

Abstract

Hussein H. Ghouz

Novel Compact Microstrip Filtenna Structures

Abstract: In this paper, Microstrip Filter_Antenna structures "MFA" have been proposed, analyzed a n d investigated in details using the CST_MW Studio. This was carried out using a full parametric study of reconfigure the ground plane along with an arbitrary defective patch shape. Reconfigurable ground structure "RGS" includes full ground "FG", partial ground "PG" (single ground strip), a n d Digital ground "DG" (N_Isolated ground strips). Defective patch "DP" includes H_Slot shape a n d Edge_Slot shape, where the overall patch dimensions are kept constant. The proposed MFA structures are mounted on a lossy FR-4 substrate having RGS a n d arbitrary slots shape near the patch edge. The proposed MFA structures are referred to as H_Slot patch filtenna "HSPF" a n d Edge_Slot patch filtenna "ESPF". Simulation results showed that the proposed Filtennas resonate at multi-frequencies having different operating bands (narrowband, broadband, a n d ultra-wideband). The presented Filtennas are very simple circuits a n d very compact in size. Furthermore, they cover a wide frequency spectrum for many wireless applications (4G wireless systems). The proposed filtenna structures have been fabricated a n d their parameters have been measured. Acceptable agreement has been obtained between simulated a n d measured filtenna parameters.