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Comparative Failure Analysis of Components Exposed to Multi-axis and Single-axis Vibration Testing.

Jelena Paripovic, Glen Throneberry, Kevin Cross, Martin Sanchez and Stephen Aulbach

Sandia National Laboratories (1)

Thomas Brown

Sandia National Laboratories (1) and University of Texas - Austin

Washington Delima

Kansas City National Security Campus (2)

It has been shown that the dynamic field environment for a component may not be represented well by a single axis shaker environmental test. Here we demonstrate, for a clamped-clamped plate, the effect of testing all the axis of interest in a multi-axis shaker environmental test. The component is a printed wiring assembly (PWA) board mounted to a Team Tensor 900 six degree-of-freedom shaker. The goal is to expose the PWA boards to a set of sequential single axis (1DOF) and simultaneous multi-axis (MDOF) and evaluate the difference in time to fail between the different environments. Interesting mileposts during the process, experimental response and analysis are discussed.

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