

**NEWS GUIDE**

- Business/Stocks
- Headline index
- NH politics
- Sports
- War on terror
- Weather

**OPINION/EDITORIALS**

NH Classifieds

- Cars
- Jobs
- Homes

**SPECIAL REPORTS**

- 40 Under Forty
- Campaign 2004
- Church in crisis
- Old Man's fall
- Teens in NH

**LOCAL COLUMNS**

- City Hall
- Granite Status
- John Clayton
- Our Gourmet
- Publisher's notes
- State House Dome

**SPORTS COLUMNS**

- Jim Fennell
- Joe Sullivan
- Vin Sylvia

**OUTDOORS**

- John Harrigan
- Stacey Cole

**LISTINGS**

- NH businesses
- NH events
- NH links
- NH nightlife
- NH sex offenders
- Support groups

News - June 23, 2004

**UNH prof solves radio wave problem**

By **BRIAN DEKONING**  
Union Leader Correspondent

**DURHAM** — Squashing bugs in a police radio system has led to international recognition for a University of New Hampshire professor - and a possible patent for the school that could drastically change police radio testing.

Kent Chamberlin, 54, who has taught electrical and computer engineering at UNH for nearly 20 years, said he wasn't looking for recognition - or 50,000 yen - when he began isolating electromagnetic interference in police cruisers outfitted with voice activated control systems by UNH.

Known as Project 54, the systems allow police to operate sirens, computer data bases and other tools through one voice-activated network instead of fussing with dozens of switches and buttons while driving their cars in frequently dangerous situations.

Project 54 is heralded by police as a marked advancement and has put systems in nearly 200 cars but electromagnetic interference from the system sometimes left police radios inoperable, according to Chamberlin.

"In order to work radios at the fringe areas of radio coverage, police had to turn off (Project 54) equipment," Kent Chamberlin said. "And that was a little embarrassing."

The interference was caused by electromagnetic waves generated by the many gadgets inside a police cruiser as well as from outside the car. Chamberlin explained that almost any electronic device generates some kind of radio waves, from a tape recorder to a laptop computer.

UNH scientists solved the problem by putting Project 54 devices into shielded boxes and using electromagnetic noise suppression instruments.

But that's not what won Chamberlin 50,000 yen (about \$465 U.S. dollars) and the "Excellence of the Presented Papers" Award at the International Conference on Electromagnetic Compatibility held in early June in Japan.

In his paper "Measuring the Impact of In-vehicle-generated EMI on VHF Radio



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Reception in an Unshielded Environment,” Chamberlin presented a new way to measure interference previously unknown to the industry.

While the only test available for such interference in vehicles involves a large shielded garage box that runs in the \$1 million range, Chamberlin came up with a test that uses little more than a laptop and a WiNRADiO - which total about \$2,000.

With software he wrote, the system is designed to be user-friendly and test unused frequencies, eliminating the need to shield outside sources of interference such as radio stations.

“As far as technology goes, it’s nothing earth shattering,” Chamberlin said. “It’s just common sense.”

The testing device could be of great use to car makers and could even apply to plane manufacturing, Chamberlin said.

“A number of car manufacturers asked me about at the conference,” Chamberlin said, listing Nissan and Toyota among those interested.

To that end, UNH’s Office of Intellectual Property Management is looking into a patent for Chamberlin’s technology.

But Chamberlin said he was just glad to solve the interference problem and make sure Project 54 systems work.

“I’m not in this for the money,” he said. “I would love to see UNH make out well. And I would love to see some money too, but that’s not my motivation.”

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