

Teardown Session Tuesday March 19, 2019

Alternative Thermal Solution for a Wireless Home Router

Justin Dixon, Electronic Cooling Solutions, Inc.

In recent years the demand for faster internet speeds has been steadily increasing. As consumers rely more on the internet for shopping, streaming videos, gaming, personal communications, business, etc. the technology used to support these applications must advance to keep in step with demand. The market dictates that devices of this nature be small, silent and aesthetically pleasing while also meeting performance requirements. Currently, many wireless devices use vents and heatsinks to cool internal components which alters the external appearance and can reduce aesthetic quality.

This Teardown session will explore the possibility of removing the heatsinks and vents currently used for cooling in a high end wireless home router and replacing them with an alternative thermal solution using heat spreaders and conductive enclosure materials. Thermal analysis and thermal test data are presented and used to demonstrate the functionality of the alternative thermal solution. A “tear down” and evaluation of the current thermal solution are presented. The evaluation includes IR scans to determine hot spots and thermal test data to determine component temperatures under stressed loading conditions. Illustrations of system components and architecture and obstacles to designing a thermal solution are also discussed.



Justin Dixon has been a consulting thermal engineer at Electronic Cooling Solutions for 5 years. He has provided thermal analysis and testing services in the consumer electronics, telecommunications, automotive and medical devices industries. Recently he has consulted in the design for a number of consumer electronics devices such as routers, access points, cameras, LCD displays and more. He graduated, with honors, from San Jose State University with a degree in Mechanical Engineering and a focus on thermal fluids.
