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Title: Considerations on the feasibility of OFDM in UTRAN downlink
Agenda Item: 8.12.3
Document for: Discussion

Introduction

Over the last 2 years, a study item has been led by RAN WG1 in order to investigate the potential feasibility of introducing OFDM in the UTRAN downlink. This contribution aims at providing Vodafone's view on this study.

Discussion

Vodafone strongly support the conclusions of the technical report of the OFDM study item [1], namely:

- There are no indications that the introduction of OFDM in UTRAN is not feasible for the downlink.
- The studies carried out within the study item indicates that the basic OFDM scheme offers the possibility for improved performance, compared to HSDPA release 5 with a Rake receiver, for channels with significant time dispersion. This performance advantage decreases for channels with less time dispersion. However, by the introduction of more advanced receiver structure, there is no significant performance difference between HSDPA release 5 and the performance of the OFDM. This is true for all channel-cases evaluated as part of the Study item.
- The introduction of OFDM will have an incremental complexity impact on (multi-mode) UE complexity. Introducing OFDM on the network side will also require modifications to existing Node B design. The exact amount of modifications and the corresponding effort has not been concluded on and may also be implementation dependent.

Vodafone believe that OFDM is likely to be an important component of UTRAN in the future. OFDM technology has a number of significant advantages which could make it a more suitable/future proof technology than WCDMA in the long-term. In particular MIMO performance are significantly better than those achieved with WCDMA. At present, Vodafone recognise that significant effort is currently being put into the work on enhanced uplink and MBMS and that an additional work item introduced now would be a distraction. We do believe as well that in order to have a better visibility of the potential of WCDMA it is necessary to wait for RAN4 to complete their work on improved receiver performance requirements for HSDPA.

Conclusion

While strongly supporting the conclusions of the OFDM SI Vodafone believe that moving to a Work Item at the current stage is not beneficial. However Vodafone is considering with a lot of interest the possible introduction of OFDM in the UTRAN to further enhance the downlink performance, and is recommending to reconsider the introduction of a well defined Work Item on OFDM in the future.

References

[1] 3GPP TSG RAN WG1, OFDM TR 25.892 v1.1.1, "Feasibility Study for OFDM for UTRAN enhancement".