

Abstract Submitted
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Factors that Influence RF Breakdown in Antenna Systems J.B.O. CAUGHMAN, F.W. BAITY, D.A. RASMUSSEN, Oak Ridge National Laboratory, M. AGHAZARIAN, C.H. CASTANO GIRALDO, DAVID RUZIC, University of Illinois at Urbana-Champaign, OAK RIDE NATIONAL LABORATORY TEAM, UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN TEAM — One of the main power-limiting factors in antenna systems is the maximum voltage that the antenna or vacuum transmission line can sustain before breaking down. The factors that influence RF breakdown are being studied in a resonant $1/4$ -wavelength section of vacuum transmission line terminated with an open circuit electrode structure. Breakdown can be initiated via electron emission by high electric fields and by plasma formation in the structure, depending on the gas pressure. Recent experiments have shown that a 1 kG magnetic field can influence plasma formation at pressures as low as 8×10^{-5} Torr at moderate voltage levels (< 5 kV). Ultraviolet light, with energies near the work function of the electrode material, can induce a multipactor discharge and limit power transmission. Details of these experimental results, including the effect of electrode materials (Ni and Cu), will be presented. Oak Ridge National Laboratory is managed by UT-Battelle, LLC, for the U.S. Dept. of Energy under contract DE-AC05-00OR22725. Work supported by USDOE with grant DE-FG02-04ER54765

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