Abstracts

Microwave Breakdown Technique for Measuring Ionization Rate of High Temperature Gases in a Shock Tube

J.B. Chown, W.C. Taylor and T. Morita. "Microwave Breakdown Technique for Measuring Ionization Rate of High Temperature Gases in a Shock Tube." 1966 G-MTT International Microwave Symposium Digest 66.1 (1966 [MWSYM]): 210-213.

In the design of antennas for use on hypersonic re-entry vehicles, the effect of high-temperature ionized gas surrounding the vehicle must be considered. Interaction of the fields of the antenna with adjacent ionized medium requires examination of parameters that are not involved in the usual RF plasma interaction. In the nonlinear case where the RF field is strong enough to produce additional ionization in the gas, breakdown occurs and proceeds catastrophically until the electron density is high enough that the plasma limits the strength of the field penetrating the plasma. The power-handling capability of the antenna depends upon the RF fields created and the electron production and loss rates in the flowing medium.

❑ Return to main document.