

## Abstract

In this letter, a dumbbell-shaped defected ground structure is proposed to suppress higher order harmonics of an electrically small antenna. A slot loading technique is applied to a well-known low-profile antenna, and the area miniaturization of a rectangular microstrip patch antenna by inserting a number of slits parallel to the radiating edges is investigated in relation to the quality factor. The antenna was designed to operate at 0.95 GHz (GSM). Measurement results on a prototype antenna fully demonstrate the performance of the proposed antenna