

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: P243389

Luminaire Tested: **S123RDR-H1165D927-X4F0-XX-UDD-F-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P243389
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-H1165D927-X4F0-XX-UDD-F-W
Description: DEFINE 3 REGRESSED DIRECT RECESSED WITH SATIN FLUSH DIFFUSER.
HIGH PERFORMANCE LIGHT ENGINE
Light Source: (184) 2700K CCT, 90 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3275.6 lumens
Efficiency: N/A
Efficacy: 86.9 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

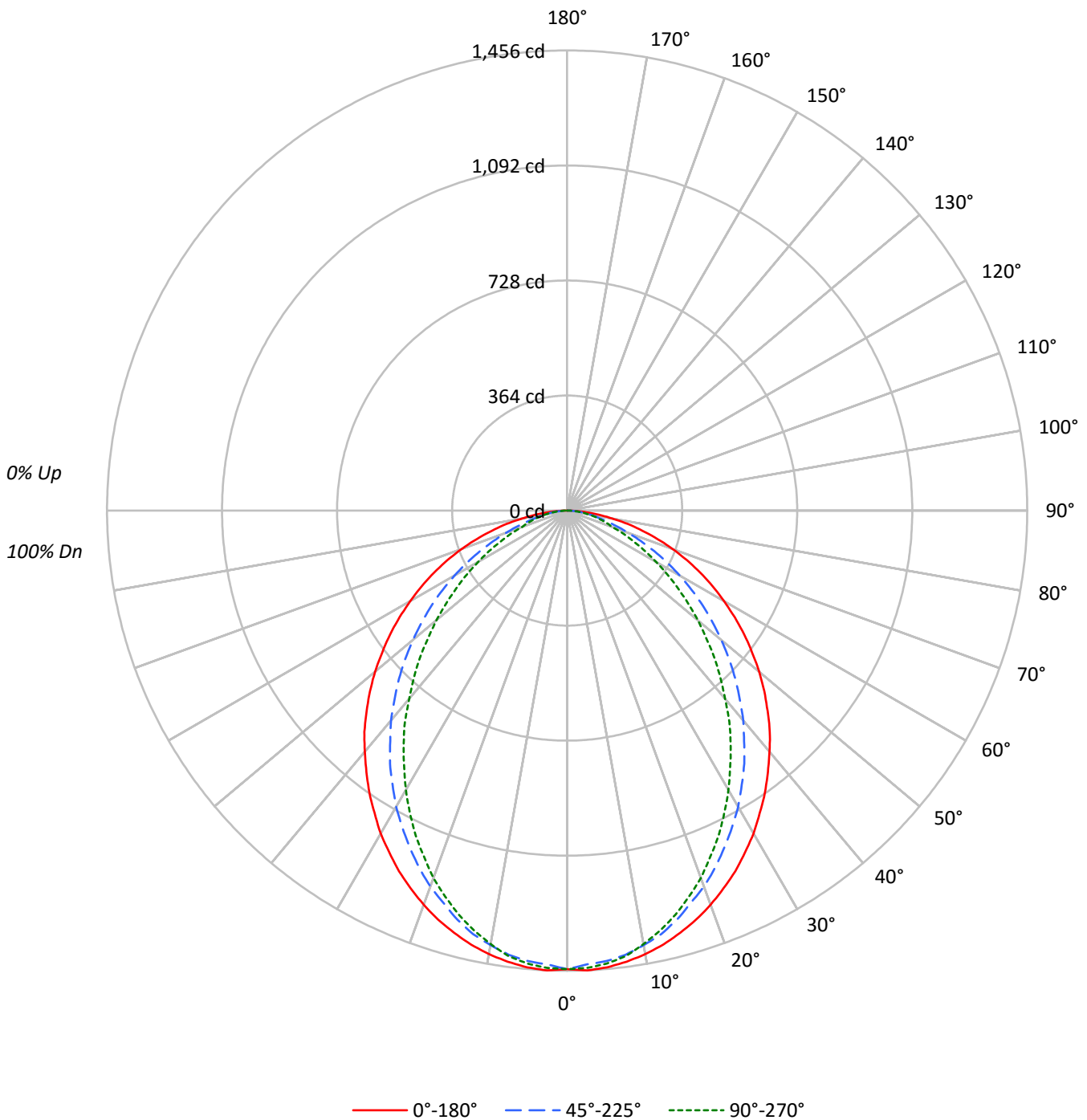
Input Watts (W): 37.7
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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° | 17585 | 17585 | 17585 |
| 5° | 17653 | 17409 | 17504 |
| 10° | 17542 | 17185 | 17144 |
| 15° | 17353 | 16822 | 16612 |
| 20° | 17118 | 16328 | 15955 |
| 25° | 16841 | 15738 | 15172 |
| 30° | 16516 | 15144 | 14286 |
| 35° | 16142 | 14460 | 13340 |
| 40° | 15763 | 13717 | 12290 |
| 45° | 15376 | 12892 | 11309 |
| 50° | 14961 | 11999 | 10170 |
| 55° | 14459 | 11067 | 9019 |
| 60° | 13884 | 9968 | 7862 |
| 65° | 13328 | 8725 | 6711 |
| 70° | 12556 | 7304 | 5369 |
| 75° | 11586 | 5793 | 5114 |
| 80° | 10115 | 5131 | 4670 |
| 85° | 8525 | 4492 | 4339 |



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 136.5 | 4.2 |
| 10°-20° | 380.0 | 11.6 |
| 20°-30° | 547.0 | 16.7 |
| 30°-40° | 616.2 | 18.8 |
| 40°-50° | 588.6 | 18.0 |
| 50°-60° | 481.3 | 14.7 |
| 60°-70° | 323.2 | 9.9 |
| 70°-80° | 161.2 | 4.9 |
| 80°-90° | 41.7 | 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° | 1063.5 | 32.5 |
| 0°-40° | 1679.6 | 51.3 |
| 0°-60° | 2749.6 | 83.9 |
| 0°-90° | 3275.6 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 3275.6 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 1451 | 1451 | 1451 | 1451 | 1451 | |
| 5° | 1451 | 1445 | 1431 | 1442 | 1439 | 138 |
| 15° | 1383 | 1373 | 1340 | 1333 | 1324 | 390 |
| 25° | 1259 | 1231 | 1177 | 1151 | 1134 | 580 |
| 35° | 1091 | 1049 | 977 | 923 | 902 | 682 |
| 45° | 897 | 844 | 752 | 686 | 660 | 692 |
| 55° | 684 | 623 | 524 | 451 | 427 | 611 |
| 65° | 465 | 400 | 304 | 248 | 234 | 460 |
| 75° | 247 | 188 | 124 | 111 | 109 | 262 |
| 85° | 61 | 36 | 32 | 30 | 31 | 71 |
| 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° | 1450.8 | 1450.8 | 1450.8 | 1450.8 | 1450.8 | 1450.8 | 1450.8 | 1450.8 | 1450.8 | 1450.8 | 1450.8 |
| 2.5° | 1456.4 | 1453.0 | 1448.6 | 1449.7 | 1450.8 | 1451.9 | 1451.9 | 1450.8 | 1447.5 | 1443.0 | 1437.4 |
| 5° | 1450.8 | 1447.5 | 1443.0 | 1443.0 | 1445.2 | 1445.2 | 1445.2 | 1444.1 | 1440.8 | 1436.3 | 1430.8 |
| 7.5° | 1439.7 | 1437.4 | 1431.9 | 1433.0 | 1434.1 | 1434.1 | 1434.1 | 1433.0 | 1428.5 | 1423.0 | 1417.4 |
| 10° | 1425.2 | 1421.8 | 1417.4 | 1417.4 | 1418.5 | 1418.5 | 1418.5 | 1416.3 | 1410.7 | 1404.0 | 1396.2 |
| 12.5° | 1406.2 | 1402.9 | 1398.4 | 1398.4 | 1398.4 | 1398.4 | 1398.4 | 1395.1 | 1386.2 | 1379.5 | 1372.8 |
| 15° | 1382.8 | 1379.5 | 1375.0 | 1375.0 | 1373.9 | 1372.8 | 1370.6 | 1365.0 | 1357.2 | 1349.4 | 1340.5 |
| 17.5° | 1357.2 | 1352.8 | 1347.2 | 1346.1 | 1345.0 | 1343.8 | 1340.5 | 1337.2 | 1326.0 | 1314.9 | 1301.5 |
| 20° | 1327.1 | 1322.7 | 1317.1 | 1316.0 | 1312.6 | 1309.3 | 1307.1 | 1300.4 | 1288.1 | 1274.8 | 1265.8 |
| 22.5° | 1293.7 | 1289.2 | 1283.7 | 1281.4 | 1274.8 | 1272.5 | 1269.2 | 1259.2 | 1245.8 | 1233.5 | 1223.5 |
| 25° | 1259.2 | 1253.6 | 1246.9 | 1243.6 | 1235.8 | 1231.3 | 1230.2 | 1215.7 | 1202.3 | 1189.0 | 1176.7 |
| 27.5° | 1219.0 | 1214.6 | 1209.0 | 1202.3 | 1194.5 | 1189.0 | 1186.7 | 1173.4 | 1156.6 | 1141.0 | 1129.9 |
| 30° | 1180.0 | 1173.4 | 1167.8 | 1160.0 | 1148.8 | 1143.3 | 1138.8 | 1125.4 | 1111.0 | 1092.0 | 1082.0 |
| 32.5° | 1134.4 | 1129.9 | 1123.2 | 1115.4 | 1104.3 | 1099.8 | 1093.1 | 1076.4 | 1057.5 | 1044.1 | 1028.5 |
| 35° | 1090.9 | 1086.4 | 1076.4 | 1068.6 | 1053.0 | 1048.6 | 1041.9 | 1027.4 | 1006.2 | 990.6 | 977.2 |
| 37.5° | 1043.0 | 1037.4 | 1029.6 | 1018.5 | 1005.1 | 999.5 | 990.6 | 976.1 | 951.6 | 936.0 | 919.3 |
| 40° | 996.2 | 988.4 | 979.5 | 967.2 | 953.8 | 948.3 | 940.5 | 919.3 | 899.2 | 881.4 | 866.9 |
| 42.5° | 949.4 | 940.5 | 929.3 | 918.2 | 903.7 | 895.9 | 887.0 | 866.9 | 844.6 | 827.9 | 807.9 |
| 45° | 897.0 | 890.3 | 879.2 | 865.8 | 849.1 | 843.5 | 833.5 | 812.3 | 790.0 | 772.2 | 752.1 |
| 47.5° | 845.8 | 838.0 | 826.8 | 813.4 | 796.7 | 788.9 | 778.9 | 757.7 | 735.4 | 713.1 | 695.3 |
| 50° | 793.4 | 785.6 | 772.2 | 758.8 | 743.2 | 733.2 | 724.3 | 703.1 | 678.6 | 658.5 | 636.3 |
| 52.5° | 737.7 | 731.0 | 719.8 | 706.5 | 686.4 | 678.6 | 669.7 | 646.3 | 622.9 | 599.5 | 579.4 |
| 55° | 684.2 | 679.7 | 666.3 | 653.0 | 631.8 | 622.9 | 614.0 | 589.5 | 566.1 | 542.7 | 523.7 |
| 57.5° | 628.5 | 625.1 | 611.7 | 596.1 | 577.2 | 568.3 | 557.1 | 532.6 | 510.3 | 486.9 | 466.9 |
| 60° | 572.7 | 569.4 | 556.0 | 540.4 | 522.6 | 511.5 | 499.2 | 480.3 | 454.6 | 433.5 | 411.2 |
| 62.5° | 519.3 | 514.8 | 503.7 | 486.9 | 466.9 | 455.7 | 444.6 | 422.3 | 398.9 | 376.6 | 356.6 |
| 65° | 464.7 | 459.1 | 445.7 | 429.0 | 410.1 | 400.0 | 388.9 | 367.7 | 344.3 | 323.1 | 304.2 |
| 67.5° | 410.1 | 404.5 | 390.0 | 376.6 | 354.3 | 344.3 | 334.3 | 313.1 | 290.8 | 269.7 | 251.8 |
| 70° | 354.3 | 348.8 | 337.6 | 319.8 | 300.9 | 290.8 | 280.8 | 258.5 | 238.5 | 222.9 | 206.1 |
| 72.5° | 299.7 | 295.3 | 284.1 | 267.4 | 249.6 | 239.6 | 228.4 | 209.5 | 191.7 | 174.9 | 162.7 |
| 75° | 247.4 | 240.7 | 230.7 | 215.1 | 197.2 | 188.3 | 180.5 | 161.6 | 144.9 | 133.7 | 123.7 |
| 77.5° | 197.2 | 189.4 | 178.3 | 166.0 | 149.3 | 140.4 | 132.6 | 117.0 | 105.9 | 98.1 | 95.8 |
| 80° | 144.9 | 143.7 | 132.6 | 119.2 | 104.7 | 98.1 | 90.3 | 80.2 | 76.9 | 75.8 | 73.5 |
| 82.5° | 101.4 | 96.9 | 88.0 | 75.8 | 64.6 | 60.2 | 57.9 | 55.7 | 53.5 | 53.5 | 51.3 |
| 85° | 61.3 | 56.8 | 49.0 | 39.0 | 36.8 | 35.7 | 34.5 | 34.5 | 33.4 | 32.3 | 32.3 |
| 87.5° | 26.7 | 22.3 | 16.7 | 15.6 | 14.5 | 14.5 | 15.6 | 15.6 | 15.6 | 14.5 | 14.5 |
| 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° | 1450.8 | 1450.8 | 1450.8 | 1450.8 | 1450.8 | 1450.8 | 1450.8 | 1450.8 | 1450.8 | 1450.8 |
| 2.5° | 1439.7 | 1445.2 | 1448.6 | 1449.7 | 1449.7 | 1449.7 | 1450.8 | 1450.8 | 1449.7 | 1448.6 |
| 5° | 1431.9 | 1437.4 | 1439.7 | 1441.9 | 1441.9 | 1441.9 | 1441.9 | 1441.9 | 1440.8 | 1438.6 |
| 7.5° | 1419.6 | 1423.0 | 1426.3 | 1425.2 | 1425.2 | 1424.1 | 1423.0 | 1424.1 | 1421.8 | 1421.8 |
| 10° | 1397.3 | 1400.7 | 1402.9 | 1399.6 | 1399.6 | 1400.7 | 1400.7 | 1399.6 | 1396.2 | 1392.9 |
| 12.5° | 1371.7 | 1375.0 | 1371.7 | 1372.8 | 1370.6 | 1368.4 | 1367.2 | 1366.1 | 1362.8 | 1360.6 |
| 15° | 1338.3 | 1338.3 | 1336.0 | 1336.0 | 1332.7 | 1328.2 | 1327.1 | 1328.2 | 1323.8 | 1323.8 |
| 17.5° | 1301.5 | 1299.3 | 1295.9 | 1293.7 | 1292.6 | 1292.6 | 1288.1 | 1288.1 | 1282.6 | 1281.4 |
| 20° | 1261.4 | 1259.2 | 1255.8 | 1250.2 | 1248.0 | 1249.1 | 1244.7 | 1241.3 | 1238.0 | 1236.9 |
| 22.5° | 1219.0 | 1213.5 | 1210.1 | 1204.6 | 1200.1 | 1200.1 | 1196.8 | 1191.2 | 1187.8 | 1184.5 |
| 25° | 1171.1 | 1165.6 | 1158.9 | 1154.4 | 1151.1 | 1145.5 | 1143.3 | 1138.8 | 1135.5 | 1134.4 |
| 27.5° | 1122.1 | 1113.2 | 1104.3 | 1099.8 | 1097.6 | 1090.9 | 1087.6 | 1085.3 | 1078.6 | 1077.5 |
| 30° | 1069.7 | 1063.0 | 1051.9 | 1044.1 | 1038.5 | 1039.6 | 1031.8 | 1027.4 | 1024.0 | 1020.7 |
| 32.5° | 1019.6 | 1008.4 | 997.3 | 987.3 | 980.6 | 979.5 | 971.7 | 967.2 | 963.9 | 960.5 |
| 35° | 962.8 | 951.6 | 938.2 | 929.3 | 922.6 | 919.3 | 911.5 | 909.3 | 903.7 | 901.5 |
| 37.5° | 905.9 | 893.7 | 880.3 | 869.2 | 864.7 | 856.9 | 853.6 | 848.0 | 843.5 | 843.5 |
| 40° | 850.2 | 835.7 | 822.4 | 809.0 | 803.4 | 799.0 | 790.0 | 785.6 | 780.0 | 776.7 |
| 42.5° | 792.3 | 775.5 | 763.3 | 751.0 | 743.2 | 739.9 | 729.9 | 724.3 | 718.7 | 717.6 |
| 45° | 734.3 | 717.6 | 702.0 | 689.7 | 686.4 | 679.7 | 669.7 | 661.9 | 660.8 | 659.7 |
| 47.5° | 675.3 | 658.5 | 644.1 | 630.7 | 626.2 | 618.4 | 611.7 | 606.2 | 599.5 | 596.1 |
| 50° | 618.4 | 601.7 | 586.1 | 571.6 | 566.1 | 559.4 | 552.7 | 544.9 | 542.7 | 539.3 |
| 52.5° | 561.6 | 542.7 | 525.9 | 512.6 | 508.1 | 502.5 | 494.7 | 488.1 | 484.7 | 482.5 |
| 55° | 503.7 | 484.7 | 470.2 | 456.9 | 451.3 | 447.9 | 439.0 | 433.5 | 429.0 | 426.8 |
| 57.5° | 446.8 | 427.9 | 414.5 | 404.5 | 396.7 | 393.3 | 384.4 | 378.9 | 376.6 | 375.5 |
| 60° | 393.3 | 375.5 | 361.0 | 351.0 | 344.3 | 341.0 | 334.3 | 328.7 | 325.4 | 324.3 |
| 62.5° | 339.9 | 324.3 | 310.9 | 300.9 | 296.4 | 291.9 | 286.4 | 281.9 | 278.6 | 278.6 |
| 65° | 288.6 | 273.0 | 260.7 | 252.9 | 248.5 | 246.3 | 239.6 | 237.3 | 234.0 | 234.0 |
| 67.5° | 238.5 | 227.3 | 218.4 | 208.4 | 205.0 | 205.0 | 198.3 | 196.1 | 193.9 | 193.9 |
| 70° | 195.0 | 185.0 | 174.9 | 169.4 | 166.0 | 164.9 | 159.3 | 156.0 | 153.8 | 151.5 |
| 72.5° | 152.7 | 143.7 | 134.8 | 133.7 | 133.7 | 132.6 | 132.6 | 130.4 | 130.4 | 131.5 |
| 75° | 117.0 | 114.8 | 112.5 | 112.5 | 111.4 | 110.3 | 110.3 | 109.2 | 109.2 | 109.2 |
| 77.5° | 93.6 | 92.5 | 91.4 | 90.3 | 90.3 | 89.1 | 88.0 | 88.0 | 88.0 | 88.0 |
| 80° | 71.3 | 70.2 | 70.2 | 69.1 | 68.0 | 69.1 | 68.0 | 68.0 | 66.9 | 66.9 |
| 82.5° | 50.1 | 50.1 | 50.1 | 49.0 | 49.0 | 49.0 | 49.0 | 47.9 | 47.9 | 49.0 |
| 85° | 31.2 | 31.2 | 31.2 | 31.2 | 30.1 | 31.2 | 30.1 | 30.1 | 30.1 | 31.2 |
| 87.5° | 13.4 | 14.5 | 13.4 | 14.5 | 14.5 | 13.4 | 13.4 | 13.4 | 13.4 | 13.4 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)