

In the HotSeat: LTE Coexistence

WDD Staff



This year at the [LTE Innovation Summit](#) [1], held in Del Mar, CA, attendees received a real-world perspective on the technologies and trends shaping today's mobile wireless communications industry.

In attempts to revolutionize the way we manage airwaves, the U.S. Federal Communications Commission (FCC) has called for innovative technologies that enable safe and efficient spectrum access in new shared spectrum bands.

[Virginia Tech's](#) [2] results on LTE coexistence with radar in the 3.5 GHz band, obtained by the Wallops Island in August 2013, provides a stepping stone towards secondary usage of Federal spectrum.

Dr. Vuk Marojevic and Dr. Jeff Reed, both from Virginia Tech, sit down with *Wireless Design and Development (WDD)* in this special edition of the HotSeat to discuss LTE coexistence with radar at 3.5GHz:

WDD: How will LTE play an important role in shared spectrum bands?

Dr. Marojevic & Dr. Reed: LTE will play a key role in spectrum sharing for the 1,755 MHz band and the 3.5GHz bands. The PCAST report on spectrum has identified up to 1 GHz of bandwidth that might eventually be shared.

WDD: What obstacles are present when trying to create shared spectrum bands between LTE and radar in the 3.5 GHz band?



Dr. Marojevic & Dr. Reed: In the 3.5 GHz band are some very high power radar systems that are legacy users and, hence, have top priority to the band. Sharing is expected to be accomplished using a database approach, but interference mitigation techniques would be very helpful.

There are also security issues in registering a legacy user's location in a database since this could be a security risk.

These radar systems are also very high power systems, so the possibility exists of overloading the front-end of the LTE receiver. In general, for carriers, they will likely use 3.5 GHz in conjunction with their licensed spectrum, and to determine how to handle this mix, which is a research issue.

WDD: Why is it important to create a shared radio environment? What are the downfalls if this coexistence is not successful?

Dr. Marojevic & Dr. Reed: It is important to provide more spectrum to the wireless users since the amount of wireless data traffic is growing exponentially. It is getting to the point that finding spectrum that can be reframed to support new commercial services is cost-prohibited with the usual method of clearing spectrum and auctioning, particularly for spectrum below 6 GHz.

Hence, spectrum sharing becomes the only viable way to acquire new spectrum. Radar systems are particularly attractive to share with since much spectrum is allocated to radar systems, and these systems tend to operate infrequently in time and/or space.

Virginia Tech's study concluded that communication is possible in the presence of operating Naval Radars under certain operating conditions – the key is to operate at higher power than usual microcellular operation, or keep the path length short.

In the HotSeat: LTE Coexistence

Published on Wireless Design & Development (<http://www.wirelessdesignmag.com>)

For more information, visit:

<http://lte-summit.com> [1]

www.rohde-schwarz.us [3]

<https://www.vt.edu> [2]

Source URL (retrieved on 06/02/2015 - 9:38pm):

<http://www.wirelessdesignmag.com/articles/2014/04/hotseat-lte-coexistence>

Links:

[1] <http://lte-summit.com>

[2] <https://www.vt.edu>

[3] <http://www.rohde-schwarz.us>