

Synopsys and AMIMON

AMIMON Achieves First-Pass Silicon Success for High-Definition Wireless Video and Audio SoC with DesignWare DDR2 IP



Synopsys' silicon-proven DesignWare DDR IP eliminated the risk of integrating the DDR2 interface into the AMN 2220 chip and enabled us to meet our power, area and performance requirements."



Ofer Peer
 Director of VLSI, AMIMON

Business

AMIMON is a fabless semiconductor company pioneering wireless uncompressed high-definition video for universal connectivity among consumer electronic video devices.

Challenges

- ▶ Achieve high-performance, low power and small area design requirements
- ▶ Acquire silicon-proven and reliable DDR2 IP that would lower integration risk
- ▶ Obtain a DDR2 IP solution that met the necessary feature requirements

DesignWare IP Solutions

- ▶ DDR2 Memory Controller and PHY in 90nm process technology

Benefits

- ▶ Achieved first-pass silicon success with high-quality DDR2 Memory Controller and PHY IP solution
- ▶ Met time-to-market window for industry's first wireless video modem capable of delivering uncompressed HD resolutions of 720p, 1080i and 1080p
- ▶ Received excellent and timely support from a knowledgeable IP team

Overview

AMIMON's uncompressed Wireless High-definition Interface (WHDI™) allows flat-panel televisions and multimedia projectors to wirelessly interface to all High-Definition TV (HDTV) video sources at a quality equivalent to that achieved with wired interfaces such as component video, DVI and HDMI™.

AMIMON offers WHDI™ chipsets, modules and reference designs that enable wireless transmission in the 5 GHz unlicensed band of uncompressed HD video streams with equivalent video data rates of up to 3 Gbps (including 1080p) using 40 MHz of bandwidth in compliance with FCC regulations. Video data rates of up to 1.5 Gbps (including 1080i and 720p) can be delivered using 20 MHz of bandwidth, conforming to worldwide 5 GHz spectrum regulations.

WHDI™ has been demonstrated at ranges of up to 100 feet through walls, and has a latency of less than one millisecond. All other wireless solutions are limited to delivering compressed video such as MPEG, which is typically not available at the output of most consumer electronics video devices.



The DesignWare DDR IP met our performance requirements and the hard-macro PHY made the back-end implementation much simpler compared to soft PHY solutions.”

Ofer Peer, Director of VLSI, AMIMON

Leading DesignWare IP Solution

The AMN 2220 baseband receiver SoC is AMIMON’s second generation chip based on the revolutionary video modem technology operating in the 5 GHz unlicensed band, pioneered by AMIMON and the backbone of WHDI. The AMN 2220 is the industry’s first chip capable of wirelessly delivering full uncompressed 1080p/60 Hz HD content throughout the entire home, without sacrificing image quality. The chip connects wirelessly between a wide variety of video transmitting devices such as DVD players, set-top-boxes and game consoles to any display device such as LCDs, monitors, and projectors.

To help meet their time-to-market window for their AMN 2220 chip, AMIMON needed a third party DDR IP solution that would meet their performance, area and feature requirements. But equally important, AMIMON wanted a solution that would lower the risk of integrating the complex DDR2 interface into their chip and work right the first time. After evaluating several IP vendors, AMIMON selected Synopsys’ silicon-proven DesignWare® DDR2 Memory Controller and PHY IP. Synopsys provided AMIMON with a DDR2 solution that offered low power consumption and small area. Furthermore, the IP was capable of operating at data rates of up to 1066 Mbps, allowing them to easily meet their performance requirement.

Unlike other DDR IP solutions in the market, Synopsys provided AMIMON with an integrated hard-macro PHY that enabled them to significantly simplify the back-end implementation.

High-Quality IP and Excellent Support

Selecting high-quality DDR IP from Synopsys enabled AMIMON to lower their integration risk and achieved first-pass silicon success for their complex design. “Synopsys completely eliminated the risk of integrating the DDR interface into our design and delivered a reliable product that just worked as expected,” commented Mr. Peer. “This was one of the most valuable contributions that Synopsys brought to the project.”

AMIMON easily integrated the DesignWare DDR IP within a month with no major issues. When they did need assistance, the Synopsys’ technical team was always there to provide timely and knowledgeable support that was better than what AMIMON experienced from other IP providers. AMIMON also found that the comprehensive and well-written documentation further helped to simplify the integration of the DesignWare DDR IP into their design.

The AMN 2220 chip was successfully introduced and quickly gained significant momentum in the market. With this project behind them, AMIMON is well on its way to developing the next-generation of innovative products that will further enable the mass adoption of WHDI technology into the home. “Synopsys is a well established IP provider and their DesignWare DDR IP will continue to play an important role in our future product developments.”



“The quality of the DDR IP is exactly what we would expect from Synopsys and the responsiveness of the technical support team is better than what we have experienced with other vendors. They are definitely experts in their field.”

Ofer Peer, Director of VLSI, AMIMON



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