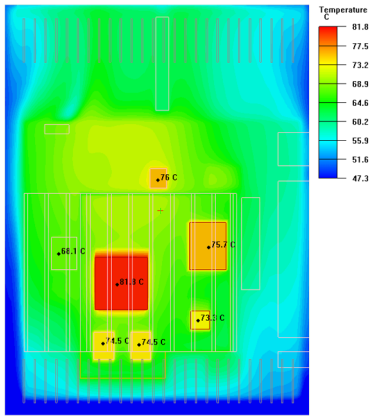
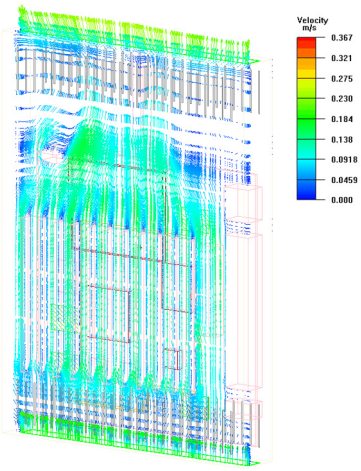
# Wireless Remote Access Point
*Design Case Study*


## Introduction

A manufacturer of high performance wired and wireless networking equipment asked Aavid, Thermal division of Boyd Corporation, to evaluate and improve the thermal performance of their wireless remote access point, with an eye toward future product generations.

## The Challenge

The product had to be cooled by natural convection airflow for reasons of noise and cost. The prototype CAD model of the product was slimmer than the older model which would limit airflow through the system.

The primary orientation of the product during use was vertical, which was best for airflow, but the product also needed to meet the thermal performance requirements in the worst-case orientation, when the product was horizontal.

The initial CFD analysis showed that as designed, the top and bottom enclosure vents severely limited airflow. The CFD model predicted that this would cause several electronic components to operate above their temperature limits.

Dust accumulation in the vents over time might reduce system airflow and cause overheating.

## The Solution

Additional vents were added to the front and back of the product case near the top and bottom vents. This increased the system airflow by nearly a factor of three and reduced the likelihood of dust blocking the vents.

Additional thermal design improvements included:

- Placing a thermally conductive "gap pad" between the high-power components and the EMI shield
- Adding a second gap pad to link the radio board to the main PC board
- Designing optimized heat sinks for several critical components

## The Deliverables/Results

The Aavid modifications successfully lowered all component temperatures below their thermal limits in both vertical and horizontal orientation, while maintaining the aesthetics of the customer's design.

Aavid's thermal analysis provided the customer with a thermal design platform they could build on for future product generations.