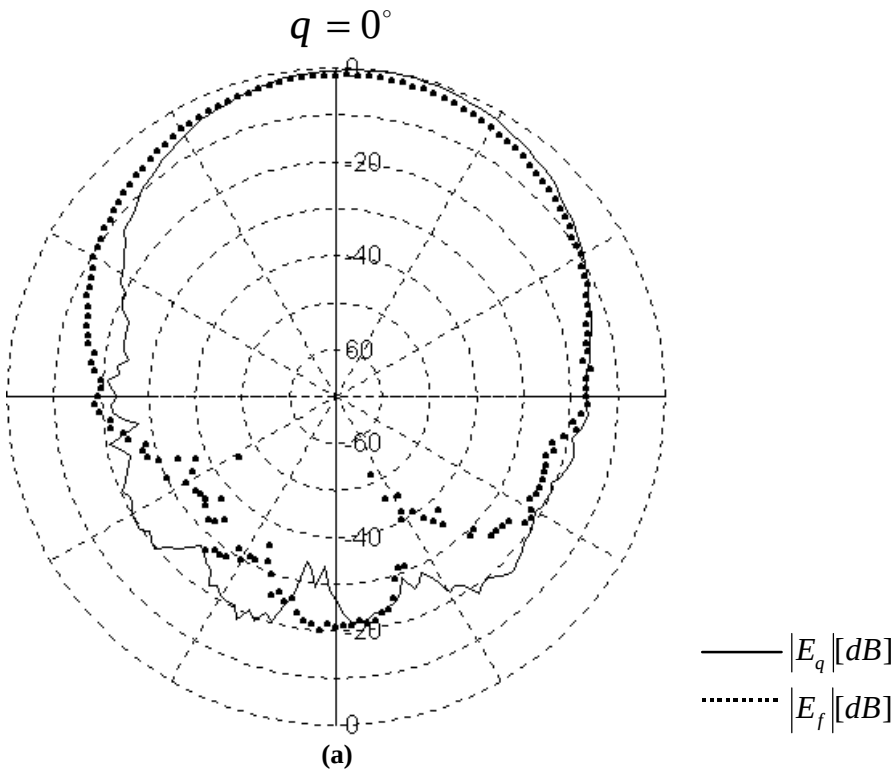
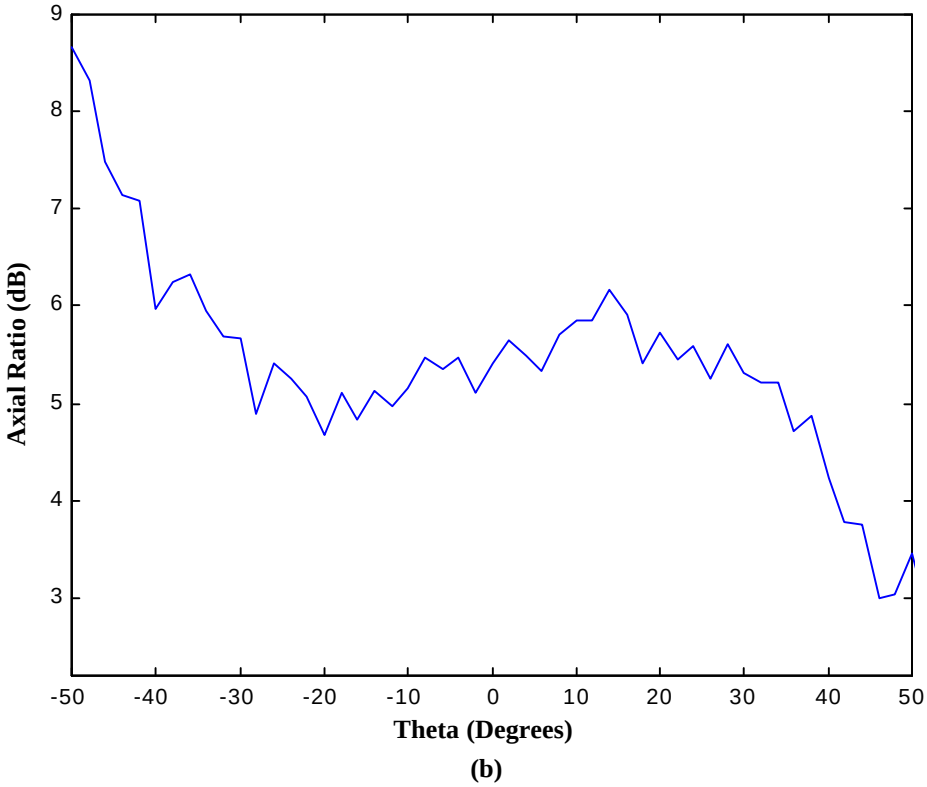
Appendix D. Measured Far-Field Patterns of Hemispherical Helix

Both far-field patterns and axial ratio for the prototype 4.5-turn hemispherical helix were measured. Part (a) of each figure shows the far-field patterns in dB scale. The pattern for the E_q component is normalized to 0 dB. The values for the E_f pattern are relative to the E_q pattern. Part (b) of each figure presents the axial ratio calculated from the measured pattern data using the method of multiple amplitude component [19].

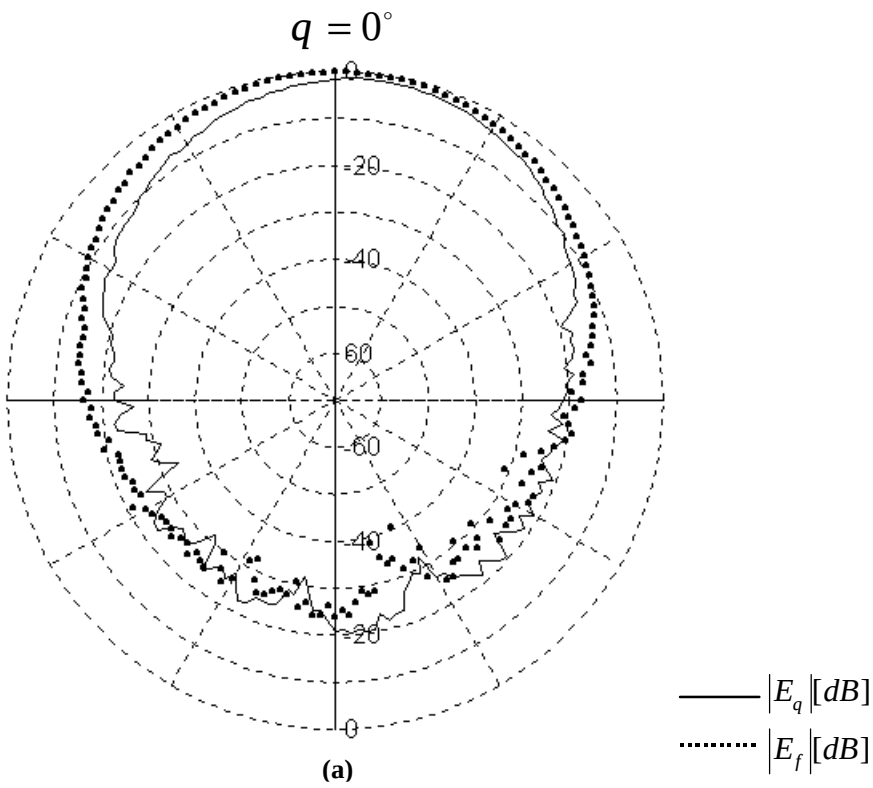


(a)

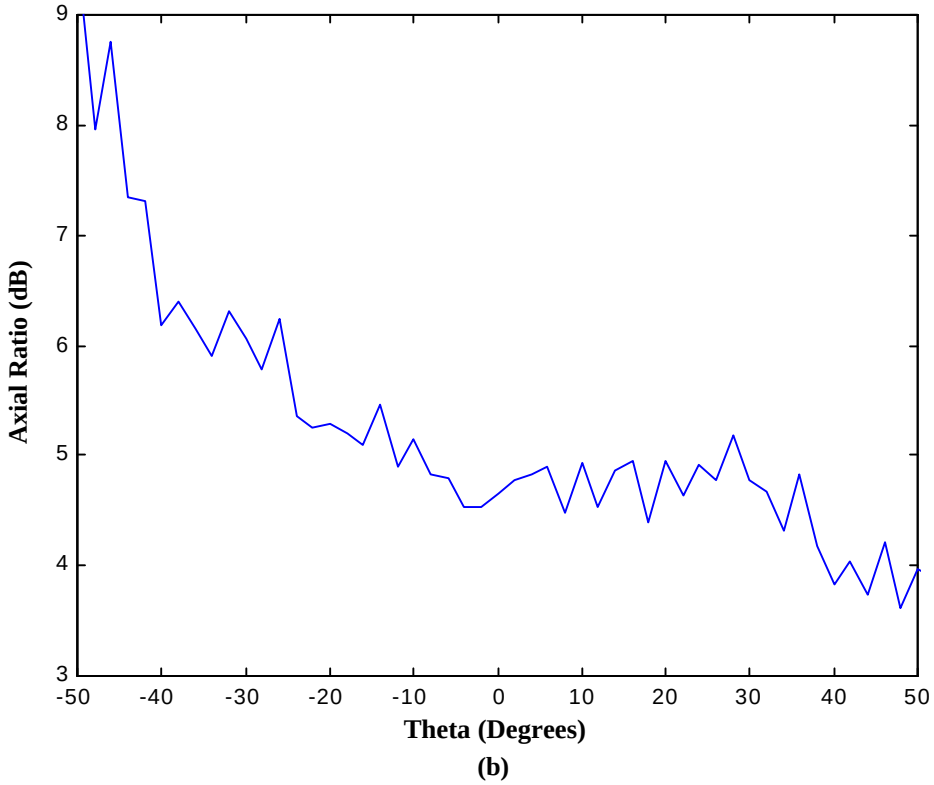


(b)

Figure D-1 **Measured antenna properties of 4.5-turn hemispherical helix with a circumference of $1.11l$, (a) radiation pattern, and (b) axial ratio.**

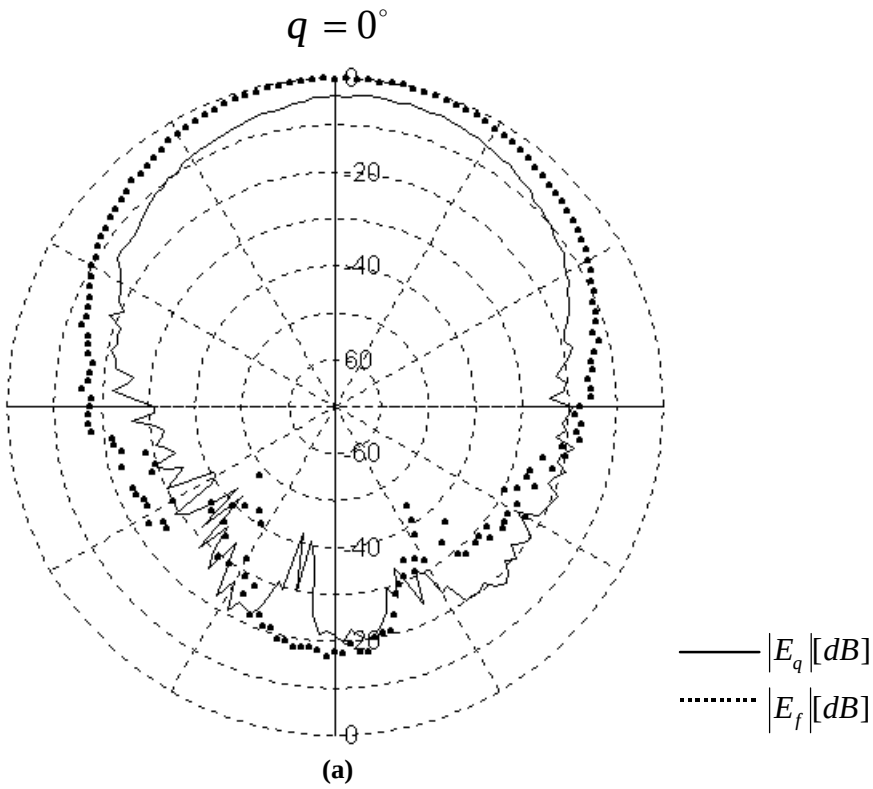


(a)

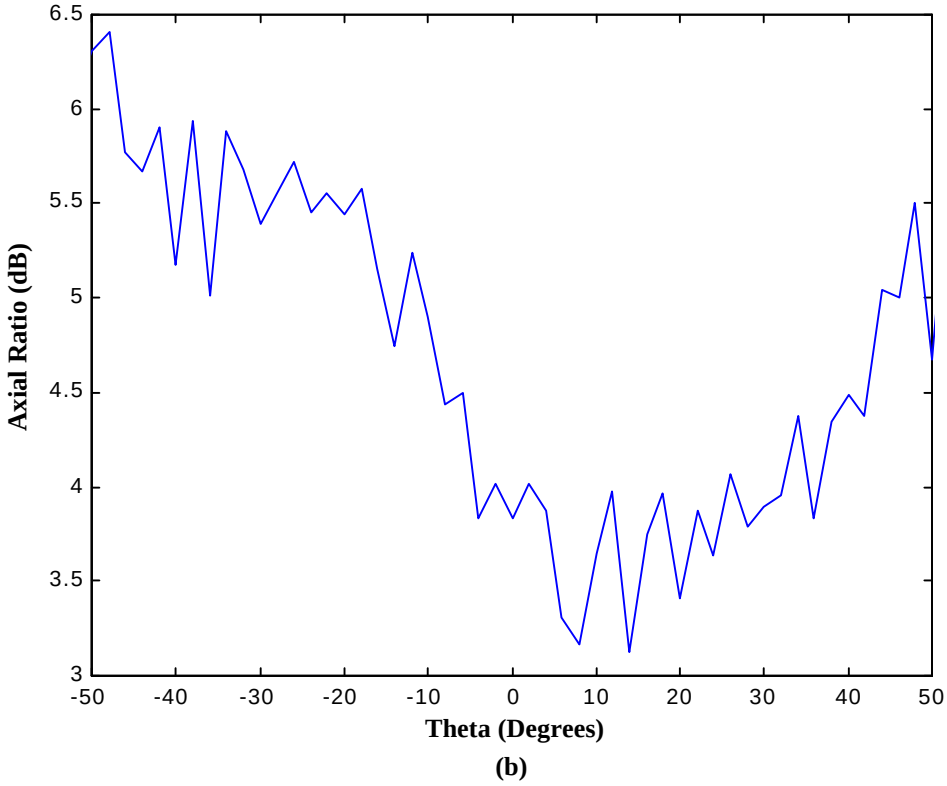


(b)

Figure D-2 **Measured antenna properties of 4.5-turn hemispherical helix with a circumference of $1.13l$, (a) radiation pattern, and (b) axial ratio.**

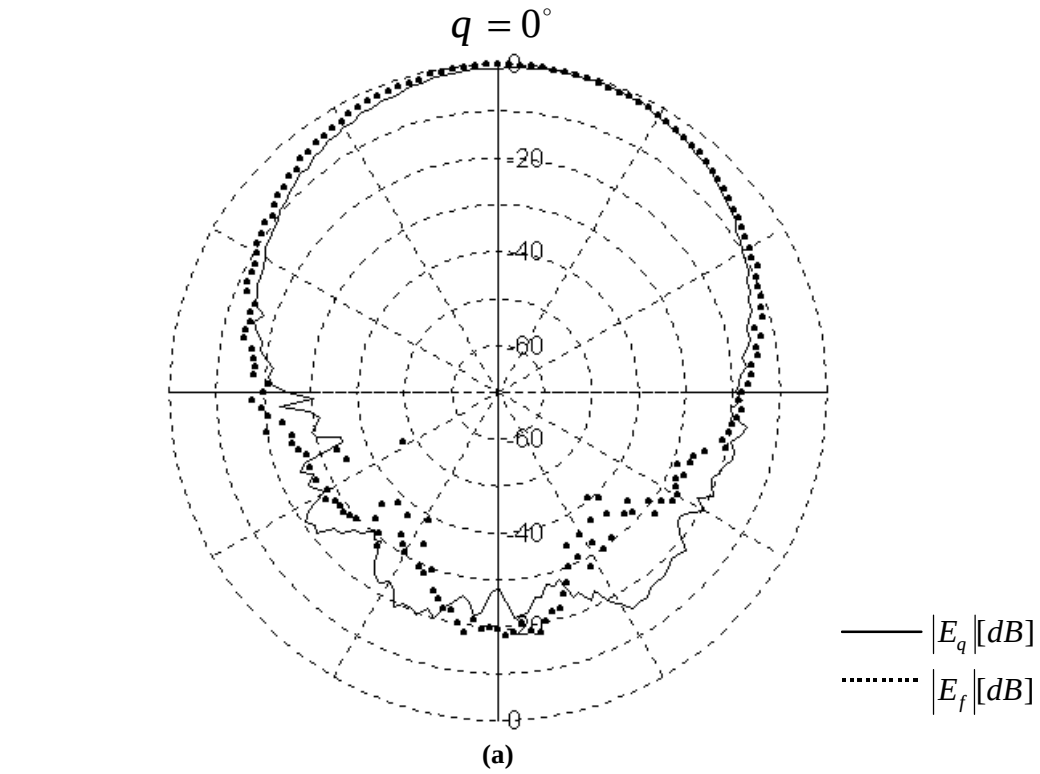


(a)

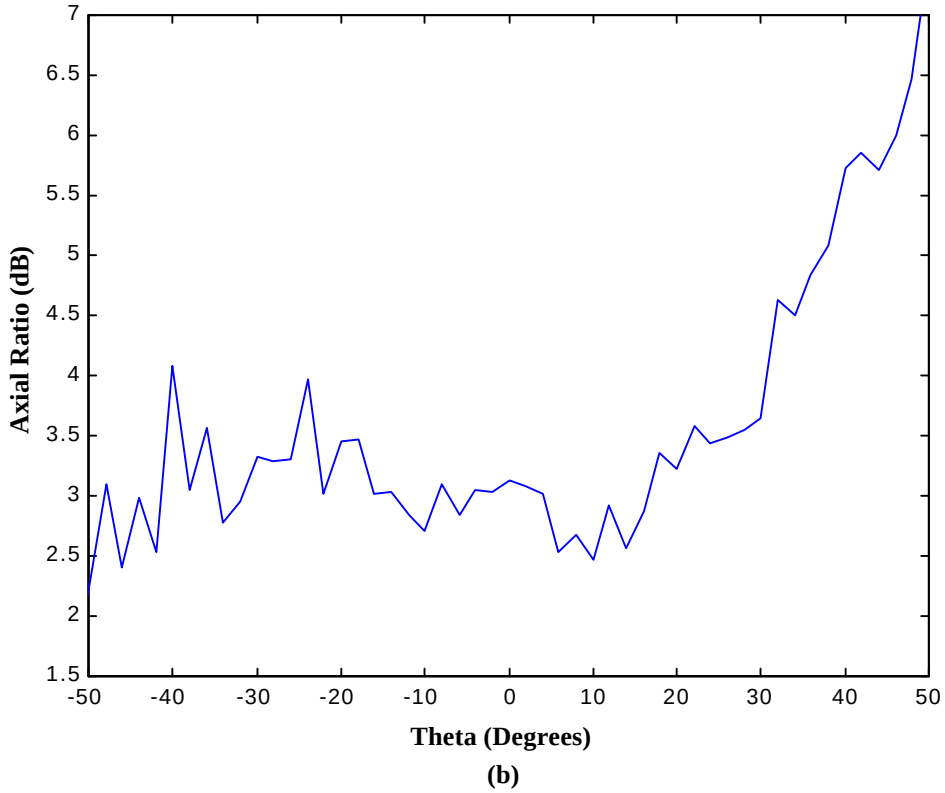


(b)

Figure D-3 **Measured antenna properties of 4.5-turn hemispherical helix with a circumference of $1.15l$, (a) radiation pattern, and (b) axial ratio.**

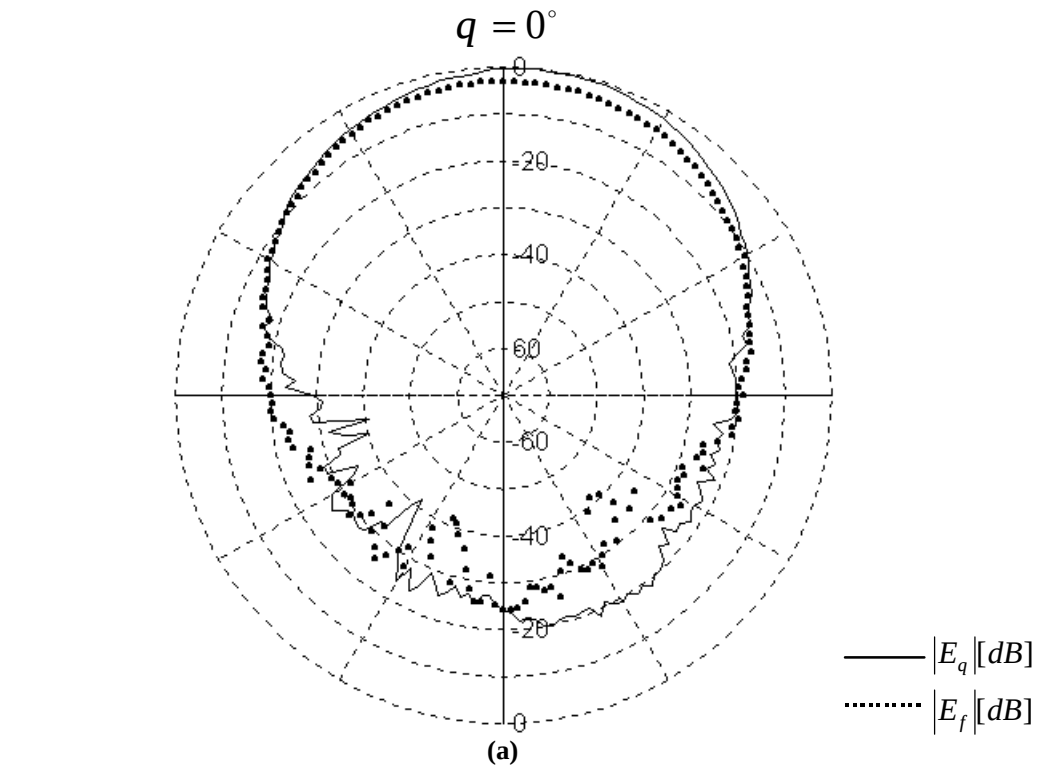


(a)

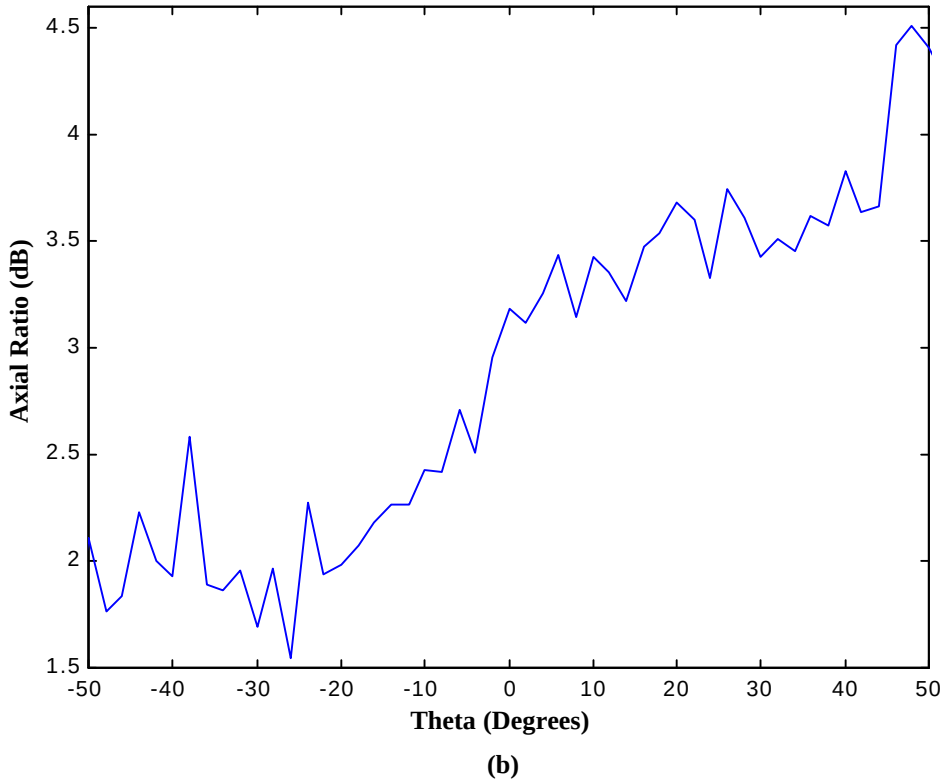


(b)

Figure D-4 **Measured antenna properties of 4.5-turn hemispherical helix with a circumference of $1.17\,l$, (a) radiation pattern, and (b) axial ratio.**

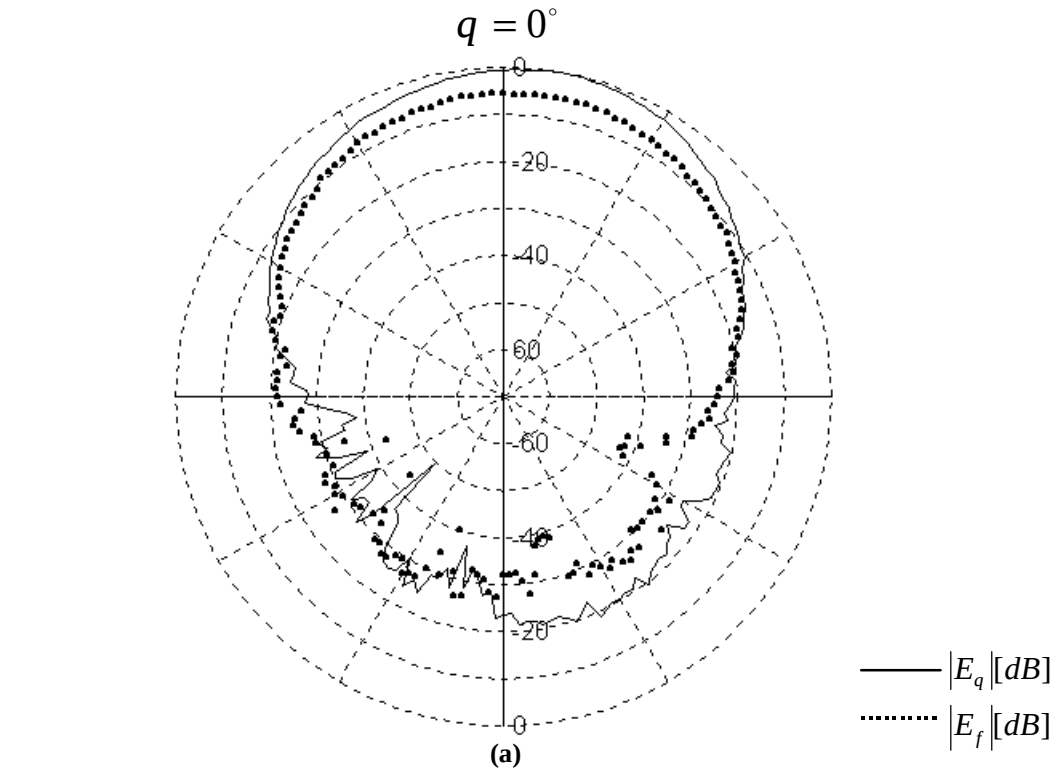


(a)

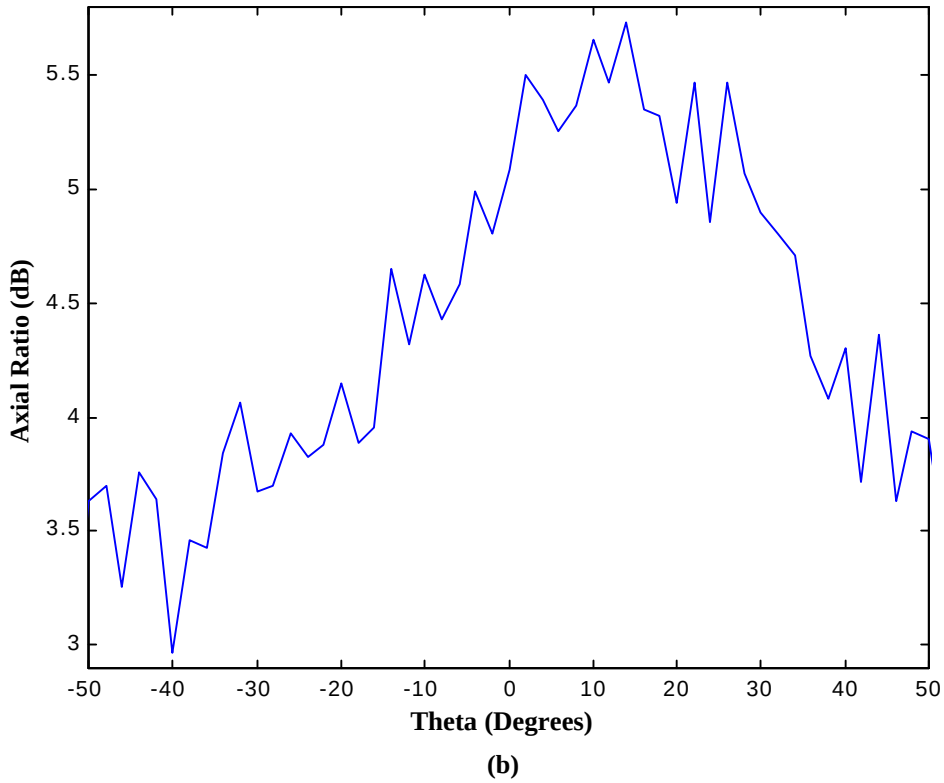


(b)

Figure D-5 **Measured antenna properties of 4.5-turn hemispherical helix with a circumference of $1.19\,l$, (a) radiation pattern, and (b) axial ratio.**

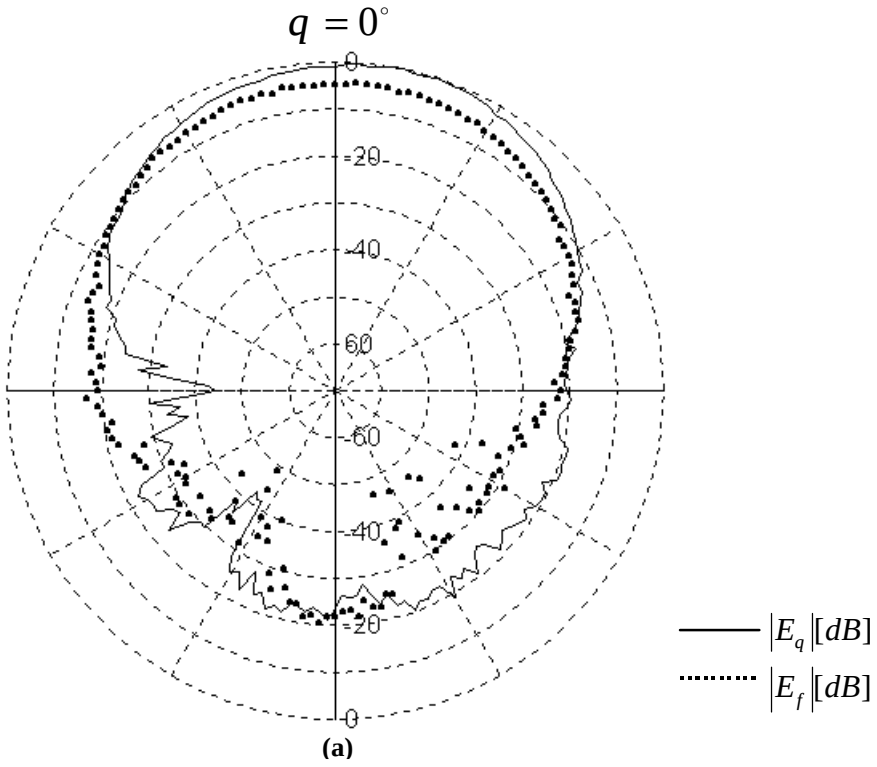


(a)

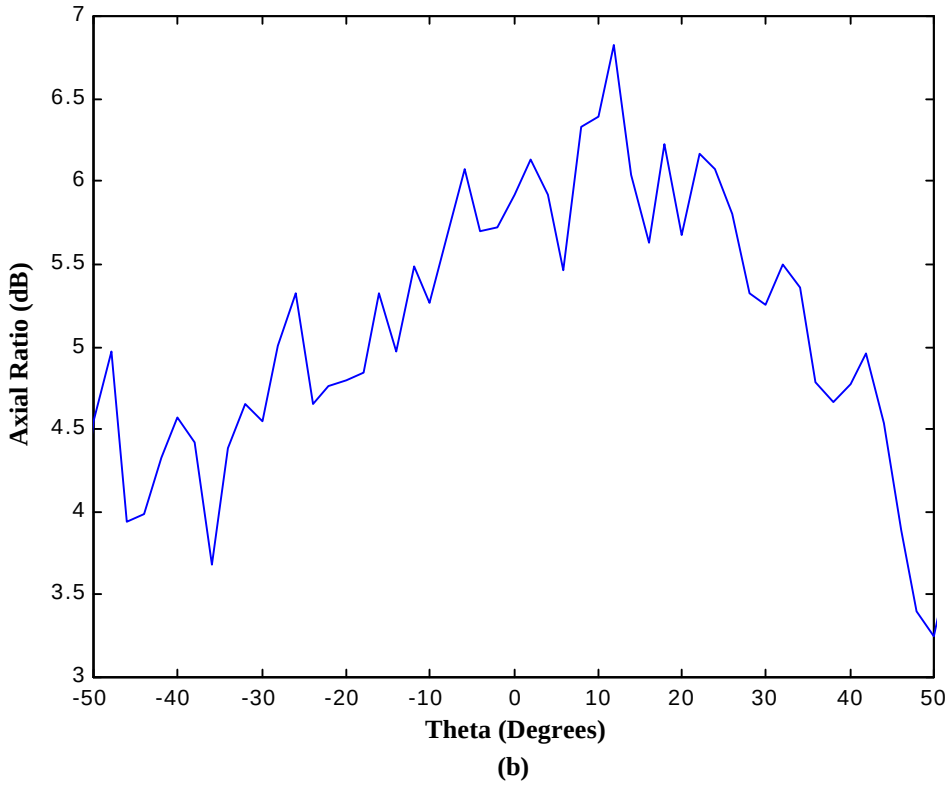


(b)

Figure D-6 **Measured antenna properties of 4.5-turn hemispherical helix with a circumference of $1.21l$, (a) radiation pattern, and (b) axial ratio.**

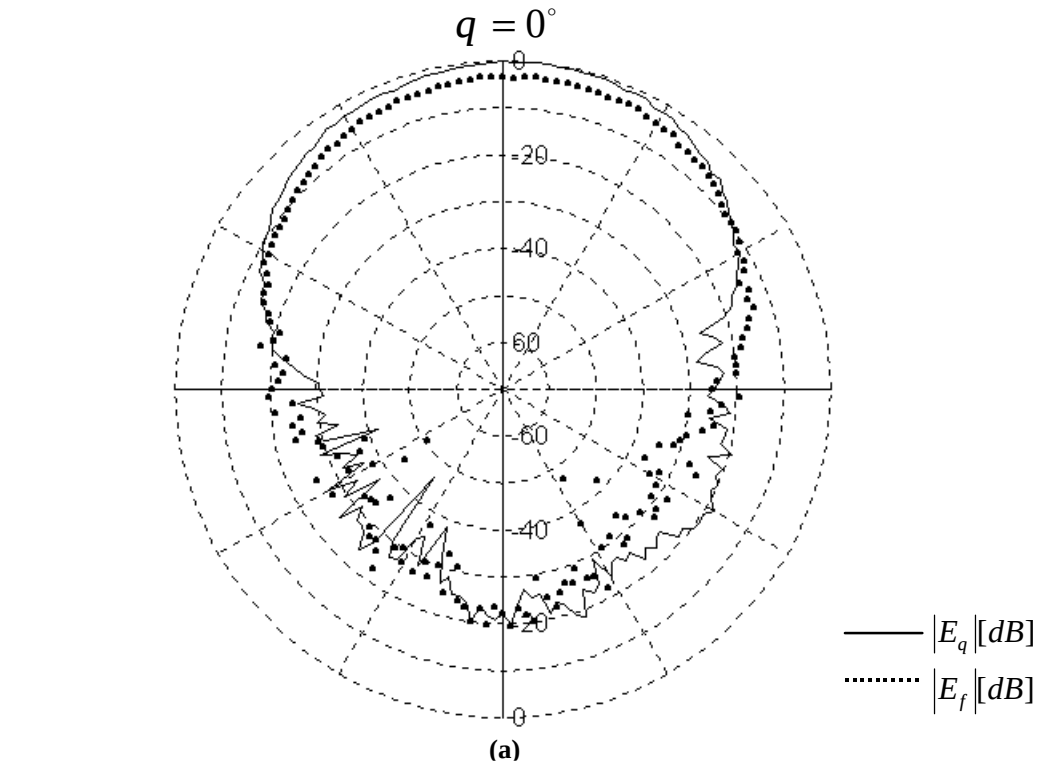


(a)

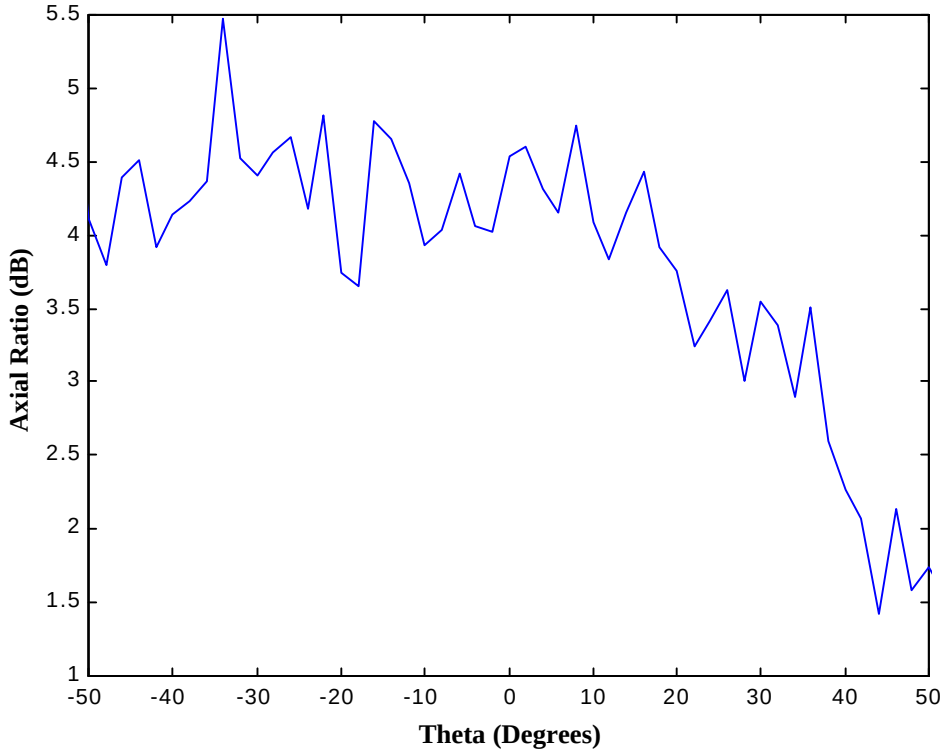


(b)

Figure D-7 **Measured antenna properties of 4.5-turn hemispherical helix with a circumference of $1.24\,l$, (a) radiation pattern, and (b) axial ratio.**



(a)



(b)

Figure D-8 Measured antenna properties of 4.5-turn hemispherical helix with a circumference of $1.26\,l$, (a) radiation pattern, and (b) axial ratio.