

## ATCA/AMC Thermal Analysis & Design

### Project Highlights

#### Services Value

*Enabled a new high-powered ATCA configuration that had been un-resolved by other vendors*

#### Customer Benefits

- Project-based availability of external thermal expertise
- One-stop thermal design services and COTS convenience and cost

#### Services Applied

- Thermomechanical analysis, simulation, and validation

### Work Summary

A telecom customer wanted to package a femtocell product in an AdvancedTCA® (ATCA) form factor. The required configuration included two Cavium OCTEON Plus™ and two Wintegra WinPath2™ processors on an ATCA blade. The high power density of this multiple AMC modules configured in a carrier configuration led to thermal concerns.

Due to the high power consumption and the ATCA form factor, other vendors were not able to achieve this configuration.

Interphase provided the telecom carrier a cost effective configuration of COTS products that included one pair OCTEON-based AdvancedMC™ (AMC) cards, one pair of WinPath2-based AMC cards, and an ATCA carrier. Although this off-the-shelf solution met the customer's capability and form-factor specification at the right cost point, the customer required proof that the solution met their thermal limits.

Interphase analyzed several configurations using ANSYS® Icepak® Computational Fluid Dynamics (CFD) simulation. Simulation results for the required configuration showed several hot spots in the upper AMC bays that exceed the maximum allowable operating temperatures.

Interphase addressed specific hot spots by applying a thermal compound to create a conductive path to the heat sink on the OCTEON-based cards. Based on IcePak analysis of additional configurations, Interphase also rearranged the AMCs in the carrier to take better advantage of chassis air flow.

Using the Accusense Blade Profiler from Degree Controls, Inc., Interphase engineers then validated the IcePak simulation results. Using this detailed thermal analysis, Interphase derived a solution that met all of the customer's requirements.

### Engineering Design Capabilities Applied

This particular design services project helped our customer to:

- **Thermal Design services** – obtain a powerful ATCA blade that met their specifications in every regard, including thermal limits validation, in a cost-effective way.

