

Thesis Title

WCDMA Performance with Multi Standard Radio

Place

Ericsson AB, Kista. WCDMA Systems.

Contact Person

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Starting Date

February 1st 2010 (proposed)

Thesis Description

This thesis project is targeted at evaluating the performance of WCDMA with Multi Standard Radio sharing resources between different technologies. Key performance aspects to evaluate are network coverage, capacity and power efficiency. The evaluation will be made using a Matlab-based radio network simulator.

Background

With the standardisation of multi standard radio there is now an opportunity to share resources between different radio access technologies (GSM, WCDMA, LTE), allowing more efficient usage of the network resources.

One key resource that is shared is the power and for WCDMA the power is important both for coverage and as an enabler for high bitrates for HSDPA. By "borrowing" power from other radio access technologies it is possible to increase the performance of WCDMA.

How much power that can be shared depends on the traffic usage in the different technologies and also how much power a technology can utilise efficiently.

Problem Statement

By sharing power it is possible to increase performance for WCDMA both in terms of coverage and capacity. One issue that comes up is that the increased power will also generate more interference for the terminals, for both traffic and control channels. The question to address is to analyse the performance improvements due to the added power in terms of capacity and additionally evaluate how to combat the increased interference. The problem is further complicated by the fact that the power distribution will not be equal in the network.

By running system simulations it is possible to evaluate the performance impacts of the above problem. Some areas to evaluate are how much power can be shared and the expected benefits considering the coverage implications both on the control and user plane in homogeneous and heterogeneous networks.

References

N/A

Scope

30 points (20 weeks), 1 person.

Application

By e-mail in English with "MSc thesis project - MSR" in the subject line. Please include a list of courses with marks and a CV. Please also provide the names and contact details of two persons that may be contacted as references during the recruitment process. Applications close on December 6th.

Suitable Background

Electrical Engineering, Engineering Physics or Computer Engineering, 300 points or equivalent. Good marks are a plus. Advanced courses in radio communication, wireless networks, control theory, signal processing or queuing theory are an advantage.