

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: RSA

Report Number: P219631

Luminaire Tested: **MRZ-1-REC-X-4-L27-97-NFL-UNV-X-STD-LSL**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P219631
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P14872)
Test Lab: INNOVATION CENTER (G1)
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: RSA
Catalog Number: MRZ-1-REC-X-4-L27-97-NFL-UNV-X-STD-LSL
Description: MRZ INTEGRAL LED DOWNLIGHT
25 DEGREE NARROW FLOOD OPTIC WITH LINEAR SPREAD LENS, LIGHT LEVEL 4
Light Source: (1) 2700K CCT, 97 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 905.4 lumens
Efficiency: N/A
Efficacy: 57.3 lumens/watt
Spacing Criteria (0/90/45): 0.4 / 0.87 / 0.54
Luminous Opening: Circular (Dia: 0.17' x H: 0')
CIE Type: Direct

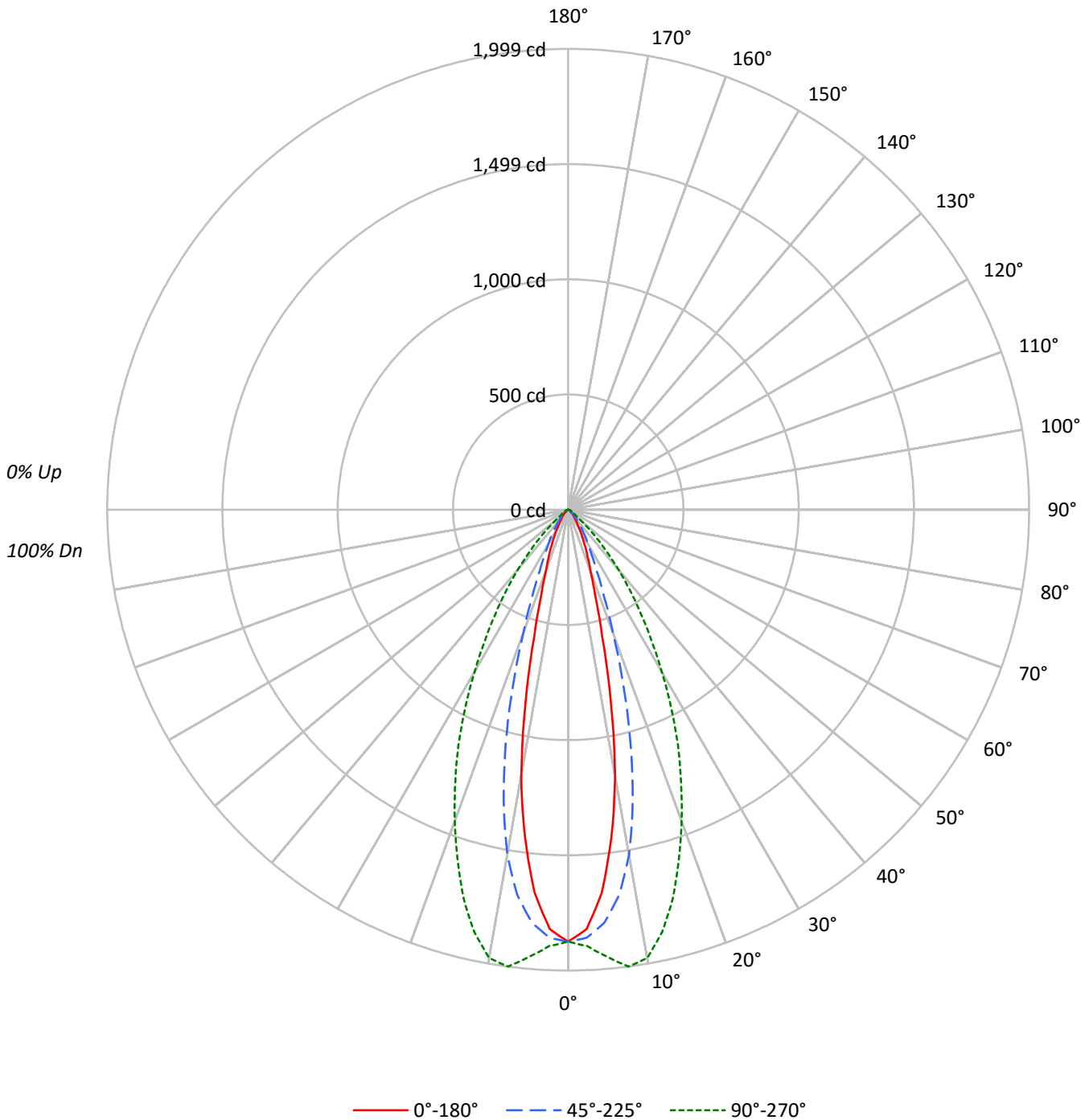
Input Watts (W): 15.8
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P219631

CATALOG NUMBER: MRZ-1-REC-X-4-L27-97-NFL-UNV-X-STD-LSL

Luminous Intensity Polar Plot





TEST NUMBER: P219631

CATALOG NUMBER: MRZ-1-REC-X-4-L27-97-NFL-UNV-X-STD-LSL

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 | 100 | 100 | 100 | 100 | 100 | | |
| 1 | 114 | 111 | 109 | 107 | 111 | 109 | 107 | 105 | 105 | 103 | 102 | 101 | 100 | 99 | 98 | 97 | 96 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | | |
| 2 | 109 | 104 | 100 | 97 | 106 | 102 | 99 | 96 | 99 | 96 | 94 | 96 | 94 | 92 | 93 | 92 | 90 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | | |
| 3 | 104 | 98 | 93 | 89 | 102 | 96 | 92 | 88 | 94 | 90 | 87 | 91 | 88 | 86 | 89 | 87 | 84 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | | |
| 4 | 99 | 92 | 87 | 83 | 97 | 91 | 86 | 82 | 89 | 85 | 81 | 87 | 83 | 80 | 85 | 82 | 80 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | | |
| 5 | 95 | 87 | 81 | 77 | 93 | 86 | 81 | 77 | 84 | 80 | 76 | 83 | 79 | 76 | 81 | 78 | 75 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | | |
| 6 | 90 | 82 | 77 | 73 | 89 | 81 | 76 | 72 | 80 | 75 | 72 | 79 | 75 | 72 | 77 | 74 | 71 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | | |
| 7 | 87 | 78 | 72 | 69 | 85 | 77 | 72 | 68 | 76 | 71 | 68 | 75 | 71 | 68 | 74 | 70 | 67 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | | |
| 8 | 83 | 74 | 69 | 65 | 82 | 74 | 68 | 65 | 73 | 68 | 65 | 72 | 67 | 64 | 71 | 67 | 64 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | | |
| 9 | 80 | 71 | 65 | 62 | 79 | 70 | 65 | 62 | 69 | 65 | 61 | 69 | 64 | 61 | 68 | 64 | 61 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | | |
| 10 | 77 | 68 | 62 | 59 | 76 | 67 | 62 | 59 | 66 | 62 | 59 | 66 | 61 | 58 | 65 | 61 | 58 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | | |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|--------|--------|--------|
| 0° | 924396 | 924396 | 924396 |
| 5° | 825952 | 890535 | 964626 |
| 10° | 586911 | 761155 | 989256 |
| 15° | 290023 | 533054 | 893617 |
| 20° | 148377 | 296807 | 755380 |
| 25° | 93307 | 159450 | 612650 |
| 30° | 56116 | 97648 | 462658 |
| 35° | 36199 | 63182 | 330425 |
| 40° | 25505 | 41156 | 218272 |
| 45° | 19607 | 28538 | 122245 |
| 50° | 11744 | 19650 | 52041 |
| 55° | 8774 | 13161 | 27526 |
| 60° | 7598 | 8881 | 17663 |
| 65° | 7472 | 7472 | 14943 |
| 70° | 7357 | 5482 | 20340 |
| 75° | 7244 | 4956 | 14678 |
| 80° | 3694 | 3694 | 7387 |
| 85° | 0 | 0 | 0 |



TEST NUMBER: P219631

CATALOG NUMBER: MRZ-1-REC-X-4-L27-97-NFL-UNV-X-STD-LSL

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 164.1 | 18.1 |
| 10°-20° | 306.0 | 33.8 |
| 20°-30° | 229.7 | 25.4 |
| 30°-40° | 126.3 | 14.0 |
| 40°-50° | 51.2 | 5.7 |
| 50°-60° | 16.3 | 1.8 |
| 60°-70° | 7.7 | 0.9 |
| 70°-80° | 3.8 | 0.4 |
| 80°-90° | 0.2 | 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° | 699.8 | 77.3 |
| 0°-40° | 826.1 | 91.2 |
| 0°-60° | 893.6 | 98.7 |
| 0°-90° | 905.4 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 905.4 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 1874 | 1874 | 1874 | 1874 | 1874 | |
| 5° | 1668 | 1706 | 1798 | 1904 | 1948 | 143 |
| 15° | 568 | 668 | 1044 | 1553 | 1750 | 166 |
| 25° | 171 | 192 | 293 | 854 | 1125 | 80 |
| 35° | 60 | 72 | 105 | 317 | 549 | 39 |
| 45° | 28 | 27 | 41 | 78 | 175 | 21 |
| 55° | 10 | 12 | 15 | 19 | 32 | 10 |
| 65° | 6 | 8 | 6 | 8 | 13 | 7 |
| 75° | 4 | 3 | 3 | 3 | 8 | 4 |
| 85° | 0 | 0 | 0 | 0 | 0 | 0 |
| 90° | 0 | 0 | 0 | 0 | 0 | 0 |



TEST NUMBER: P219631

CATALOG NUMBER: MRZ-1-REC-X-4-L27-97-NFL-UNV-X-STD-LSL

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 10° | 15° | 20° | 22.5° | 25° | 30° | 35° | 40° | 45° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1873.6 | 1873.6 | 1873.6 | 1873.6 | 1873.6 | 1873.6 | 1873.6 | 1873.6 | 1873.6 | 1873.6 | 1873.6 |
| 2.5° | 1821.1 | 1821.1 | 1819.9 | 1823.7 | 1831.4 | 1831.4 | 1835.2 | 1839.0 | 1842.9 | 1850.5 | 1858.2 |
| 5° | 1667.7 | 1670.2 | 1668.9 | 1683.0 | 1693.2 | 1706.0 | 1709.9 | 1731.6 | 1748.2 | 1773.8 | 1798.1 |
| 7.5° | 1434.9 | 1436.2 | 1447.7 | 1464.3 | 1489.9 | 1504.0 | 1523.2 | 1553.8 | 1590.9 | 1639.5 | 1686.8 |
| 10° | 1171.5 | 1171.5 | 1189.4 | 1213.7 | 1234.1 | 1262.3 | 1276.3 | 1326.2 | 1379.9 | 1447.7 | 1519.3 |
| 12.5° | 853.0 | 853.0 | 883.7 | 901.6 | 938.7 | 963.0 | 983.5 | 1041.0 | 1111.4 | 1198.3 | 1293.0 |
| 15° | 567.8 | 578.1 | 589.6 | 613.9 | 647.1 | 667.6 | 681.6 | 740.5 | 823.6 | 920.8 | 1043.6 |
| 17.5° | 386.2 | 392.6 | 400.3 | 419.5 | 436.1 | 446.3 | 459.1 | 509.0 | 569.1 | 663.7 | 792.9 |
| 20° | 282.6 | 289.0 | 295.4 | 304.4 | 314.6 | 319.7 | 328.7 | 354.3 | 397.7 | 464.2 | 565.3 |
| 22.5° | 218.7 | 223.8 | 228.9 | 234.0 | 241.7 | 245.5 | 250.7 | 267.3 | 290.3 | 332.5 | 405.4 |
| 25° | 171.4 | 171.4 | 177.8 | 181.6 | 188.0 | 191.8 | 198.2 | 209.7 | 227.6 | 251.9 | 292.9 |
| 27.5° | 130.4 | 131.7 | 135.6 | 140.7 | 145.8 | 149.6 | 156.0 | 166.3 | 177.8 | 194.4 | 220.0 |
| 30° | 98.5 | 101.0 | 103.6 | 107.4 | 113.8 | 117.7 | 121.5 | 130.4 | 140.7 | 153.5 | 171.4 |
| 32.5° | 75.5 | 78.0 | 79.3 | 83.1 | 88.2 | 90.8 | 94.6 | 102.3 | 111.3 | 124.1 | 135.6 |
| 35° | 60.1 | 60.1 | 62.7 | 63.9 | 69.1 | 71.6 | 74.2 | 79.3 | 88.2 | 95.9 | 104.9 |
| 37.5° | 47.3 | 48.6 | 49.9 | 51.2 | 55.0 | 56.3 | 57.5 | 61.4 | 66.5 | 74.2 | 81.8 |
| 40° | 39.6 | 40.9 | 40.9 | 40.9 | 42.2 | 42.2 | 43.5 | 46.0 | 51.2 | 56.3 | 63.9 |
| 42.5° | 33.3 | 33.3 | 33.3 | 33.3 | 33.3 | 33.3 | 34.5 | 35.8 | 39.6 | 44.8 | 51.2 |
| 45° | 28.1 | 26.9 | 26.9 | 26.9 | 26.9 | 26.9 | 26.9 | 29.4 | 32.0 | 35.8 | 40.9 |
| 47.5° | 20.5 | 21.7 | 21.7 | 21.7 | 21.7 | 21.7 | 23.0 | 23.0 | 25.6 | 29.4 | 32.0 |
| 50° | 15.3 | 16.6 | 16.6 | 17.9 | 17.9 | 17.9 | 17.9 | 19.2 | 21.7 | 24.3 | 25.6 |
| 52.5° | 12.8 | 12.8 | 12.8 | 14.1 | 14.1 | 14.1 | 14.1 | 15.3 | 17.9 | 19.2 | 20.5 |
| 55° | 10.2 | 10.2 | 10.2 | 10.2 | 11.5 | 11.5 | 12.8 | 14.1 | 15.3 | 15.3 | 15.3 |
| 57.5° | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 10.2 | 10.2 | 11.5 | 12.8 | 11.5 | 11.5 |
| 60° | 7.7 | 7.7 | 7.7 | 7.7 | 7.7 | 9.0 | 9.0 | 10.2 | 9.0 | 9.0 | 9.0 |
| 62.5° | 7.7 | 7.7 | 6.4 | 6.4 | 7.7 | 7.7 | 7.7 | 7.7 | 7.7 | 7.7 | 6.4 |
| 65° | 6.4 | 6.4 | 6.4 | 6.4 | 6.4 | 7.7 | 7.7 | 6.4 | 6.4 | 5.1 | 6.4 |
| 67.5° | 6.4 | 6.4 | 5.1 | 6.4 | 6.4 | 6.4 | 6.4 | 5.1 | 5.1 | 5.1 | 5.1 |
| 70° | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 3.8 | 3.8 | 3.8 | 3.8 |
| 72.5° | 3.8 | 3.8 | 3.8 | 5.1 | 3.8 | 3.8 | 3.8 | 3.8 | 3.8 | 3.8 | 3.8 |
| 75° | 3.8 | 3.8 | 3.8 | 3.8 | 3.8 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 |
| 77.5° | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 1.3 | 1.3 |
| 80° | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 |
| 82.5° | 0.0 | 1.3 | 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 |



TEST NUMBER: P219631

CATALOG NUMBER: MRZ-1-REC-X-4-L27-97-NFL-UNV-X-STD-LSL

CANDELA DISTRIBUTION (continued):

| | 50° | 55° | 60° | 65° | 67.5° | 70° | 75° | 80° | 85° | 90° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1873.6 | 1873.6 | 1873.6 | 1873.6 | 1873.6 | 1873.6 | 1873.6 | 1873.6 | 1873.6 | 1873.6 |
| 2.5° | 1864.6 | 1869.7 | 1876.1 | 1882.5 | 1885.1 | 1887.6 | 1891.5 | 1894.0 | 1895.3 | 1895.3 |
| 5° | 1823.7 | 1849.3 | 1873.6 | 1894.0 | 1904.3 | 1913.2 | 1928.6 | 1938.8 | 1947.7 | 1947.7 |
| 7.5° | 1736.7 | 1790.4 | 1840.3 | 1883.8 | 1903.0 | 1923.4 | 1955.4 | 1979.7 | 1992.5 | 1998.9 |
| 10° | 1594.8 | 1675.3 | 1750.8 | 1817.3 | 1848.0 | 1873.6 | 1919.6 | 1951.6 | 1966.9 | 1974.6 |
| 12.5° | 1401.7 | 1507.8 | 1603.7 | 1686.8 | 1723.9 | 1754.6 | 1801.9 | 1844.2 | 1865.9 | 1877.4 |
| 15° | 1176.6 | 1301.9 | 1415.7 | 1510.4 | 1552.6 | 1590.9 | 1653.6 | 1704.8 | 1735.4 | 1749.5 |
| 17.5° | 938.7 | 1093.4 | 1222.6 | 1331.3 | 1369.7 | 1411.9 | 1484.8 | 1543.6 | 1584.5 | 1594.8 |
| 20° | 718.7 | 886.3 | 1033.3 | 1145.9 | 1190.6 | 1232.8 | 1314.7 | 1377.4 | 1422.1 | 1438.7 |
| 22.5° | 523.1 | 685.5 | 847.9 | 968.1 | 1019.3 | 1065.3 | 1147.2 | 1214.9 | 1262.3 | 1278.9 |
| 25° | 373.4 | 505.2 | 666.3 | 803.1 | 854.3 | 900.3 | 982.2 | 1051.2 | 1099.8 | 1125.4 |
| 27.5° | 272.4 | 361.9 | 503.9 | 644.6 | 699.6 | 748.1 | 823.6 | 895.2 | 941.3 | 965.6 |
| 30° | 199.5 | 258.3 | 364.5 | 501.3 | 561.4 | 608.7 | 689.3 | 749.4 | 799.3 | 812.1 |
| 32.5° | 152.2 | 185.4 | 258.3 | 369.6 | 431.0 | 480.9 | 558.9 | 616.4 | 656.1 | 670.1 |
| 35° | 116.4 | 136.8 | 180.3 | 264.7 | 317.2 | 368.3 | 442.5 | 501.3 | 535.9 | 548.6 |
| 37.5° | 90.8 | 104.9 | 130.4 | 186.7 | 227.6 | 272.4 | 345.3 | 393.9 | 422.0 | 438.7 |
| 40° | 72.9 | 83.1 | 99.8 | 133.0 | 161.1 | 194.4 | 255.8 | 301.8 | 330.0 | 338.9 |
| 42.5° | 58.8 | 66.5 | 75.5 | 94.6 | 113.8 | 138.1 | 188.0 | 220.0 | 243.0 | 248.1 |
| 45° | 46.0 | 51.2 | 61.4 | 70.3 | 78.0 | 90.8 | 125.3 | 154.7 | 168.8 | 175.2 |
| 47.5° | 37.1 | 43.5 | 43.5 | 48.6 | 53.7 | 62.7 | 84.4 | 101.0 | 111.3 | 113.8 |
| 50° | 28.1 | 29.4 | 32.0 | 34.5 | 37.1 | 39.6 | 51.2 | 61.4 | 67.8 | 67.8 |
| 52.5° | 20.5 | 21.7 | 21.7 | 23.0 | 24.3 | 26.9 | 33.3 | 38.4 | 42.2 | 43.5 |
| 55° | 15.3 | 15.3 | 16.6 | 17.9 | 19.2 | 20.5 | 24.3 | 29.4 | 30.7 | 32.0 |
| 57.5° | 11.5 | 11.5 | 12.8 | 14.1 | 15.3 | 15.3 | 19.2 | 21.7 | 24.3 | 26.9 |
| 60° | 9.0 | 9.0 | 10.2 | 10.2 | 11.5 | 12.8 | 16.6 | 17.9 | 17.9 | 17.9 |
| 62.5° | 7.7 | 7.7 | 7.7 | 9.0 | 9.0 | 9.0 | 11.5 | 15.3 | 16.6 | 16.6 |
| 65° | 6.4 | 6.4 | 6.4 | 6.4 | 7.7 | 7.7 | 9.0 | 10.2 | 12.8 | 12.8 |
| 67.5° | 5.1 | 5.1 | 5.1 | 5.1 | 6.4 | 6.4 | 9.0 | 10.2 | 12.8 | 14.1 |
| 70° | 3.8 | 3.8 | 3.8 | 5.1 | 5.1 | 6.4 | 7.7 | 10.2 | 12.8 | 14.1 |
| 72.5° | 2.6 | 2.6 | 3.8 | 3.8 | 3.8 | 5.1 | 6.4 | 7.7 | 9.0 | 9.0 |
| 75° | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 3.8 | 6.4 | 6.4 | 7.7 |
| 77.5° | 2.6 | 2.6 | 1.3 | 2.6 | 2.6 | 2.6 | 2.6 | 3.8 | 5.1 | 5.1 |
| 80° | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 2.6 |
| 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 |

(END OF REPORT)