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Comments/Questions on Throughput Simulations for MIMO

Introduction
Comments and questions on [1] titled "Throughput Simulations for MIMO and Transmit Diversity Enhancements to HSDPA" are presented in this contribution.

Comments/Questions:
Traffic Model:
There is no traffic model. All users have an infinite amount of data to send. These results are not directly comparable to other HSDPA results that use the web traffic model specified in the HSDPA TR. The web traffic model should be incorporated for proper comparisons.

Diversity Mode Comparisons:
Closed loop transmit diversity (two transmitting elements) is a supported diversity method in Release '99 and it is supported for the downlink shared channel (DSCH). It should be included as a reference for diversity mode comparisons. Further, the throughput results should be compared to baseline HSDPA results of the TR.

Simulation Parameters:
The simulations used an idealized antenna pattern, with no use of a backlobe. Also, no site-to-site correlation was modeled. These assumptions result in an optimistic (high) C/I distribution.

Packet Call Delay:
Multi-user diversity obtained by judicious scheduling is proposed. This technique will have an adverse effect on packet call delay. Packet call delay statistics should be reported to allow a proper evaluation of the performance of multi-user diversity. Since all packet traffic will not be delay tolerant, it is important to evaluate multi-user diversity performance under a mix of packet traffic types.
In addition, feedback delay (both ARQ and modulation and coding select) was not included in the simulation. Since multi-user diversity relies on time scheduling, feedback delay may have an adverse effect and should be properly modeled.

Multi-Antenna Reference for Comparisons:
Closed loop transmit diversity with four transmitting elements is under study in WG1. This mode should be incorporated as a reference point for MIMO performance comparisons.

MIMO Transmission:
On page 4, a metric is defined based on the log-det. It is not clear why this is a proper method or metric. Please expand on this approach.
What log-det threshold values were used to select the MIMO data rates? Page 4 specifies 0.1% FER as the criterion. What is this FER level based upon?
H-ARQ was not modeled. What will be its impact on MIMO performance?

Was MMSE receiver with SIC used in the link level simulations described on page 4 to generate the FER vs log-det curve in Figure 2? Is it possible to provide a basic block diagram of the receiver used in the simulations?

References

[1] Lucent, "Throughput simulations for MIMO and transmit diversity enhancements to HSDPA", Tdoc#TSGR1#17(00) 1387/1388, Stockholm, Sweden.

[2] Lucent, "Enhancements for HSDPA Using Multiple Antennas", Tdoc# TSGR1#15(00)1096, 22-26th, August 2000, Berlin, Germany.