Powerline comms offers low data links for smart meters in the home

In-building power lines targeted for low-bandwitdth functions like smart metering, writes **Steve Bush**

Machine-to-machine (M2M) communication over domestic power lines is the aim of Bath-based fabless start-up Xsilon.

The firm is aiming at in-building, rather than access applications and intends to trade data bandwidth for coverage: reaching all mains sockets in a house at low bandwidth, rather than some of the sockets at high bandwidth. "As M2M services look to connect to mobile devices that move in and out of the consumer's home, and as M2M services within the home begin to take off, a generation of reliable M2M connectivity is now needed for mass market take-up to begin," said Xsilon.

Products following the HomePlug standard are also aimed at in-home powerline communication. "The HomePlug Alliance is chasing video data rates. We use the same 2MHz-30MHz mains spectrum to chase connectivity rather than bandwidth," Xsilon's vice-president of business development Russell Haggar told *Electronics Weekly*.

The intention is to provide links of 100kbit/s-500kbit/s for any M2M ap-

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plication, said Haggar, offering examples of home energy management, and smart metering in blocks of flats. Home energy management in this case is separately monitoring the power consumed by individual home appliances so that an energy display can show what is consuming what.

Initially, the raw data would come from smart adapters that sit between appliance plug and wall socket. Isn't this one of the intended applications for ZigBee?

"We are going after the markets ZigBee is after, but we are looking at the places ZigBee won't work. You would use ZigBee where ZigBee will work," said Haggar, for example: "Washing machines tend to be at the extremity of the home, then you put the ZigBee plug between a concrete wall and the Faraday cage that is the washing machine."

The firm is calling its own system Hanadu. It uses a proprietary modulation scheme – being patented now – and supports networking standards including IPv6, 6LowPAN, Weightless, Home Automation Profile 1.1 and Smart Energy Profile 2.0; smart energy profile usually sits on top of ZigBee.

Hanadu supports ad hoc topologies with auto-discovery routing algorithms, and bandwidth scales to support "many dozens" of connected endpoints within a single home," said Xsilon.

The firm is aiming to draw 0.5W or less from the mains. "That is the ballpark. Powerline is difficult, a typical HomePlug needs 4W-5W," claimed Haggar.

The first chips are planned for next year, followed by a dual-mode Hanadu-ZigBee product. Xsilon intends to form an industry body around Hanadu. "This is common practice," said Haggar. "There are various templates of how to make intellectual property open to a standard."

The product scheduled for 2013 is the HAN1250 module – available pre-assembled for direct incorporation into OEM products, and as a reference design. The HAN9000 evaluation kit is scheduled for delivery in Q3.
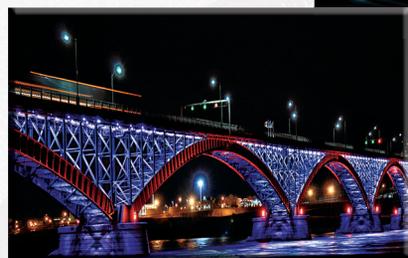
The HomePlug Alliance has a specification called Green PHY aimed at 1Mbit/s effective data rate (3.8Mbit/s peak PHY rate) "estimated at up to 75% lower cost and 75% less power consumption than HomePlug AV", said the alliance.

And HomePlug is not blind to its lack of socket coverage. It also has a 'smart energy initiative'. "By providing a complimentary ZigBee and HomePlug infrastructure, the coverage for large homes and multi dwelling units can be assured", it claimed. ∎

Xsilon
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