Abstracts

New Results Using Membrane-Supported Circuits: A Ka-Band Power Amplifier and Survivability Testing (Short Papers)

T.M. Weller, L.P.B. Katehi, M.I. Herman, P.D. Wamhof, K. Lee, E.A. Kolawa and B.H. Tai. "New Results Using Membrane-Supported Circuits: A Ka-Band Power Amplifier and Survivability Testing (Short Papers)." 1996 Transactions on Microwave Theory and Techniques 44.9 (Sep. 1996 [T-MTT]): 1603-1606.

This paper describes recent results which pertain to the integration and reliability testing of micromachined, membrane-supported transmission line circuits. These circuits employ a 1.4-μm-thick dielectric membrane to support thin-film conducting lines above an air substrate. With regard to integration, the development of a Ka-band solid state power amplifier (SSPA) is presented. The design includes a membrane-supported Wilkinson power divider/combiner with 0.2 dB loss, along with a commercially available monolithic microwave/millimeter wave integrated circuit (MMIC) amplifier stage. Also reported are tests which investigated the survivability of membrane lines under space qualification conditions. No failures occurred as a result of thermal cycling and vibration testing at levels which reached 39.6 grms.

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