550.5 | 542.4 | 540.1 | 536.7 | 529.2 | 518.3 | 510.3 | 503.4 |
| 37.5° | 537.3 | 534.4 | 530.4 | 524.6 | 517.8 | 514.9 | 510.3 | 502.8 | 490.2 | 482.2 | 473.6 |
| 40° | 513.2 | 509.1 | 504.6 | 498.2 | 491.4 | 488.5 | 484.5 | 473.6 | 463.2 | 454.0 | 446.6 |
| 42.5° | 489.1 | 484.5 | 478.7 | 473.0 | 465.5 | 461.5 | 456.9 | 446.6 | 435.1 | 426.5 | 416.2 |
| 45° | 462.1 | 458.6 | 452.9 | 446.0 | 437.4 | 434.5 | 429.4 | 418.5 | 407.0 | 397.8 | 387.5 |
| 47.5° | 435.7 | 431.7 | 425.9 | 419.0 | 410.4 | 406.4 | 401.2 | 390.3 | 378.8 | 367.4 | 358.2 |
| 50° | 408.7 | 404.7 | 397.8 | 390.9 | 382.9 | 377.7 | 373.1 | 362.2 | 349.6 | 339.2 | 327.8 |
| 52.5° | 380.0 | 376.6 | 370.8 | 363.9 | 353.6 | 349.6 | 345.0 | 332.9 | 320.9 | 308.8 | 298.5 |
| 55° | 352.4 | 350.1 | 343.3 | 336.4 | 325.5 | 320.9 | 316.3 | 303.7 | 291.6 | 279.5 | 269.8 |
| 57.5° | 323.7 | 322.0 | 315.1 | 307.1 | 297.3 | 292.7 | 287.0 | 274.4 | 262.9 | 250.8 | 240.5 |
| 60° | 295.0 | 293.3 | 286.4 | 278.4 | 269.2 | 263.5 | 257.2 | 247.4 | 234.2 | 223.3 | 211.8 |
| 62.5° | 267.5 | 265.2 | 259.5 | 250.8 | 240.5 | 234.8 | 229.0 | 217.6 | 205.5 | 194.0 | 183.7 |
| 65° | 239.4 | 236.5 | 229.6 | 221.0 | 211.2 | 206.1 | 200.3 | 189.4 | 177.4 | 166.5 | 156.7 |
| 67.5° | 211.2 | 208.4 | 200.9 | 194.0 | 182.5 | 177.4 | 172.2 | 161.3 | 149.8 | 138.9 | 129.7 |
| 70° | 182.5 | 179.7 | 173.9 | 164.7 | 155.0 | 149.8 | 144.7 | 133.2 | 122.8 | 114.8 | 106.2 |
| 72.5° | 154.4 | 152.1 | 146.4 | 137.8 | 128.6 | 123.4 | 117.7 | 107.9 | 98.7 | 90.1 | 83.8 |
| 75° | 127.4 | 124.0 | 118.8 | 110.8 | 101.6 | 97.0 | 93.0 | 83.2 | 74.6 | 68.9 | 63.7 |
| 77.5° | 101.6 | 97.6 | 91.8 | 85.5 | 76.9 | 72.3 | 68.3 | 60.3 | 54.5 | 50.5 | 49.4 |
| 80° | 74.6 | 74.0 | 68.3 | 61.4 | 54.0 | 50.5 | 46.5 | 41.3 | 39.6 | 39.0 | 37.9 |
| 82.5° | 52.2 | 49.9 | 45.3 | 39.0 | 33.3 | 31.0 | 29.8 | 28.7 | 27.6 | 27.6 | 26.4 |
| 85° | 31.6 | 29.3 | 25.3 | 20.1 | 18.9 | 18.4 | 17.8 | 17.8 | 17.2 | 16.6 | 16.6 |
| 87.5° | 13.8 | 11.5 | 8.6 | 8.0 | 7.5 | 7.5 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 |
| 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° | 747.4 | 747.4 | 747.4 | 747.4 | 747.4 | 747.4 | 747.4 | 747.4 | 747.4 | 747.4 |
| 2.5° | 741.6 | 744.5 | 746.2 | 746.8 | 746.8 | 746.8 | 747.4 | 747.4 | 746.8 | 746.2 |
| 5° | 737.6 | 740.5 | 741.6 | 742.8 | 742.8 | 742.8 | 742.8 | 742.8 | 742.2 | 741.0 |
| 7.5° | 731.3 | 733.0 | 734.7 | 734.2 | 734.2 | 733.6 | 733.0 | 733.6 | 732.4 | 732.4 |
| 10° | 719.8 | 721.5 | 722.7 | 721.0 | 721.0 | 721.5 | 721.5 | 721.0 | 719.2 | 717.5 |
| 12.5° | 706.6 | 708.3 | 706.6 | 707.2 | 706.0 | 704.9 | 704.3 | 703.7 | 702.0 | 700.9 |
| 15° | 689.4 | 689.4 | 688.2 | 688.2 | 686.5 | 684.2 | 683.6 | 684.2 | 681.9 | 681.9 |
| 17.5° | 670.4 | 669.3 | 667.6 | 666.4 | 665.9 | 665.9 | 663.6 | 663.6 | 660.7 | 660.1 |
| 20° | 649.8 | 648.6 | 646.9 | 644.0 | 642.9 | 643.5 | 641.2 | 639.4 | 637.7 | 637.2 |
| 22.5° | 628.0 | 625.1 | 623.4 | 620.5 | 618.2 | 618.2 | 616.5 | 613.6 | 611.9 | 610.2 |
| 25° | 603.3 | 600.4 | 597.0 | 594.7 | 593.0 | 590.1 | 588.9 | 586.6 | 584.9 | 584.3 |
| 27.5° | 578.0 | 573.4 | 568.8 | 566.5 | 565.4 | 562.0 | 560.2 | 559.1 | 555.6 | 555.1 |
| 30° | 551.1 | 547.6 | 541.9 | 537.8 | 535.0 | 535.6 | 531.5 | 529.2 | 527.5 | 525.8 |
| 32.5° | 525.2 | 519.5 | 513.7 | 508.6 | 505.1 | 504.6 | 500.5 | 498.2 | 496.5 | 494.8 |
| 35° | 495.9 | 490.2 | 483.3 | 478.7 | 475.3 | 473.6 | 469.5 | 468.4 | 465.5 | 464.4 |
| 37.5° | 466.7 | 460.4 | 453.5 | 447.7 | 445.4 | 441.4 | 439.7 | 436.8 | 434.5 | 434.5 |
| 40° | 438.0 | 430.5 | 423.6 | 416.7 | 413.9 | 411.6 | 407.0 | 404.7 | 401.8 | 400.1 |
| 42.5° | 408.1 | 399.5 | 393.2 | 386.9 | 382.9 | 381.1 | 376.0 | 373.1 | 370.2 | 369.7 |
| 45° | 378.3 | 369.7 | 361.6 | 355.3 | 353.6 | 350.1 | 345.0 | 341.0 | 340.4 | 339.8 |
| 47.5° | 347.9 | 339.2 | 331.8 | 324.9 | 322.6 | 318.6 | 315.1 | 312.3 | 308.8 | 307.1 |
| 50° | 318.6 | 310.0 | 301.9 | 294.5 | 291.6 | 288.2 | 284.7 | 280.7 | 279.5 | 277.8 |
| 52.5° | 289.3 | 279.5 | 270.9 | 264.0 | 261.7 | 258.9 | 254.9 | 251.4 | 249.7 | 248.5 |
| 55° | 259.5 | 249.7 | 242.2 | 235.3 | 232.5 | 230.8 | 226.2 | 223.3 | 221.0 | 219.8 |
| 57.5° | 230.2 | 220.4 | 213.5 | 208.4 | 204.3 | 202.6 | 198.0 | 195.2 | 194.0 | 193.4 |
| 60° | 202.6 | 193.4 | 186.0 | 180.8 | 177.4 | 175.6 | 172.2 | 169.3 | 167.6 | 167.0 |
| 62.5° | 175.1 | 167.0 | 160.1 | 155.0 | 152.7 | 150.4 | 147.5 | 145.2 | 143.5 | 143.5 |
| 65° | 148.7 | 140.6 | 134.3 | 130.3 | 128.0 | 126.9 | 123.4 | 122.3 | 120.5 | 120.5 |
| 67.5° | 122.8 | 117.1 | 112.5 | 107.3 | 105.6 | 105.6 | 102.2 | 101.0 | 99.9 | 99.9 |
| 70° | 100.5 | 95.3 | 90.1 | 87.2 | 85.5 | 85.0 | 82.1 | 80.4 | 79.2 | 78.1 |
| 72.5° | 78.6 | 74.0 | 69.5 | 68.9 | 68.9 | 68.3 | 68.3 | 67.2 | 67.2 | 67.7 |
| 75° | 60.3 | 59.1 | 58.0 | 58.0 | 57.4 | 56.8 | 56.8 | 56.3 | 56.3 | 56.3 |
| 77.5° | 48.2 | 47.6 | 47.1 | 46.5 | 46.5 | 45.9 | 45.3 | 45.3 | 45.3 | 45.3 |
| 80° | 36.7 | 36.2 | 36.2 | 35.6 | 35.0 | 35.6 | 35.0 | 35.0 | 34.4 | 34.4 |
| 82.5° | 25.8 | 25.8 | 25.8 | 25.3 | 25.3 | 25.3 | 25.3 | 24.7 | 24.7 | 25.3 |
| 85° | 16.1 | 16.1 | 16.1 | 16.1 | 15.5 | 16.1 | 15.5 | 15.5 | 15.5 | 16.1 |
| 87.5° | 6.9 | 7.5 | 6.9 | 7.5 | 7.5 | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)