

## Project Summary:

### Design Review of Thermostat

DfR Solutions was asked to perform a comprehensive design review of a new high-end thermostat design. The thermostat manufacturer had already established a very good basis of defining the product use environment and performing component and step stress analysis. DfR Solutions recommended a truer standard for measuring reliability goals for the thermostat, including consideration given to meeting the customer-desired lifetime, maximizing performance during the warranty period, and instituting failure analysis on field returns. DfR Solutions also recommended switching to a lower voltage DC aluminum electrolytic capacitor and adjusting to meet RoHS compliance.

Keywords: gold, solder tails, electrolytic capacitor, failure analysis, popcorning, root cause, SMT diode, temperature humidity bias, transformer, LCD display, battery powered, warranty period, customer desire lifetime, incorrect installation, no fault found, wrong product ordered, field returns, voltage rate assurance, ESD sensitivity, surge testing, vibration, mechanical shock, critical to quality parameter, CTQ, transformer, relay, wave soldering, virtual qualification, lot qualification, contamination, solderability, Pb-free, RoHS