Abstracts

Analysis and application of a two-port aperture-coupled microstrip antenna

Wen-Jen Tseng and Shyh-Jong Chung. "Analysis and application of a two-port aperture-coupled microstrip antenna." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part I [T-MTT]): 530-535.

A two-port aperture-coupled microstrip antenna was analyzed using the method of moments together with a mixed potential integral equation (MPIE). The antenna contains two microstrip-line ports (i.e., a feeding port and a coupling port). The field coming from one microstrip line on the circuit layer is fed into the patch through an aperture on the ground plane. Part of the field is then coupled back to a second microstrip line through another aperture on the same ground. The influences of the stub lengths, along with the positions and sizes of the apertures, on the coupling power and the resonant frequency were investigated. As an application, a feedback antenna oscillator was designed using the present structure where the antenna served not only as a radiator, but also as a feedback resonator. The oscillation was stable and with a clean spectrum at the frequency of 9.79 GHz, which was only 0.2% different from the design one. An effective isotropic radiated power (EIRP) of 39 mW was achieved. The measured cross-polarized fields were at least 15 dB lower than the copolarized ones.

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