

# Jam-Duration Optimization for Responsive Vehicle-Protection Jammers

Jan Mietzner, Patrick Nickel, and Askold Meusling

COMs Jammer Systems & Algorithms (OPES56)

EADS Deutschland GmbH

Cassidian Electronics

D-89077 Ulm, Germany

E-mail: {jan.mietzner, patrick.nickel, askold.meusling}@cassidian.com

## Abstract

In this paper, we consider responsive communications jamming for vehicle protection against radio-controlled improvised explosive devices (RCIEDs). Unlike barrage jamming systems, which operate in an open-loop fashion, responsive jammers scan the radio spectrum on a regular basis and are thus able to react to upcoming signal activities. This allows to focus the available jamming energy on relevant time fractions and frequency bands, which potentially leads to significantly improved jamming efficiencies. In the first part of the paper, we provide a tutorial overview of the various theoretical and practical challenges that are associated with this new jamming technology. In the second part, we turn to the problem of jamduration optimization for a given set of jammer and RCIED parameters. Simulations as well as analytical results are presented which show that with a suitable choice of the jam duration a responsive jammer can achieve an excellent performance, both in the case of a single and multiple relevant RCIED threats.

## Keywords

Electronic warfare, communications jamming, software-defined radio, cognitive radio.

**Conference:** Military Commun. Conf. (MILCOM 2010), San Jose, CA, USA, Oct./Nov. 2010.