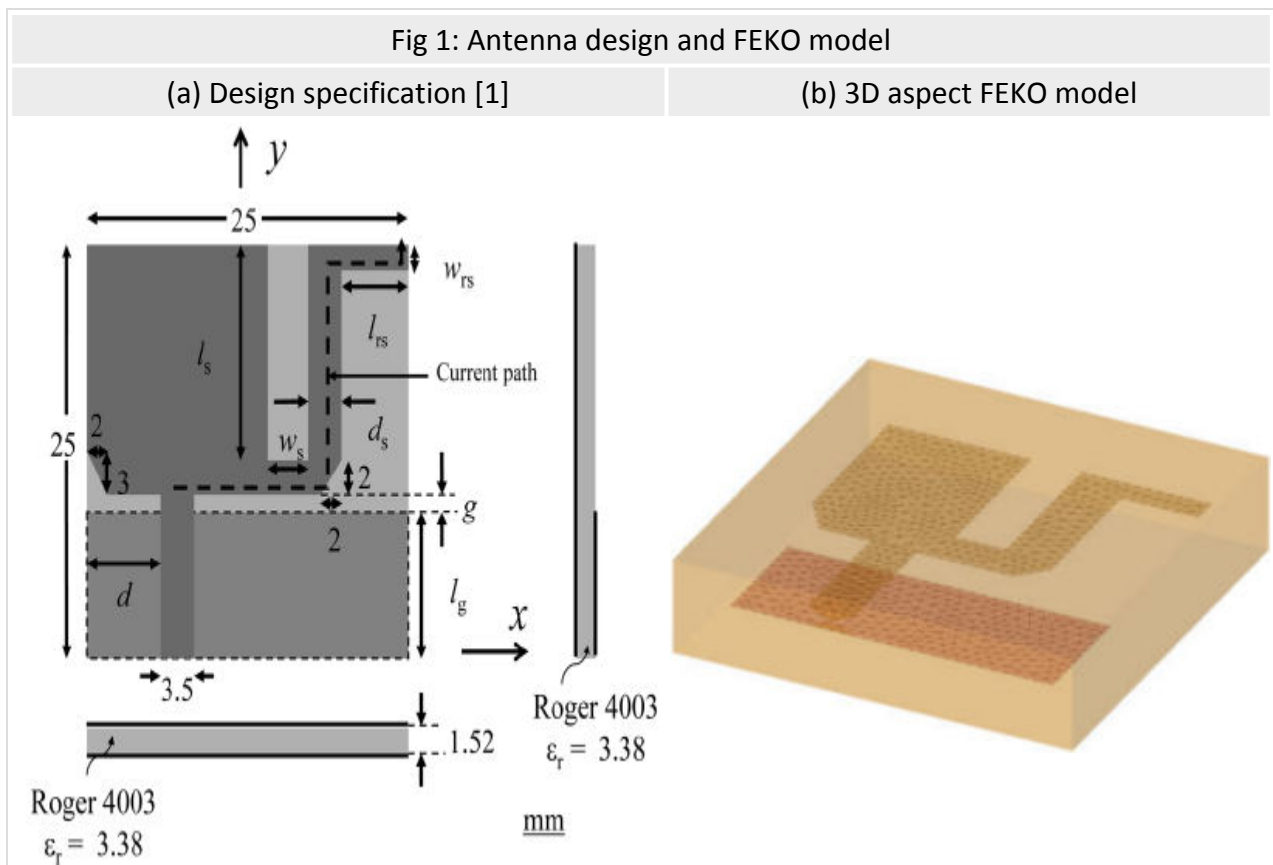




Small Printed Ultra Wideband Antenna with Reduced Ground Plane Effect

An UWB patch antenna is modeled in FEKO with FEM modeling of substrate, encasing air substrate and S-parameter extraction from a source in the FEM region. Results are compared with literature.

A small printed UWB microstrip patch antenna is proposed by Chen *et.al.* in [1]. The ground plane effect is reduced in the design to result in ultra wide-band (UWB) antenna performance. The design is based on Rogers 4003 substrate. A FEKO model was created for the antenna with a FEM region being used to model the substrate. In order to minimize the coupling for the FEM region to the free space MoM region the entire antenna is encased in a FEM dielectric region with the dielectric properties of air. An impressed current source is used to feed the antenna inside the FEM region and to extract S-parameters for the antenna at this feed point. Figure 1 presents the design specification from [1] and the resulting FEKO model.



The FEKO model was simulated across the band of interest to compute S_{11} for the design. Figure 2 compares the measured and simulated data from [1] with the FEKO simulation result. The FEKO model clearly agrees well with the published result. Figure 3 shows the currents on the antenna at 6.37 GHz.

Fig 2: Reflection coefficient result comparison

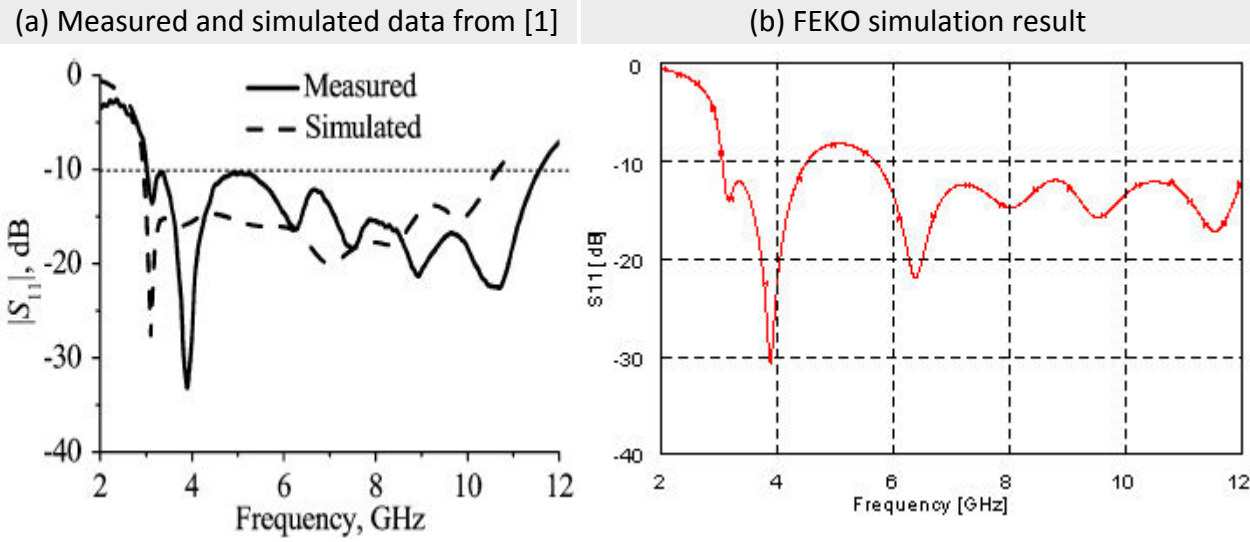
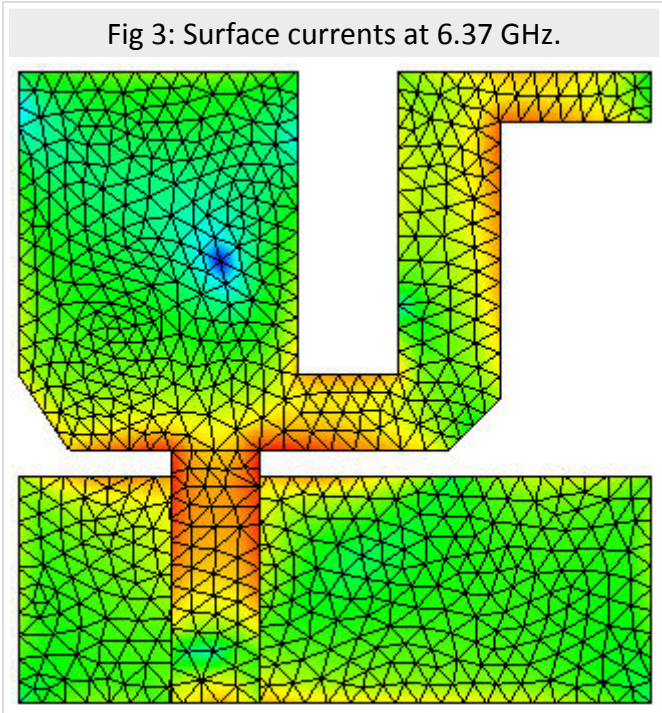


Fig 3: Surface currents at 6.37 GHz.



References

- [1] Z. Chen, T.S.P. See, X. Qing, "Small Printed Ultrawideband Antenna with Reduced Ground Plane Effect," IEEE Transactions on Antennas and Propagation, Vol. 55, No. 2, February 2007



Copyright © 2010 by EM Software & Systems-SA (Pty)

www.feko.info

