

Abstract Submitted  
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**Simulation, Design, and Testing of a Coaxial Multipactor Test Cell**<sup>1</sup> STEPHEN LANGELLOTTI, NICHOLAS JORNDAN, YY LAU, RONALD GILGENBACH, University of Michigan, MULTIPACTOR MURI COLLABORATION — Multipactor is a discharge phenomenon that occurs in vacuum microwave electronics [1,2]. Secondary emission of electrons colliding with electrode surfaces develop into large clouds of space charge that can cause severe degradation of signal quality and potentially result in catastrophic failure of the device. While there is an extensive theoretical background for planar two-surface multipactor [1,2], the phenomenon is less well understood in the coaxial geometry. Previous experiments have been performed that provide insight into coaxial multipactor at low frequencies [3,4]. At the University of Michigan, we expand on these works by developing a standardized test cell for studying multipactor in a coaxial geometry at 2-3 GHz. This paper will present simulations that have been performed in support of the design process and compare to our experimental data. [1] Vaughan, JRM. IEEE T Electron Dev 35: 1172-1180, 1988. [2] Kishek RA, Lau YY, Ang LK, Valfells A, and Gilgenbach RM. Phys Plasmas 5: 2120-2126, 1998. [3] Woo R. J Appl Phys 39: 15281533, 1968. [4] Graves T. (PhD thesis). Cambridge, MA: Massachusetts Institute of Technology, 2006.

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