Abstracts

Dielectric Waveguide Phase Shifter

J.J. Green. "Dielectric Waveguide Phase Shifter." 1982 MTT-S International Microwave Symposium Digest 82.1 (1982 [MWSYM]): 255-256.

Using ferrite waveguide toroids and dielectric ribs (epsilon/sub r/ = 50), we have demonstrated that a dielectric waveguide (no metal walls) phase shifter (Delta Phi = 600°) can propagate with reasonable insertion loss (/spl ap/3 dB) and modest cross coupling (/spl ap/ 15 dB). With brass inserts, the cross coupling can be further reduced (> 20 dB) with some sacrifice of insertion loss and phase shift. The use of dielectric waveguide phase shifters should allow simpler, lower-cost phased arrays in the conventional frequency range (3 to 20 GHz). At millimeter wave frequencies there is the possibility of making a column of phase shifters from slabs of ferrite and dielectric using flat-grinding and cutting techniques.

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