

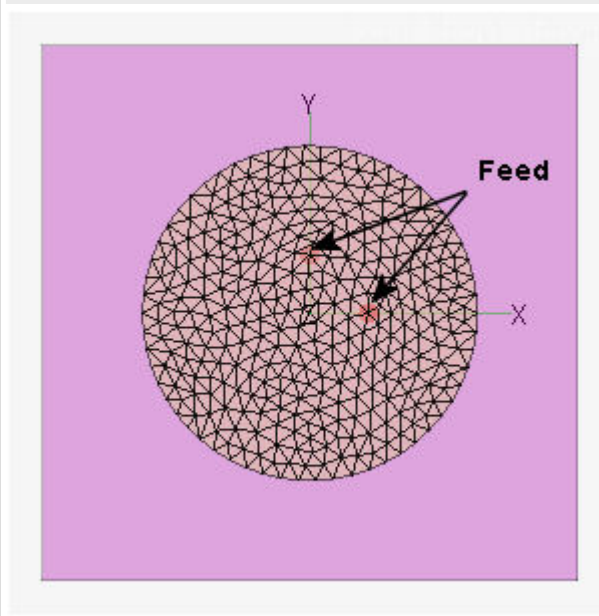


Two-port Probe-fed Circular Antenna

A two-port probe-fed circular microstrip antenna is simulated as an example.

This example presents the computation of the S-parameters for a two-port probe-fed circular microstrip antenna. The antenna was originally analyzed in [1], allowing simple validation of the FEKO results. The model was set up with a special Green's function infinite plane modeling the substrate.

Figure 1: Two-port probe-fed circular antenna model

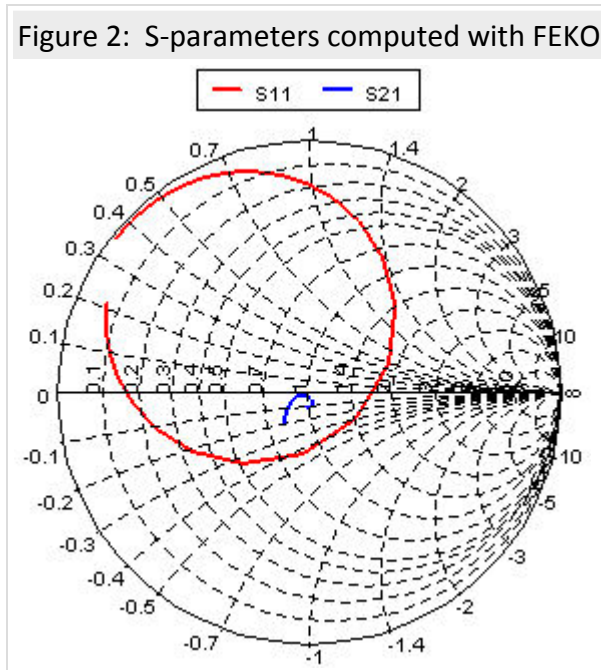


Dimensions

- Patch radius = 20 mm.
- Substrate:
 - $\epsilon_r = 2.2$,
 - $\tan \delta = 0.001$,
 - $h = 2.1844$ mm.
- Probe 1 $(x_1, y_1) = (7.0, 0.0)$ mm.
- Probe 2 $(x_2, y_2) = (0.0, 7.0)$ mm.
- Probe radius = 0.45 mm.

Simulation results

Figure 2 presents an S-parameter analysis for this two-port microstrip patch. Comparison with [1, Figure 4] is excellent, validating FEKO's results.



References

- [1] J. T. Aberle, D. M. Pozar, and C. R. Birtcher, "Evaluation of input impedance and radar cross section of probe-fed microstrip patch elements using an accurate feed model," *IEEE Trans. on Antennas and Propagation*, vol. 39, pp. 1691–1696, Dec. 1991.



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