Keywords: Duplexer, Front end, Handset, Tunable circuit

Context and objectives
Nowadays, for a lot of mobile communication applications, a high integration and miniaturization of electronic equipments are a major challenge, because of increasing number of frequency bands supported by cellular transceivers. Actual duplexer components are made with ceramic substrate, which is very expensive and not tunable. The main objective of my work is to design a tunable duplexer on SOI for mobile application, that can be used across different frequency bands and for multi-standard applications.

Methodology
The major issue of the design that a duplexer must overcome is transmitter leakage signal to the receiver because of high power level at the antenna mobile, desensitizing the receiver through several mechanisms, especially with blocker signal[1].

Results
Using ADS and GoldenGate simulation tools, a transmitter/receiver isolation around 70 dB (having 28 dBm at input power) is achieved at a specific frequency. After some improvements and using new component models, the system will be made and tested at ACCO laboratory.

Related references: