

Smartphones -- the grip of death

February 28 2011

New research by academics in the University of Bristol's Centre for Communications Research has highlighted the problems of reduced sensitivity in wireless communications, along with developing new solutions to overcome the loss of connectivity.

The growth in the demand of smartphones has highlighted the complexities of wireless communications through problems of reduced sensitivity when the user holds some devices. New research has been investigating this problem, along with developing new solutions to overcome the loss of connectivity.

The study by academics in the field of antennas and propagation in the University of Bristol's Centre for Communications Research (CCR) is published in the journal *IEEE Antennas and Wireless Propagation Letters*.

The paper builds on previous work that analysed multi-antenna or multiple-input multiple-output (MIMO) enabled wireless devices, such as those now synonymous with the latest cellular radio and wireless [local area network](#) (LAN) products.

The new research rigorously characterised the effects of the antenna being obstructed by the user's hand on the device, when it was in contact with a "thumb phantom" with the dielectric properties of skin and also when operating hands-free.

The researchers showed how signal levels change due to obstruction, position and motion, and that signal fluctuations increase significantly,

therefore tending to impair service quality. The academics also examined how proximity of the operator's hand affects the antenna's radiation and input characteristics.

The results from the study indicate a 100-fold reduction in sensitivity of the device when held, or when the user's thumb is mimicked by phantom material. This de-tuning of the antenna was found not to significantly alter the shape of the radiation pattern, but dramatically worsened the electrical match between the antenna and the [electronic circuitry](#).

Mark Beach, Professor of Radio Systems Engineering in the Department of Electrical & Electronic Engineering, said: "Antenna position and user grip on smartphones may lead to obstruction of radio signal paths and antenna detuning.

"Research looking at the automated re-tuning of the antenna elements to maintain high efficiency when holding smartphones or similar devices to enhance connection reliability with wireless networks is on going within the CCR."

Further tests concluded that providing a gap between the [antenna](#) surface and the phantom thumb using a layer of plastic electrical insulator did not restore the matching and operational sensitivity of the phone for the antennas under evaluation. Thus, some phone covers in the market place may not improve the situation.

Provided by University of Bristol

Citation: Smartphones -- the grip of death (2011, February 28) retrieved 26 April 2024 from <https://phys.org/news/2011-02-smartphones-death.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private

study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.