Abstracts

A Coupled-Mode Description of the Reggia-Spencer Phase Shifter

C.R. Boyd. "A Coupled-Mode Description of the Reggia-Spencer Phase Shifter." 1966 G-MTT International Microwave Symposium Digest 66.1 (1966 [MWSYM]): 250-255.

Although Reggia-Spencer phase shifters have been built for many years, no completely satisfactory description of the principle of operation of this type of device has appeared in the literature. Of the many theories advanced to explain the phase shifter operation, two have retained some measure of vogue. Button and Lax have postulated that the basic mechanism is the change in effective permeability with applied field, enhanced by the dielectric loading effects of the ferrite. Their view is supported by J. A. Weiss, who identified frequency-periodic resonances as the onset of Faraday rotation in a rectangular guide structure. Rizzi suggested that the ferrite rod acts as a "dielectric waveguide" and that the phase shift results from Faraday rotation of the r-f fields with applied field. Subsequent computations by Tompkins, Reggia, and Joseph have tended to verify this point of view.

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