

# Synopsys and Ralink Technology

## Complete DesignWare IP for PCI Express Helps Reduce Power Consumption and Lower Area



**“Lowering the power consumption for our chipset was our main goal. Synopsys provided us with a complete, PCI Express IP solution that helped us deliver a product that is extremely competitive in both power and area.”**

— Rick Jeng, Executive Vice President, Ralink Technology

### Business

Ralink is a global leader in 802.11x chipset solutions for wireless communications.

### Ralink Challenges

- Lower power consumption
- Reduce overall chip area
- Reduce time to market

### Solution

- DesignWare® complete IP For PCI Express® including digital controllers, PHY and verification IP

### Benefits

- Reduced overall power consumption
- Obtained PHY IP that was up to 20% smaller than other offerings in the market
- Reduced chip development time by one month with high quality, silicon-proven IP
- Achieved production test in days by utilizing advanced built-in test capabilities

### Overview

Ralink’s renowned 802.11x products deliver superior throughput, extended range, low-power consumption and consistent reliability for today’s Wi-Fi, mobile and embedded applications. Each Ralink chipset provides a comprehensive feature set, a high level of chip integration and compliance with key IEEE and Wi-Fi standards.

Ralink’s feature rich PCI Express 802.11 wireless chipsets embody 2 transmitter, 3 receiver (2T3R) architectures to ensure reliable, cost-effective wireless connectivity at high throughput over an extended range. Optimized RF architecture and baseband algorithms provide superb performance with low-power consumption. Intelligent MAC design deploys a highly efficient DMA engine and hardware data processing accelerators without overloading the host processor. All chipsets support standards-based security, quality of service and international regulatory, giving end users the greatest performance anytime, anywhere.

**“Having high quality, silicon proven IP definitely gave us a time to market advantage. This combined with well documented user manuals and immediate access to a knowledgeable support team enabled us to easily integrate the core within a matter of weeks.”**

*- Rick Jeng, Executive Vice President, Ralink Technology*

**Leading IP Features**

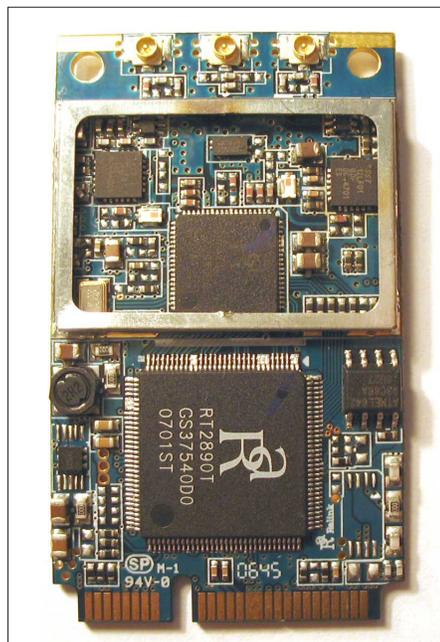
Ralink needed to develop a PCI Express wireless 802.11n chipset (RT2890) that was not only low in power consumption but also smaller in area. The RT2890 chipset is used in small form factor peripherals such as the miniCard, which is ideal for notebooks and mobile devices where space is at a premium. Ralink turned to Synopsys to provide them with a PCI Express IP solution that was up to 50% lower in power consumption and 20% smaller in area than competitive offerings.

In addition, Ralink took advantage of the unique built-in diagnostic capabilities of the PHY to get from initial silicon to production test within a matter of days.

**High Quality and Excellent Support**

The silicon-proven digital controllers, PHY and verification IP enabled Ralink to integrate the IP in a matter of weeks, thus helping to achieve their time to market schedule.

Furthermore, Synopsys provided Ralink with expert support when they needed it. The local applications engineering team was very responsive and the excellent documentation enabled Ralink to speed up production time.



**“The built-in test capabilities of the PCI Express PHY enabled us to get from initial silicon to production test within a matter of days.”**

*- Rick Jeng, Executive Vice President, Ralink Technology*

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 Predictable Success

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