

LucidPort creates unique chip for PC peripherals, with help from Ellisys analyzers

Client

**LucidPort
Technology**



Mountain View, CA

Fabless semiconductor startup

www.lucidport.com

Challenge

To develop a chip that easily adds wireless USB capability to PC peripherals.

Solution

LucidPort used both an Ellisys Explorer 200 and a Wireless Explorer 300 protocol analyzer to help test its new L800 chip.

Benefits

Using both analyzers for hardware emulation testing, LucidPort ensured that its chip complied with both the USB 2.0 and Certified Wireless USB specifications.

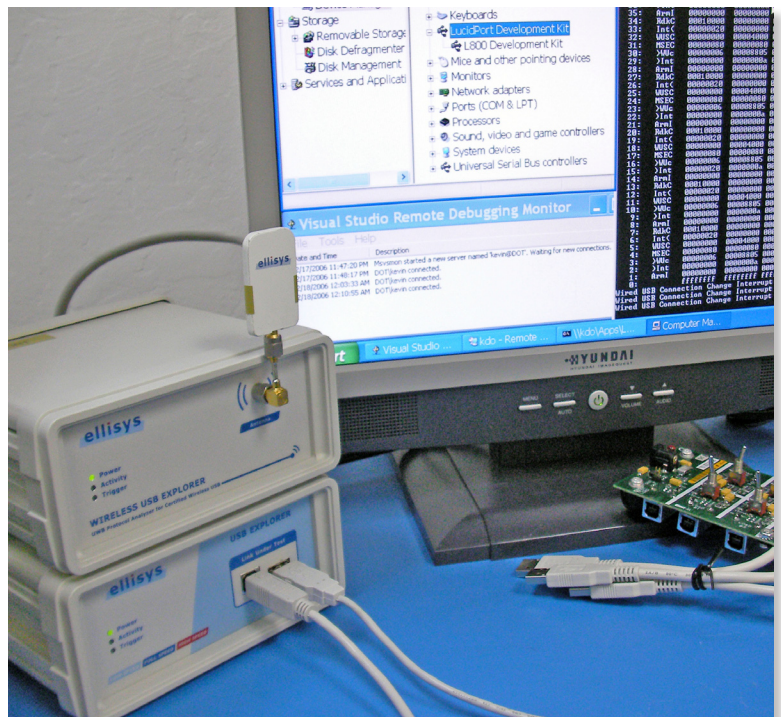
Quote

"Our biggest concern is that the chip works, and that it's fully compliant with the USB standards. This would have been impossible without the Ellisys analyzers; they were critical to our development process."

Reid Augustin, VP of Engineering
LucidPort Technology

To help PC peripheral makers add support for Certified Wireless USB, engineers at Silicon Valley's LucidPort Technology faced a double challenge. They needed to develop a unique new chip that complies with both wired USB 2.0 and Certified Wireless USB.

And they chose Ellisys protocol analyzers to provide precise, easy-to-use functions for both standards during their year-long development process.



Saving time and effort

Wireless USB creates a high-bandwidth wireless network up to 30 feet around a host PC. The concept is simple --- but it takes a lot of work to add Wireless USB to an existing peripheral.

"Lots of products already have wired USB, but when a manufacturer wants to add wireless USB, they have to modify their legacy firmware for association," says Adam Chen, LucidPort's VP of marketing. "But the person who wrote that firmware probably hasn't worked on it in years."

Revising firmware costs money, and slows down a manufacturer's time to market with an updated product.

LucidPort's mission is to help PC peripheral makers save time and effort when adding Certified Wireless USB, by putting both the wired and wireless USB interfaces in a single chip with a single driver.



Ellisys is a leading supplier of cutting-edge USB, Wireless USB and Ultrawideband Protocol Analyzers. The company's products help hardware, software and test engineers save development effort, improve quality, and accelerate time to market. Ellisys protocol analyzers range from simple and cost-effective tools to high-end fully-featured equipment.



Based in Mountain View, CA, LucidPort Technology is a fabless semiconductor company developing Certified Wireless USB controllers powered by Ultrawideband technology.

LucidPort's controllers are designed for PC peripherals like printers, scanners, cable modems, TV tuners, and wireless hard disks. They also add wireless functionality to consumer electronics products like IP phones, portable media players, digital cameras, and home media equipment.

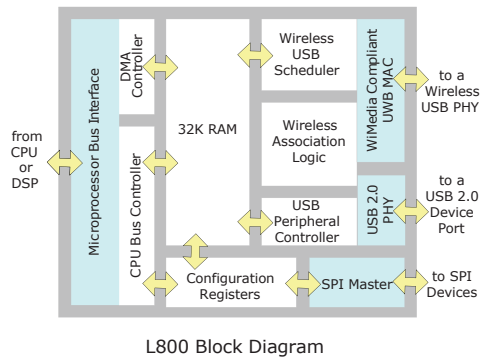


Adam Chen
V.P. Marketing
LucidPort

"The analyzer is a critical piece of equipment. You can't do effective debugging without it, because you're just guessing at what's going over the air."

Disciplined design process

Over the past year, the fabless semiconductor startup followed a disciplined process to develop its double-duty L800 chip. They wrote a detailed spec, designed the chip, and then verified the design in software.



peripheral like a printer with a lot of physical constraints and a lack of I/O."

"The wireless analyzer sat between the host and peripheral, sniffing out all the packets going over the air. Being able to capture traffic with the wireless analyzer was really helpful," says Augustin.

While the Explorer 200 captured what the L800 chip sent down the USB wire, the Wireless Explorer 300 recorded what was happening on the wireless side. Then engineers could analyze the two results to make sure everything was working right, and finalize the chip design.

A critical piece of equipment

After using the Ellisis analyzers to help meet this tough challenge, what does LucidPort's engineering team think of them?

"The analyzer is a critical piece of equipment. You can't do effective debugging without it, because you're just guessing at what's going over the air," says Chen. "It's a mandatory tool. We couldn't have done the emulation without it."

Among the features they especially liked were the simple setup, the portability, the ability to filter signals to focus on one peripheral, and the clear decoding which spared engineers from memorizing the entire USB packet structure.

The team was also pleased to get a free upgrade for the Wireless 300 Explorer after they purchased it, which refined the interface and improved the device even more. All Ellisis products come with a free lifetime software upgrade.

"Our engineers liked the fact that using the analyzers was an almost real-time operation," notes Augustin. "Because there was no post-processing delay, they didn't have to guess when something was recorded. When it was done, they could just stop the analyzer."

The next step was emulating the chip in a field-programmable gate array (FPGA) plugged into hardware devices for real-world testing.

"Nothing ever quite works the way you expect, so you absolutely need to emulate it to verify the interpretation of the protocol," says Chen. Unspoken assumptions, little-used options, and corner cases can all make headaches for USB designers.

LucidPort's team needed USB test equipment for emulation testing. Ellisis had the only Wireless USB protocol analyzer that really worked over-the-air, as well as a full-featured wired USB analyzer, so LucidPort ordered one of each.

"It was nice that both analyzers were from the same manufacturer, because both have the same clean interface," says Chen. "The Ellisis analyzer helps us find ambiguities in the spec that were not anticipated by the authors."

An easy clean test setup

LucidPort's test setup included a wireless USB host: a PCI board in a standard PC, running custom software to send test patterns to the peripheral. The peripheral was LucidPort's own FPGA board in another PC, with the L800 chip programmed into the FPGA.

"That whole PC, in effect, becomes the USB peripheral. This allows us to easily control what goes on in the peripheral from a standard operating environment using common software tools," says VP of Engineering Reid Augustin. "That's a lot easier than working with a

LucidPort engineers also liked the scan channel function. When they plugged in another wireless device during emulation testing, they didn't always know which USB channel it was using. But the analyzer automatically found it by scanning every channel periodically.

All in all, the Ellisis analyzers gave the LucidPort engineers everything they needed for their unique project: powerful features, complete ease of use, and flexible coverage of both USB standards. 📶



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