Abstracts

RCS Reduction for a Microstrip Antenna Using a Normally Biased Ferrite Substrate

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It is shown that the radar cross section of a microstrip antenna can be significantly reduced over a broad frequency range by using a ferrite substrate biased to a cutoff state. When unbiased, the antenna operates in its usual fashion, with relatively large RCS peaks at frequencies corresponding to the resonances of the patch element. When the ferrite substrate is properly biased, the antenna element becomes effectively short-circuited, resulting in the elimination of the resonant behavior of the scattering response of the patch, and a reduction of 20-40 dB in its RCS, This mechanism allows the implementation of a microstrip antenna or array system that can be switched to an "off" state, where it will be much less visible to an interrogating radar. Calculated results are obtained from a full-wave moment method solution for the RCS of a microstrip antenna on a normally biased ferrite substrate.

❑ Return to main document.