Abstracts

A Design Theory for Reggia-Spencer Reciprocal Ferrite Phase Shifters

W.E. Hord, F.J. Rosenbaum and C.R. Boyd. "A Design Theory for Reggia-Spencer Reciprocal Ferrite Phase Shifters." 1968 G-MTT International Microwave Symposium Digest and Technical Program 68.1 (1968 [MWSYM]): 255-263.

The Reggia-Spencer phase shifter consists of a ferrite bar or rod placed along the axis of a rectangular waveguide. When a longitudinal magnetic field is applied to the ferrite a change in the rf insertion phase is produced which is independent of the direction of the applied field and the direction of propagation. Although many phase shifters have been constructed using this principle, their design has proceeded empirically due to the lack of an adequate design theory. In 1966, Boyd suggested that the reciprocal phase shift could be explained in terms of a non-reciprocal coupling between two cross-polarized waveguide modes, one the TE/sub 10/-like dominant mode supported by the inhomogeneously filled waveguide, the other a cross-polarized mode which is normally cut off. If this mode propagates Faraday rotation can occur.

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