Project Summary:

Failure Analysis of Circuit Card Assemblies

A major personal computer manufacturer asked DfR Solutions to perform failure analysis on CCAs that had been subjected to accelerated life testing. Some findings included excessive flux residues, broken leads on aluminum electrolytic capacitors, solder ball attachments, voids in the ball grid array interconnects, and partially filled plated vias. DfR's recommendations included a review of the accelerated life testing methods to avoid broken electrolytic capacitor leads, reviewing surface mounting procedure to eliminate solder ball formation, and capping the vias with solder mask.

Keywords: CCA, circuit card assembly, computer, aluminum electrolytic capacitors, flux residues, solder ball, BGA, ball grid array, heat sink termination, partially filled vias, non-destructive evaluation, visual inspection, x-ray analysis, cross sectioning, epoxy resin, separation of lead connections from component body, through-hole capacitors, cyclic fatigue, solder joint fillet, fatigue-driven failure, electrodynamic pulses, repetitive shock, stencil aperture, bond pad, paste viscosity, reflow profile, voiding occurrences, crack propagation in BGA components, defect condition, process indicator condition

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