

NICTA demonstrates new interference-cancellation modem for 3G femtocell networks

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(PhysOrg.com) -- NICTA, Australia's Information and Communications Technology (ICT) Research Centre of Excellence, has successfully demonstrated technology that reduces the amount of radio interference in 3G networks with femtocells.

A femtocell is a small wireless base station that connects to the telephone network via a home or office [broadband connection](#). Targeted at people using 3G mobile connections indoors, where they may encounter mobile coverage 'black spots', a femtocell provides significant improvements in coverage and capacity.

[Radio interference](#) from other 3G connections is recognised as one of the top issues in femtocell networks. NICTA has developed technology to address such interference. A real-time proof-of-concept test in Canberra last week showed the NICTA femtocell connecting to multiple 3G devices. The test verified that NICTA's uplink interference cancellation (ULIC) technology successfully and substantially reduced radio interference in the uplink.

When integrated into system-on-chip products, the NICTA technology will increase service quality for 3G mobile devices, improve coverage and capacity, and minimise the impact on legacy wireless infrastructure. The ULIC technology, developed by NICTA's InterfereX project team, is believed to be a world-first. The demonstrator is realised fully in

programmable [logic gates](#), thereby providing a straightforward path to a low-cost, small footprint silicon chip implementation.

NICTA InterfereX Project Leader Dr Mark Reed said the design was the result of many years of research and development effort. “Our unique design approach was based on discussions with industry on the need for a low-cost design capable of minimising the impact on legacy wireless infrastructure by using advanced interference cancellation techniques. Our innovative architecture and design methodology has allowed us to deliver this.”

The test configuration used a universal [radio communication](#) tester from electronics company Rohde & Schwarz as one of the 3G devices connected to the NICTA femtocell. The R&S CMU300 universal radio communication tester provided an excellent test platform for validation of the InterfereX design and made development and test easier through the graphical user interface and internal signal setup and generation options.

Rohde & Schwarz test solutions support the latest 3GPP specifications, and are applicable from design and production through conformance testing of components and mobile terminals. With the R&S CMU-K78 WCDMA hardware and R&S CMU-K70/71/75/78 option, the creation of WCDMA uplink and downlink signals of excellent quality is straightforward and convenient.

Provided by NICTA

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