

Abstract:

This paper investigated the characteristics of a new shape of metamaterial (MTM) structure; including a new metamaterial (proposed-MTM) as a parasitic element for monopole antenna. The MTM structures are designed to have a resonant frequency around 2.88GHz and achieve Negative values of Permeability and Permittivity within the operating frequency ranges. S-parameter and retrieved effective value for MTM structures, the return loss, bandwidth and radiation pattern for monopole antenna with MTMs are all simulated using CST software. The simulated data show that the proposed MTM can produce a relatively low resonant frequency (dual band) with reduced antenna dimensions without external matching network. It has been remarked that the bandwidth of the proposed monopole antenna is increased when associated with the metamaterial structure.