

Radio Receiver Systems: *R&D Innovation Needs and Impacts on Technology and Policy*

WSRD Workshop IX

May 5, 2017

Synopsis

Principles of co-existence and interference tolerance are often overlooked and under-exploited in today's radio receiver systems. For example, a receiver's ability to accept wanted signals or reject unwanted signals impacts the quality of the information transmitted. The Wireless Spectrum R&D Interagency Working Group (WSRD) will hold a workshop, "Radio Receiver Systems: R&D Innovation Needs, and Impacts on Technology and Policy", on May 5, 2017, from 8:00 AM to 5:00 PM at the National Science Foundation, Arlington, Virginia. The workshop will address various signal reception topics including technology advances for receivers, transmitters, filters, antenna design, signal processing techniques, and policy issues.

Despite additional radio frequencies becoming commercially available in the U.S., such as the move to open up several millimeter-wave bands, the nation's radio spectrum continues to get more congested. With the continued proliferation of bandwidth hungry devices and varying on-demand needs, including the Internet of Things, autonomous vehicles (cars and drones), and virtual reality, the need for innovation in radio receiver technology is believed to be an important step toward making spectrum coexistence more successful. For example, recommendations have been made in reports coming out of the FCC's Technology Advisory Council, and the European Union recently published a new Radio Equipment Directive that includes guidance on receivers. While the overall goal is to help build trust between Federal and non-Federal policy makers, operators, and spectrum users that co-existence, both within bands and with adjacent bands, both licensed and unlicensed, can be effective and efficient; focusing on the receiver early in the technology development process has been identified as an important step in assuring interference tolerance.

This workshop will provide a forum for information exchange and the identification of relevant radio receiver research and development opportunities and policy challenges. WSRD members, across multiple federal agencies, will use information gathered from this workshop to develop recommendations for their agency-specific research agendas.

The main goals of this workshop are to:

- Outline the wireless spectrum sharing receiver needs, scenarios and issues for the short-term and long-term.
- Discuss the technology and regulatory frameworks that can deliver appropriate receiver solutions, including those needed for emerging IoT scenarios from passive to active techniques.
- Identify innovative tools, techniques, experimentation, and recommendations for additional research.