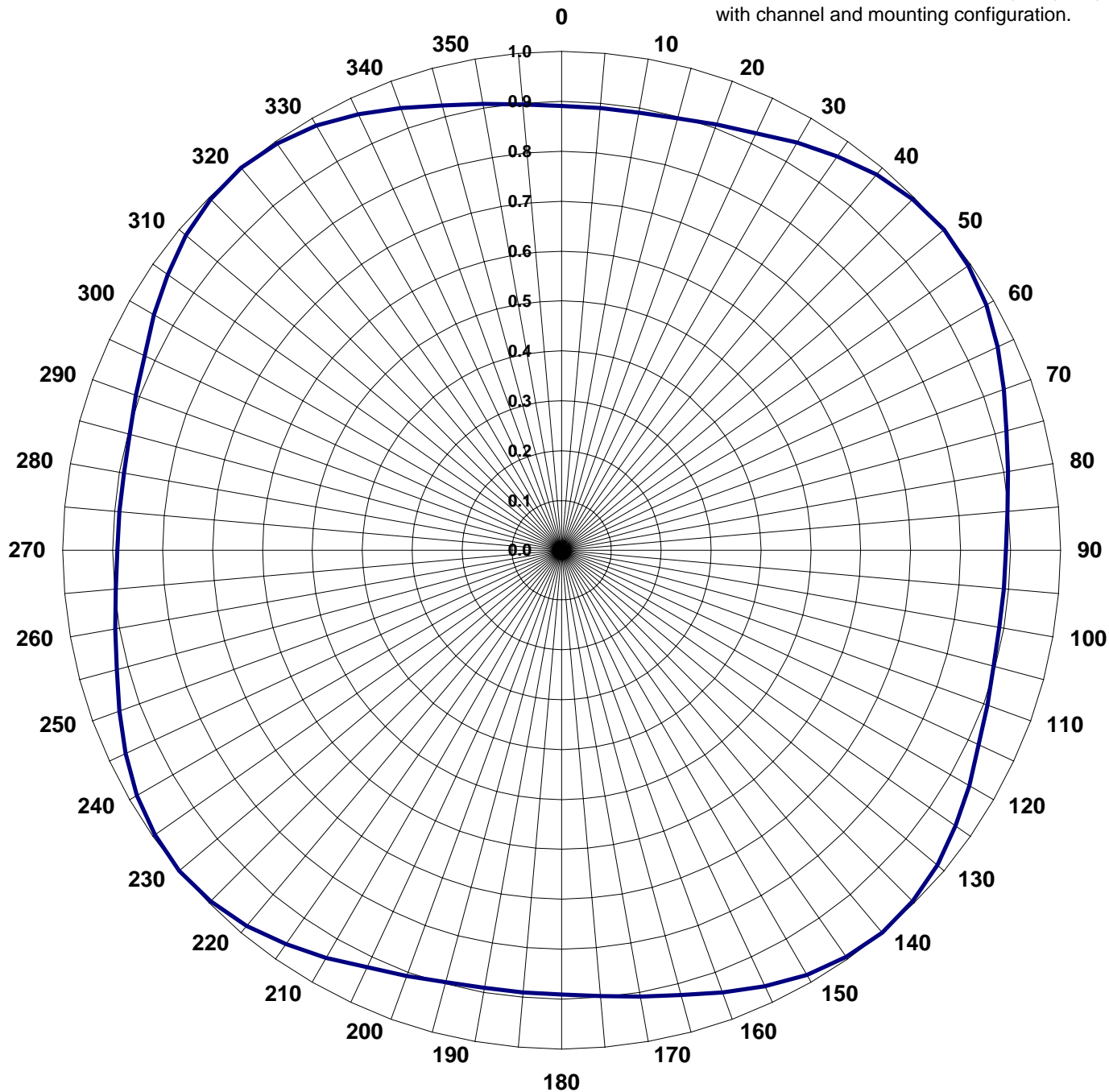


AZIMUTH PATTERN

| | | |
|----------------------|---------------------|-------------|
| TYPE: | CH29HAZ-OX | |
| | Numeric | dB |
| Directivity: | 1.10 | 0.41 |
| Peak(s) at: | | |
| | | |
| Polarization: | Horizontal | |
| Frequency: | 29 (Digital) | |
| Location: | Utica, NY | |

Note: Pattern shape and directivity may vary with channel and mounting configuration.



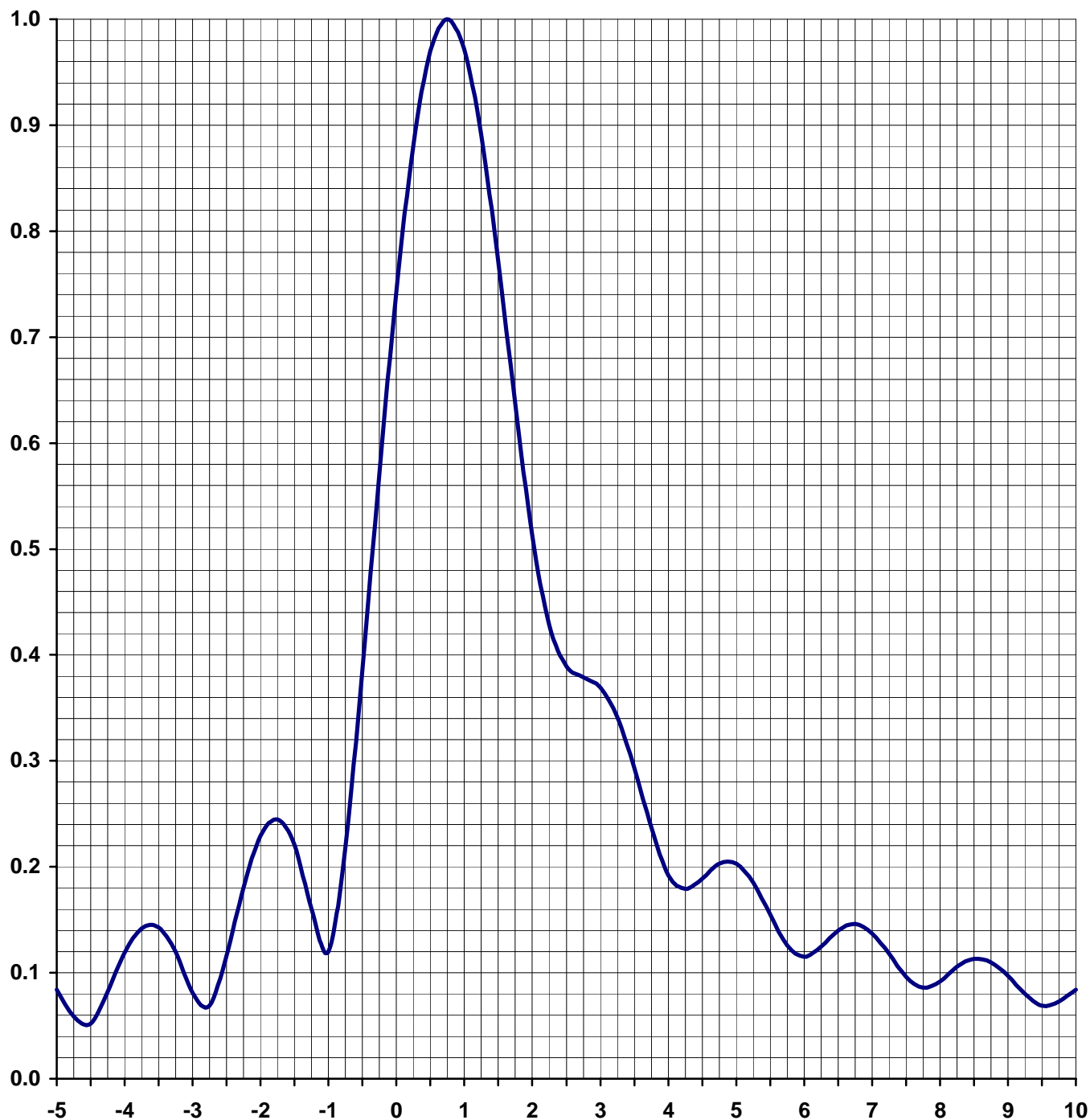
TABULATED DATA FOR AZIMUTH PATTERN

TYPE: CH29HAZ-OX

| ANGLE | FIELD | dB | ANGLE | FIELD | dB | ANGLE | FIELD | dB | ANGLE | FIELD | dB |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0 | 0.891 | -1.00 | 92 | 0.890 | -1.01 | 184 | 0.889 | -1.02 | 276 | 0.889 | -1.02 |
| 2 | 0.890 | -1.01 | 94 | 0.889 | -1.02 | 186 | 0.889 | -1.02 | 278 | 0.890 | -1.01 |
| 4 | 0.889 | -1.02 | 96 | 0.889 | -1.02 | 188 | 0.890 | -1.01 | 280 | 0.891 | -1.00 |
| 6 | 0.889 | -1.02 | 98 | 0.890 | -1.01 | 190 | 0.891 | -1.00 | 282 | 0.893 | -0.98 |
| 8 | 0.890 | -1.01 | 100 | 0.891 | -1.00 | 192 | 0.893 | -0.98 | 284 | 0.895 | -0.96 |
| 10 | 0.891 | -1.00 | 102 | 0.893 | -0.98 | 194 | 0.895 | -0.96 | 286 | 0.899 | -0.92 |
| 12 | 0.893 | -0.98 | 104 | 0.895 | -0.96 | 196 | 0.899 | -0.92 | 288 | 0.903 | -0.89 |
| 14 | 0.895 | -0.96 | 106 | 0.899 | -0.92 | 198 | 0.903 | -0.89 | 290 | 0.908 | -0.84 |
| 16 | 0.899 | -0.92 | 108 | 0.903 | -0.89 | 200 | 0.908 | -0.84 | 292 | 0.913 | -0.79 |
| 18 | 0.903 | -0.89 | 110 | 0.908 | -0.84 | 202 | 0.913 | -0.79 | 294 | 0.920 | -0.72 |
| 20 | 0.908 | -0.84 | 112 | 0.913 | -0.79 | 204 | 0.920 | -0.72 | 296 | 0.927 | -0.66 |
| 22 | 0.913 | -0.79 | 114 | 0.920 | -0.72 | 206 | 0.927 | -0.66 | 298 | 0.935 | -0.58 |
| 24 | 0.920 | -0.72 | 116 | 0.927 | -0.66 | 208 | 0.935 | -0.58 | 300 | 0.943 | -0.51 |
| 26 | 0.927 | -0.66 | 118 | 0.935 | -0.58 | 210 | 0.943 | -0.51 | 302 | 0.951 | -0.44 |
| 28 | 0.935 | -0.58 | 120 | 0.943 | -0.51 | 212 | 0.951 | -0.44 | 304 | 0.960 | -0.35 |
| 30 | 0.943 | -0.51 | 122 | 0.951 | -0.44 | 214 | 0.960 | -0.35 | 306 | 0.968 | -0.28 |
| 32 | 0.951 | -0.44 | 124 | 0.960 | -0.35 | 216 | 0.968 | -0.28 | 308 | 0.975 | -0.22 |
| 34 | 0.960 | -0.35 | 126 | 0.968 | -0.28 | 218 | 0.975 | -0.22 | 310 | 0.982 | -0.16 |
| 36 | 0.968 | -0.28 | 128 | 0.975 | -0.22 | 220 | 0.982 | -0.16 | 312 | 0.988 | -0.10 |
| 38 | 0.975 | -0.22 | 130 | 0.982 | -0.16 | 222 | 0.988 | -0.10 | 314 | 0.993 | -0.06 |
| 40 | 0.982 | -0.16 | 132 | 0.988 | -0.10 | 224 | 0.993 | -0.06 | 316 | 0.997 | -0.03 |
| 42 | 0.988 | -0.10 | 134 | 0.993 | -0.06 | 226 | 0.997 | -0.03 | 318 | 0.999 | -0.01 |
| 44 | 0.993 | -0.06 | 136 | 0.997 | -0.03 | 228 | 0.999 | -0.01 | 320 | 1.000 | 0.00 |
| 46 | 0.997 | -0.03 | 138 | 0.999 | -0.01 | 230 | 1.000 | 0.00 | 322 | 0.999 | -0.01 |
| 48 | 0.999 | -0.01 | 140 | 1.000 | 0.00 | 232 | 0.999 | -0.01 | 324 | 0.997 | -0.03 |
| 50 | 1.000 | 0.00 | 142 | 0.999 | -0.01 | 234 | 0.997 | -0.03 | 326 | 0.993 | -0.06 |
| 52 | 0.999 | -0.01 | 144 | 0.997 | -0.03 | 236 | 0.993 | -0.06 | 328 | 0.988 | -0.10 |
| 54 | 0.997 | -0.03 | 146 | 0.993 | -0.06 | 238 | 0.988 | -0.10 | 330 | 0.982 | -0.16 |
| 56 | 0.993 | -0.06 | 148 | 0.988 | -0.10 | 240 | 0.982 | -0.16 | 332 | 0.975 | -0.22 |
| 58 | 0.988 | -0.10 | 150 | 0.982 | -0.16 | 242 | 0.975 | -0.22 | 334 | 0.968 | -0.28 |
| 60 | 0.982 | -0.16 | 152 | 0.975 | -0.22 | 244 | 0.968 | -0.28 | 336 | 0.960 | -0.35 |
| 62 | 0.975 | -0.22 | 154 | 0.968 | -0.28 | 246 | 0.960 | -0.35 | 338 | 0.951 | -0.44 |
| 64 | 0.968 | -0.28 | 156 | 0.960 | -0.35 | 248 | 0.951 | -0.44 | 340 | 0.943 | -0.51 |
| 66 | 0.960 | -0.35 | 158 | 0.951 | -0.44 | 250 | 0.943 | -0.51 | 342 | 0.935 | -0.58 |
| 68 | 0.951 | -0.44 | 160 | 0.943 | -0.51 | 252 | 0.935 | -0.58 | 344 | 0.927 | -0.66 |
| 70 | 0.943 | -0.51 | 162 | 0.935 | -0.58 | 254 | 0.927 | -0.66 | 346 | 0.920 | -0.72 |
| 72 | 0.935 | -0.58 | 164 | 0.927 | -0.66 | 256 | 0.920 | -0.72 | 348 | 0.913 | -0.79 |
| 74 | 0.927 | -0.66 | 166 | 0.920 | -0.72 | 258 | 0.913 | -0.79 | 350 | 0.908 | -0.84 |
| 76 | 0.920 | -0.72 | 168 | 0.913 | -0.79 | 260 | 0.908 | -0.84 | 352 | 0.903 | -0.89 |
| 78 | 0.913 | -0.79 | 170 | 0.908 | -0.84 | 262 | 0.903 | -0.89 | 354 | 0.899 | -0.92 |
| 80 | 0.908 | -0.84 | 172 | 0.903 | -0.89 | 264 | 0.899 | -0.92 | 356 | 0.895 | -0.96 |
| 82 | 0.903 | -0.89 | 174 | 0.899 | -0.92 | 266 | 0.895 | -0.96 | 358 | 0.893 | -0.98 |
| 84 | 0.899 | -0.92 | 176 | 0.895 | -0.96 | 268 | 0.893 | -0.98 | 360 | 0.891 | -1.00 |
| 86 | 0.895 | -0.96 | 178 | 0.893 | -0.98 | 270 | 0.891 | -1.00 | | | |
| 88 | 0.893 | -0.98 | 180 | 0.891 | -1.00 | 272 | 0.890 | -1.01 | | | |
| 90 | 0.891 | -1.00 | 182 | 0.890 | -1.01 | 274 | 0.889 | -1.02 | | | |

ELEVATION PATTERN

| | | |
|---------------|--------------|-------|
| TYPE: | ATW28H3H | |
| Directivity: | Numeric | dBd |
| Main Lobe: | 30.00 | 14.77 |
| Horizontal: | 16.52 | 12.18 |
| Beam Tilt: | 0.75 | |
| Polarization: | Horizontal | |
| Frequency: | 29 (Digital) | |
| Location: | Utica, NY | |



TABULATED DATA FOR ELEVATION PATTERN**TYPE: ATW28H3H****-5 to 10 degrees in 0.25 increments****10 to 90 degrees in 0.50 increments**

| ANGLE | FIELD | dB | ANGLE | FIELD | dB | ANGLE | FIELD | dB | ANGLE | FIELD | dB | ANGLE | FIELD | dB |
|-------|-------|--------|-------|-------|--------|-------|-------|--------|-------|-------|--------|-------|-------|--------|
| -5.00 | 0.084 | -21.51 | 6.75 | 0.146 | -16.71 | 27.00 | 0.033 | -29.63 | 50.50 | 0.027 | -31.37 | 74.00 | 0.021 | -33.56 |
| -4.75 | 0.059 | -24.58 | 7.00 | 0.137 | -17.27 | 27.50 | 0.034 | -29.37 | 51.00 | 0.019 | -34.42 | 74.50 | 0.014 | -37.08 |
| -4.50 | 0.052 | -25.68 | 7.25 | 0.118 | -18.56 | 28.00 | 0.024 | -32.40 | 51.50 | 0.012 | -38.42 | 75.00 | 0.007 | -43.10 |
| -4.25 | 0.082 | -21.72 | 7.50 | 0.096 | -20.35 | 28.50 | 0.021 | -33.56 | 52.00 | 0.018 | -34.89 | 75.50 | 0.002 | -53.98 |
| -4.00 | 0.119 | -18.49 | 7.75 | 0.086 | -21.31 | 29.00 | 0.031 | -30.17 | 52.50 | 0.026 | -31.70 | 76.00 | 0.008 | -41.94 |
| -3.75 | 0.142 | -16.95 | 8.00 | 0.092 | -20.72 | 29.50 | 0.033 | -29.63 | 53.00 | 0.029 | -30.75 | 76.50 | 0.015 | -36.48 |
| -3.50 | 0.143 | -16.89 | 8.25 | 0.106 | -19.49 | 30.00 | 0.023 | -32.77 | 53.50 | 0.025 | -32.04 | 77.00 | 0.020 | -33.98 |
| -3.25 | 0.120 | -18.42 | 8.50 | 0.113 | -18.94 | 30.50 | 0.020 | -33.98 | 54.00 | 0.016 | -35.92 | 77.50 | 0.025 | -32.04 |
| -3.00 | 0.081 | -21.83 | 8.75 | 0.110 | -19.17 | 31.00 | 0.030 | -30.46 | 54.50 | 0.011 | -39.17 | 78.00 | 0.029 | -30.75 |
| -2.75 | 0.069 | -23.22 | 9.00 | 0.097 | -20.26 | 31.50 | 0.032 | -29.90 | 55.00 | 0.018 | -34.89 | 78.50 | 0.031 | -30.17 |
| -2.50 | 0.116 | -18.71 | 9.25 | 0.080 | -21.94 | 32.00 | 0.023 | -32.77 | 55.50 | 0.026 | -31.70 | 79.00 | 0.032 | -29.90 |
| -2.25 | 0.180 | -14.89 | 9.50 | 0.069 | -23.22 | 32.50 | 0.018 | -34.89 | 56.00 | 0.029 | -30.75 | 79.50 | 0.032 | -29.90 |
| -2.00 | 0.229 | -12.80 | 9.75 | 0.073 | -22.73 | 33.00 | 0.027 | -31.37 | 56.50 | 0.026 | -31.70 | 80.00 | 0.032 | -29.90 |
| -1.75 | 0.245 | -12.22 | 10.00 | 0.084 | -21.51 | 33.50 | 0.031 | -30.17 | 57.00 | 0.018 | -34.89 | 80.50 | 0.030 | -30.46 |
| -1.50 | 0.221 | -13.11 | 10.50 | 0.092 | -20.72 | 34.00 | 0.024 | -32.40 | 57.50 | 0.010 | -40.00 | 81.00 | 0.028 | -31.06 |
| -1.25 | 0.161 | -15.86 | 11.00 | 0.069 | -23.22 | 34.50 | 0.016 | -35.92 | 58.00 | 0.013 | -37.72 | 81.50 | 0.026 | -31.70 |
| -1.00 | 0.120 | -18.42 | 11.50 | 0.058 | -24.73 | 35.00 | 0.023 | -32.77 | 58.50 | 0.022 | -33.15 | 82.00 | 0.023 | -32.77 |
| -0.75 | 0.218 | -13.23 | 12.00 | 0.076 | -22.38 | 35.50 | 0.030 | -30.46 | 59.00 | 0.028 | -31.06 | 82.50 | 0.021 | -33.56 |
| -0.50 | 0.385 | -8.29 | 12.50 | 0.073 | -22.73 | 36.00 | 0.026 | -31.70 | 59.50 | 0.029 | -30.75 | 83.00 | 0.018 | -34.89 |
| -0.25 | 0.570 | -4.88 | 13.00 | 0.050 | -26.02 | 36.50 | 0.017 | -35.39 | 60.00 | 0.024 | -32.40 | 83.50 | 0.015 | -36.48 |
| 0.00 | 0.742 | -2.59 | 13.50 | 0.055 | -25.19 | 37.00 | 0.018 | -34.89 | 60.50 | 0.016 | -35.92 | 84.00 | 0.012 | -38.42 |
| 0.25 | 0.880 | -1.11 | 14.00 | 0.067 | -23.48 | 37.50 | 0.027 | -31.37 | 61.00 | 0.008 | -41.94 | 84.50 | 0.010 | -40.00 |
| 0.50 | 0.970 | -0.26 | 14.50 | 0.055 | -25.19 | 38.00 | 0.028 | -31.06 | 61.50 | 0.012 | -38.42 | 85.00 | 0.008 | -41.94 |
| 0.75 | 1.000 | 0.00 | 15.00 | 0.039 | -28.18 | 38.50 | 0.020 | -33.98 | 62.00 | 0.021 | -33.56 | 85.50 | 0.006 | -44.44 |
| 1.00 | 0.972 | -0.25 | 15.50 | 0.052 | -25.68 | 39.00 | 0.015 | -36.48 | 62.50 | 0.027 | -31.37 | 86.00 | 0.005 | -46.02 |
| 1.25 | 0.891 | -1.00 | 16.00 | 0.057 | -24.88 | 39.50 | 0.023 | -32.77 | 63.00 | 0.030 | -30.46 | 86.50 | 0.003 | -50.46 |
| 1.50 | 0.772 | -2.25 | 16.50 | 0.042 | -27.54 | 40.00 | 0.029 | -30.75 | 63.50 | 0.027 | -31.37 | 87.00 | 0.002 | -53.98 |
| 1.75 | 0.638 | -3.90 | 17.00 | 0.036 | -28.87 | 40.50 | 0.025 | -32.04 | 64.00 | 0.021 | -33.56 | 87.50 | 0.002 | -53.98 |
| 2.00 | 0.514 | -5.78 | 17.50 | 0.049 | -26.20 | 41.00 | 0.016 | -35.92 | 64.50 | 0.012 | -38.42 | 88.00 | 0.001 | -60.00 |
| 2.25 | 0.429 | -7.35 | 18.00 | 0.048 | -26.38 | 41.50 | 0.017 | -35.39 | 65.00 | 0.005 | -46.02 | 88.50 | 0.001 | -60.00 |
| 2.50 | 0.389 | -8.20 | 18.50 | 0.032 | -29.90 | 42.00 | 0.026 | -31.70 | 65.50 | 0.012 | -38.42 | 89.00 | 0.001 | -60.00 |
| 2.75 | 0.379 | -8.43 | 19.00 | 0.035 | -29.12 | 42.50 | 0.029 | -30.75 | 66.00 | 0.021 | -33.56 | 89.50 | 0.000 | --- |
| 3.00 | 0.369 | -8.66 | 19.50 | 0.046 | -26.74 | 43.00 | 0.023 | -32.77 | 66.50 | 0.027 | -31.37 | 90.00 | 0.000 | --- |
| 3.25 | 0.341 | -9.34 | 20.00 | 0.040 | -27.96 | 43.50 | 0.014 | -37.08 | 67.00 | 0.030 | -30.46 | | | |
| 3.50 | 0.293 | -10.66 | 20.50 | 0.027 | -31.37 | 44.00 | 0.018 | -34.89 | 67.50 | 0.030 | -30.46 | | | |
| 3.75 | 0.237 | -12.51 | 21.00 | 0.035 | -29.12 | 44.50 | 0.026 | -31.70 | 68.00 | 0.026 | -31.70 | | | |
| 4.00 | 0.192 | -14.33 | 21.50 | 0.042 | -27.54 | 45.00 | 0.028 | -31.06 | 68.50 | 0.019 | -34.42 | | | |
| 4.25 | 0.179 | -14.94 | 22.00 | 0.033 | -29.63 | 45.50 | 0.022 | -33.15 | 69.00 | 0.011 | -39.17 | | | |
| 4.50 | 0.189 | -14.47 | 22.50 | 0.025 | -32.04 | 46.00 | 0.013 | -37.72 | 69.50 | 0.002 | -53.98 | | | |
| 4.75 | 0.203 | -13.85 | 23.00 | 0.035 | -29.12 | 46.50 | 0.018 | -34.89 | 70.00 | 0.009 | -40.92 | | | |
| 5.00 | 0.203 | -13.85 | 23.50 | 0.039 | -28.18 | 47.00 | 0.026 | -31.70 | 70.50 | 0.018 | -34.89 | | | |
| 5.25 | 0.185 | -14.66 | 24.00 | 0.029 | -30.75 | 47.50 | 0.029 | -30.75 | 71.00 | 0.025 | -32.04 | | | |
| 5.50 | 0.155 | -16.19 | 24.50 | 0.023 | -32.77 | 48.00 | 0.024 | -32.40 | 71.50 | 0.030 | -30.46 | | | |
| 5.75 | 0.126 | -17.99 | 25.00 | 0.034 | -29.37 | 48.50 | 0.015 | -36.48 | 72.00 | 0.032 | -29.90 | | | |
| 6.00 | 0.115 | -18.79 | 25.50 | 0.037 | -28.64 | 49.00 | 0.015 | -36.48 | 72.50 | 0.032 | -29.90 | | | |
| 6.25 | 0.125 | -18.06 | 26.00 | 0.026 | -31.70 | 49.50 | 0.024 | -32.40 | 73.00 | 0.030 | -30.46 | | | |
| 6.50 | 0.140 | -17.08 | 26.50 | 0.022 | -33.15 | 50.00 | 0.029 | -30.75 | 73.50 | 0.026 | -31.70 | | | |