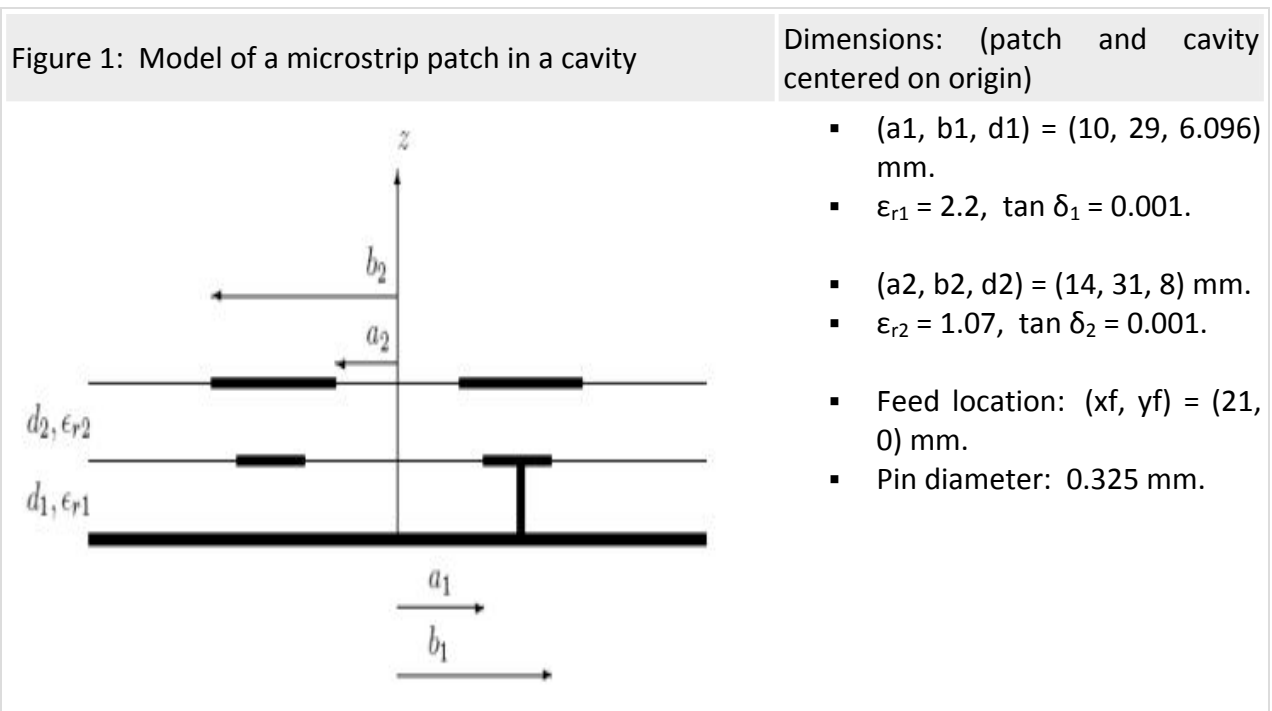




Probe-fed Stacked Annular Ring Antenna

An example of how a probe fed stacked annular ring antenna may be simulated in FEKO.

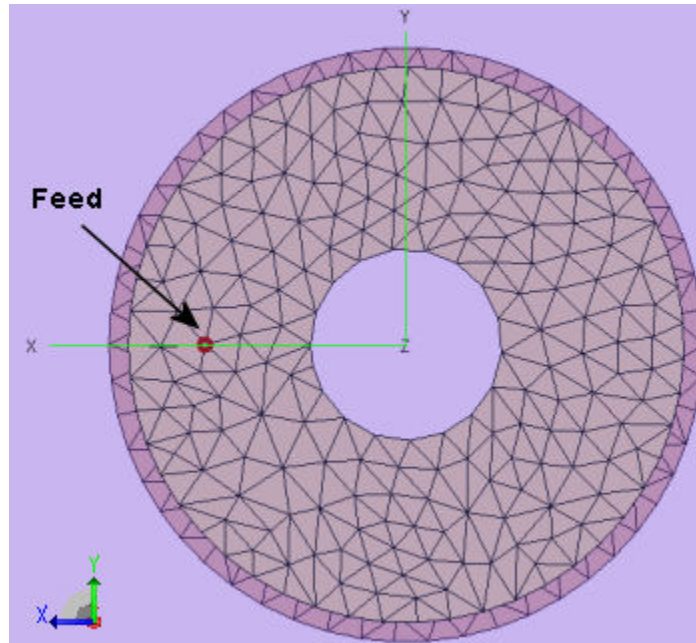
This example illustrates how a probe-fed stacked annular ring antenna may be simulated in FEKO. The structure has been analyzed in [1], which provides easy validation for the FEKO results. The basic model and dimensions are presented in Figure 1.



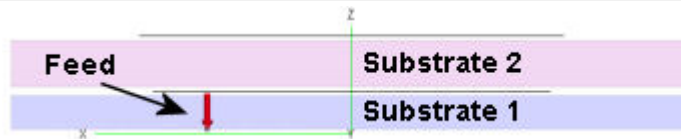
Special Green's functions are ideally suited to modeling the dielectric layers as infinite planes. The substrate layers were therefore set up as such, with a finite ground plane at the bottom of the stack. FEKO allows the coupling of the feed pin to this infinite ground plane, which meant that the feed segment could be modeled as a standard wire segment with the required diameter. Figure 2 presents the simulated model, with dielectric layers and feed point visible.

Figure 2: Special Green's function dielectric layers in the simulation model

(a) Bottom

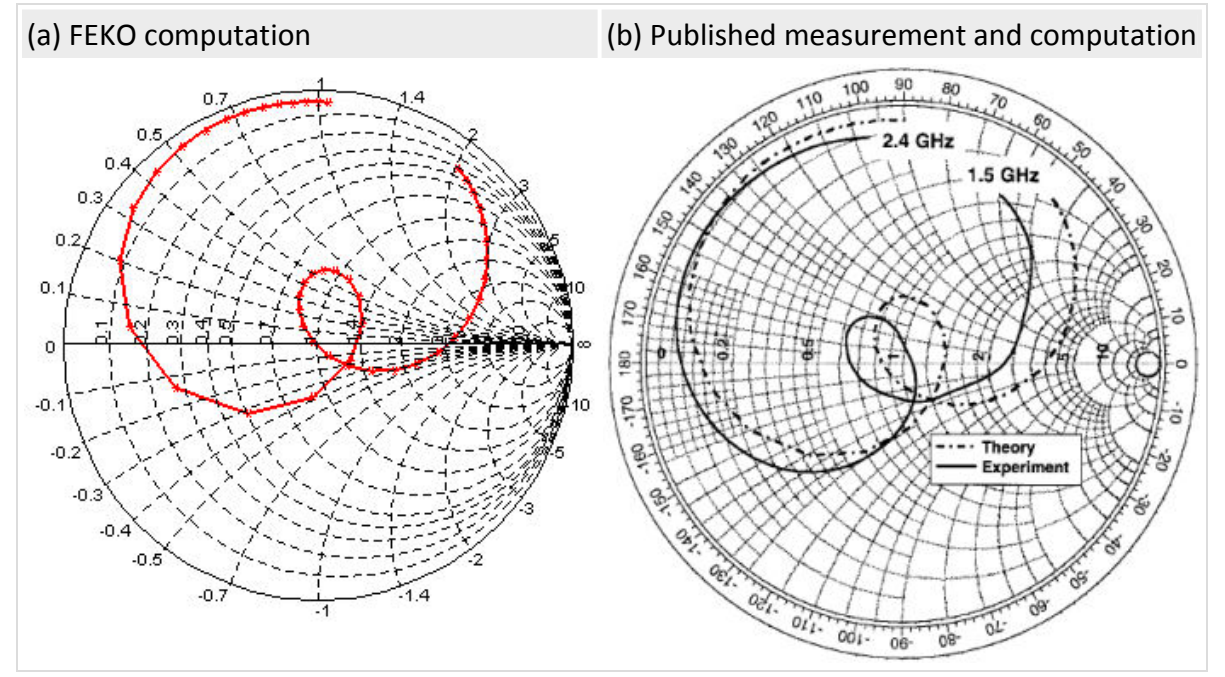


(b) Side



The model shown in Figure 2 was used to compute the input impedance of the antenna. The computed result is presented in Figure 3 in comparison with the measurements and simulation data of [1]. The FEKO computation compares well with the published data, validating the FEKO model.

Figure 3: Input impedance locus: FEKO simulated data in comparison with published data [1]



References:

[1] D. M. Kokotoff, J. T. Aberle, and R. B. Waterhouse, "Rigorous analysis of probe-fed printed annular ring antennas," IEEE Trans. on Antennas and Propagation, vol. 47, pp. 384–388, Feb. 1999.



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