# Abstracts

## Accurate Determination of Varactor Resistance at UHF and Its Relation to Parametric Amplifier Noise Temperature

*K. Inal and C. Toker. "Accurate Determination of Varactor Resistance at UHF and Its Relation to Parametric Amplifier Noise Temperature." 1973 Transactions on Microwave Theory and Techniques 21.5 (May 1973 [T-MTT]): 327-333.*

A thorough investigation is made on the frequency-dependent properties of a varactor diode loss resistance at UHF. The variation of the losses with frequency in a varactor diode mounted cavity has been theoretically investigated, and it is shown that the previously reported inverse-squared frequency dependence of the varactor loss resistance can be attributed to the distributed cavity losses transformed across the varactor diode. A new measurement technique is introduced in which the circuit losses are first matched to the input line instead of the varactor loss resistance as an application of the relative impedance method. Measurements carried out with this technique for five different varactor diodes showed that the loss resistances of these diodes are not frequency dependent. It is also shown that the choice of the varactor diode capacitance plays an important role on the parametric amplifier noise temperature at UHF. In an experimental parametric amplifier the effect of varactor diode capacitance on the noise temperature has been demonstrated. It has been theoretically and experimentally shown that, generally, varactor diodes having higher capacitances result in better noise temperature at UHF.

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