



Published Researches الأبحاث المنشورة



Title عنوان البحث	Bandwidth Improvement of Bowtie Antenna for GPR Applications Using Antipodal Technique, Corner Bending, and Triangular Slot Modifications
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Abstract خلاصة	<p>In this paper, the bandwidth of a bowtie antenna is improved to meet the requirements of Ground Penetrating Radar (GPR) applications that need a fractional bandwidth greater than 100% and are able to operate at low frequencies. This was done using several modification steps, which were the use of Antipodal technique for its advantages in reducing the complexity of the feeder network to achieve good matching with a standard 50-Ω SMA connector, bending the four corners of the arms, and adding a triangular slot in each arm. The simulation was carried out using CST Microwave Studio to study the effect of each modification step on improving the bandwidth. The simulation results of the new antenna achieved a fractional bandwidth of 138% within the frequency range (1-5.45) GHz at the values of return loss ($S_{11} \leq -10$ dB). The new antenna was also fabricated, and the return loss was measured and showed a good agreement with the simulation results.</p>