

LTE Inter-Frequency Mobility

Fachgebiet: Mobile ICT

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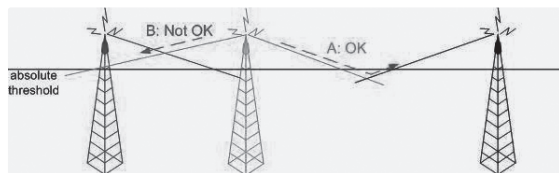
Mobility management is one of the most important and difficult problems while planning and optimising radio access networks. Inter-frequency (Intra-LTE) mobility with overlapping bands is of special interest as it deals with interferences which have to be considered. This thesis examines the effects of potential interferences and recommends a working parameterisation which overcomes the problem of possible connection drops.

Problem Description

The thesis focuses on the handover process between LTE cells in the same band but on different centre frequencies and with different system bandwidth. If the bands are overlapping there is interference. Handover as such can work, the main problem is to get full control over it because there is a high risk that handover is performed too late and you get a dropped call instead.

Objectives and scope of this research

The aim of this research was mainly to define absolute thresholds, to get the handover between LTE cells with different bandwidth, different centre frequencies and overlapping bands working. The goal was to understand the set of problems of the interferences and what are the outcomes of these interferences in a way to get the handover as much as possible under control. In case handover is not the best solution it had to be figured out what can be a good temporary workaround for this problem.



Inter-Frequency mobility based on absolute thresholds

Realization

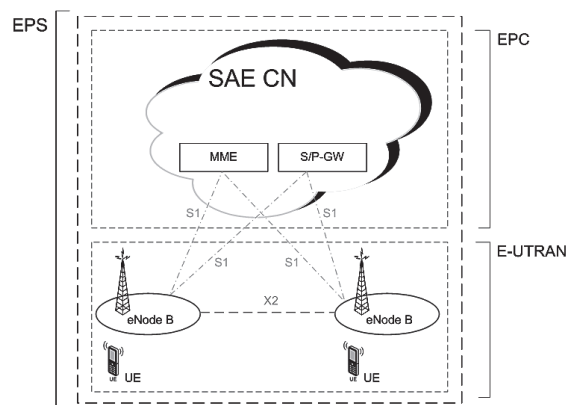
The thesis has not only included the theoretical background of LTE and mobility management within LTE, rather measurements were carried out. Different parameters and configurations were tested and the results were analysed and assessed concerning different criteria as e.g. the amount of cell changes, the downlink throughput, the success rate and the interruption time.

Results

Finally, a working parameterisation was found which overcomes the problem of possible connection drops when moving from one cell to another. The decision for the recommended and final parameterisation was based on a better downlink throughput, the less interruption time and the less amount of cell changes.



Christian Rüger



LTE Network Architecture