

Abstract Submitted
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Effects of Radiation on FR4 Printed Circuit Boards KEVIN SCHEUER, Arizona State University, Radiation Detection and Imaging, RICARDO ALARCON, Arizona State University, JASON HOLMES, Arizona State University, Radiation Detection and Imaging, EVGENY GALYAEV, DAVID BLYTH, Radiation Detection and Imaging, RADIATION DETECTION AND IMAGING COLLABORATION, ARIZONA STATE UNIVERSITY COLLABORATION¹ — Printed Circuit Board applications in high dose rate environments are becoming more common, and considerable research exists on how electrical devices attached to the PCB respond to varying degrees of radiation. An understanding of how the PCB substrate itself reacts is lacking though, particularly for FR4, one of the most common substrates used. The following study presents measurements of electrical and physical parameters for a variety of FR4 substrates, and the respective changes following exposure to a $3.38 * 10^{16} \text{ n/cm}^2$ total neutron fluence, in The Ohio State's Nuclear Reactor Laboratory Auxiliary Irradiation Facility (AIF) vertical dry tube. Consequently, selection of a PCB substrate is shown to be of consideration beyond the typical frequency dependant parameters, especially for environments where high physical stress or flammability are of concern.

¹Utilized ASU facilities

Kevin Scheuer
Arizona State University, Radiation Detection and Imaging

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