Abstracts

Theoretical and Experimental Analysis of a Waveguide Mounting Structure

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The induced EMF method has been extended and applied to derive the driving-point impedance of a common waveguide structure used for mounting small microwave devices. An equivalent circuit is developed and discussed in detail. Theoretical impedance curves are presented demonstrating the circuit characteristics for various configurations of the mount. The driving-point impedance of this mount has also been considered experimentally. A novel measurement technique is used based upon the use of subminiature coaxial line to gain electrical access to the terminal pair located inside the waveguide. A model of the measurement circuit, which enhances the accuracy of the results, providing excellent agreement between the theoretical and measured values, is developed. The multilateral nature of the circuit allows consideration of the mount in the waveguide as an obstacle to any incident propagating mode. Some related measurements have been made using standard techniques for the H/sub 10/ mode. It is anticipated that this formulation will permit accurate design of many components which previously required empirical methods based on limited experimental data.

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