

## **The Tinker's Toolbox - Tim Colleran of Qualcomm Atheros on the Smart Grid and the 'Internet of Things'**



Hosted by Alix Paultre, the Tinker's Toolbox is the Advantage Design Group's web-based interview show where we talk about the latest technology, components, and design issues for the electronic design engineering community.



In today's podcast we talk to Tim Colleran, Director Internet of Things, Qualcomm Atheros. The 'Internet of Things' is the idea that everyday objects can be readable, recognizable, locatable, addressable, and controllable via the Internet. Qualcomm Atheros has created an initiative to directly address this developing philosophy and technology.

[Right-click to download the podcast](#) [1]

Here is a link to the podcast in case the play button is not visible: [Qualcomm Atheros Interview](#) [1]

Here is their presentation on the 'Internet of Things': [Internet of Things Presentation](#) [2]

Here is a recent press release:

Qualcomm Atheros, the networking and connectivity subsidiary of Qualcomm, today announced the AR4100, a first-of-its-kind, highly integrated Wi-Fi system-in-package (SIP) for microcontroller (MCU) based design. The new module is based on

Qualcomm Atheros' industry-leading 802.11b/g/n single-stream Qualcomm Atheros Align technology, enabling long range transmission while minimizing energy consumption. The product is initially aimed at customers implementing machine-to-machine (M2M) communications in the smart home/building/grid markets, also referred to as the "Internet of Things."

The AR4100 is the newest product within the [Qualcomm Atheros Internet of Everything product portfolio](#) [3], which includes standards-based wired and wireless technologies to enable scalable Internet protocol (IP) infrastructures for smart grid, smart home, security, building automation, remote health and wellness monitoring and other M2M applications. With its extensive technology portfolio and IP networking expertise, Qualcomm Atheros is uniquely positioned to deliver a variety of low-energy, standards-based communications solutions that connect potentially hundreds of IP addressable devices in the home, building or grid.

The AR4100 is the industry's smallest FCC-certified SIP package, integrating all Wi-Fi functionality into a low profile 8.3 mm by 9.2 mm LGA package that can be easily mounted via low-cost PCB manufacturing flows. The AR4100 is optimized for client applications hosted by low-resource MCUs that send infrequent data packets over the network. MCUs interface to the AR4100 via a simple serial peripheral interface bus (SPI) and will be initially aimed at customers in the smart home, smart grid and smart building markets. The AR4100 SIP provides full offload of all Wi-Fi functionality, including security protocols such as WEP, WPA, WPA2 and WPS. The AR4100 is a pre-certified FCC solution that offers simple wireless system integration, requiring only a few external bypass capacitors and a connection to an antenna for a board-level design.

Qualcomm Atheros is collaborating with Freescale Semiconductor to bring the AR4100 to market. The two companies have worked together to develop an implementation for Freescale's Tower development System. The TWR-WIFI-AR4100 is a peripheral module for the Tower System that allows the AR4100 to be quickly added to tower designs based on select Kinetis and Coldfire processors. The TWR-WIFI-AR4100 package comes with all of the required software to implement an AR4100 design, as well as example designs. The module is tightly integrated with Freescale's MQX operating system. The TWR-WIFI-AR4100 will be available beginning June 20, 2011 through Freescale and select distribution channels.

"The AR4100 is an exciting product for Qualcomm Atheros and marks a significant step forward in advancing our Internet of Everything vision. Many potential customers have been frustrated by the lack of a standards-based, globally interoperable, low-cost modular solution for M2M applications, which is broadly available, energy efficient and can connect easily to a simple MCU running various applications," said Adam Lapede, senior director, Internet of Things technology, Qualcomm Atheros. "Qualcomm Atheros is providing an innovative, standard Wi-Fi based solution that can deliver outstanding performance in extremely small size, with low energy and cost. Our collaboration with Freescale will help enable a wide variety of customers with the AR4100 and accelerate products getting to market with the easy-to-use Tower system and MQX development suite. We believe the AR4100 offers a unique value proposition for the industry and will help expand the

universe of connected devices.”

The initial development environment is the Freescale Tower System, with optimized support for the Freescale MQX Operation System, leveraging the IAR Embedded Workbench compiler for the Freescale Kinetis MCU product line, and the Freescale CodeWarrior® tool suite for the Coldfire MCU product line. The AR4100 is backwards compatible to any existing 802.11b/g infrastructure and forward compatible with higher-performance, multi-stream, MIMO-based 802.11n infrastructures.

“Freescale and Qualcomm Atheros share a common vision for increasing connectivity in the home and enterprise to share information, streamline operations and reduce expenses. We are deploying leading-edge technologies into many of these markets, but no single connectivity solution meets the needs of our diverse customer base,” said John Weil, global product and enablement manager at Freescale. “Qualcomm Atheros’ broad array of wired and wireless solutions will complement Freescale’s offering in helping our customers deliver connected devices that will enable the true Internet of Things.”

<http://www.qca.qualcomm.com/networking/technology.php?nav1=149> [4]

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**Links:**

[1] <http://www.ecnmag.com/sites/ecnmag.com/files/legacyfiles/ECN/Multimedia/Audio/2011/08/qualcomm.MP3>

[2] [http://www.ecnmag.com/sites/ecnmag.com/files/legacyfiles/ECN/Multimedia/Audio/2011/08/IOE\\_AR4100\\_Presentation\\_20v8.pdf](http://www.ecnmag.com/sites/ecnmag.com/files/legacyfiles/ECN/Multimedia/Audio/2011/08/IOE_AR4100_Presentation_20v8.pdf)

[3] <http://www.qca.qualcomm.com/networking/feature.php?feature=16>

[4] <http://www.qca.qualcomm.com/networking/technology.php?nav1=149>