

Design of a Quad Band CPW-fed Compact Flexible Patch Antenna for Wearable Applications

Abstract

A compact and flexible coplanar waveguide-fed (CPW) monopole antenna is presented for operation at four different wireless bands. The antenna design is based on a simple rectangular patch which is then integrated with multiple L-shaped slots to enable multiband operation at 1.22, 1.56, 2.45 and 3.42 GHz, offering a reflection coefficient of -10 dB at these frequencies. Modeling is performed using FEKO, a commercial software, based on two approaches: the method of moments (MoM) and characteristic mode analysis (CMA). Results show satisfactory agreement of the predicted resonant frequencies. In addition, radiation efficiency, realized gain, bandwidth and current distributions are discussed in the paper. Finally, a systematic investigation of the bending effects for the proposed wearable antenna is also presented.