Abstracts

Electrode Resistance Effects in Interdigital Transducers

K.M. Lakin. "Electrode Resistance Effects in Interdigital Transducers." 1974 Transactions on Microwave Theory and Techniques 22.4 (Apr. 1974 [T-MTT]): 418-424.

A distributed RC circuit model is used to describe an interdigital electrode transducer (IDT) having finite conduction in the electrode stripes. The distributed circuit is described by a set of differential equations whose solutions yield the current and voltage distributions along the aperture of the IDT. It is found that the electrode resistance causes a distortion of the excited wave amplitude and phase due to the nonuniform voltage and current distribution. An equivalent circuit for the terminal properties is also derived which illustrates the effects of conduction loss. The theory is also used to predict electrode efficiency, effective aperture weighting, and phase shift in weighted arrays.

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