CalRadio is a wireless transceiver research program that has already produced a first generation of test platforms for radio frequency (RF) and networking research and development applied to a broad range of applications.

These platforms are for the community of developers of wireless software and hardware, and they are made available to researchers on an open basis for R&D. A single integrated test platform gives a new dimension to radio design that could lead to new publishing standards in software/firmware and hardware. This would greatly speed the design, implementation and adoption of new standards.

CalRadio platforms have been supplied to numerous university and industry labs, and it will be integrated into a new research infrastructure of wireless communication platforms that are programmable down to the physical layer and testbeds based on such platforms.

CalRadio gives wireless developers new flexibility

CalRadio is a simple, low-cost software-defined, radio-based test platform for 802.11b MAC layer (layer 2) research and development. It functions both as a test instrument, an access point, and as a Wi-Fi client.

The first-generation CalRadio 1 consists of three hardware components: MP board, RF module and enclosure, and the software/firmware to drive it. The MP board contains all the digital processing, memory, 802.3 Ethernet interface, and serial interface. The device uses a WLAN physical layer Intersil (Conexant) chipset with parameterized control of transmission power, data rate, packet header, etc. It also puts all the MAC functionality into ‘C’ code that runs on a TMS320VC5471 Texas Instruments DSP. Additionally, the C5471 contains an ARM processor that is used to host a small Linux operating kernel to provide easy access to programming, downloading as well as display and monitoring of data. The next version of CalRadio will replace the special-purpose 802.11b radio front-end with a general-purpose RF front-end operating in different frequency ranges.

"CalRadio simplifies the task of obtaining real-world performance analysis for RF/networking research across device layers."

Doug Palmer, Calit2 Researcher

http://calradio.calit2.net

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