**Planning report for examination thesis at IDA**

**Authours**

Paul Nedstrand

Razmus Lindgren

**Preliminary title**

Test Data Post-Processing and Analysis of LA & HARQ

**Problem formulation**

Q: How can we know how well the LTE is working under different interference conditions?

A: by analyzing data that are logged at the base station, we can see what the throughput at different interference circumstition

Q: How can we know how that LTE is fulfilling the standard (requirments)?

A: By looking at reference data given by Ericsson. We can compare our result with reference data.

What kind of data we will be looking at? Internet, voice, textmessage?

What are the requirments for lte under different circumstances?

The purpose is to help Long Term Evolution Interoperability Development Testing (LTE IODT) Data analysis. LTE IODT wants to automatically generate analysis of Link Adaptation (LA) and Hybrid Automatic Repeat Request (HARQ) tests where we sweep through Signal to Interference plus Noise Ratio (SINR) for different channel models. This is important because we would be able to see the SINR, SNR and throughput in a clearer way in relation to the 3GPP standard. The LTE IODT lab test logs give a unique opportunity to look into detailed behavior of link and rank adaptation for both downlink and uplink.

**Our approach**

We will receive data from Ericsson in form of log file, on a disk. We will analyze this data (with the help of i.e Matlab or some other suitable tool) in the perspective of SNR, (Signal-to-noise ratio), SINR (Signal-to-interference-noise ratio), throughput among other things to see if the data meets the requirement of the 3GPP standards. We will interview relevant employees at Ericsson and ask them what the most important tasks are to accomplish, how they will use our work, the purpose etc. When the work is done we will compare the things we have analyzed with the 3GPP standard.

**Litterature base**

Literuature for interviewtechniques/focus group.

Manuals for the labs (how to retrieve data logs from base station)

Literature for algorithms for HARQ,LA etc.

**Time plan**

Preliminary halftime report date: 2014-11-19

Preliminary Oral presentation: 2015-02-01

By the end of the halftime report we expect to have a not complete (but mostly working ) analyzer tool. We expect to have deep knowledge about mostly all LTE knowledge that is useful to us in our project.

We also expect to have written around half of the final report.

See attached file “Project Time Plan” for the actual time plan in excel format.