Contribution ID: **810** Type: **Oral**

The Effects of Multipactor on the Quality of a Signal in a Transmission Line

Tuesday 25 June 2019 16:30 (15 minutes)

Multipactor is a much studied AC discharge [1,2] that is harmful to microwave components. There is substantial current interest on this topic because of its threat to satellite communications [3]. In this paper, we present an analytical transmission line model to assess the effects of multipactor, should it happen, on the distortion of a signal. Both planar and coaxial transmission lines will be studied and compared. Extensions to complex, multi-tone signals will also be investigated. The I-Q plots (normalized error vector) for all of the cases considered will be presented to show the effects of multipactor.

1. J. R. M. Vaughan, IEEE TED, Vol. 35, No. 7, 1988.
2. R. A. Kishek et al., Physics of Plasmas 5, 2120 (1998).
3. Special sessions on Multipactor, I and II, ICOPS, Denver, CO, June 2018.

This work was supported by AFOSR MURI Grant No. FA9550-18-1-0062, by AFOSR Grant No. FA9550-15-1-0097, and by L3 Technologies Electron Devices Division.

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Session Classification: 2.7 Microwave Plasma Interaction II

Track Classification: 2.7 Microwave Plasma Interaction